Jerzy M. Gutowski, Krzysztof Sućko, Andrzej Lasoń, Jerzy Borowski, Adam Byk, Tomasz Gazurek, Czesław Greń, Karol Komosiński, Roman Królik, Daniel Kubisz, Miłosz A. Mazur, Tomasz Mokrzycki, Radosław Plewa

THE BEETLES (COLEOPTERA) OF THE KNYSZYŃSKA FOREST

Jerzy M. Gutowski (Editor), Krzysztof Sućko, Andrzej Lasoń, Jerzy Borowski, Adam Byk, Tomasz Gazurek, Czesław Greń, Karol Komosiński, Roman Królik, Daniel Kubisz, Miłosz A. Mazur, Tomasz Mokrzycki, Radosław Plewa

THE BEETLES (COLEOPTERA) OF KNYSZYŃSKA FOREST

CHRZĄSZCZE (COLEOPTERA)
PUSZCZY KNYSZYŃSKIEJ

AUTHORS:
Jerzy M. Gutowski, Krzysztof Sućko, Andrzej Lasoń, Jerzy Borowski, Adam Byk, Tomasz Gazurek, Czesław Greń, Karol Komosiński, Roman Królik, Daniel Kubisz, Miłosz A. Mazur, Tomasz Mokrzycki, Radosław Plewa

Reviewed by:
Prof. dr hab. Jerzy R. Starzyk
Dr inż. Lech Buchholz

Financial support for the publication of this book was provided by Stowarzyszenie Przyjaciół Puszczy Knyszyńskiej "Wielki las" [Association of Friends of Knyszyńska Forest "The Great Forest"]

ISBN 978-83-67801-15-7
DOI: 10.48538/ibl-2026-0005

This work was received on November 30, 2023
and accepted by the publisher on February 8, 2024.

Scientific editor: Jerzy M. Gutowski
Technical editor: Przemysław Bartuszek

PUBLISHER:
Instytut Badawczy Leśnictwa
Sękocin Stary, ul. Braci Leśnej 3, 05-090 Raszyn
www.ibles.pl
Wydawnictwa_IBL@ibles.waw.pl

Layout: Agata Mościcka

Jerzy M. Gutowski (Editor), Krzysztof Sućko, Andrzej Lasoń, Jerzy Borowski, Adam Byk, Tomasz Gazurek, Czesław Greń, Karol Komosiński, Roman Królik, $\boxed{\text{Daniel Kubisz}}$, Miłosz A. Mazur, Tomasz Mokrzycki, Radosław Plewa

THE BEETLES (COLEOPTERA) OF KNYSZYŃSKA FOREST

Instytut Badawczy Leśnictwa / Forest Research Institute
Sękocin Stary, 2026

The photographs in this publication are from the following collections:

IBL Archive – 592A
Lech BOROWIEC (Iconographia Coleopterorum Poloniae; www.colpolon.biol.uni.wroc.pl) – 46, 49, 55, 76, 95, 120, 130, 132, 156, 161, 163-165, 167, 168, 171, 178, 182A, 196, 197, 211, 213, 221, 222, 224, 225, 239, 241, 248, 249, 251, 253, 256, 257, 259-261, 265, 267, 270, 271, 274, 278, 290, 291, 293, 294, 297, 317, 329, 339, 349, 355, 359, 363, 372, 374, 375, 386, 388, 400, 412-414, 439, 451, 456, 458-460, 468, 470, 475, 477, 479-482, 485-487, 490, 492x, 602, 604-607, 609, 611, 612, 615, 616, 630, 639-643
Mateusz CIEPLIŃSKI – 51, 53, 56, 57, 180, 183, 216
Anna CZUBA – 60
Danmarks BilleBank (https://danbiller.dk/docs) – 215, 231, 233, 235, 237
Emmanuel GAY (https://www.insecte.org/forum/viewtopic.php?t=245883) – 167
Czesław GREŃ – 59-61, 182B
Renata GREŃ – 9, 17, 48, 50, 52, 62
Adrian GRYCUK (https://creativecommons.org/licenses/by-sa/3.0/pl/deed.en) – 15
Janusz GRZYWOCZ – 403
Jerzy M. GUTOWSKI – 3, 5-8, 10, 12-14, 20-23, 25-28, 30-31, 33-35, 37-44, 63, 99, 101, 117, 125, 136, 184, 191, 201, 203, 207A, 319, 321, 323, 324A, 464, 466, 497, 501, 513B, 514B, 530B, 533, 550B, 550C, 561B, 562, 565B, 572A, 574, 575, 577A, 577C, 579B, 581B, 589C, 595B, 600B, 625
Andrzej JADWISZCZAK – 93, 186A, 189, 206, 408, 409, 513A, 538, 592C, 634
Sergey V. KAZANTSEV (KAZANTSEV et al. 2019) – 160
Morten KOFOED-HANSEN (https://www.naturbasen.dk/art/11010/atheta-vilis) – 236
Karol KOMOSIŃSKI – 11, 29
Marek W. KOZŁOWSKI – 208, 415, 493, 516, 619
Roman KRÓLIK – 85, 88-90, 92, 172, 174, 175, 177, 214, 232, 243, 252, 255, 299, 334, 335, 337, 338, 360, 377, 380, 474
Janusz KUPRYJANOWICZ – 147, 186B, 204, 229, 324B, 376, 503, 509, 532, 535, 544, 572B, 573, 621-624, 627, 631-633, 635, 637
Bogusława KURA – 16, 18, 19
Adam LARYSZ – 314
Andrzej LASOŃ – 24, 32, 83, 102, 104-106, 113, 114, 118, 119, 126, 127, 137, 140, 264, 272, 275, 280, 306, 308, 309, 311, 327, 330, 332, 340, 341, 343, 344, 348, 350, 352, 366, 367, 368, 370, 382, 401, 404, 416, 418, 420-422, 424, 426, 428, 430-433, 435-437, 439-442, 444-447, 449-450, 452, 454, 455, 549
Arved LOMPE (Käfer Europas) – 218, 247
Łukasz MINKINA – 194, 198, 210
Marek MIŁKOWSKI – 65, 67, 75, 141, 143, 144, 152, 361, 517, 618, 638
Tomasz MOKRZYCKI – 157, 190, 207B, 285, 305, 353, 494, 523-525, 528, 539, 546, 552, 557, 561A, 566, 569, 578, 579A, 580, 581A, 584, 589A, 589B, 592B, 614, 636
Marko MUTANEN (University of Oulu, CC BY-NC) – 227
Tamás NÉMETH (https://www.flickr.com/photos/tamas_nemeth/16072526837) – 283
Paweł NIEMIEC – 518, 520, 526, 565A, 595A, 597, 601, 628, 629
Karol OX (https://www.hmyzslovenska.info/picture.php?/556) – 71
Georges PELLETIER (Canadian Forest Service: https://v3.boldsystems.org/index.php/Taxbrowser_Taxonpage?taxid=899469) – 462
PIEZO (https://www.insecte.org/forum/viewtopic.php?t=125266) – 220
Michał PIOTROWSKI – 96
Radosław PLEWA – 36, 45
Michał PRZYBYLSKI – 68
Uno ROOSILEHT (http://creativecommons.org/licenses/by-sa/4.0/) – 244
Rafał RUTA – 79, 81, 82, 301
Udo SCHMIDT (https://www.flickr.com/photos/coleoptera-us/) – 240, 245, 268, 357, 495
SNSB, Zoologische Staatssammlung Muenchen – 263
Marek SŁAWSKI – 463
Krzysztof SOBAŃSKI – 553A, 620, 626
Mateusz SOWIŃSKI – 276, 284, 472, 610
Krzysztof SUĆKO – 10, 87, 116, 320, 467, 530A
Stanisław SZAFRANIEC – 158, 188, 502, 507, 508, 531, 594
Grzegorz TARWACKI (RCIN – https://www.rcin.org.pl, CC BY-SA 4.0) – 69, 72, 73, 78, 109, 111, 122, 123, 129, 133, 134, 138, 139, 145, 148, 150, 154, 155, 192, 193, 281, 303, 304, 308, 312, 315, 318, 325, 344, 346, 348, 350, 356, 364, 371, 379, 387, 410, 484, 489, 491, 498, 505, 527, 541, 543, 563
Jan TATUR-DYTKOWSKI – 98, 153, 228, 286, 288, 295, 331, 499, 511, 512, 514A, 534, 536, 540, 548, 550A, 553B, 553C, 554, 556, 559, 568, 571, 576, 577B, 582B, 585, 586, 588, 590, 598-600A
Marek TOMALAK – 521
Konrad WILAMOWSKI – 384, 582A
Sławomir ZIELIŃSKI – 200

Table of Contents

Jerzy M. Gutowski[1] (Editor), Krzysztof Sućko[1], Andrzej Lasoń[2], Jerzy Borowski[3], Adam Byk[3], Tomasz Gazurek[3], Czesław Greń[2], Karol Komosiński[4], Roman Królik[5], Daniel Kubisz[6], Miłosz A. Mazur[7], Tomasz Mokrzycki[3], Radosław Plewa[8]

[1]Department of Natural Forests, Forest Research Institute, Park Dyrekcyjny 6, 17-230 Białowieża, Poland
[2]Upper Silesian Museum in Bytom, Department of Natural History, pl. Jana III Sobieskiego 2, 41-902 Bytom, Poland
[3]Department of Forest Protection, Institute of Forest Sciences, Warszawa University of Life Sciences – SGGW, Nowoursynowska 159/34, 02-776 Warszawa, Poland
[4]Department of Zoology, University of Warmia and Mazury in Olsztyn, Oczapowskiego 5, 10-718 Olsztyn, Poland
[5]ul. Mickiewicza 8, 46-200 Kluczbork
[6]Institute of Systematics and Evolution of Animals Polish Academy of Sciences, Sławkowska 17, 31-016 Kraków, Poland
[7]Institute of Biology, University of Opole, Oleska 22, 45-052 Opole, Poland
[8]Department of Forest Protection, Forest Research Institute, Sękocin Stary, Braci Leśnej 3, 05-090 Raszyn, Poland

Abstract. The beetles of Knyszyńska Forest (KF) (NE Poland) were studied between the years 1979-2023. Knyszyńska Forest covers an area of 1767 km^2. The following collecting methods were used: various models of self-trapping, entomological net, hydrobiological net, shaking beetles on an entomological umbrella, direct collecting by hands, searching potential larval galleries of saproxylic beetles, rearing from collected inhabited host material (cambio- and xylophages), collecting to artificial light sources.

Based on our own research and literature data, a total of 2075 species of beetles belonging to 90 families were found; of these, 863 species were recorded from the area for the first time. *Atheta sodermani* (Staphylinidae) and *Podagrica menetriesi* (Chrysomelidae) – are new to the fauna of Poland, and 157 species – to the entire region of Podlasie.

The largest number of representatives of Staphylinidae were caught – 348 species, followed by Curculionidae – 292, Carabidae – 158, Chrysomelidae – 138, and Cerambycidae – 101. Among the listed taxa, 402 rare and protected species were detailed described and illustrated. These include Nature 2000 species: *Rhysodes sulcatus*, *Boros schneideri*, *Cucujus cinnaberinus*, *Osmoderma barnabita*, and *Oxyporus mannerheimii*.

The mentioned species, plus *Cucujus haematodes*, are also under strict protection in Poland. Partially protected are: *Carabus convexus*, *C. coriaceus*, *C. glabratus*, *C. menetriesi*, *Calosoma inquisitor*, *Leptura thoracica*, *Stictoleptura variicornis*, and *Ceruchus chrysomelinus*. 80 species of beetles from various families are on the Red List of *Endangered and Threatened Animals in Poland*, 36 species on the list of *Primeval forest relict beetles of Central Europe*, and 166 on the *European Red List of Saproxylic Beetles*.

Among the most valuable of the listed species are those that have at most 1-2 current, known localities in the country: *Agrilus pseudocyaneus*, *Aspidiphorus lareyniei*, *Astylogethes subrugosus*, *Aulonothroscus laticollis*, *Bibloplectus spinosus*, *Cryptophagus obsoletus*, *Episernus tatarinovae*, *Glischrochilus tremulae*, *Hydroporus brevis*, *Ilybius wasastjernae*, *Lopheros lineatus*, *Microrhagus emyi*, *Nacerdes carniolica*, *Orthoperus nikitskyi*, *Oxyporus mannerheimii*, *Pseudanostirus globicollis*, *Pteryx splendens*, *Stictoleptura variicornis*.

Beetles found in Knyszynska Forest Landscape Park, which covers about 41.2% of the study area, were characterized. 1858 species of beetles were found in the Park, which is 89.4% of all those recorded in KF. The diversity of beetles in twenty-five nature reserves located in KF was also analyzed. They cover a total area of 51.7 square kilometers, which is about 2.9% of the study area. The highest number of species was shown from Budzisk Reserve – 602, followed by Góra Pieszczana – 363, Krzemianka – 362, Jesionowe Góry – 336, Las Cieliczański – 300, and Krzemienne Góry – 271. A total of 1356 species were listed in the reserves, which is 65.3% of all those known in KF. The most valuable beetle fauna has the oldest reserve in KF – Budzisk. Found here include: *Agrilus pseudocyaneus*, *Aulonothroscus laticollis*, *Microrhagus emyi*, *Lopheros lineatus*, *Episernus tatarinovae*, *Nacerdes carniolica*, and *Stictoleptura variicornis*.

The listed beetles were characterized in terms of their preferred environments. Among forest species, saproxylic beetles dominate, with 841 species. Beetles inhabiting the soil environment during their individual development were recorded with 688 species. In addition, 394 species were found to be mycetophilic, 328 – hydrophilic, 174 – anthophilic, 127 – pyrophilic, 105 – coprophilic, 88 – necrophilic, 47 – nidicolous, 46 – synanthropic, 34 – myrmecophilic, and 32 – xerothermophilic; 137 species of aquatic beetles were recorded (the above categories are not mutually exclusive).

The fauna of KF Coleoptera was compared with other natural sites and protected areas in Poland. Compared general biodiversity and particular taxonomic and ecological groups. The species richness of beetles in KF was assessed as high – more than 34% of all beetles recorded from Poland have been found in this area. The best known families are: Boridae, Byturidae, Dascillidae, Lymexylidae, Nosodendridae, Noteridae, Peltidae, Sphaeritidae, Sphindidae, and Thymalidae (100% of the Polish fauna); Mycetophagidae – 92.9%, Cerylonidae – 83.3%, Lucanidae – 71.4%, Aderidae – 71.4%, Eucnemidae – 68.2%. Among the species-rich families, Nitidulidae – 53.1% and Cerambycidae – 51.3% also belong to the well-studied ones.

The paper discusses the problems of protecting the species richness of KF beetles. It is postulated that: (1) enlarge existing nature reserves, or establish new ones, so that their total area reaches 5-10% of KF, (2) gradually increase the amount of deadwood in management forests, especially in older stands to at least 10 m^3/ha, (3) improve the quality of deadwood, i.e. primarily to ensure that it contains the proportion of all species present in the stand and the presence of standing dead trees and thick lying logs in all stages of decomposition, (4) to rebuild ecological corridors between actual and potential habitats of valuable saproxylic species within KF, to achieve ecological connectivity with areas outside KF, (5) to continue the study of KF beetles, as good knowledge determines their effective protection.

Key words: beetles, NE Poland, biology, ecology, faunistics, nature conservation

Return to contents

1. Introduction

Beetles (Coleoptera) are the richest order of insects in the world; about 386,000 species are currently known (Ślipiński et al. 2011). In Poland, their number is estimated at about 6,200 (Chudzicka & Skibińska 2003), with more species being found every year.

Beetles have conquered all the terrestrial habitats available for life (along with the running and standing water bodies within them). Different ecological groups are distinguished by the habitats they occupy. In the climatic and vegetation zone in which Poland is located (temperate zone of deciduous and mixed forests), one of the most numerous groups are saproxylic beetles. This group of insects is dependent on deadwood (Speight 1989; Stokland et al. 2012; Gutowski et al. 2022b). Among the saproxylic beetles are: species that feed in and under bark (cambiophages), in wood (xylophages), and in rotten wood (caryophages); species whose food is wood-decaying fungi (mycophages); predatory and parasitic beetles that feed on insects and other organisms living in this habitat; species that feed on feces (coprophages) and the remains of other animals (necrophages) found in deadwood or in the hollows of old living trees; species that live in the sap oozing from trees; beetles that use deadwood as a place of refuge from predators, adverse weather conditions and as a wintering site (e.g., representatives of the ground beetle family).

A clearly distinct ecological group are aquatic beetles. Most species inhabit all kinds of standing water, but some have adapted to life in flowing water, springs, and even underground water.

Beetles are an important part of biodiversity. They participate in many ecosystem processes, and are an irreplaceable factor in the ecological balance (Stokland et al. 2012; Gutowski et al. 2022b). Among other things, they take part in the processes of:

- the decomposition and mineralization of organic matter (with the participation of microorganisms);
- limiting the abundance of plants (selection factor);
- limiting the abundance of other invertebrates;
- reducing the abundance of phytophagous insects that can damage managed forests;
- improving soil structure;
- pollinating the flowers of many herbaceous and woody plant species;
- preparing nesting and hiding places for many amphibians, reptiles, birds, and mammals (e.g., by killing weakened trees, which consequently facilitates the excavation of holes in them), as well as for a number of invertebrate species.

Detailed information on the morphology, biology, and ecology of selected representatives of the Coleoptera can be found in publications by Crowson (1986), Evans & Bellamy (2000), Gutowski (2006), Kozłowski (2009), and Gutowski et al. (2020a).

Beetles can be an excellent model group for studying ecosystem processes (Gutowski 2006).

The invertebrates of Knyszyńska Forest (KF) are poorly studied. Spiders (Staręga 1974, 1978, 1984, 2003), diurnal butterflies (Klimczuk & Twerd 2000), and some groups of beetles (Kubisz & Pawłowski 1995) are better known.

The first entomologist to study the beetles of KF area was the Czech coleopterologist Jan Roubal, who explored Białowieża Forest near Białystok, and Vilnius in July 1909 (Roubal 1910). He listed 65 species (of eighteen families) from the Białystok site, that is, from the area immediately adjacent to the borders of KF. In a number of publications, especially older ones, information on the localities of some insect species was not very precise. The Białystok site could mean both an area within the city limits or a point a few or a dozen kilometers away from the city, and therefore with great probability already lying within the territory of KF. In order not to lose this data, it was decided to include its historical information in the study (publications that appeared before World War II), especially since these areas do not differ geographically, except for the degree of forest cover. For more recent data (precise labeling), Białystok was excluded from the area covered in this study. Another report relating to *Orthotomicus proximus* (Eichhoff, 1868) is provided by Kéler (1925). Successive information about a dozen species of bark beetles comes from Nunberg (1929), while Ruszkowski (1933) provided information about one species of weevils (Curculionidae). Kuntze (1936) authored a publication in the pre-war period discussing plant pests recorded in Poland in 1919–1933. This work lists four common species of the leaf beetle (Chrysomelidae) and weevil (Curculionidae) families.

The first publication to appear after World War II was the work of Borusiewicz & Kapuściński (1950), listing four species of ground beetles of the genus *Carabus* L. found in the Dojlidy, Knyszyn, and Żednia Forest Districts. Several species of the Scarabaeidae family are described by Sierpiński (1969). Additional species from Knyszyńska Forest area were provided in subsequent volumes of the *Catalogue of the Fauna of Poland* (Burakowski et al. 1974, 1976, 1978, 1979, 1980, 1981, 1983, 1985, 1990a, 1990b, 1991, 1992, 1993, 1995, 1997, 2000). Mroczkowski (1975) reports the occurrence of the skin beetle *Globicornis emarginata* (Gyllenhal, 1808) near Michałów. Capecki (1980), who analyzed the distribution of species of the genus *Tetropium* Kirby in Poland, found the brown spruce longhorn beetle *Tetropium fuscum* (Fabricius, 1787) in KF area. Wojdyna (1981) wrote about insects causing damage to agricultural crops adjacent to the Forest, citing three species of beetles. In 1984, a study was conducted in the Supraśl Forest District on the effectiveness of trapping the striped ambrosia beetle *Trypodendron lineatum* (Olivier, 1795) into traps with a synthetic aggregation pheromone. The publication presenting the results of these studies also mentions three other Coleoptera species (Fornal et al. 1986, Fornal & Jaskulska 1987). Four species of Staphylinidae from KF are provided by Nowosad (1990) in a paper on rove beetles associated with mole nests in Poland. Single species from the families Carabidae, Geotrupidae, Scarabaeidae, and Silphidae are provided by Haitlinger (1985, 1988, 1990, 1993, 1999, 2001, 2002, 2004) from research on the distribution of mites (Acarina) on insects (phoresy) in Poland. Stachowiak (1993) lists three species of weevils of the genus *Sitona* Germ. from KF.

Significant progress in the knowledge of KF beetles was achieved thanks to Daniel Kubisz's organization of two scientific camps in the Kopna Góra (in 1985, 1986) for students of the Scientific Circle of Foresters of the Agricultural Academy in Kraków. During these camps, beetles were trapped using various methods, including pheromone traps, in many areas of KF. Based on the results of these studies, a number of papers were published (Kubisz & Szwałko 1991, 1994; Bunalski 1992; Wojas 1992, 1995), listing several hundred species of Coleoptera.

The publication of Knutelski & Lasoń (1995) brought much new information about species of weevils (Curculionoidea), in which the authors report 189 species from Podlasie, including about a hundred from KF area.

The first summary of the state of knowledge on all the beetles of KF is the publication by Kubisz & Pawłowski (1995). In this work, the authors review publications that appeared up to 1994 and provide 181 additional species (original data). In total, 547 species of Coleoptera were known from KF in 1994 (this statistic also includes materials by Knutelski & Lasoń, which were not published until 1995).

Further information, usually about single species or a small number of them, is contained in the following publications: Gutowski et al. 1992, 1999, 2010a; Bunalski 1995; Gutowski 1995; Gutowski & Królik 1996; Kuśka 1995; Borowiec & Kubisz 1999; Stachowiak 2001; Byk et al. 2004; Kubisz et al. 2004a, 2006, 2010a, 2010b, 2014, 2015; Mazur 2004; Pawłowski 2004, 2005; Ruta et al. 2006, 2020; Bohdan 2008, 2009; Hilszczański 2008; Iwan et al. 2010, 2012; Kapuściński 2010; Plewa 2010; Plewa & Niemiec 2010; Tarwacki & Plewa 2010; Jaskuła & Rachalewski 2011; Plewa et al. 2011a, 2011b, 2014, 2018; Skłodowski 2011; Wanat et al. 2011; Jałoszyński et al. 2013; Hilszczański et al. 2015; Plewa & Borowski 2016; Bieńko et al. 2017; Tatur-Dytkowski et al. 2017; Kolasa et al. 2018; Kajtoch et al. 2019; Królik & Lasoń 2020; Kurzawa et al. 2020; Mroczyński & Marczak 2020; Konarzewski & Kupryjanowicz 2021; Szawaryn et al. 2021; Miłkowski & Gutowski 2022; Mokrzycki et al. 2022; Średziński 2022; Sikora et al. 2023; Wanat & Ulanowski 2023. A more detailed study devoted to one family – Carabidae (ground beetles) – was conducted in the Czarna Białostocka Forest District, where 57 species were reported (Kwiatkowski 2011). Studies on this family of beetles were also conducted by Grzegorz Tarwacki in the Krynki Forest District. However, the publication that was released (Tarwacki 2011) lacks precise information about the species – the work is ecological in nature. There is also much information about the Kateretidae and Nitidulidae of this site (Lasoń 1997, 2003, 2023a). Several dozen species of the superfamily Scarabaeoidea from KF were reported by Bunalski (2006), who studied this group on a larger scale – along the eastern borders of Poland.

In 2018–2020, studies of KF beetles, with particular emphasis on the Budzisk and Jesionowe Góry Reserves, were conducted by Adam Kwiatkowski and Dawid Marczak. These studies resulted in a number of valuable publications that significantly expanded the knowledge about this group of insects (Borowski et al. 2020; Kwiatkowski 2020; Kwiatkowski & Marczak 2020a, 2020b; Marczak et al. 2020b, 2021, 2023a, 2023b, 2023c, 2023d; Lasoń et al. 2023). The result of this work is, among others, a fairly good identification of the species composition of longhorn beetles (Cerambycidae), of which a total of 96 species were counted in KF and the adjacent Białystok area (Marczak et al. 2023d). The fauna of false click beetles (Eucnemidae) was also recorded, showing 14 species from the study area (Marczak et al. 2023b).

Members of the authors' team of the present study have also published some of their results about rare beetle species recently found in KF (Królik & Lasoń 2020; Greń et al. 2022b; Mokrzycki et al. 2022; Lasoń 2023a; Lasoń et al. 2023; Królik et al. 2024; Ruta et al. 2024). Research results on aquatic beetles have also been published separately, presenting 137 species from the area (Greń et al. 2022a).

This research activity by both teams in recent years has resulted in the rapid expansion of the number of discovered species. Published data from KF area exists on 1,213 species of Coleoptera. From the neighboring Białowieża Forest, about 3,250 species of beetles have been reported (Gutowski & Jaroszewicz 2001, 2004; Biggs et al. 2004; Tończyk & Gusta 2016; Greń et al. 2017; Plewa et al. 2019, 2020; Gutowski et al. 2020b; Walesiak et al. 2021; Schwerk 2023). Given the vastness of the area, the diversity of habitats, and the good state of preservation of many of the forests located in KF area, it was anticipated that the species richness of beetles would be much higher than indicated by the literature data. And indeed this proved to be the case.

The purpose of this work was to collect, verify, organize and make available all information, both published and original, on the beetles (Coleoptera) of Knyszyńska Forest. The monograph presents faunal and ecological data, as well as the challenges of the conservation of this group of insects in the study area.

Return to contents

2. Study area

The Knyszyńska Forest (KF) is named after the small town of Knyszyn, located on the western edge of this forest complex. The KF is located in northeastern Poland, in the Podlasie Voivodeship, in the East European Lowlands physical-geographic region, in the North Podlasie Lowland macroregion. It is located in two adjacent mesoregions – the Białystok Plateau in the north and the Upper Narew Valley in the south (Solon et al. 2018). The forests of KF are managed by seven forest districts: Czarna Białostocka, Dojlidy, Knyszyn, Krynki, Supraśl, Waliły, and Żednia (Fig. 1, 2).

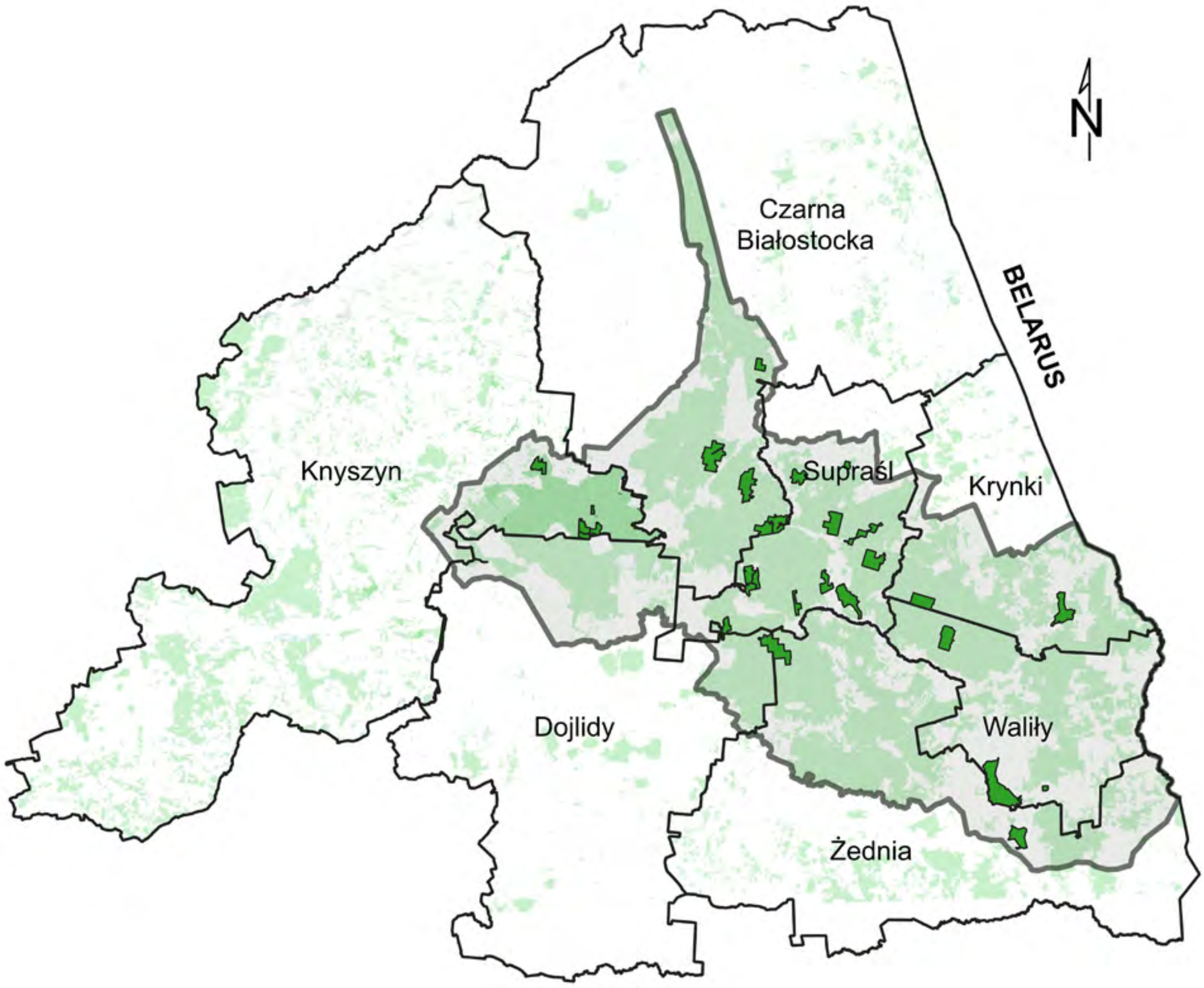


Fig. 1. The boundaries of forest districts in which Knyszyńska Forest is located

It is difficult to unequivocally determine the borders of KF, as in many sources we often find significantly different interpretations of the range of this natural-physiographic object. Its range and boundaries have also changed over time, with its area generally decreasing as human settlements expanded World War II. After the war, large areas of former farmland on the eastern and southern fringes of the Forest began to be afforested (Sokołowski 2006). Today, these afforestations have largely become mature forests and constitute a single forest complex and an integral extension of the historic KF (Fig. 1). Nomenclature has also changed – in the 16th century, the present KF complex was distinguished by the Nowodworska, Kuźnicka, Malawicka, Odelska, Kryńska, Błędowska, and Knyszyńska forests (Sokołowski 2006).

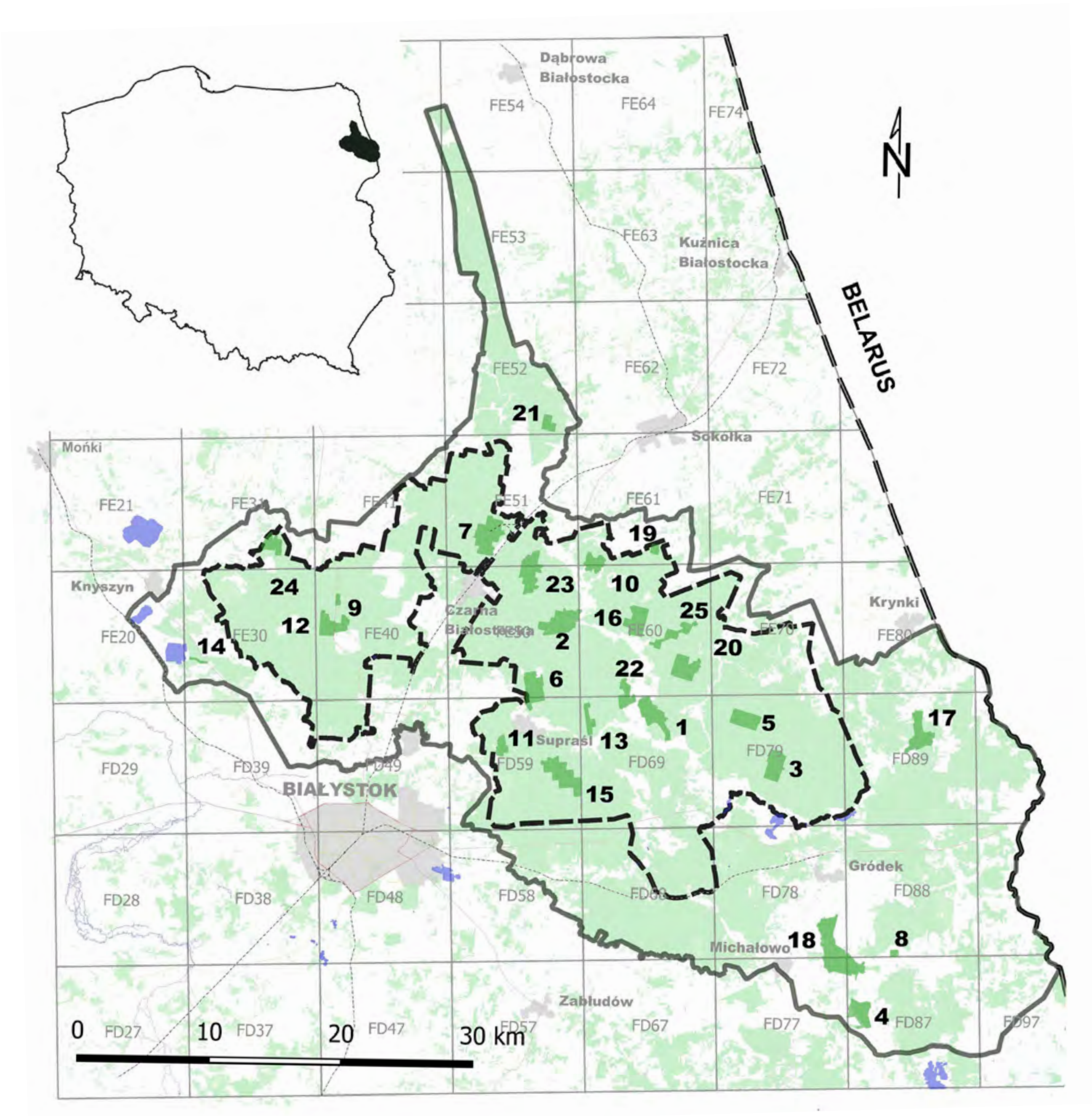


Fig. 2. The boundaries of Knyszyńska Forest adopted in the study (solid line); 1, 2, 3… – nature reserves (1 – Bahno w Borkach, 2 – Budzisk, 3 – Chomontowszczyzna, 4 – Gorbacz, 5 – Góra Pieszczana, 6 – Jałówka, 7 – Jesionowe Góry, 8 – Jezioro Wiejki, 9 – Karczmisko, 10 – Kozłowy Ług, 11 – Krasne, 12 – Krzemianka, 13 – Krzemienne Góry, 14 – Kulikówka, 15 – Las Cieliczański, 16 – Międzyrzecze, 17 – Nietupa, 18 – Rabinówka, 19 – Stara Dębina, 20 – Stare Biele, 21 – Starodrzew Szyndzielski, 22 – Surażkowo, 23 – Taboły, 24 – Wielki Las, 25 – Woronicza), FE53, FD58… – a grid of UTM squares, ━ ━ ━ – border of Knyszyńska Forest Landscape Park

Some suggestion of the range of KF are the boundaries of Knyszyńska Forest Landscape Park, established in 1988. This park, including its buffer zone, currently covers more than 1,260 km^2 (Park Krajobrazowy... 2023). The most similar approach to the study area in this monograph is contained in the study by Mirek et al. (2005) on vegetation refuges in Poland. The boundaries of the Knyszyńska Refuge adopted in the aforementioned study are much wider and extend in the east as far as the state border with Belarus, and in the south as far as Michałowo (over 1,367 km^2). The Special Area of Conservation "Ostoja Knyszyńska" (Rozporządzenie Ministra... 2021) also has a similar range (an area of about 1,361 km^2).

The study area adopted for this monograph includes a fairly dense forest complex, clearly distinguishable from open areas (fields, meadows, pastures), which is easily visible on satellite images. It includes both the historic KF (Fig. 3) and large areas of forest that were created on post-war farmland (Fig. 1). This relatively compact forest complex is an integral whole (1,767 km^2), suitable as habitat for dendrophilous beetles and those associated with the forest, but living in soil, water, and other substrates.

Fig. 3. A peat bog with the cotton grass *Eriophorum vaginatum* L. (photo J.M. Gutowski)

The study area falls within 35 squares (10 ×10 km) of the UTM grid (zone 34U): FD39, FD49, FD58, FD59, FD67, FD68, FD69, FD77, FD78, FD79, FD87, FD88, FD89, FD97, FD98, FD99, FE20, FE21, FE30, FE31, FE40, FE41, FE43, FE44, FE50, FE51, FE52, FE53, FE54, FE60, FE61, FE62, FE70, FE71, FE80 (Fig. 4). The entire area of KF is located within the borders of Podlasie in accordance with the division of Poland into faunistic regions used in the *Catalogue of the Fauna of Poland* [*Katalog Fauny Polski*] (Burakowski et al. 1974).

The sites of several species lying just outside the boundary of the formally adopted study area were also included in the research, if ecological requirements indicated that they also occur in KF but have not yet been detected due to the lack of more intensive research.

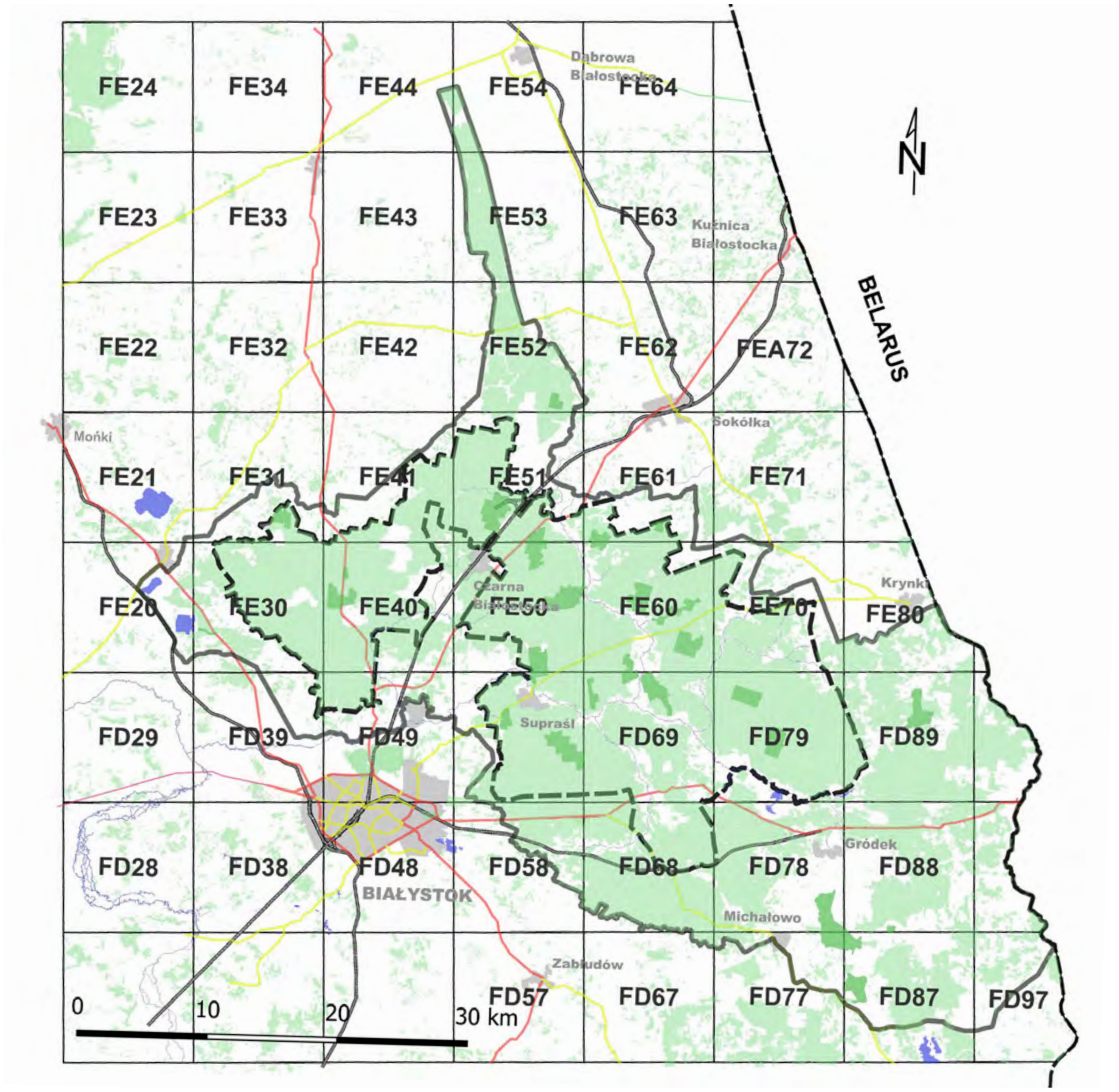


Fig. 4. A grid of UTM squares in Knyszyńska Forest

There are 25 nature reserves located in the seven forest districts within the boundaries of KF adopted here (Table 1).

Table 1. Nature reserves in Knyszyńska Forest

No.	Nature reserve	Area [ha]	Date established	Forest district
1.	Bahno w Borkach	286.90	1990	Supraśl
2.	Budzisk	341.00	1970	Czarna Białostocka, Supraśl
3.	Chomontowszczyzna	234.42	1999	Waliły

No.	Nature reserve	Area [ha]	Date established	Forest district
4.	Gorbacz	222.72	1966	Żednia
5.	Góra Pieszczana	220.05	1987	Krynki
6.	Jałówka	277.11	1990	Supraśl
7.	Jesionowe Góry	375.50	1987	Czarna Białostocka
8.	Jezioro Wiejki	22.50	2005	Waliły
9.	Karczmisko	20.45	1971	Knyszyn
10.	Kozłowy Ług	140.49	1997	Supraśl
11.	Krasne	85.22	1990	Supraśl
12.	Krzemianka	230.91	1987	Knyszyn
13.	Krzemienne Góry	79.29	1987	Supraśl
14.	Kulikówka	9.98	1987	Knyszyn
15.	Las Cieliczański	370.58	1990	Dojlidy, Żednia
16.	Międzyrzecze	250.27	1990	Supraśl
17.	Nietupa	273.73	1996	Krynki
18.	Rabinówka	658.57	2005	Waliły
19.	Stara Dębina	33.54	1987	Supraśl
20.	Stare Biele	255.65	1987	Supraśl
21.	Starodrzew Szyndzielski	79.74	1990	Czarna Białostocka
22.	Surażkowo	137.15	1987	Supraśl
23.	Taboły	302.44	1999	Czarna Białostocka
24.	Wielki Las	129.78	1990	Knyszyn
25.	Woronicza	133.80	1989	Supraśl
Total		**5171.79**		

The following brief descriptions provide the characteristics of these reserves:

Bahno w Borkach (286.90 ha). Forest and peatland reserve in the Supraśl River valley (Fig. 5), which aims to preserve valuable, well-developed boreal-type peatland assemblages, characterized by a rich flora of vascular plants and bryophytes and the presence of a large number of protected species. A large part of the reserve is occupied by a pine-birch swamp forest *Thelypteridi-Betuletum pubescentis*, rare in Poland, smaller areas on the outskirts have alder bog *Sphagno squarrosi-Alnetum* and mixed bog forests *Betulo pubescentis-Piceetum*. The forest stand is dominated by Scots pine *Pinus sylvestris* L. accompanied by downy birch *Betula pubescens* Ehrh. and less frequently by silver birch *Betula pendula* Roth. and black alder *Alnus glutinosa* (L.) Gaertn., with a small admixture of Norway spruce *Picea abies* (L.) Karst. and bay willow *Salix pentandra* L. The shrub layer is dominated by grey willow *Salix cinerea* L., alder buckthorn *Frangula alnus* Mill., and birches, including shrubby birch *Betula humilis* Schrank (Sokołowski 2006).

Fig. 5. Bahno w Borkach Reserve (photo J.M. Gutowski)

Budzisk (341.00 ha). Forest reserve (Fig. 6, 7), which aims to preserve a fragment of KF with natural forest, bog, meadow, and spring assemblages. Part of the reserve's area – 50.25 hectares – is under strict protection (Zarządzenie RDOŚ 2016). The reserve is managed by two forest districts: Czarna Białostocka and Supraśl.

The area of the reserve is quite varied – height differences amount to 25 m. The central part is occupied by a sunken depression with several springs and a stream. Among the forest assemblages in the predominant area of the reserve are various sub-associations of the *Tilio-Carpinetum* deciduous forest. In addition, reed grass-spruce mixed coniferous *Calamagrostio-Piceetum*, ash-alder riparian *Fraxino-Alnetum*, and spruce-alder riparian *Piceo-Alnetum* associations are present. Smaller areas are occupied by currant-alder *Ribeso nigri-Alnetum* and pine-birch swamp forests *Thelypteridi-Betuletum pubescentis*. The vegetation is rich and diverse – more than 280 species of vascular plants have been found here, including 17 species of trees and 19 species of shrubs (Sokołowski 2006).

Chomontowszczyzna (234.42 ha). A forest reserve whose purpose is to preserve a fragment of KF characterized by a high degree of naturalness for scientific and didactic purposes (Figs. 8, 9). It encompasses part of an extensive bog, fed by the waters of various springs. It is one of the largest peat bog areas in KF. The vegetation of the reserve is rich – almost 270 species of vascular plants have been identified here, including 19 species of trees and 14 species of shrubs. There are seven forest associations and six non-forest vegetation associations in the reserve. Sphagnum spruce coniferous forest *Sphagno girgensohnii-Piceetum*, mixed bog forest, and various subcomponents of oak-hornbeam forests are among the assemblages. Also encountered are hazel-spruce mixed forest *Corylo-Piceetum*, ash-alder riparian, spruce-alder riparian, and currant-alder (Sokołowski 2006).

Fig. 6. Budzisk – the oldest and best preserved reserve in Knyszyńska Forest (photo J.M. Gutowski)

Fig. 7. The natural oak-hornbeam forest community in Budzisk Reserve (photo J.M. Gutowski)

Gorbacz (222.72 ha). A peat bog and water reserve, the purpose of which is to preserve for nature, science, and didactics, raised, transitional, and low peat bogs together with a humic lake in the final stage of forming land and relicts of post-glacial flora, as well as a black grouse refuge. This is a disappearing oligotrophic lake with surrounding marshes overgrown by woody vegetation (Fig. 10). The vegetation of the reserve is rich, having five forest associations, one scrub association, 10 bog associations and several aquatic vegetation associations. Among the woody plants are Scots pine, birches (including *Betula humilis*) (Sokołowski 2006), and various species of willow *Salix* L. spp.

Fig. 8. Spruce forest in Chomontowszczyzna Reserve (photo J.M. Gutowski)

Fig. 9. Chomontowszczyzna Reserve, Średnia River (photo R. Greń)

Fig. 10. Gorbacz Reserve – former peat bog (photo K. Sućko)

Góra Pieszczana (220.05 ha). A forest reserve, established to preserve natural stands of spruce and pine (Fig. 11). The dominant assemblage is the reed grass-spruce mixed forest *Calamagrostio-Piceetum* with a pine stand and a significant proportion of spruce. The reserve also contains the reed grass-pine mixed coniferous forest *Calamagrostio-Pinetum*, cowberry coniferous forest *Vaccinio vitis-Pinetum*, coniferous swamp forest *Vaccinio uliginosi-Pinetum*, and peat-birch swamp forest *Sphagno-Betuletum pubescentis*. Among the shrubs are common hazel *Corylus avellana* L., fly honeysuckle *Lonicera xylosteum* L., warted spindle *Euonymus verrucosus* Scop., rowan *Sorbus aucuparia* L. em. Hedl., grey willow *Salix cinerea* L., eared willow *S. aurita* L., and alder buckthorn *Frangula alnus* Mill. (Sokołowski 2006).

Fig. 11. Spruce and pine forest in Góra Pieszczana Reserve (photo K. Komosiński)

Jałówka (277.11 ha). Forest reserve (Fig. 12) established to preserve a valuable fragment of KF encompassing geomorphological systems characteristic of its area and distinguished by the richness of plant assemblages. The reserve includes numerous springs and the Jałówka Stream. The stream valley is surrounded by hills with considerable relative heights (up to 34 m). The largest area is occupied by a reed grass-spruce mixed coniferous forest, there is also cowberry coniferous forest and hazel-spruce mixed forest *Corylo-Piceetum*. The stream valley has ash-alder riparian and spruce-alder riparian associations, and a small area is occupied by an oak-hornbeam forest (Sokołowski 2006).

Jesionowe Góry (375.50 ha). A forest reserve established to preserve a series of assemblages occurring in swampy habitats and on mineral soils, with a high degree of naturalness and with a rich, old-growth forest of multiple species. Approximately half of the reserve's area is occupied by peat bog assemblages belonging to nine forest and four non-forest associations, while four associations on mineral soils occur on the elevations (Fig. 13). Large areas are occupied by the *Ledo-Sphagnetum magellanici* raised bog association, with peat-birch mixed coniferous swamp, coniferous swamp, pine-birch swamp, and mixed bog forests also present. A significant part of the area is occupied by ash-alder riparian (Fig. 13), spruce-alder riparian, currant-alder, and sphagnum spruce coniferous forests. Oak-hornbeam and hazel-spruce mixed forests are found on the elevations. Small plots in the wet areas are occupied by the oak-spruce moist mixed coniferous forest *Querco-Piceetum* and the quaking bog moist coniferous forest *Molinio-Pinetum* (Sokołowski 2006).

Fig. 12. Jałówka Reserve (photo J.M. Gutowski)

Fig. 13. Oak-hornbeam forest in Jesionowe Góry Reserve (photo J.M. Gutowski)

Fig. 14. Riparian forest in Jesionowe Góry Reserve (photo J.M. Gutowski)

Jezioro Wiejki (22.50 ha). An aquatic, biocenotic, and physiocenotic reserve (Fig. 15) established for teaching and science and to preserve a natural mesotrophic lake, a peat bog, as well as rare animal and plant species occurring in the area. One of the most valuable qualities of the reserve is the ecosystem of a small lake with a clearly delineated zonal arrangement of marsh and aquatic vegetation. There are successive swards of water horsetail *Equisetum fluviatile* L. and bulrush *Typha latifolia* L. formed evenly from the center of the lake, as well as mats of lesser tussock-sedge *Carex diandra* Schrank and beaked sedge *Carex rostrata* Stokes. Grey willow covers large areas within the boundaries of the swamp mats. The surrounding zone consists of currant-alder and birch-willow forests. Among others, the protected shrubby birch *Betula humilis* (Wikipedia 2023a) is found in the reserve.

Karczmisko (20.45 ha). Forest reserve aimed at preserving forest assemblages in their natural state, including the pine-spruce forest characteristic of KF (Fig. 16). The reserve is home to Scots pine trees aged 180-200 years and younger spruce trees; shrubs include mezereum *Daphne mezereum* L. (Sokołowski 2006).

Kozłowy Ług (140.49 ha). Forest and peat bog reserve (Fig. 17) established to preserve an extensive low peat bog in the early stages of forest succession for science and didactics. The reserve includes a peat bog in the valley of the Sokołda River surrounded by moraine uplands. A large site in the protected area is occupied by low bogs with clumps of shrubby willows: grey *Salix cinerea*, eared *S. aurita*, dark-leaved *S. myrsinifolia* Salisb., rosemary-leaved *S. rosmarinifolia* L., bay willow *S. pentandra* L.; shrubby birch is also present. A mixed bog forest and ash-alder riparian forest are on the periphery of the bog, with reed grass-spruce mixed coniferous and, in places, oak-hornbeam forests on the elevations (Sokołowski 2006).

Fig. 15. Jezioro Wiejki Reserve (photo A. Grycuk)

Fig. 16. Spruce and pine forest in Karczmisko Reserve (photo B. Kura)

Krasne (85.22 ha). Forest reserve established to preserve a valuable fragment of KF, which includes well-developed forest assemblages, mainly from the group of coniferous and mixed coniferous forests. The dominant plant community is reed grass-spruce mixed coniferous forest (Fig. 18), with a smaller area occupied by cowberry coniferous forest and alder in a mosaic with ash-alder riparian. There is a spring in the reserve that gives rise to a stream (Sokołowski 2006).

Fig. 17. Forest and peat bog reserve Kozłowy Ług (photo R. Greń)

Fig. 18. Spruce and pine forest in Krasne Reserve (photo B. Kura)

Krzemianka (230.91 ha). Forest-archaeological reserve (Fig. 19) established to preserve forest ecosystems characteristic of KF, springs and numerous sites of rare and protected plant and animal species for science, didactics, and nature conservation. The reserve also seeks to protect the archaeological legacy of flint mines. The reserve encompasses a swampy valley including springs and Krzemianka Stream, surrounded by elevations reaching 38 meters. The reserve contains three types of springs: open, muddy, and boggy. Of the plant communities, ash-alder riparian dominates here, with currant-alder on the edges of the valley. Deciduous and mellitis-hornbeam *Melitti-Carpinetum* forests occur on the elevations, as well as bilberry-spruce, cowberry coniferous, and reed grass-spruce mixed coniferous forests (Sokołowski 2006).

Fig. 19. Krzemianka Reserve – seepage spring area (photo B. Kura)

Krzemienne Góry (79.29 ha). A forest reserve located on a kame embankment (Fig. 20) established to preserve forest communities typical of KF. The site is distinguished by a very varied relief – height differences amount to 45 m. The reserve contains a great diversity of plant cover with, among others, mezereum. The plant communities present here include reed grass-pine mixed coniferous forest *Calamagrostio-Pinetum*, reed grass-spruce mixed, cowberry coniferous, and hazel-spruce mixed forest (Sokołowski 2006).

Kulikówka (9.98 ha). A forest-floristic reserve established to preserve fragments of riparian forests in KF, with a large stand of ostrich fern *Matteuccia struthiopteris* (L.) Tod. The site includes a fragment of Kulikówka Stream valley with its riparian forest (Fig. 21). Ostrich fern occurs in the *Stellario-Alnetum* riparian forest. An ash-alder riparian forest occurs on the edges of the valley (Sokołowski 2006).

Fig. 20. Natural pine-spruce forest in Krzemienne Góry Reserve (photo J.M. Gutowski)

Las Cieliczański (370.58 ha). A forest reserve preserving a fragment of KF with numerous valuable forest communities having a natural character, represented mainly by an oak-hornbeam forest with wych elm *Ulmus glabra* Huds., which is rare in our forests, as well as mixed coniferous and alder forests. The reserve is located at the border of the Dojlidy and Żednia Forest Districts. It has a varied relief – height differences amount to 35 m, with numerous springs and streams (Fig. 22, 23). The extensive variety of relief and hydrological conditions determines the great diversity and richness of the reserve's vegetation. The area contains hazel-spruce mixed forest, reed grass-spruce mixed coniferous forest, two sub-associations of oak-hornbeam forests, as well as mixed bog forest. The stream valleys contain ash-alder, with currant-alder forests in depressions with stagnant water (Sokołowski 2006).

Międzyrzecze (250.27 ha). Forest reserve (Fig. 24) protecting a fragment of KF characterized by varied terrain and the presence of numerous springs, well-developed plant assemblages characteristic of the area, as well as many protected plant species. In the western part of the site is a peated valley of the Koszówka Stream, fed by numerous springs. The largest area of the reserve is occupied by reed grass-spruce mixed coniferous forest, much less by the reed grass-pine mixed coniferous forest, cowberry coniferous forest, and hazel-spruce mixed forest. An ash-alder riparian forest occurs along the stream (Sokołowski 2006).

Nietupa (273.73 ha). A faunal and forest reserve encompassing part of an extensive low bog in the Nietupa River valley. The reserve serves as a refuge for beaver, a number of bird species, and preserves valuable forest assemblages in a natural state, mainly alder and mixed swamp forests with a high degree of naturalness (Fig. 25). The reserve contains currant-alder, bird cherry-alder riparian *Pado-Alnetum*, pine-birch swamp forest, and mixed bog forest (Sokołowski 2006).

Fig. 21. Riparian forest by Kulikówka Stream with the ostrich plume *Matteucia struthiopteris* (L.) Tod. (photo J.M. Gutowski)

Fig. 22. Starzynka Brook in Las Cieliczański Reserve (photo J.M. Gutowski)

Fig. 23. Las Cieliczański Reserve – beaver pond (photo J.M. Gutowski)

Fig. 24. Międzyrzecze Reserve (photo A. Lasoń)

Rabinówka (658.57 ha). A faunal reserve (Figs. 26, 27) for rare and protected species of breeding avifauna, especially the black grouse population in the Grodecko-Michałowski Basin, established for the purpose of nature protection, science, and didactics. It resembles the Biebrza Basin with its abundance of water and vegetation types. Until a few decades ago, the area included agriculturally-used wet meadows. Of the interesting tree species, shrubby birch should be mentioned (Wikipedia 2023b).

Stara Dębina (33.54 ha). A forest reserve aimed at preserving an old-growth oak stand (Fig. 28) found in mixed forest habitat, as well as a stand of sessile oak at the northern limit of its range. The stand includes: sessile oak *Quercus petraea* (Matt.) Liebl., pedunculate oak *Q. robur* L., Norway spruce *Picea abies* (L.) Karst., common hornbeam *Carpinus betulus* L., the less common small-leaved linden *Tilia cordata* Mill., Norway maple *Acer platanoides* L., mountain elm *Ulmus glabra* Huds., silver birch *Betula pendula* Roth, aspen *Populus tremula* L., and Scots pine *Pinus sylvestris* L. A mellitis-hornbeam forest occurs in the reserve (Sokołowski 2006).

Stare Biele (255.65 ha). A forest and peat bog reserve (Fig. 29), whose purpose is to preserve valuable fragments of KF, including well-developed plant assemblages with a number of protected and rare plants, as well as complexes of marshes and overgrown meadows that serve as a refuge for animals. The vegetation of the reserve is diverse and rich; it contains nine forest associations. The largest area is occupied by currant-alder and alder bog forests *Sphagno squarrosi-Alnetum* as well as mixed bog forest. Smaller areas contain sphagnum spruce coniferous, oak-hornbeam, moist coniferous, mixed coniferous, cowberry coniferous, and hazel-spruce mixed forests (Sokołowski 2006).

Fig. 25. Alder forest in Nietupa Reserve (photo J.M. Gutowski)

Starodrzew Szyndzielski (79.74 ha). A forest reserve (Fig. 30) preserving a thermophilic pine-spruce-oak forest, characteristic of the northern part of KF, with a high degree of naturalness and the presence of many rare and protected plant species. Almost the entire area is occupied by the mellitis-hornbeam forest assemblage. The stand is dominated by pedunculate oak, with a large share of hornbeam, pine, and spruce. The shrub layer contains abundant hazel, rowan, and fly honeysuckle, and less abundant alder buckthorn and warted spindle. A coniferous swamp forest occurs in the peated depressions, and their periphery is occupied by the oak-spruce moist mixed coniferous forest *Querco-Piceetum* (Sokołowski 2006).

Fig. 26. Low peat bog in Rabinówka Reserve (photo J.M. Gutowski)

Surażkowo (137.15 ha). Forest and peat bog reserve (Fig. 31) established to preserve a fragment of KF that includes numerous forest communities with a high degree of naturalness and a significant share of forest bog assemblages. A number of plant assemblages are found here, including mixed bog forest, pine-birch swamp forest, and ash-alder riparian forest. The elevations contain hazel-spruce mixed and oak-hornbeam forests. (Sokołowski 2006).

Taboły (302.44 ha). A forest and peat bog reserve (Fig. 32) preserving a fragment of KF characterized by the occurrence of moss coniferous and sphagnum spruce forests. The reserve encompasses an extensive and fairly deep forest peat bog. It contains low, transitional, and raised peat bogs. The plant cover is rich and diverse, and the plant assemblages are characterized by a high degree of naturalness. The flora of the reserve includes more than 200 species of vascular plants. Mixed bog, sphagnum spruce, pine-birch swamp, currant-alder, and alder bog forests occur here. Oak-hornbeam and reed grass-spruce mixed coniferous forests grow on the mineral soils (Sokołowski 2006).

Fig. 27. Rabinówka Reserve – aspen, spruce and alder forest stand (photo J.M. Gutowski)

Fig. 28. Stara Dębina Reserve – oak-hornbeam forest (photo J.M. Gutowski)

Fig. 29. Sphagnum spruce forest in Stare Biele Reserve (photo K. Komosiński)

Fig. 30. Oakwood in Starodrzew Szyndzielski Reserve (photo J.M. Gutowski)

Fig. 31. Pine and birch swamp forest in Surażkowo Reserve (photo J.M. Gutowski)

Fig. 32. Taboły Reserve (photo A. Lasoń)

Wielki Las (129.78 ha). A forest reserve established to preserve a fragment of KF consisting mainly of numerous coniferous forest communities and a high degree of naturalness. The largest area is occupied by reed grass-spruce mixed coniferous forest, sometimes accompanied by patches of cowberry coniferous forest. The peated depressions are occupied by alder bog accompanied by an assemblage of shrubby willows representing the *Salicetum pentandro-cinereae* association (Fig. 33), consisting of grey, eared, and bay willows (Sokołowski 2006).

Woronicza (133.80 ha). Forest reserve established to preserve the natural state of the Woronicza Stream valley (Fig. 34) and adjacent moraine hills, together with numerous plant assemblages characteristic of the region, as well as protected and rare plant species. The reserve encompasses the entire stream valley with its spring zone. The largest area is occupied by mixed bog forest, accompanied in places by sphagnum spruce coniferous and ash-alder riparian forests. Moist coniferous, reed grass-spruce mixed coniferous, hazel-spruce mixed, and oak-hornbeam forests occur in the vicinity of the valley (Sokołowski 2006).

There are many interwoven forms of site-based nature protection in KF. In addition to the above-mentioned nature reserves, which provide a high degree of protection, the importance of the Prof. Witold Sławiński Knyszyńska Forest Landscape Park, which covers most of KF area, must be emphasized. Within the Nature 2000 network, two areas have been established here: Ostoja Knyszyńska Special Conservation Area (PLH 200006) and Knyszyńska Forest Special Protection Area (PLB 200003). The eastern part of the study area includes the Sokólskie Hills protected landscape area.

The relief of KF area is very varied, having been shaped during the period of Central Poland's glaciation. Differences in relative height reach up to 70 m (Sokołowski 2006). The KF lies in the Narew River basin. The main river is the Supraśl, and its tributaries are the Sokołda, Czarna, Płoska, and Słoja. A characteristic feature of KF is the large number of springs it holds – more than 430 have been registered (Łoszewski 1984).

Fig. 33. Wielki Las Reserve – *Salicetum pentandro-cinereae* community (photo J.M. Gutowski)

Fig. 34. Wet meadow in Woronicza Reserve (photo J.M. Gutowski)

The stands of the entire KF complex are dominated by Scots pine *Pinus sylvestris* L., followed by Norway spruce *Picea abies* (L.) Karst., and then by silver birch *Betula pendula* Roth and downy birch *B. pubescens* Ehrh., pedunculate oak *Quercus robur* L., black alder *Alnus glutinosa* (L.) Gaertn., aspen *Populus tremula* L., European hornbeam *Carpinus betulus* L., Norway maple *Acer platanoides* L., small-leaved linden *Tilia cordata* Mill., European ash *Fraxinus excelsior* L., and goat willow *Salix caprea* L. The proportion of forest habitat types is as follows: dry coniferous – 0.02%, fresh coniferous – 19.20%, moist coniferous forest – 0.43%, coniferous swamp forest – 0.70%, fresh mixed coniferous forest – 43.37%, moist mixed coniferous forest – 2.51%, mixed coniferous swamp forest – 0.59%, fresh mixed deciduous forest – 19.20%, moist mixed deciduous forest – 0.87%, mixed deciduous swamp forest – 0.58%, fresh deciduous forest – 7.18%, moist deciduous forest – 1.13%, typical alder – 3.17%, ash-alder – 1.13% (Sokołowski 2006). Knyszyńska Forest is dominated by coniferous habitats, which occupy slightly over 60% of the area, oak-hornbeam habitats have a share of about 30%, while riparian and alder forests together occupy less than 10% (Łaska 2006). A characteristic feature of KF forest assemblages is the constant presence of spruce in all forest associations (Sokołowski 2006). One of the most characteristic forest assemblages in northeastern Poland, including KF, is the spruce coniferous bog forest *Sphagno girgensohnii-Piceetum*, in which boreal (northern) beetle species can occur (Sokołowski 2006). Within KF, this boreal spruce forest growing on peat soils occurs in Budzisk, Jesionowe Góry, Krasne, Las Cieliczański, and Woronicza Reserves, among others.

The forest of KF have retained a considerable degree of naturalness, although most of them have been quite heavily anthropogenically altered. Natural habitats have been preserved primarily in nature reserves and in the most inaccessible parts of wetland habitats – on about 13% of the area administered by the State Forests (Kwiatkowski 2018). One important indicator of the naturalness of forests is the quantity and quality of deadwood. The abundance of dead trees and their fragments in individual forest sections varies in KF from 4.76 to 17.77 m^3/ha. The smallest is in Katrynka Forest Subdistrict (Dojlidy Forest District) – 4.76, Michałowo – 6.23, and Hieronimowo – 6.46 (Żednia Forest District); the largest in Zajma – 17.77 and Żednia – 12.19 (Żednia Forest District), in Supraśl – 15.45 and Sokółka – 12.36 (Supraśl Forest District), as well as in Waliły (Waliły Forest District) – 12.60 (Kwiatkowski & Marczak 2020b).

Almost 850 species of vascular plants (Sokołowski 1995), 182 species of bryophytes (Karczmarz & Sokołowski 1995), 280 species of lichens (Cieslinski 1995; Kolanko 2009), and 1,376 taxa of macro- and microscopic fungi (Kujawa et al. 2019) were found in KF. Forest assemblages occupy about 80% of the area, but the landscape is also clearly marked by numerous non-forest communities – mainly meadows and reed beds in the wide river valleys (Kujawa et al. 2019).

For more information on Knyszyńska Forest, see the nature monograph edited by Andrzej Czerwiński (1995).

3. Methods

We collected all literature data on the occurrence of beetles in KF area and its immediate surroundings (Fig. 1). In addition, a search was made among those conducting research in the area in order to obtain possible, hitherto unpublished information on as yet unreported species. Above all, we also conducted our own field surveys, during which faunal data were collected from the entire study area (Fig. 1). Exploration was conducted in various terrestrial, arboreal, and aquatic habitats. Exploration for saproxylic (wood-associated) species mainly covered forested areas and woodlots, and focused on stands (woodlots) where there was a supply of deadwood. It consisted of searching for larvae, pupae, imagines, and their remains, as well as traces of feeding on the potential host material of specific species. For this purpose, lying logs, branches, standing tree trunks, stumps, wood piles, as well as hollows and arboreal fungi were surveyed. Fragments of bark were pried open in suitable places to determine the presence of the sought beetle stages. Once a species was found, the search was discontinued to minimize disturbance within the foraging area. The insect species, the species and diameter of the inhabited tree (wood), and other parameters characterizing the environment (including substrate moisture content, state of wood decay, light conditions, and habitat) were recorded. These detailed data were used only partially in this study, but will be useful in further work on the biology and ecology of selected species. In cases where the determination of found pre-imaginal stages was not possible in the field, fragments of the inhabited feeding areas were taken and transported for cultivation under laboratory conditions. Such cultivations (Fig. 35), in addition to obtaining imagines, also allowed us to learn the details of the biology of some species (e.g., raising parasitoids).

Beetles were also captured using various types of traps – IBL-2 (Fig. 36) and IBL-2bis (Fig. 37) screen (barrier)-type traps and Lindgren funnel traps in violet (Fig. 38), green (Fig. 39), and black (Fig. 40) (with or without a set of synthetic pheromones). Funnel traps were hung on trees at various heights, including in the crowns. Moericke traps (so-called yellow bowls or pan traps) placed on the ground were also used (Fig. 41), as well as those suspended at a height of 1 m off the ground. Barber soil traps (a jar buried flush with the ground surface) with a canopy (Fig. 41) and Netocia-type traps (Fig. 42), which also function in the literature under the name IBL-5 (Marczak et al. 2023b), were also used. Ethylene or propylene glycol was used as a preservative in the traps.

Fig. 35. Breeding of saproxylic beetles from inhabited branch fragments collected in the field (photo J.M. Gutowski)

Fig. 36. IBL-2 trap exposed in compartment 167 in Żednia Forest District in 2008 (photo R. Plewa)

Fig. 37. IBL-2bis barrier trap (photo J.M. Gutowski)

Fig. 38. Lindgren funnel trap, violet (photo J.M. Gutowski)

Fig. 39. Lindgren funnel trap, green (photo J.M. Gutowski)

Fig. 40. Lindgren funnel trap, black (photo J.M. Gutowski)

Fig. 41. Moericke trap placed on the ground and a Barber trap covered with a roof (photo J.M. Gutowski)

Fig. 42. Netocia type trap (photo J.M. Gutowski)

Traps issued by the forest administration were also checked, mainly for bark beetles (Fig. 43). Other beetle species were usually caught in these traps as well.

Fig. 43. A crevice trap used by the forest administration to catch bark beetles, also catching other species of beetles (photo J.M. Gutowski)

We also searched for imagines in areas where they were active – on flowers (Fig. 44), on the leaves of herbaceous and woody plants, etc. The primary method for searching for saproxylic beetles, in addition to analyzing potential larval host material, was to seek out specimens as they moved through various habitats and collect them by hand or with an entomological net. Beetles were also collected by beating vegetation over an entomological umbrella. Characteristic species, including protected ones, were only recorded, left in the field, and possibly photographed. To a lesser extent, artificial light was applied for trapping, using a generator, a mercury or UV lamp, and a white screen.

Fig. 44. Antophilous beetles often feed on pollen from plants from the Apiaceae family (photo J.M. Gutowski)

An entomological sweep net was mainly used to trap insects in open areas (meadows, pastures, agricultural crops, roadsides, xerothermic, and psammophilous grasslands).

Water beetles were caught using: standard hydrobiological GB-nets in larger reservoirs and rivers, different diameter plastic strainers with mesh sizes of 1 mm in smaller and extremely small water bodies (puddles, mudflats, peat bog ponds), bottle traps using organic bait, flotation methods (on the banks of water bodies, peat bogs), the method of placing submerged objects (stones and wood fragments) taken out of the water (especially from watercourses) onto a plastic sheet and waiting for the hiding beetles to appear as they dried out, either by moving on the objects themselves or by falling onto a sheet spread out underneath (Greń et al. 2022).

During these searches, geographic coordinates were recorded for most of the locations where beetles were found using a GPS receiver. Photographic documentation was also made of some specimens.

When analyzing the materials, all species were characterized, taking into account the habitats they occupied and their microhabitats (Table 2). Species were categorized to anthophilic species – associated with flowers (A), soil, and epigeic (G), hydrophilic (aquatic and arboreal) (H), coprophilic – associated with the feces of mammals and birds, sometimes other animals (K), mycetophilic – associated with fungi, lichens, and mucilage (M), myrmecophilic – living in anthills (Mr), necrophilic – associated with carrion (N), nidicolous – inhabiting bird nests and mammal burrows (Nd), pyrophilic – living in burned areas (P), saproxylic (S), synanthropic (Sn), xerothermophilic (X). It should be noted that some species can be simultaneously classified to two or more groups – these are not exclusionary categories.

The field studies began in 1979 (J.M. Gutowski). They were continued, with not very high intensity, in the years of: 1980–1983, 1985, 1987–1988, 1993–1994, 1996–1997, 2000, 2005, 2012, 2015, 2017. More extensive field research was conducted by the authors of the present study in 2020–2023. Research on the beetle fauna of KF reserves was conducted with the permission of the Regional Director of Environmental Protection in Białystok (WPN.6205.17.2020.ML and WPN.6205.8.2022.MM).

In 2008, beetle surveys were conducted in seven forest districts (R. Plewa) (Czarna Białostocka – 6 forest units, Dojlidy – 4, Knyszyn – 4, Krynki – 3, Supraśl – 8, Waliły – 5, and Żednia – 3). The choice of study areas was determined by taking into account the different variants of forest habitat moisture content (forest habitat type) and the age of the stand. In addition to commercially used forests, some plots were selected in the nature reserves, that is, Góra Pieszczana, Jałówka, Karczmisko, Krzemianka, and Wielki Las. In order to achieve the research objectives, coniferous and deciduous forest habitats were selected by combining them into individual groups, similar in terms of moisture variants: moist fresh coniferous/moist fresh mixed coniferous, moist coniferous/moist mixed coniferous, and moist fresh deciduous/moist fresh mixed deciduous, moist deciduous/moist mixed deciduous. All selected habitat groups were represented by four stand age variants: I – stands up to 20 years old (age class I and II), II – stands 21–60 years old (age class III and IV), III – stands 61–100 years old (age class V and VI), and IV – old-growth stands over 100 years old (>VI age class). In each of the studied forest habitat types, three study plots were established for each stand age, where one IBL-2 screen trap was installed (Fig. 36). The traps were installed in small gaps in the stand at a height of about 2 m from the ground, and the container for the collected insects was filled with about 150 ml of ethylene glycol-water solution and added detergent. The traps were installed in the field on April 22–27, 2008, and three successive inspections, along with the removal of the traps, were conducted in the same year on June 3–9, July 7–13, and August 25–31. A total of 48 traps were installed in the entire of KF area during one growing season.

In 2019–2020, insects were collected in older oak stands located in the Czarna Białostocka Forest District (T. Jaworski, R. Plewa) (Dąbrowa, Sławno, and Szyndziel Forest Subdistricts). The beetles were caught occasionally, as the research focused primarily on flightless female butterflies from the Geometridae family of Lepidoptera. For this purpose, collar traps (produced by Geolas, Kraków) were used, set up on the trunks of oak trees at a height of about 2 m from the ground (Fig. 45). The traps were installed on October 1, 2019, and removed on December 15 of the same year. In 2020, the traps were reinstalled on February 1 on the same trees, and the experiment was ended on April 15. Propylene glycol with detergent was used as the preservative for the collected insects in each trap.

Participants of the Symposium of the Coleopterological Section of the Polish Entomological Society contributed to completing the list of species and expanding the knowledge of the distribution of beetles in the vicinity of Supraśl and Jałówka. They explored various biotopes on this occasion on 18–21.05.2023 and provided information or Coleoptera specimens to the authors of this monograph.

Specimens or their photographs were also provided by Adam Bohdan, Mirosław Bugwin, Marek Chilimoniuk, Dr. Roland Dobosz, Krzysztof Gabiec, Jakub Kowejsza, Dr. Janusz Kupryjanowicz, Marian Łuszczak, Arkadiusz Pokojowczyk, Mateusz Przybylski, Lech Sawicki, Dr. Janusz Sawoniewicz, Marcin Sosnowski, Dr. Przemysław Szwałko, Dariusz Tarnawski, Wojciech Wygralak, and Mateusz Zamojski.

Fig. 45. Collar trap (produced by Geolas, Kraków) installed on an oak tree in Czarna Białostocka Forest District (photo R. Plewa)

Observed (species that could be identified in the field were only recorded) or collected insects were identified mainly by the authors of this monograph. In addition, some specimens were identified by: Adam Bohdan (Peltidae), Dr. Lech Buchholz (Elateroidea), Janusz Grzywocz (Anthicidae, Byturidae, Cantharidae, Chrysomelidae, Curculionidae, Dermestidae, Elateridae, Lucanidae, Oedemeridae, Scarabaeidae, Staphylinidae), Prof. Jacek Hilszczański (Buprestidae), Dr. Hubert Jakoniuk (Carabidae), Dr. Paweł Jałoszyński (Pselaphinae), Dr. Tomasz Jaworski (Buprestinae), Prof. Andrzej Kolk (Curculionidae, Lymexylidae, Scarabaeidae), Krzysztof Lubecki (Dryopidae, Dytiscidae, Elmidae, Gyrinidae, Haliplidae, Heloporidae, Hydrophilidae, Noteridae), Marian Łuszczak (Cerambycidae), Dr. Andrzej Mazur (Pselaphinae i Scydmaeninae), Andrzej Melke (Staphylinidae), Marek Miłkowski (Carabidae, Cerambycidae, Dermestidae, Erotylidae, Nitidulidae), Pavel Průdek (Corylophidae), Dr. Rafał Ruta (Corylophidae, Histeridae, Scirtidae), Dr. Paweł Sienkiewicz and Marcin Sosnowski (Carabidae), Prof. Bernard Staniec (Staphylinidae), Stanisław Szafraniec (Anthribidae), Henryk Szołtys (Anthicidae, Dermestidae, Leiodidae, Monotomidae, Nitidulidae, Ptiliidae, Staphylinidae), Dr. Grzegorz Tarwacki (Carabidae), Prof. Marek Wanat (Curculionoidea).

The monograph also makes use of beetle specimens deposited in the collections of various institutions (Museum and Institute of Zoology of the Polish Academy of Sciences in Warszawa – collection of M. Nunberg, Forest Protection Station in Kopna Góra, Institute of Plant Protection in Poznań) and private individuals (M. Łuszczak, P. Mering, L. Sawicki, D. Tarnawski).

Under the guidance of the first author of this monograph, draft conservation plans were prepared for seven nature reserves located in the Forest. As part of this work, much information was collected on the occurrence of beetles in the following reserves: Budzisk, Jesionowe Góry, Krasne, Krzemienne Góry, Las Cieliczański, Szyndzielski Starodrzew, and Woronicza (Plany ochrony... 2011). These data were used in this monograph.

In order to identify the beetles of KF, the first author organized (designated) diploma (engineering) work in various reserves and other areas within KF for his students of the Forestry Department of the Białystok University of Technology in Hajnówka. Materials collected for these theses (Jurewicz 2012; Kisiel 2012; Radziwon 2012; Terlecki 2012; Micun 2013; Szestowicka 2014) were also used in this study. Two engineering theses (Popławski 2010; Kozłowska 2017) and six master's theses (Zalewski 2007; Zagrzywiec 2009; Stankiewicz 2013; Korzeniewski 2015; Szestowicka 2015; Kirpsza 2017) prepared at the Forestry Department of the Warszawa University of Life Sciences were also included.

The monograph also uses information from unpublished reports of research conducted by the Forest Research Institute in KF: Koehler & Kolk 1990, Kolk et al. 1990, Lipiński et al. 2009, Sukowata et al. 2012, Borowski et al. 2016, Głowacka et al. 2017, Sikora et al. 2018, 2021. Reports by the *Pracownia na rzecz Wszystkich Istot* association (Bohdan & Świerżewski 2016) and the *Wild Poland* foundation (Bohdan 2022; Bohdan & Wieniecki 2022) are also included.

Evidence specimens are located in the collections of the Department of Natural Forests of the Forest Research Institute (FRI) in the Białowieża, Department of Forest Protection of the FRI in Sękocin Stary, Institute of Systematics and Evolution of Animals of the Polish Academy of Sciences in Kraków, Upper Silesian Museum in Bytom, the authors, as well as in the collection of M. Łuszczak, M. Przybylski, and M. Sosnowski.

Acknowledgements

The authors extend their gratitude to Prof. Lech Borowiec from the University of Wrocław, Anna Czuba and Renata Greń from Ruda Śląska, Janusz Grzywocz from the Upper Silesian Museum in Bytom, Andrzej Jadwiszczak from Olsztyn, Prof. Marek W. Kozłowski from the Warszawa University of Life Sciences, Dr. Janusz Kupryjanowicz from the University of Białystok, Bogusława Kura from Białystok, Adam Larysz from the Upper Silesian Museum in Bytom, Marek Miłkowski from Radom, Łukasz Minkina from Polana Szaflarska, Dr. Paweł Niemiec from the Silesian Medical University in Katowice, Michał Piotrowski from the Regional Directorate of State Forests in Toruń, Michał Przybylski from Warszawa, Dr. Rafał Ruta from the University of Wrocław, Dr. Marek Sławski from the Warszawa University of Life Sciences, Krzysztof Sobański from Łódź, Mateusz Sowiński from Olsztyn, Stanisław Szafraniec from Babia Góra National Park, Dr. Grzegorz Tarwacki from the Forest Research Institute in Sękocin Stary, Jan Tatur-Dytkowski from Warszawa, Prof. Marek Tomalak from the Institute of Plant Protection in Poznań, Konrad Wilamowski from the Białystok University of Technology, and Dr. Sławomir Zieliński from Rotmanka. We are grateful to the above-mentioned specialists for providing photographs, as well as for providing or identifying beetle specimens. We would also like to thank the field staff of the State Forests, who on more than one occasion provided us with assistance during the research, especially forester Grzegorz Kirpsza, who was involved in handling the traps. Special thanks are due to Director Joanna Kurzawa, representing Knyszyńska Forest Landscape Park, who together with the Association of Friends of Knyszyńska Forest "The Great Forest" supported the idea of publishing this book.

4. Results

4.1. List of species

So far, 2,075 species of beetles (Coleoptera) belonging to 90 families have been found in KF area (Tables 2, 3). Among them are 2 species new to the fauna of Poland: *Atheta sodermani* Bernhauer, 1931 from the rove beetle family (Staphylinidae) and *Podagrica menetriesi* (Faldermann, 1837) from the leaf beetle family (Chrysomelidae). In addition, 156 species were newly recorded for Podlasie region, and 863 were previously unknown from KF. Among the species found in the area of Knyszyńska Forest, the largest number represented rove beetles (Staphylinidae) – 348 species, followed by 292 weevils (Curculionidae), 158 ground beetles (Carabidae), 138 leaf beetles (Chrysomelidae), 101 longhorn beetles (Cerambycidae), 67 sap beetles (Nitidulidae), and 66 predaceous diving beetles (Dytiscidae) (Table 3).

Table 2. List of beetles (Coleoptera) found in Knyszyńska Forest [Abbreviations: ! – species new for Podlasie region, S – saproxylic, G – soil and epigeic, H – hydrophilic (aquatic and semiaquatic), M – mycetophilic, X – xerothermophilic, Sn – synanthropic, A – anthophilic, K – coprophilic, N – necrophilic, Mr – myrmecophilic, pyrophilic (1 – obligatory, 2 – facultative), Nd – nidicolous; R – rare species; primeval forest relict (1 – *sensu stricto*, 2 – *sensu lato*); *Red List of Threatened Animals in Poland* (CR – critically endangered, EN – endangered, VU – vulnerable, NT – near threatened, LC – least concern, DD – data deficient); *European Red List of Saproxylic Beetles* (as above); nature reserve (1-25 – see table 1)]

Family Subfamily Species	Saproxylic	Soil and epigeic	Hydrophilic	Mycetophilic	Xerothermophilic	Synanthropic	Anthophilic	Coprophilic	Necrophilic	Myrmecophilic	Pyrophilic	Nidicolous	Rare species	Primeval forest relict	Poland Red List	European Red List	Nature reserves	References
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
HALIPLIDAE																		
Haliplus fluviatilis (Aubé, 1836)			H															Greń et al. 2022a
Haliplus heydeni (Wehncke, 1875)			H														3, 12, 15	Greń et al. 2022a
Haliplus lineaticollis (Marsham, 1802)			H															Greń et al. 2022a
Haliplus ruficollis (De Geer, 1774)			H														3, 12, 14	Greń et al. 2022a
Haliplus sibiricus (Motschulsky, 1860)			H															Greń et al. 2022a

Return to contents

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
GYRINIDAE																		
Gyrinus aeratus (Stephens, 1832)			H															Greń et al. 2022a
Gyrinus natator (Linnaeus, 1758)			H															Greń et al. 2022a
Gyrinus substriatus (Stephens, 1828)			H														3, 12, 14, 17	Greń et al. 2022a
NOTERIDAE																		
Noterus clavicornis (De Geer, 1774)			H															
Noterus crassicornis (Müller, 1776)			H														3, 12	Greń et al. 2022a
DYTISCIDAE																		
Agabinae																		
Agabus affinis (Paykull, 1798)			H															Greń et al. 2022a
Agabus bipustulatus (Linnaeus, 1767)			H														20	Greń et al. 2022a
Agabus congener (Thunberg, 1794)			H														20	Greń et al. 2022a
Agabus guttatus (Paykull, 1798)			H										R					Greń et al. 2022a
Agabus paludosus (Fabricius, 1801)			H															Greń et al. 2022a
Agabus striolatus (Gyllenhal, 1808)			H										R		NT			Greń et al. 2022a
Agabus sturmii (Gyllenhal 1808)			H															Greń et al. 2022a
Agabus uliginosus (Linnaeus, 1761)			H															Greń et al. 2022a
Agabus undulatus (Schrank, 1776)			H															Greń et al. 2022a
Ilybius ater (De Geer, 1774)			H														20	Greń et al. 2022a
Ilybius chalconatus (Panzer, 1797)			H														20	Greń et al. 2022a
Ilybius fuliginosus (Fabricius, 1792)			H															Greń et al. 2022a
Ilybius guttiger (Gyllenhal, 1808)			H															Greń et al. 2022a
Ilybius quadriguttatus (Lacordaire, 1835)			H															Greń et al. 2022a
Ilybius subtilis (Erichson, 1837)			H															Greń et al. 2022a
Ilybius wasastjernae (Sahlberg, 1824)			H										R		VU			Greń et al. 2022a, 2022b; Średziński 2022
Platambus maculatus (Linnaeus, 1758)			H															Greń et al. 2022a
Colymbetinae																		
Colymbetes fuscus (Linnaeus, 1758)			H															Greń et al. 2022a
Colymbetes paykulli Erichson, 1837			H															Greń et al. 2022a

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Rhantus bistriatus (Bergstrasser, 1778)			H															Greń et al. 2022a
Rhantus exsoletus (Forster, 1771)			H															Greń et al. 2022a
Rhantus grapii (Gyllenhal, 1808)			H															Greń et al. 2022a
Rhantus latitans Sharp, 1882			H															Greń et al. 2022a
Rhantus notaticollis (Aubé, 1837)			H															Greń et al. 2022a
Rhantus suturalis (MacLeay, 1825)			H															Greń et al. 2022a
Copelatinae																		
Liopterus haemorrhoidalis (Fabricius, 1787)			H															Greń et al. 2022a
Dytiscinae																		
Acilius canaliculatus (Nicolai, 1822)			H															Greń et al. 2022a
Acilius sulcatus (Linnaeus, 1758)			H															Greń et al. 2022a
Cybister lateralimarginalis (De Geer, 1774)			H															Greń et al. 2022a
Dytiscus dimidiatus (Bergstresser, 1777)			H															Greń et al. 2022a
Dytiscus marginalis (Linnaeus, 1758)			H															Greń et al. 2022a
Graphoderus cinereus (Linnaeus, 1758)			H															Greń et al. 2022a
Graptodytes granularis (Linnaeus, 1767)			H															Greń et al. 2022a
Graptodytes pictus (Fabricius, 1787)			H															Greń et al. 2022a
Hydaticus seminiger (De Geer, 1774)			H															Kubisz, Pawłowski 1995; Greń et al. 2022a
Hydaticus transversalis (Pontoppidan, 1763)			H															Greń et al. 2022a
Hydroporinae																		
Clemnius decoratus (Gyllenhal, 1810)			H															Greń et al. 2022a
Deronectes latus (Stephens, 1829)			H										R					Greń et al. 2022a
Hydroglyphus geminus (Fabricius 1792)			H															Greń et al. 2022a
Hydroporus angustatus (Sturm, 1835)			H														16	Greń et al. 2022a
Hydroporus brevis Sahlberg, 1834			H										R		VU			Greń et al. 2022a
Hydroporus discretus (Fairmaire et Brisout de Barneville, 1859)			H															Greń et al. 2022a
Hydroporus dorsalis (Fabricius, 1787)			H															Greń et al. 2022a
Hydroporus elongatulus Sturm, 1835			H										R		VU			Greń et al. 2022a

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Hydroporus erytrocephalus (Linnaeus, 1758)			H															Greń et al. 2022a
Hydroporus fuscipennis (Schaum, 1868)			H															Greń et al. 2022a
Hydroporus glabriusculus (Aubé, 1836)			H										R					Greń et al. 2022a
Hydroporus incognitus Sharp, 1869			H															Greń et al. 2022a
Hydroporus melanarius Sturm, 1835			H														20	Greń et al. 2022a
Hydroporus memnonius Nicolai, 1822			H															Greń et al. 2022a
Hydroporus morio Aubé, 1838			H															Greń et al. 2022a
Hydroporus neglectus Schaum, 1845			H															Greń et al. 2022a
Hydroporus nigrita (Fabricius, 1792)			H															Greń et al. 2022a
Hydroporus obscurus Sturm, 1835			H															Greń et al. 2022a
Hydroporus palustris (Linnaeus, 1761)			H															Greń et al. 2022a
Hydroporus planus (Fabricius, 1781)			H															Greń et al. 2022a
Hydroporus rufifrons (Müller, 1776)			H															Greń et al. 2022a
Hydroporus striola (Gyllenhal, 1826)			H															Greń et al. 2022a
Hydroporus tristis (Paykull, 1798)			H															Greń et al. 2022a
Hydroporus umbrosus (Gyllenhal, 1808)			H															Greń et al. 2022a
Hygrotus impressopunctatus (Schaller, 1783)			H															Greń et al. 2022a
Hygrotus inaequalis (Fabricius, 1776)			H															Greń et al. 2022a
Hyphydrus ovatus (Linnaeus, 1761)			H															Greń et al. 2022a
Laccornis oblongus (Stephens, 1835)			H										R					Greń et al. 2022a
Porhydrus lineatus (Fabricius, 1775)			H															Greń et al. 2022a
Laccophilinae																		
Laccophilus hyalinus (De Geer, 1774)			H															Greń et al. 2022a
CICINDELIDAE																		
Cicindela campestris Linnaeus, 1758		G																Konarzewski, Kupryjanowicz 2021
Cicindela hybrida Linnaeus, 1758		G															21	Kubisz, Pawłowski 1995
Cicindela sylvatica Linnaeus, 1758		G															21	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
CARABIDAE																		
Broscinae																		
Broscus cephalotes (Linnaeus, 1758)		G													DD		21	Haitlinger 1985; Kubisz, Pawłowski 1995
Carabinae																		
Calosoma inquisitor (Linnaeus, 1758)																	12	
Carabus arcensis Herbst, 1784		G															5, 9, 12, 15	Borusiewicz, Kapuściński 1950; Kubisz, Pawłowski 1995; Jaskuła, Rachalewski 2011; Kwiatkowski 2011
Carabus cancellatus Illiger, 1798	S	G															2, 6, 7, 12, 15, 21	Haitlinger 1988; Skłodowski 2011; Kwiatkowski 2011
Carabus convexus Fabricius, 1775		G													NT		6	
Carabus coriaceus Linnaeus, 1758	S	G															1, 6, 12, 21, 25	Kubisz, Pawłowski 1995
Carabus glabratus Paykull, 1790	S	G															12, 15, 20	Borusiewicz, Kapuściński 1950; Haitlinger 1988; Jaskuła, Rachalewski 2011; Kwiatkowski 2011; Konarzewski, Kupryjanowicz 2021
Carabus granulatus Linnaeus, 1758	S	G															2, 3, 6, 7, 9, 11, 12, 13, 15, 16, 18, 20, 21	Jaskuła, Rachalewski 2011
Carabus hortensis Linnaeus, 1758	S	G															9, 13	Haitlinger 1988; Kubisz, Pawłowski 1995; Jaskuła, Rachalewski 2011; Skłodowski 2011
Carabus menetriesi Hummel, 1827		G	H										R		EN			Kubisz, Pawłowski 1995; Pawłowski 2005
Carabus nemoralis Müller, 1764	S	G															9, 12, 21	Borusiewicz, Kapuściński 1950; Kubisz, Pawłowski 1995; Jaskuła, Rachalewski 2011; Kwiatkowski 2011
Carabus violaceus Linnaeus, 1758	S	G															9, 12, 16	Borusiewicz, Kapuściński 1950; Jaskuła, Rachalewski 2011; Skłodowski 2011
Cychrus caraboides (Linnaeus, 1758)	S	G															2, 20, 21	Kwiatkowski 2011
Elaphrinae																		
Elaphrus cupreus (Duftschmid, 1812)		G	H														12, 14	Kubisz, Szwałko 1991
Elaphrus riparius (Linnaeus, 1758)		G	H															Kubisz, Szwałko 1991

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Harpalinae																		
Acupalpus exiguus (Dejean, 1829)		G	H												VU		15, 20, 23, 25	
Acupalpus flavicollis (Sturm, 1825)		G	H															Kubisz, Szwałko 1991
Acupalpus meridianus (Linnaeus, 1761)		G																
Acupalpus parvulus (Sturm, 1825)		G															6	
Agonum duftschmidi (Schmidt, 1994)		G	H															
Agonum emarginatum (Gyllenhal, 1827)		G	H														20	Kwiatkowski 2011
Agonum fuliginosum (Panzer, 1809)		G	H														15, 16, 21, 23	Kubisz, Pawłowski 1995; Kwiatkowski 2011
Agonum gracile Sturm, 1824		G	H															Kubisz, Szwałko 1991
Agonum hypocrita (Apfelbeck, 1904)		G	H															
Agonum piceum (Linnaeus, 1758)		G	H														15	
Agonum sexpunctatum (Linnaeus, 1758)		G																Roubal 1910; Kubisz, Szwałko 1991; Kwiatkowski 2011
Agonum versutum Sturm, 1824		G	H															
Agonum viduum (Panzer, 1796)		G	H															Kwiatkowski 2011
Agonum viridicupreum (Goeze, 1777)		G	H															Kubisz, Szwałko 1991
Amara aenea (De Geer, 1774)		G															5, 6	
Amara apricaria (Paykull, 1790)		G																Kubisz, Pawłowski 1995
Amara aulica (Panzer, 1796)		G																
Amara bifrons (Gyllenhal, 1810)		G																
Amara brunnea (Gyllenhal, 1810)		G																Kwiatkowski 2011
Amara communis (Panzer, 1797)		G																Kwiatkowski 2011
Amara consularis (Duftschmid, 1812)		G																Kubisz, Szwałko 1991
Amara cursitans Zimmermann, 1832		G													VU		1, 6, 16	Kubisz, Pawłowski 1995; Wojas 1995
Amara curta Dejean, 1828		G																Kwiatkowski 2011
Amara eurynota (Panzer, 1797)		G																Kubisz, Szwałko 1991
Amara familiaris (Duftschmid, 1812)		G															6, 10, 13	Kubisz, Pawłowski 1995; Kwiatkowski 2011

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Amara fulva (Müller, 1776)		G																Roubal 1910; Kubisz, Pawłowski 1995
!*Amara lucida* (Duftschmid, 1812)		G																
Amara lunicollis Schiodte, 1837		G																Kwiatkowski 2011
Amara nitida Sturm, 1825		G																Kwiatkowski 2011
Amara ovata (Fabricius, 1792)		G																Kubisz, Szwałko 1991
Amara plebeja (Gyllenhal, 1810)		G															5, 6	Kubisz, Szwałko 1991; Kwiatkowski 2011
Amara similata (Gyllenhal, 1810)		G																
Amara tibialis (Paykull, 1798)		G																Kubisz, Szwałko 1991
Anchomenus dorsalis (Pontoppidan, 1763)		G																Kubisz, Pawłowski 1995
Anisodactylus binotatus (Fabricius, 1787)		G															6, 10	Kwiatkowski 2011
Anthracus consputus (Duftschmid, 1812)		G	H														2	Marczak et al. 2023c
Badister bullatus (Schrank, 1798)		G																Kubisz, Szwałko 1991
Badister dilatatus (Chaudoir, 1837)		G	H															
Badister lacertosus Sturm, 1815		G																Kwiatkowski 2011
Badister sodalis (Duftschmid, 1812)		G	H															Kwiatkowski 2011
Badister unipustulatus Bonelli, 1813		G	H															
Bradycellus caucasicus (Chaudoir, 1846)		G																Kubisz, Szwałko 1991
Calathus ambiguus (Paykull, 1790)		G																
Calathus erratus (Sahlberg, 1827)		G									2							
Calathus fuscipes (Goeze, 1777)		G																Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995
Calathus melanocephalus (Linnaeus, 1758)		G																Kubisz, Pawłowski 1995
Calathus micropterus (Duftschmid, 1812)		G															3, 5	Roubal 1910; Kubisz, Pawłowski 1995; Kwiatkowski 2011
Calodromius spilotus (Illiger, 1798)	S																2	Burakowski et al. 1973; Kubisz, Pawłowski 1995; Marczak et al. 2023c
Demetrias imperialis (Germar, 1824)		G	H												VU			
Demetrias monostigma Samouelle, 1819		G																

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Dromius agilis (Fabricius, 1787)	S																12, 19, 21	Kubisz, Pawłowski 1995; Hilszczański 2008
Dromius fenestratus (Fabricius, 1794)	S																13	
Dromius quadraticollis Morawitz, 1862	S																1, 2, 5, 7, 10, 15, 16, 20, 23	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Dromius quadrimaculatus (Linnaeus, 1758)	S																	Kubisz, Pawłowski 1995; Hilszczański 2008
Dromius schneideri Crotch, 1871	S																	
Harpalus affinis (Schrank, 1781)		G																Kubisz, Pawłowski 1995
Harpalus anxius (Duftschmid, 1812)		G																Kwiatkowski 2011
Harpalus calceatus (Duftschmid, 1812)		G																
Harpalus distinguendus (Duftschmid, 1812)		G																
Harpalus flavescens (Piller et Mitterpacher, 1783)		G																
Harpalus froelichii Sturm, 1818		G																Kubisz, Szwałko 1991
Harpalus griseus (Panzer, 1796)		G																
Harpalus laevipes Zetterstedt, 1828		G									2						6	Kwiatkowski 2011
Harpalus latus (Linnaeus, 1758)		G															3, 5, 12, 16, 20	
Harpalus luteicornis (Duftschmid, 1812)		G																Kwiatkowski 2011
Harpalus rubripes (Duftschmid, 1812)		G																Kubisz, Szwałko 1991
Harpalus rufipes (De Geer, 1774)		G															22, 25	Kubisz, Pawłowski 1995
Harpalus signaticornis (Duftschmid, 1812)		G			X												1, 3, 10, 16, 19	Kubisz, Pawłowski 1995
Harpalus solitaris Dejean, 1829		G																Kubisz, Szwałko 1991
Harpalus tardus (Panzer, 1796)		G															6	Kubisz, Pawłowski 1995
!*Harpalus xanthopus winkleri* Schauberger, 1923		G																
Lebia chlorocephala (Hoffmann, 1803)		G																Kubisz, Pawłowski 1995
Limodromus assimilis (Paykull, 1790)	S	G															1, 6, 18	Kubisz, Szwałko 1991; Kwiatkowski 2011
Limodromus krynickii (Sperk, 1835)	S	G																Kwiatkowski 2011
Limodromus longiventris Mannerheim, 1825	S	G																

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Microlestes maurus (Sturm, 1827)		G															5	
Microlestes minutulus (Goeze, 1777)	S	G															12, 22	
Nebria brevicollis (Fabricius, 1792)		G															6, 19	Kubisz, Pawłowski 1995; Kwiatkowski 2011
Odacantha melanura (Linnaeus, 1767)		G	H														9, 12	Jaskuła, Rachalewski 2011
Oodes helopioides (Fabricius, 1792)		G	H												VU		9, 12	Roubal 1910; Jaskuła, Rachalewski 2011
Ophonus laticollis Mannerheim, 1825		G															6	
Oxypselaphus obscurus (Herbst, 1784)		G	H														7, 21	Kubisz, Szwałko 1991
Panagaeus cruxmajor (Linnaeus, 1758)		G	H															
Paradromius linearis (Olivier, 1795)		G															17	
!*Pedius longicollis* (Duftschmid, 1812)		G																
Philorhizus sigma (Rossi, 1790)		G															6	
!*Platyderus rufus* (Duftschmid, 1812)		G																
Platynus livens (Gyllenhal, 1810)		G																
Poecilus cupreus (Linnaeus, 1758)		G																
Poecilus lepidus (Leske, 1785)		G																Kubisz, Pawłowski 1995
Poecilus versicolor (Sturm, 1824)		G															2, 5	Kubisz, Pawłowski 1995; Kwiatkowski 2011
Pterostichus aethiops (Panzer, 1796)	S	G															1, 2, 3, 7, 10, 12, 15, 19, 21	
Pterostichus anthracinus (Illiger, 1798)		G	H															Kwiatkowski 2011
Pterostichus diligens (Sturm, 1824)		G	H															Kwiatkowski 2011
Pterostichus gracilis (Dejean, 1828)		G	H															Kubisz, Szwałko 1991
Pterostichus melanarius (Illiger, 1798)		G															1, 2, 3, 5, 20, 21	
Pterostichus minor (Gyllenhal, 1827)		G	H														2, 23	Kwiatkowski 2011
Pterostichus niger (Schaller, 1783)		G															2, 6, 7, 11, 12, 13, 15, 18, 21, 22	Kubisz, Pawłowski 1995; Skłodowski 2011
Pterostichus nigrita (Paykull, 1790)		G	H														15, 22	Kwiatkowski 2011
Pterostichus oblongopunctatus (Fabricius, 1787)	S	G									2						1, 3, 5, 6, 7, 12, 13, 15, 16, 19, 21, 22, 23	Kubisz, Pawłowski 1995

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Pterostichus rhaeticus Heer, 1837		G	H														15	Kwiatkowski 2011
Pterostichus strenuus (Panzer, 1796)		G	H														1, 2, 3, 15, 20, 22, 23	Kwiatkowski 2011; Marczak et al. 2023c
Pterostichus vernalis (Panzer, 1796)		G	H															Kwiatkowski 2011
Stomis pumicatus (Panzer, 1796)		G															13	Kwiatkowski 2011
Syntomus foveatus (Geoffroy, 1785)		G																Kubisz, Pawłowski 1995
Syntomus truncatellus (Linnaeus, 1761)		G																Kubisz, Szwałko 1991
Synuchus vivalis (Illiger, 1798)		G																Roubal 1910; Kwiatkowski 2011
Loricerinae																		
Loricera pilicornis (Fabricius, 1775)		G	H															Kwiatkowski 2011
Nebriinae																		
Leistus ferrugineus (Linnaeus, 1758)		G																
Leistus piceus Frölich, 1799		G															20	Kwiatkowski 2011
!*Leistus rufomarginatus* (Duftschmid, 1812)		G															19	
Leistus terminatus (Panzer, 1793)		G															20	Kubisz, Szwałko 1991; Kwiatkowski 2011
Notiophilus aestuans Dejean, 1826		G																Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995
Notiophilus biguttatus (Fabricius, 1779)		G															6, 12, 13, 15, 16	Kubisz, Szwałko 1991; Kwiatkowski 2011
Notiophilus germinyi Fauvel, 1863		G																Kubisz, Szwałko 1991
Notiophilus palustris (Duftschmid, 1812)		G															13	Kubisz, Szwałko 1991; Kwiatkowski 2011
Omophroninae																		
Omophron limbatum (Fabricius, 1777)		G	H												NT			
Rhysodinae																		
Rhysodes sulcatus (Fabricius, 1787)	S												R	1	EN	DD	5	Plewa i Niemiec 2010; Średziński 2022; Marczak i Kwiatkowski 2023
Scaritinae																		
Clivina collaris (Herbst, 1784)		G																Kubisz, Szwałko 1991
Clivina fossor (Linnaeus, 1758)		G																Kubisz, Szwałko 1991; Kwiatkowski 2011
Dyschirius globosus (Herbst, 1784)		G															1, 2, 25	Kwiatkowski 2011; Marczak et al. 2023c
Dyschirius politus (Dejean, 1825)		G	H															
Dyschirius tristis Stephens, 1827		G	H															

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Trechinae																		
Asaphidion flavipes (Linnaeus, 1761)		G	H														12	Kubisz, Szwałko 1991
Asaphidion pallipes (Duftschmid, 1812)		G	H														12	
Bembidion articulatum (Panzer, 1796)		G	H															
Bembidion dentellum (Thunberg, 1787)		G	H															
Bembidion doris (Panzer, 1796)		G	H															
!*Bembidion fluviatile* Dejean, 1831		G																
Bembidion gilvipes (Sturm, 1825)		G	H															
Bembidion lampros (Herbst, 1784)		G									2						6, 15, 16, 19, 21	Kubisz, Pawłowski 1995; Kwiatkowski 2011
Bembidion litorale (Olivier, 1790)		G	H															
Bembidion mannerheimii (Sahlberg, 1827)		G																Kwiatkowski 2011
Bembidion properans (Stephens, 1828)		G																
Bembidion quadrimaculatum (Linnaeus, 1761)		G																Kubisz, Pawłowski 1995
Bembidion tetracolum Say, 1823		G																
Bembidion varium (Olivier, 1795)		G	H															Kubisz, Szwałko 1991
Patrobus atrorufus (Strom, 1768)		G																
Patrobus septentrionis australis Sahlberg, 1875		G	H												CR			Wojas 1992
Tachyta nana (Gyllenhal, 1810)	S										2						2, 7	Kubisz, Szwałko 1991; Marczak et al. 2023c
Trechus austriacus Dejean, 1831		G				Sn									CR			Kubisz, Pawłowski 1995
Trechus quadristriatus (Schrank von Paula, 1781)		G																Kubisz, Szwałko 1991
Trechus secalis (Paykull, 1790)		G																Kubisz, Szwałko 1991
SCIRTIDAE																		
Contacyphon coarctatus (Paykull, 1799)			H														2	Szawaryn et al. 2021
Contacyphon laevipennis (Tounier, 1868)			H															
Contacyphon ochraceus (Stephens, 1830)			H														2, 19	Szawaryn et al. 2021
Contacyphon padi (Linnaeus, 1758)			H														2, 12, 15, 25	Kubisz, Szwałko 1991; Szawaryn et al. 2021

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Contacyphon palustris (Thomson, 1855)			H														11	
Contacyphon pubescens (Fabricius, 1792)			H														2, 15	Kubisz, Szwałko 1991; Szawaryn et al. 2021
Contacyphon punctipennis Sharp, 1872			H										R					Kubisz, Szwałko 1991; Burakowski et al. 2000
Contacyphon ruficeps (Tournier, 1868)			H										R				2, 15	Szawaryn et al. 2021
Contacyphon variabilis (Thunberg, 1785)			H														2, 6, 10	Kubisz, Szwałko 1991; Szawaryn et al. 2021
!*Elodes minuta* (Linnaeus, 1767)			H														11	
Elodes tricuspis (Nyholm, 1985)			H										R					Szawaryn et al. 2021
Microcara testacea (Linnaeus, 1767)			H														6	Szawaryn et al. 2021
Prionocyphon serricornis (Müller, 1821)	S		H														2	Szawaryn et al. 2021
Scirtes haemisphaericus (Linnaeus, 1767)			H															
CLAMBIDAE																		
Clambus pubescens Redtenbacher, 1847	S			M														
EUCINETIDAE																		
Eucinetus haemorrhoidalis (Germar, 1818)		G		M									R					Kubisz, Szwałko 1991
DASCILLIDAE																		
Dascillus cervinus (Linnaeus, 1758)		G															2	Kubisz, Szwałko 1991
BYRRHIDAE																		
Byrrhinae																		
Byrrhus fasciatus (Forster, 1771)		G																Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995
Byrrhus pilula (Linnaeus, 1758)		G															19	
Byrrhus pustulatus (Forster, 1771)		G																
Cytilus sericeus (Forster, 1771)		G																Kubisz, Pawłowski 1995
Lamprobyrrhulus nitidus (Schaller, 1783)		G																
Morychus aeneus (Fabricius, 1775)		G																
Syncalyptinae																		
!*Chaetophora spinosa* (Rossi, 1794)		G															12, 19	
BUPRESTIDAE																		
Agrilinae																		
Agrilus angustulus (Illiger, 1803)	S																20	
!*Agrilus ater* (Linnaeus, 1767)	S																3, 7, 15	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
!*Agrilus auricollis* Kiesenwetter, 1857	S												R				11	
Agrilus betuleti (Ratzeburg, 1837)	S																3, 13	Burakowski et al. 1985
Agrilus biguttatus (Fabricius, 1777)	S										2						7, 12, 19, 21	Bohdan 2009; Kapuściński 2010; Średziński 2022
!*Agrilus convexicollis* Redtenbacher, 1847	S												R				2, 7	
!*Agrilus cuprescens* (Ménétriés, 1832)	S																10, 25	
Agrilus cyanescens (Ratzeburg, 1837)	S																2, 20	
!*Agrilus derasofasciatus* Lacordaire, 1835	S																	
Agrilus integerrimus (Ratzeburg, 1837)	S												R		NT			Marczak et al. 2023c
!*Agrilus laticornis* (Illiger, 1803)	S																	
!*Agrilus obscuricollis* Kiesenwetter, 1857	S																2, 7	
!*Agrilus olivicolor* Kiesenwetter, 1857	S																	
!*Agrilus pratensis* (Ratzeburg, 1837)	S																	
Agrilus pseudocyaneus Kiesenwetter, 1857	S												R		EN		2	Marczak i Kwiatkowski 2020b; Średziński 2022
Agrilus ribesi Schaefer, 1946	S																	
Agrilus sinuatus (Olivier, 1790)	S																	
!*Agrilus subauratus* Gebler, 1833	S												R					
Agrilus sulcicollis Lacordaire, 1835	S																2, 19, 20	Marczak et al. 2023c
!*Agrilus suvorovi* Obenberger, 1935	S																2, 13, 18	
!*Agrilus viridis* (Linnaeus, 1758)	S																13, 18, 24	
!*Trachys fragariae* Brisout de Barneville, 1874					X								R				25	
Trachys minutus (Linnaeus, 1758)																	2, 3, 4, 6, 7, 10, 11, 13, 14, 15, 17, 19, 20, 23, 25	Kubisz, Pawłowski 1995; Kajtoch et al. 2019; Marczak et al. 2023c
!*Trachys troglodytes* Gyllenhal, 1817					X								R					
Buprestinae																		
!*Anthaxia godeti* Gory et Castelnau, 1839	S						A				2						13, 20, 22	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Anthaxia morio (Fabricius, 1792)	S						A				2						7	Marczak et al. 2023c
Anthaxia quadripunctata (Linnaeus, 1758)	S						A				2						1, 2, 3, 7, 11, 13, 14, 15, 20, 22, 24	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Buprestis haemorrhoidalis Herbst, 1780	S										2						2, 16	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Buprestis novemmaculata Linnaeus, 1767	S										2							Kubisz, Pawłowski 1995
Buprestis octoguttata Linnaeus, 1758	S										2							Kubisz, Pawłowski 1995
Buprestis rustica Linnaeus, 1758	S										2							
!*Chrysobothris affinis* (Fabricius, 1794)	S										2						13	
!*Chrysobothris igniventris* Reitter, 1895	S										2							
Phaenops cyanea (Fabricius, 1775)	S										2						12	Burakowski et al. 1985; Gutowski et al. 1992; Gutowski, Królik 1996; Kubisz, Pawłowski 1995
Chrysochroinae																		
Chalcophora mariana (Linnaeus, 1758)	S										2						12, 13, 15, 20, 25	Burakowski et al. 1985; Konarzewski, Kupryjanowicz 2021
!*Dicerca alni* (Fischer von Waldheim, 1824)	S													2			3, 11, 20, 23	
!*Lamprodila decipiens* (Gebler, 1847)	S												R					
!*Poecilonota variolosa* (Paykull, 1799)	S												R					
DRYOPIDAE																		
Dryops auriculatus (Geoffroy, 1785)			H															Greń et al. 2022a
Dryops griseus (Erichson, 1847)			H															Greń et al. 2022a
ELMIDAE																		
Elmis aenea (Müller, 1806)			H														14, 17	Greń et al. 2022a
Elmis maugetii Latreille, 1802			H														14, 17	Greń et al. 2022a
Oulimnius tuberculatus (Müller, 1806)			H														14, 17	Greń et al. 2022a
HETEROCERIDAE																		
Heterocerus fenestratus (Thunberg, 1784)			H															Kubisz, Szwałko 1991
Heterocerus fusculus Kiesenwetter, 1843			H															Kubisz, Szwałko 1991
THROSCIDAE																		
Aulonothroscus brevicollis (Bonvouloir, 1859)	S																2, 5, 7, 9, 12, 13, 19, 20, 21, 24	Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Aulonothroscus laticollis (Rybiński, 1897)	S												R		EN		2	Mokrzycki et al. 2022; Marczak et al. 2023c
Trixagus carinifrons (Bonvouloir, 1859)				M													2, 5, 6, 9, 10, 12, 23, 24	Marczak et al. 2023c
Trixagus dermestoides (Linnaeus, 1767)				M													2, 5, 10, 15, 20, 22, 23	Marczak et al. 2023c
!*Trixagus elateroides* (Heer, 1841)				M													15, 16	
!*Trixagus leseigneuri* Muona, 2002				M									R				12, 15	
!*Trixagus meybohmi* Leseigneur, 2005				M									R				12	
EUCNEMIDAE																		
Eucneminae																		
Eucnemis capucina Ahrens, 1812	S			M												LC	2, 7, 25	Marczak et al. 2023b
Macraulacinae																		
Dromaeolus barnabita (Villa et Villa, 1838)	S			M									R			LC		Marczak et al. 2023b
Melasinae																		
Hylis foveicollis (Thomson, 1874)	S			M												LC	7	Marczak et al. 2023b
Hylis olexai (Palm, 1955)	S			M											DD	LC	2, 5, 7, 12, 13, 16, 20	Marczak et al. 2023b
Hylis procerulus (Mannerheim, 1823)	S			M												LC	2, 5, 20	Marczak et al. 2023b
Isorhipis marmottani Bonvouloir, 1871	S			M									R		VU	LC	2, 7, 20	
Melasis buprestoides (Linnaeus, 1761)	S			M												LC	2, 6, 7, 12, 13, 15, 16, 19, 20, 21, 22	Hilszczański et al. 2015; Marczak et al. 2023b
Microrhagus emyi (Rouget, 1856)	S			M									R			LC	2, 7, 15	Byk et al. 2004; Marczak et al. 2023b
Microrhagus lepidus Rosenhauer, 1847	S			M												LC	2, 7, 13	Marczak et al. 2023b
Microrhagus pygmaeus (Fabricus, 1792)	S			M												LC	2, 5, 7	Byk et al. 2004; Marczak et al. 2023b
Microrhagus pyrenaeus Bonvouloir, 1872	S			M									R	2		NT	15	Marczak et al. 2023b
Otho sphondyloides (Germar, 1818)	S			M									R	1	VU	DD	2, 6, 7	Kwiatkowski, Marczak 2020b; Marczak et al. 2023b
Rhacopus sahlbergi (Mannerheim, 1823)	S			M									R		EX?	LC	20	
Xylophilus corticalis (Paykull, 1800)	S			M							2					LC	2, 5, 7, 12	Hilszczański et al. 2015; Marczak et al. 2023b
Xylophilus testaceus (Herbst, 1806)	S			M										2		NT	2, 5, 7	Kwiatkowski, Marczak 2020b; Marczak et al. 2023b
ELATERIDAE																		
Agrypninae																		
Agrypnus murinus (Linnaeus, 1758)		G															3, 6, 7, 15, 20	Kubisz, Pawłowski 1995; Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Drilus concolor Ahrens, 1812					X										DD		2, 7	Marczak et al. 2023c
Cardiophorinae																		
Cardiophorus ruficollis (Linnaeus, 1758)	S	G									2					LC	2, 5, 13, 15, 20	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Dicronychus equiseti (Herbst, 1784)		G					A											
Dendrometrinae																		
Actenicerus sjaelandicus (Müller, 1764)		G					A										6, 10, 20, 23	Kubisz, Pawłowski 1995
Anostirus castaneus (Linnaeus, 1758)	S	G					A										7	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Athous haemorrhoidalis (Fabricius, 1801)	S	G															3, 13, 15, 17, 21	
Athous subfuscus (Müller, 1764)	S	G															1, 2, 3, 5, 6, 9, 10, 11, 12, 13, 15, 16, 20, 21, 24	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Athous vittatus (Fabricius, 1792)		G																
Cidnopus aeruginosus (Olivier, 1790)		G															13, 15	Kubisz, Pawłowski 1995
Crepidophorus mutilatus (Rosenhauer, 1847)	S													2	DD	NT	2	Marczak et al. 2023c
Ctenicera pectinicornis (Linnaeus, 1758)		G					A										3, 7, 17	Marczak et al. 2023c
Denticollis linearis (Linnaeus, 1758)	S															LC	2, 7	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Diacanthous undulatus (De Geer, 1774)	S															LC	2, 7, 11, 16	Kwiatkowski, Marczak 2020b; Marczak et al. 2023c
Hemicrepidius hirtus (Herbst, 1784)		G															2, 7	Marczak et al. 2023c
Hemicrepidius niger (Linnaeus, 1758)		G															7	Marczak et al. 2023c
Limonius minutus (Linnaeus, 1758)		G		M													2	Kubisz, Pawłowski 1995
!*Paraphotistus impressus* (Fabricius, 1792)	S	G															5	
Prosternon tessellatum (Linnaeus, 1758)		G															2, 12	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Pseudanostirus globicollis (Germar, 1843)		G											R		DD		6, 7	Marczak et al. 2023c
Selatosomus aeneus (Linnaeus, 1758)		G					A										12, 13	Kubisz, Pawłowski 1995
Selatosomus cruciatus (Linnaeus, 1758)		G					A										2, 6, 7, 13, 15, 19, 21	Kubisz, Pawłowski 1995; Plewa et al. 2014; Marczak et al. 2023c
Stenagostus rufus (De Geer, 1774)	S														NT			Burakowski et al. 1985

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Elaterinae																		
Adrastus limbatus (Fabricius, 1776)		G																Roubal 1910
Adrastus pallens (Fabricius, 1792)		G															15, 16	
Agriotes lineatus (Linnaeus, 1767)		G																
Agriotes obscurus (Linnaeus, 1758)		G																Kubisz, Pawłowski 1995
Ampedus balteatus (Linnaeus, 1758)	S										2					LC	1, 2, 5, 7, 10, 12, 13, 15, 16, 20, 24	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Ampedus cinnaberinus (Eschscholtz, 1829)	S												R			LC	2	Marczak et al. 2023c
Ampedus elegantulus (Schönherr, 1817)	S													2		NT	2, 7	Kwiatkowski, Marczak 2020b; Marczak et al. 2023c
Ampedus erythrogonus (Müller, 1821)	S															LC	1, 2, 3, 5, 7, 9, 10, 12, 16, 20, 24	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Ampedus hjorti (Rye, 1905)	S														EN	VU	2, 5	Marczak et al. 2023c
Ampedus melanurus Mulsant et Guillebeau, 1855	S													2	VU	DD	5	
Ampedus nigrinus (Herbst, 1784)	S										2					LC	1, 2, 3, 5, 7, 9, 10, 12, 13, 15, 20, 24	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Ampedus nigroflavus (Goeze, 1777)	S															LC	2	Marczak et al. 2023c
Ampedus pomonae (Stephens, 1830)	S						A									LC	3, 5, 23	Kubisz, Pawłowski 1995
Ampedus pomorum (Herbst, 1784)	S						A									LC	2, 3, 5, 6, 7, 9, 10, 12, 13, 15, 16, 20, 21, 22, 23	Kubisz, Pawłowski 1995; Marczak et al. 2023c
!*Ampedus praeustus* (Fabricius, 1792)	S												R			LC	5, 6	
Ampedus sanguineus (Linnaeus, 1758)	S															LC	12, 13, 15, 16, 24	
Ampedus sanguinolentus (Schrank, 1776)	S															LC	3, 5	
Ampedus tristis (Linnaeus, 1758)	S												R	2	DD	LC	2, 7, 12	
Dalopius marginatus (Linnaeus, 1758)		G					A										2, 3, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Ectinus aterrimus (Linnaeus, 1761)		G															1, 2, 3, 6, 9, 10, 12, 13, 15, 16, 19, 20, 21, 22, 23	Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Melanotus castanipes (Paykull, 1800)	S															LC	2, 5, 6, 9, 12, 13, 16, 22, 24	Marczak et al. 2023c
Melanotus villosus (Geoffroy, 1785)	S															LC	2, 3, 5, 9, 12, 13, 15, 16, 19, 21, 24	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Sericus brunneus (Linnaeus, 1758)		G															1, 10, 15	Kubisz, Pawłowski 1995
Hypnoidinae																		
!*Hypnoidus riparius* (Fabricius, 1792)		G	H															
Lissominae																		
Drapetes mordelloides (Host, 1789)	S										2						2	Marczak et al. 2023c
Omalisinae																		
Omalisus fontisbellaquaei Geoffroy in Fourcroy, 1785													R				2	Marczak et al. 2023c
LYCIDAE																		
Calochrominae																		
Lygistopterus sanguineus (Linnaeus, 1758)	S																1, 2, 3, 6, 7, 13, 15, 23	Kubisz, Pawłowski 1995; Kolasa et al. 2018; Kajtoch et al. 2019; Marczak et al. 2023c
Erotinae																		
Dictyoptera aurora (Herbst, 1784)	S																1, 2, 5, 6 9, 13, 15, 16, 21	Marczak et al. 2023c
Erotides cosnardi (Chevrolat, 1831)	S												R				7	Marczak et al. 2023c
Lopheros lineatus (Gorham, 1883)	S												R	2	LC		2	Marczak et al. 2023c
Platycis minuta (Fabricius, 1787)	S																7	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Pyropterus nigroruber (De Geer, 1774)	S																2	Marczak et al. 2023c
LAMPYRIDAE																		
Lampyris noctiluca (Linnaeus, 1758)																	2, 5, 13, 20	Marczak et al. 2023c
CANTHARIDAE																		
Cantharinae																		
Cantharis figurata Mannerheim, 1843		G					A										3, 20, 23	
Cantharis flavilabris Fallén, 1808		G					A											Kuśka 1985
Cantharis fusca Linnaeus, 1758		G					A										3, 25	
Cantharis lateralis Linnaeus, 1758		G					A											Roubal 1910; Kubisz, Pawłowski 1995
Cantharis livida Linnaeus, 1758		G					A										19	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Cantharis nigra (De Geer, 1774)		G					A						R				2, 17	Marczak et al. 2023c
Cantharis nigricans (Müller, 1776)		G					A										2, 5, 7, 14, 17	Marczak et al. 2023c
Cantharis obscura Linnaeus, 1758		G					A										3	
Cantharis paludosa Fallén, 1807		G	H				A						R					
Cantharis pellucida Fabricius, 1792		G					A										2, 17, 20, 23, 25	Kuśka 1985; Marczak et al. 2023c
Cantharis rustica Fallén, 1807		G					A										2, 3, 14, 17, 25	
Podabrus alpinus (Paykull, 1798)		G					A										7, 20	Kuśka 1985
Rhagonycha atra (Linnaeus, 1767)		G					A						R				5	
Rhagonycha fulva (Scopoli, 1763)		G					A										2, 4, 7, 21	Kuśka 1985; Marczak et al. 2023c
Rhagonycha lignosa (Müller, 1764)	S	G					A										2, 7, 12, 13, 14, 19, 23, 24, 25	Marczak et al. 2023c
Rhagonycha nigriventris Motschulsky, 1860		G	H				A										3, 10, 20	
Rhagonycha testacea (Linnaeus, 1758)		G					A										1, 2, 7, 17, 23, 24	Marczak et al. 2023c
Malthininae																		
Malthinus biguttatus (Linnaeus, 1758)	S	G					A						R				3, 16	
!*Malthinus facialis* Thomson, 1864	S	G					A						R		DD		12, 19	
Malthinus flaveolus (Herbst, 1786)	S	G					A										15, 20, 23	
Malthinus frontalis (Marsham, 1802)	S	G					A						R					
Malthodes marginatus (Latreille, 1806)	S	G					A						R					
!*Malthodes mysticus* Kiesenwetter, 1852	S	G					A						R				22	
Silinae																		
Autosilis nitidula (Fabricius, 1792)		G					A											
NOSODENDRIDAE																		
Nosodendron fasciculare (Olivier, 1790)	S																	
SPHAERITIDAE																		
Sphaerites glabratus (Fabricius, 1792)	S			M													7	Marczak et al. 2023c
HISTERIDAE																		
Abraeinae																		
Abraeus granulum Erichson, 1839	S																2, 5	Marczak et al. 2023c
Abraeus parvulus Aubé, 1842	S												R	2	VU		2	Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Acritus nigricornis (Hoffmann, 1803)		G															2	Marczak et al. 2023c
Chaetabraeus globulus (Creutzer, 1799)				M				K										Burakowski et al. 1978
Plegaderus caesus (Herbst, 1791)	S											Nd					2, 5, 7, 12, 20	Marczak et al. 2023c
Plegaderus saucius Erichson, 1834	S																	
Plegaderus vulneratus (Panzer, 1797)	S																2, 5, 6, 7, 15, 22	Kubisz, Szwałko 1991; Marczak et al. 2023c
!*Teretrius fabricii* Mazur, 1972	S												R					
Dendrophilinae																		
Carcinops pumilio (Erichson, 1834)									N									
Dendrophilus punctatus (Herbst, 1791)	S											Nd					2, 7, 20	Marczak et al. 2023c
Dendrophilus pygmaeus (Linnaeus, 1758)										Mr								
Paromalus flavicornis (Herbst, 1791)	S																2, 5, 7	Marczak et al. 2023c
Paromalus parallelepipedus (Herbst, 1791)	S										2						1, 2, 5, 6, 7, 10, 12, 15, 19, 22, 23, 24	Kubisz, Pawłowski 1995; Hilszczański 2008; Marczak et al. 2023c
Platylomalus complanatus (Panzer, 1797)	S													1	VU		2, 7, 13	Marczak i Kwiatkowski 2020b; Marczak et al. 2023d
Histerinae																		
!*Atholus corvinus* (Germar, 1817)								K	N			Nd					25	
Eurosomides minor (Rossi, 1792)	S																6, 15, 20	Kubisz, Szwałko 1991
Hister unicolor Linnaeus, 1758				M				K	N									Skłodowski 2011
Hololepta plana (Sulzer, 1776)	S																2, 7	Marczak et al. 2023c
Margarinotus bipustulatus (Schrank, 1781)								K				Nd					19	Kubisz, Pawłowski 1995
Margarinotus carbonarius (Hoffmann, 1803)								K	N									Roubal 1910; Burakowski et al. 1978
!*Margarinotus marginatus* (Erichson, 1834)	S											Nd						
Margarinotus merdarius (Hoffmann, 1803)	S							K	N			Nd					2	Marczak et al. 2023c
Margarinotus neglectus (Germar, 1813)	S											Nd					2, 10	Marczak et al. 2023c
!*Margarinotus obscurus* (Kugelann, 1792)								K	N			Nd						
Margarinotus purpurascens (Herbst, 1792)								K									12	Burakowski et al. 1978; Kubisz, Pawłowski 1995
Margarinotus striola succicola (Thomson, 1862)	S							K	N								21	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Margarinotus ventralis (Marseul, 1854)	S			M				K	N									
Platysoma angustatum (Hoffmann, 1803)	S																24	Kubisz, Szwałko 1991
Platysoma compressum (Herbst, 1783)	S																2, 15	Kubisz, Szwałko 1991
Platysoma lineare Erichson, 1834	S										2						2, 5, 15, 24	Kubisz, Szwałko 1991; Marczak et al. 2023c
Saprininae																		
Gnathoncus buyssoni Auzat, 1917	S											Nd					2, 21	Marczak et al. 2023c
!*Gnathoncus communis* (Marseul, 1862)	S								N			Nd						
Gnathoncus nannetensis (Marseul, 1862)	S											Nd					5, 6, 20, 23	
Myrmetes paykulli Kanaar, 1979										Mr			R				2, 13, 24	Marczak et al. 2023d
Saprinus immundus (Gyllenhal, 1827)								K	N									Roubal 1910; Burakowski et al. 1978
HYDROPHILIDAE																		
Hydrophilinae																		
Anacaena limbata (Fabricius, 1792)			H														10. 12, 14	Greń et al. 2022a
Anacaena lutescens (Stephens, 1829)			H														1, 3, 7, 10. 12, 14, 15, 17, 20	Kubisz, Pawłowski 1995; Greń et al. 2022a
Berosus frontifoveatus Kuwert, 1888			H															Kubisz, Szwałko 1991; Greń et al. 2022a
Cymbiodyta marginella (Fabricius, 1792)			H														3, 10. 12, 14, 17	Kubisz, Szwałko 1991; Greń et al. 2022a
Enochrus affinis (Thunberg, 1794)			H														15	Greń et al. 2022a
Enochrus coarctatus (Gredler, 1863)			H														1, 7, 10. 12, 14, 17, 20	Greń et al. 2022a
Enochrus ochropterus (Marsham, 1802)			H															Greń et al. 2022a
Enochrus quadripunctatus (Herbst, 1797)			H														10, 14	Kubisz, Szwałko 1991; Greń et al. 2022a
Enochrus testaceus (Fabricius, 1801)			H															Greń et al. 2022a
Helochares obscurus (Müller, 1776)			H														17	Greń et al. 2022a
Hydrobius fuscipes (Linnaeus, 1758)			H														1, 3, 10, 12, 14	Greń et al. 2022a
Hydrobius rottenbergii Gerhardt, 1872			H														1, 3, 10, 13, 14, 17	Greń et al. 2022a
Hydrobius subrotundus Stephens, 1829			H														1, 6, 7, 10, 12, 14, 15	Greń et al. 2022a
Hydrochara caraboides (Linnaeus, 1758)			H														3, 12	Greń et al. 2022a
Hydrophilus piceus (Linnaeus, 1758)			H													NT		21	Greń et al. 2022a

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Laccobius bipunctatus (Fabricius, 1775)			H														6. 12	Greń et al. 2022a
Laccobius minutus (Linnaeus, 1758)			H														12	Greń et al. 2022a
Laccobius sinuatus (Motschulsky, 1849)			H										R					Greń et al. 2022a
Laccobius striatulus (Fabricius, 1801)			H														12	Greń et al. 2022a
Sphaeridiinae																		
Cercyon bifenestratus Küster, 1851		G	H															Kubisz, Szwałko 1991; Greń et al. 2022a
Cercyon castaneipennis Brunke, 2009								K										Greń et al. 2022a
Cercyon convexiusculus Stephens, 1829		G	H														1, 3, 14, 15	Greń et al. 2022a
Cercyon granarius Erichson, 1837		G	H										R				9	Greń et al. 2022a
Cercyon haemorrhoidalis (Fabricius, 1775)								K	N									Roubal 1910; Burakowski et al. 1976; Greń et al. 2022a
Cercyon laminatus Sharp 1873		G	H															Kubisz, Szwałko 1991; Greń et al. 2022a
Cercyon lateralis (Marsham, 1802)								K									24	Greń et al. 2022a
Cercyon marinus Thomson, 1853		G	H															Kubisz, Szwałko 1991; Greń et al. 2022a
Cercyon nigriceps (Marsham, 1802)		G	H					K										Kubisz, Szwałko 1991; Greń et al. 2022a
Cercyon pygmaeus (Illiger, 1801)								K									14	Greń et al. 2022a
Cercyon quisquilius (Linnaeus, 1760)								K										Roubal 1910; Burakowski et al. 1976; Kubisz, Szwałko 1991; Greń et al. 2022a
Cercyon sternalis Sharp, 1918		G																Greń et al. 2022a
Cercyon tristis (Illiger, 1801)		G	H												LC		25	Kubisz, Szwałko 1991; Greń et al. 2022a
Cercyon ustulatus (Preyssler, 1790)								K									15	Greń et al. 2022a
Coelostoma orbiculare (Fabricius, 1775)		G	H														3	Kubisz, Szwałko 1991; Greń et al. 2022a
Cryptopleurum minutum (Fabricius, 1775)								K										
Megasternum immaculatum (Stephens, 1829)								K	N									
Sphaeridium bipustulatum Fabricius, 1781								K										Roubal 1910; Burakowski et al. 1976
Sphaeridium lunatum Fabricius, 1792								K										
Sphaeridium marginatum Fabricius, 1787								K										

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Sphaeridium scarabaeoides (Linnaeus, 1758)								K										
HELOPHORIDAE																		
Helophorus aquaticus (Linnaeus, 1758)			H														10, 12	Greń et al. 2022a
Helophorus discrepans Rey, 1885			H															Greń et al. 2022a
Helophorus flavipes Fabricius, 1792			H															Greń et al. 2022a
Helophorus grandis Illiger, 1798			H															Greń et al. 2022a
Helophorus granularis (Linnaeus, 1761)			H														1, 10, 14, 20	Greń et al. 2022a
Helophorus minutus Fabricius, 1775			H															Greń et al. 2022a
Helophorus nanus Sturm, 1836			H														23	Greń et al. 2022a
Helophorus pumilio Erichson, 1837			H														14	Greń et al. 2022a
Helophorus strigifrons Thomson, 1868			H														1, 10, 14	Greń et al. 2022a
Helophorus tuberculatus Gyllenhal, 1808			H														1, 7	Greń et al. 2022a
HYDROCHIDAE																		
Hydrochus brevis (Herbst, 1793)			H														10, 12	Greń et al. 2022a
Hydrochus crenatus (Fabricius, 1792)			H														12	Greń et al. 2022a
LUCANIDAE																		
Lucaninae																		
Dorcus parallelipipedus (Linnaeus, 1758)	S														VU	LC	7, 12, 21	Konarzewski, Kupryjanowicz 2021
Platycerus caprea (De Geer, 1774)	S															LC		
Platycerus caraboides (Linnaeus, 1758)	S															LC	6, 7, 12, 13, 15, 16, 17, 19	Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995; Marczak et al. 2023c
Syndesinae																		
Ceruchus chrysomelinus (Hochenwarth, 1785)	S												R	2	VU	NT	7, 13, 15, 20	Marczak et al. 2023c
Sinodendron cylindricum (Linnaeus, 1758)	S															LC	2, 7, 12, 13, 15	Kubisz, Pawłowski 1995; Marczak et al. 2023c
TROGIDAE																		
Trox sabulosus (Linnaeus, 1758)		G							N									Bunalski 1992
Trox scaber (Linnaeus, 1767)		G							N									
BOLBOCERATIDAE																		
Odonteus armiger (Scopoli, 1772)		G		M														Tarwacki, Plewa 2010

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
GEOTRUPIDAE																		
Anoplotrupes stercorosus (Hartmann in Scriba, 1791)		G		M				K									3, 5, 6, 12, 13, 15, 19, 20, 21, 22	Haitlinger 1999, 2001; Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995; Skłodowski 2011; Konarzewski, Kupryjanowicz 2021
Geotrupes spiniger (Marsham, 1802)		G						K									16	Haitlinger 1993, 2001; Bunalski 2006
Geotrupes stercorarius (Linnaeus, 1758)		G						K									1, 5, 11, 15, 16, 19, 20	Haitlinger 1993; Kubisz, Pawłowski 1995; Bunalski 2006; Konarzewski, Kupryjanowicz 2021
Trypocopris vernalis (Linnaeus, 1758)		G						K									6, 12, 20	Haitlinger 1990; Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995; Skłodowski 2011
SCARABAEIDAE																		
Aphodiinae																		
Acrossus depressus (Kugelann, 1792)								K									2, 5, 12, 24, 25	Kubisz, Szwałko 1991; Mroczyński, Marczak 2020
Acrossus rufipes (Linnaeus, 1758)								K									2, 3, 5, 25	Kubisz, Pawłowski 1995; Bunalski 2006
Agoliinus nemoralis (Erichson, 1848)								K									5	Kubisz, Szwałko 1991
Agrilinus ater (De Geer, 1774)								K									2	Kubisz, Szwałko 1991
Aphodius foetidus (Herbst, 1783)								K					R					Roubal 1910
Aphodius pedellus (De Geer, 1774)								K									2, 3, 24, 25	Mroczyński, Marczak 2020
Bodilopsis rufa (Moll, 1782)								K										
Bodilopsis sordida (Fabricius, 1775)								K										Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995
Calamosternus granarius (Linnaeus, 1767)								K									12	
Chilothorax distinctus (Müller, 1776)								K									1, 10, 20, 23, 25	Mroczyński, Marczak 2020
Esymus merdarius (Fabricius, 1775)								K										
Esymus pusillus (Herbst, 1789)								K									15	
Euheptaulacus sus (Herbst, 1783)								K					R		DD			Roubal 1910
Euorodalus coenosus (Panzer, 1798)								K										Kubisz, Szwałko 1991
Eupleurus subterraneus (Linnaeus, 1758)								K									1, 9	Kubisz, Pawłowski 1995; Bunalski 2006
Limarus zenkeri (Germar, 1813)								K					R				5, 12	Kubisz, Szwałko 1991

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Liothorax plagiatus (Linnaeus, 1767)																		
Melinopterus prodromus (Brahm, 1790)								K									2, 6, 9, 20, 22, 24	Mroczyński, Marczak 2020
Otophorus haemorrhoidalis (Linnaeus, 1758)								K									1, 2, 3, 5, 6, 7, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25	Kubisz, Pawłowski 1995
Oxyomus sylvestris (Scopoli, 1763)																		
Plagiogonus arenarius (Olivier, 1789)								K					R					Roubal 1910
Planolinoides borealis (Gyllenhal, 1827)								K					R				9, 12	
Psammodius asper (Fabricius, 1775)		G													VU			Bunalski 2006
Rhodaphodius foetens (Fabricius, 1787)								K										
Teuchestes fossor (Linnaeus, 1758)								K									5	
Volinus sticticus (Panzer, 1798)								K									9, 12	Mroczyński, Marczak 2020
Cetoniinae																		
Cetonia aurata (Linnaeus, 1758)	S	G					A										2, 3, 7, 12, 13, 16, 17, 19, 20, 21, 25	Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995; Haitlinger 2002; Bunalski 2006
Gnorimus nobilis (Linnaeus, 1758)	S						A									LC	2, 15	Bunalski 2006
Osmoderma barnabita Motschulsky, 1845	S												R	2	VU	NT		Konarzewski, Kupryjanowicz 2021; Śrędziński 2022
Oxythyrea funesta (Poda von Neuhaus, 1761)		G					A										1, 2, 3, 16, 20, 25	
Protaetia cuprea metallica (Herbst, 1782)	S						A			Mr							2, 3, 5, 13, 14, 17, 20, 21, 25	Kubisz, Pawłowski 1995; Bunalski 2006; Marczak et al. 2023c
Protaetia marmorata (Fabricius, 1792)	S						A										2, 5, 7	Marczak et al. 2023c
Trichius fasciatus (Linnaeus, 1758)	S						A									LC	2, 3, 16	Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995; Bunalski 2006
Tropinota hirta (Poda von Neuhaus, 1761)		G					A										2, 3, 5, 6, 10, 12, 13, 15, 17	Kubisz, Pawłowski 1995
Valgus hemipterus (Linnaeus, 1758)	S						A									LC	3, 6, 7, 15, 16, 23	Marczak et al. 2023c
Dynastinae																		
Oryctes nasicornis (Linnaeus, 1758)	S					Sn									NT		12, 21	
Melolonthinae																		
Amphimallon solstitiale (Linnaeus, 1758)		G															12	Bunalski 2006

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Hoplia graminicola (Fabricius, 1792)		G															3	Bunalski 2006
Hoplia philanthus (Fuessly, 1775)		G															23	
Maladera holosericea (Scopoli, 1772)		G															10, 13	Kubisz, Pawłowski 1995
Melolontha hippocastani (Fabricius, 1801)		G															5, 12	Bunalski 2006
Melolontha melolontha (Linnaeus, 1758)		G															12, 16, 21	Kubisz, Pawłowski 1995; Bunalski 2006
Serica brunnea (Linnaeus, 1758)		G															2, 5, 7, 12, 13	Bunalski 2006; Marczak et al. 2023c
Rutelinae																		
Anomala dubia (Scopoli, 1763)		G															12, 21	Kolasa et al. 2018; Kajtoch et al. 2019
Phyllopertha horticola (Linnaeus, 1758)		G															2, 11, 13, 14, 15, 16, 17, 20, 25	Kubisz, Pawłowski 1995; Bunalski 2006; Konarzewski, Kupryjanowicz 2021; Marczak et al. 2023c
Scarabaeinae																		
Copris lunaris (Linnaeus, 1758)		G						K							NT			Kubisz, Pawłowski 1995
Onthophagus fracticornis (Preyssler, 1790)		G						K									2	Kubisz, Pawłowski 1995; Bunalski 2006
!*Onthophagus illyricus* (Scopoli, 1763)		G						K					R		DD			
Onthophagus joannae Goljan, 1953		G						K										Kubisz, Szwałko 1991
Onthophagus nuchicornis (Linnaeus, 1758)		G						K									1, 23	
Onthophagus ovatus (Linnaeus, 1767)		G						K										Kubisz, Szwałko 1991
Onthophagus similis (Scriba, 1790)		G						K										Kubisz, Szwałko 1991
PTILIIDAE																		
Acrotrichis brevipennis (Erichson, 1845)		G	H															
Acrotrichis grandicollis (Mannerheim, 1844)		G						K	N									Roubal 1910; Burakowski et al. 1978
Acrotrichis intermedia (Gillmeister, 1845)		G						K	N								5, 16	
Acrotrichis montandoni (Allibert, 1844)	S	G		M													5	
Acrotrichis sitkaensis (Motschulsky, 1845)		G	H	M													5	
!*Baeocrara variolosa* (Mulsant et Rey, 1873)	S	G		M				K	N				R				5	
Ptenidium longicorne Fuss, 1868	S	G	H							Mr			R					
Ptenidium turgidum Thomson, 1855	S			M						Mr							5	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
!*Pteryx splendens* Strand, 1960	S	G											R				5	
Pteryx suturalis (Heer, 1841)	S	G		M													5, 20	
!*Ptiliolum schwarzi* (Flach, 1887)		G						K	N				R		CR		5	
HYDRAENIDAE																		
Hydraeninae																		
Hydraena britteni Joy, 1907			H														6	Greń et al. 2022a
Hydraena palustris Erichson, 1837			H															Greń et al. 2022a
Hydraena pulchella Germar, 1824			H										R					Greń et al. 2022a
Hydraena riparia Kugelann, 1794			H														9, 10, 12, 14	Greń et al. 2022a
Limnebius aluta (Bedel, 1881)			H															Greń et al. 2022a
Limnebius atomus (Duftschmid, 1805)			H															Greń et al. 2022a
Limnebius crinifer Rey, 1885			H														7, 14	Greń et al. 2022a
Limnebius parvulus (Herbst, 1797)			H														10, 12	Greń et al. 2022a
Ochthebiinae																		
Ochthebius minimus (Fabricius, 1792)			H														3, 10, 12, 17	Greń et al. 2022a
COLONIDAE																		
!*Colon angulare* Erichson, 1837		G		M									R					
!*Colon barnevillei* Kraatz, 1858		G		M									R				9	
Colon latum Kraatz, 1850		G		M									R					Kubisz, Szwałko 1991
LEIODIDAE																		
Cholevinae																		
Catops fuliginosus Erichson, 1837		G							N			Nd					5	
!*Catops nigriclavis* Gerhardt, 1900		G							N			Nd					5	
Catops tristis (Panzer, 1794)		G							N			Nd						
Fissocatops westi (Krogerus, 1931)		G							N			Nd					3, 20	
Nemadus colonoides (Kraatz, 1851)	S								N			Nd					2, 12	Marczak et al. 2023c
Ptomaphagus sericatus (Chaudoir, 1845)		G							N			Nd					24	
!*Sciodrepoides alpestris* Jeannel, 1934		G							N			Nd	R		NT			
Sciodrepoides fumatus (Spence, 1813)		G							N			Nd					2, 5, 12, 21	Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Sciodrepoides watsoni (Spence, 1813)		G							N			Nd					2, 5, 12	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Leiodinae																		
Agathidium atrum (Paykull, 1798)	S			M													5, 15, 16	
Agathidium badium Erichson, 1845	S			M													5	
Agathidium confusum Brisout de Barneville, 1863	S			M											VU		2, 12	Marczak et al. 2023c
!*Agathidium haemorrhoum* Erichson, 1845	S			M													19	
Agathidium laevigatum Erichson, 1845	S			M													6, 9, 13	
Agathidium mandibulare Sturm, 1807	S			M													19	
Agathidium nigripenne (Fabricius, 1792)	S			M													2, 6, 7, 12, 24	
Agathidium pisanum Brisout de Barneville, 1872	S			M														
Agathidium rotundatum (Gyllenhal, 1827)	S			M													2, 5, 12, 19	
Agathidium seminulum (Linnaeus, 1758)	S			M													2, 5, 6, 9, 12, 16, 20, 22, 24, 25	Marczak et al. 2023c
Agathidium varians Beck, 1817	S			M													6	
Amphicyllis globiformis (Sahlberg,1833)				M														
Amphicyllis globus (Fabricius, 1792)				M													15, 19	
!*Anisotoma axillaris* Gyllenhal, 1810	S			M														
Anisotoma castanea (Herbst, 1791)	S			M													2, 5, 15, 16, 19	Marczak et al. 2023c
Anisotoma glabra (Fabricius, 1787)	S			M													5, 7, 9, 19, 24	Marczak et al. 2023c
Anisotoma humeralis (Herbst, 1791)	S			M													2, 5, 6, 7, 9, 10, 12, 13, 19, 20, 24	Marczak et al. 2023c
Anisotoma orbicularis (Herbst, 1791)	S			M													5, 19	
!*Colenis immunda* (Sturm, 1807)		G		M									R					
Leiodes dubia (Fabricius, 1792)		G		M														Kubisz, Szwałko 1991
Leiodes oblonga (Erichson, 1845)		G		M									R				6	
Leiodes silesiaca (Kraatz, 1852)		G		M									R					Kubisz, Szwałko 1991
Leiodes triepkei (Schmidt, 1841)		G		M														

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Liodopria serricornis (Gyllenhal, 1813)	S	G		M									R		EN		2, 5	Marczak et al. 2023c
STAPHYLINIDAE						0												
Aleocharinae																		
Acrotona aterrima (Gravenhorst, 1802)		G						K	N								11	
Acrotona parvula (Mannerheim, 1830)		G						K									20	
!*Acrotona pygmaea* (Gravenhorst, 1806)		G						K	N									
Acrotona sylvicola (Kraatz, 1856)		G	H														2	
Acrotona troglodytes (Motschulsky, 1858)		G											R				3	
Aleochara bilineata Gyllenhal, 1810		G						K										
Aleochara bipustulata (Linnaeus, 1760)		G						K										
Aleochara brevipennis Gravenhorst, 1806		G	H														2	Marczak et al. 2023a
Aleochara curtula (Goeze, 1777)		G						K	N									
Aleochara erythroptera Gravenhorst, 1806		G			X			K				Nd						
Aleochara fumata Gravenhorst, 1802		G		M					N								2	Marczak et al. 2023a
Aleochara kamila Likovský, 1984		G				Sn		K	N								2	Marczak et al. 2023a
Aleochara sparsa Heer, 1839	S	G										Nd					5, 20	
Aleochara verna Say, 1839		G																Roubal 1910; Burakowski et al. 1981
!*Aloconota insecta* (Thomson, 1856)		G	H														2	
Aloconota gregaria (Erichson, 1839)		G	H															
!*Amidobia talpa* (Heer, 1841)										Mr							5	
Amischa analis (Gravenhorst, 1802)		G															2, 5, 6, 20	Marczak et al. 2023a
Amischa bifoveolata (Mannerheim, 1830)		G															6	
!*Amischa decipiens* (Sharp, 1869)		G	H										R				5	
Amischa nigrofusca (Stephens, 1832)		G															5	
Anomognathus cuspidatus (Erichson, 1839)	S																5, 8	
Atheta aeneicollis (Sharp, 1869)	S	G		M													2	Marczak et al. 2023a
Atheta boletophila (Thomson, 1856)	S			M														
!*Atheta clientula* (Erichson, 1839)		G															20	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Atheta crassicornis (Fabricius, 1792)		G		M													12	
Atheta dadopora Thomson, 1867		G		M													19	
Atheta divisa (Märkel, 1844)		G							N			Nd					2	Marczak et al. 2023a
Atheta elongatula (Gravenhorst, 1802)		G	H														2	Marczak et al. 2023a
Atheta euryptera (Stephens, 1832)	S	G																
!*Atheta fallaciosa* (Sharp, 1869)		G	H										R					
Atheta fungi (Gravenhorst, 1806)		G															5, 6, 12, 16, 25	
Atheta gagatina (Baudi, 1848)		G		M													2, 12	Marczak et al. 2023a
Atheta gyllenhalii (Thomson, 1856)		G	H															
Atheta harwoodi Williams, 1930	S	G										Nd						
!*Atheta marcida* (Erichson, 1837)		G		M													12	
Atheta myrmecobia (Kraatz, 1856)		G															3	
Atheta orbata (Erichson, 1837)		G															11, 13, 23	
Atheta pallidicornis (Thomson, 1856)	S	G		M													2, 12, 13, 22	Marczak et al. 2023a
Atheta palustris (Kiesenwetter, 1844)		G	H								2							
Atheta paracrassicornis Brundin, 1954		G		M														
Atheta picipes (Thomson, 1856)	S	G		M													2	Marczak et al. 2023a
Atheta pilicornis (Thomson, 1852)	S			M														
Atheta sodalis (Erichson, 1837)		G		M													5, 12	
!*Atheta sodermani* Bernhauer, 1931								K	N				R					
!*Atheta vilis* (Erichson, 1837)		G	H										R					
Autalia longicornis Scheerpeltz, 1947		G		M													12	
!*Autalia rivularis* (Gravenhorst, 1802)		G						K	N									
Bolitochara bella Märkel, 1844	S			M														
Bolitochara obliqua Erichson, 1837	S			M													2, 19	Marczak et al. 2023a
Bolitochara pulchra (Gravenhorst, 1806)	S			M													12	
!*Bolitochara tecta* Assing, 2014	S			M													12	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Calodera aethiops (Gravenhorst, 1802)		G	H															
!*Crataraea suturalis* (Mannerheim, 1830)		G				Sn											5	
!*Cypha seminulum* (Erichson, 1839)	S	G	H										R				1	
Cyphea curtula (Erichson, 1837)	S												R				2	Marczak et al. 2023a
Dadobia immersa (Erichson, 1837)	S																2, 5, 6	Marczak et al. 2023a
Dexiogyia corticina (Erichson, 1837)	S																6	
Dinaraea aequata (Erichson, 1837)	S																5	
Dinaraea angustula (Gyllenhal, 1810)	S	G	H															
Dinaraea arcana (Erichson, 1839)	S																2	Marczak et al. 2023a
Dinaraea linearis (Gravenhorst, 1802)	S																	
!*Enalodroma hepatica* (Erichson, 1839)	S											Nd					12	
Euryusa castanoptera Kraatz, 1856	S																2, 5, 21	Marczak et al. 2023a
Falagria caesa Erichson, 1837		G																Roubal 1910; Burakowski et al. 1981
Geostiba circellaris (Gravenhorst, 1806)		G															22	Kubisz, Pawłowski 1995
Gnypeta ripicola (Kiesenwetter, 1844)		G	H															Roubal 1910; Burakowski et al. 1981
Gyrophaena bihamata Thomson, 1867				M													12	
Gyrophaena boleti (Linnaeus, 1758)	S			M													1, 2, 5, 11, 13, 15, 17, 22	Marczak et al. 2023c
Gyrophaena fasciata (Marsham, 1802)				M													12	
Gyrophaena gentilis Erichson, 1839				M													11, 15	
Gyrophaena joyi Wendler, 1924				M													12	
!*Gyrophaena joyioides* Wüsthoff, 1937				M													12, 20	
Gyrophaena manca Erichson, 1839				M													12	
Gyrophaena minima Erichson, 1837				M													12	
Gyrophaena nana (Paykull, 1800)	S			M													2	Marczak et al. 2023a
Gyrophaena poweri Crotch, 1867	S			M													2	Marczak et al. 2023a
Gyrophaena strictula Erichson, 1839	S			M													2, 13	Marczak et al. 2023a
Gyrophaena williamsi Strand, 1935				M													21	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Haploglossa gentilis Märkel, 1844	S											Nd					2	Marczak et al. 2023a
Haploglossa villosula (Stephens, 1832)	S											Nd					2, 5, 6, 24	
Holobus apicatus (Erichson, 1837)	S	G				Sn											5, 13	
!*Holobus flavicornis* (Lacordaire, 1837)		G					A										5	
Homalota plana (Gyllenhal, 1810)	S																2	Marczak et al. 2023a
!*Ischnoglossa obscura* Wunderle, 1990	S																6	
Leptusa fumida (Erichson, 1839)	S																2, 5, 6, 12, 19	Marczak et al. 2023a
Leptusa pulchella (Mannerheim, 1831)	S																15, 6, 12, 21	Marczak et al. 2023a
Leptusa ruficollis (Erichson, 1839)	S																2	Marczak et al. 2023a
Liogluta longiuscula (Gravenhorst, 1802)		G																Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995
Meotica exilis (Erichson, 1837)		G	H															
Meotica filiformis (Motschulsky, 1860)		G											R				2	Marczak et al. 2023a
Meotica pallens (Redtenbacher, 1849)		G															2	Marczak et al. 2023a
Myllaena intermedia Erichson, 1837		G	H															
Myllaena minuta (Gravenhorst, 1806)		G	H														2, 5, 23	
Notothecta flavipes (Gravenhorst, 1806)										Mr							5	
Ocalea badia Erichson, 1837		G	H														12	
Ocyusa maura (Erichson, 1837)		G	H														2	Marczak et al. 2023a
Ocyusa picina (Aubé, 1850)		G	H															
Oxypoda abdominalis Mannerheim, 1830		G		M					N									
!*Oxypoda acuminata* (Stephens, 1832)		G		M					N									
Oxypoda alternans (Gravenhorst, 1802)	S			M													12, 15	
Oxypoda annularis Mannerheim, 1830	S	G		M														
Oxypoda brevicornis (Stephens, 1832)		G		M													3, 21	
Oxypoda opaca (Gravenhorst, 1802)		G		M													16	
!*Oxypoda recondita* Kraatz, 1856	S			M									R				5	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Oxypoda skalitzkyi Bernhauer, 1902	S	G											R					
Pella cognata (Märkel, 1842)		G								Mr								
Pella humeralis Gravenhorst, 1802	S	G								Mr								
Pella laticollis Märkel, 1844		G								Mr							12	
Pella limbata Paykull, 1789		G								Mr								
Pella lugens (Gravenhorst, 1802)		G								Mr							2, 6	Marczak et al. 2023a
Phloeopora teres (Gravenhorst, 1802)	S																2	Marczak et al. 2023a
Placusa atrata (Mannerheim, 1830)	S										2						2, 13	Marczak et al. 2023a
Placusa complanata Erichson, 1839	S										2						2	Marczak et al. 2023a
Placusa depressa Mäklin, 1845	S																	
Placusa pumilio (Gravenhorst, 1802)	S																2	Marczak et al. 2023a
Placusa tachyporoides (Waltl, 1838)	S																2, 13	Roubal 1910; Burakowski et al. 1980; Marczak et al. 2023a
!*Plataraea dubiosa* Benick, 1934		G											R					
Schistoglossa viduata (Erichson, 1837)		G	H										R				2	Marczak et al. 2023a
Thamiaraea hospita (Märkel, 1844)	S												R				2	Marczak et al. 2023a
Thiasophila angulata (Erichson, 1837)										Mr							5	
Habrocerinae																		
Habrocerus capillaricornis (Gravenhorst, 1806)	S	G																
Omaliinae																		
Acrulia inflata (Gyllenhal, 1813)	S																12, 16	
Anthophagus angusticollis (Mannerheim, 1830)		G	H				A										2	
Arpedium brachypterum (Gravenhorst, 1802)		G	H															Kubisz, Pawłowski 1995
Eusphalerum minutum (Fabricius, 1792)			H				A										6, 11, 13, 14, 15, 17, 25	
Omalium rivulare (Paykull, 1789)		G							N								12	
!*Omalium rugatum* Mulsant et Rey, 1880		G															25	
Phloeonomus minimus (Erichson, 1839)	S			M									R				2	Marczak et al. 2023a
Phloeonomus punctipennis Thomson, 1867	S																2, 16	Marczak et al. 2023a

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Phloeonomus pusillus (Gravenhorst, 1806)	S										2						2, 5, 13, 15	Marczak et al. 2023a
Phloeopora corticalis (Gravenhorst, 1802)	S																2, 5	Marczak et al. 2023a
Phloeopora scribae (Eppelsheim, 1884)	S																5, 6	
Phloeopora testacea (Mannerheim, 1830)	S																2, 5, 6	Marczak et al. 2023a
Phloeostiba lapponica (Zetterstedt, 1838)	S										2						2, 5	Marczak et al. 2023a
Phloeostiba plana (Paykull, 1792)	S																2, 6	Marczak et al. 2023a
Xylostiba monilicornis (Gyllenhal, 1810)	S																11	
Oxyporinae																		
Oxyporus mannerheimii Gyllenhal, 1827				M									R		VU		7	Kubisz 2004a; Marczak et al. 2021; Średziński 2022
Oxyporus maxillosus Fabricius, 1793	S			M													2, 7, 12, 19, 21	Kubisz, Szwałko 1991; Marczak et al. 2023a; Marczak et al. 2023c
Oxyporus rufus (Linnaeus, 1758)	S			M													7	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Oxytelinae																		
Anotylus nitidulus (Gravenhorst, 1802)		G	H															
Anotylus rugosus (Fabricius, 1775)		G	H														2	Kubisz, Pawłowski 1995; Marczak et al. 2023a
Anotylus tetracarinatus (Block, 1799)		G						K									5, 6, 13	
Aploderus caelatus (Gravenhorst, 1802)		G						K										
Carpelimus bilineatus (Stephens, 1834)		G	H															Roubal 1910; Burakowski et al. 1979; Kubisz, Pawłowski 1995; Marczak et al. 2023a
Carpelimus corticinus (Gravenhorst, 1806)		G	H														2, 5	Marczak et al. 2023a
Carpelimus despectus (Baudi di Selve, 1870)		G	H										R				2	Marczak et al. 2023a
Carpelimus elongatulus (Erichson, 1839)		G	H														2, 20	Marczak et al. 2023a
Carpelimus gracilis (Mannerheim, 1830)		G	H															
Carpelimus heidenreichi Benick, 1934		G	H															
Carpelimus rivularis (Motschulsky, 1860)		G	H															
!*Carpelimus subtilis* (Erichson, 1839)		G	H														5	
Coprophilus striatulus (Fabricius, 1793)	S	G				Sn											2	Marczak et al. 2023a

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Oxytelus fulvipes Erichson, 1839		G	H															
Oxytelus laqueatus (Marsham, 1802)		G						K										Roubal 1910; Burakowski et al. 1979
Oxytelus migrator Fauvel, 1904		G						K										Kubisz, Szwałko 1994
Oxytelus piceus (Linnaeus, 1767)		G						K										Kubisz, Szwałko 1991
Oxytelus sculptus Gravenhorst, 1806		G						K										
Platystethus nodifrons Mannerheim, 1830		G	H														2	Marczak et al. 2023a
Syntomium aeneum (Müller, 1821)	S	G	H														15	
Paederinae																		
Lathrobium brunnipes (Fabricius, 1793)		G	H														13	
Lathrobium geminum Kraatz, 1857		G	H														16	
Paederus caligatus Erichson, 1840		G	H															
Paederus riparius (Linnaeus, 1758)		G	H														5, 25	
Rugilus angustatus (Geoffroy in Fourcroy, 1785)		G	H															
Rugilus erichsonii (Fauvel, 1867)		G	H														25	
Rugilus rufipes Germar, 1836		G																Kubisz, Szwałko 1991
Scopaeus laevigatus (Gyllenhal, 1827)		G	H														5	
Tetartopeus rufonitidus (Reitter, 1909)		G	H										R					
Tetartopeus terminatus (Gravenhorst, 1802)		G	H															
Phloeocharinae																		
Phloeocharis subtilissima Mannerheim, 1830	S	G																
Proteininae																		
Proteinus brachypterus (Fabricius, 1792)		G		M													3, 12	
Pselaphinae																		
Batrisodes delaporti (Aubé, 1833)	S									Mr							2	Marczak et al. 2023a
Batrisodes venustus (Reichenbach, 1816)	S									Mr							2, 5, 13, 16, 19, 20	Marczak et al. 2023a
Bibloplectus ambiguus (Reichenbach, 1816)	S	G	H														23	
!*Bibloplectus spinosus* Raffray, 1914		G	H										R				12, 20	
Bibloporus bicolor (Denny, 1825)	S	G															2, 3, 5, 6, 12, 13, 19	Marczak et al. 2023a

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Bibloporus minutus Raffray, 1914	S																5, 6	
Brachygluta fossulata (Reichenbach, 1816)		G															15	
Bryaxis bulbifer (Reichenbach, 1816)		G	H														5	
Bryaxis curtisii Karaman, 1952	S	G																
Bryaxis puncticollis (Denny, 1825)	S	G																
Bythinus burrellii Denny, 1825		G	H														5, 12, 16, 20, 25	
!*Bythinus macropalpus* Aubé, 1833		G	H														5	
Euplectus bescidicus Reitter, 1882	S																	
Euplectus brunneus (Grimmer, 1841)	S																2, 13	Marczak et al. 2023a
Euplectus karstenii (Reichenbach, 1816)	S	G															2, 5	Marczak et al. 2023a
Euplectus kirbii Denny, 1825	S												R		DD		2, 5	Marczak et al. 2023a
Euplectus mutator Fauvel, 1895																	5	
Euplectus nanus (Reichenbach, 1816)	S																2	Marczak et al. 2023a
Euplectus piceus Motschulsky, 1835	S																2, 5, 20, 25	Marczak et al. 2023a
Euplectus punctatus Mulsant et Rey, 1861	S																2, 5, 6, 12, 13, 25	Marczak et al. 2023a
Fagniezia impressa (Panzer, 1803)		G	H															
Plectophloeus fischeri (Aubé, 1833)	S																2, 5, 6, 13, 16, 20	Marczak et al. 2023a
Plectophloeus nitidus (Fairmaire, 1857)	S														DD		5	
Plectophloeus nubigena (Reitter, 1877)	S																2, 5, 19	Marczak et al. 2023a
Pselaphus heisei Herbst, 1792		G	H														15	
Rybaxis longicornis (Leach, 1817)		G	H														2	Marczak et al. 2023a
Saulcyella schmidtii (Maerkel, 1844)	S									Mr							2, 5, 12	Marczak et al. 2023a
Trichonyx sulcicollis (Reichenbach, 1816)	S									Mr							2, 15	Marczak et al. 2023a
Trimium brevicorne (Reichenbach, 1816)	S	G								Mr							5, 13	
Tyrus mucronatus (Panzer, 1803)	S									Mr							2, 20	Marczak et al. 2023a
Scaphidiinae																		
Scaphidium quadrimaculatum Olivier, 1790	S			M													6, 7, 12, 15, 18, 19	Kubisz, Pawłowski 1995

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Scaphisoma agaricinum (Linnaeus, 1758)	S			M							2						1, 2, 5, 6, 10, 11, 12, 13, 15, 16, 17, 19, 20, 21, 25	Marczak et al. 2023a
Scaphisoma assimile Erichson, 1845	S			M													5, 12, 15	
Scaphisoma balcanicum (Tamanini, 1954)	S			M									R		DD		19, 20	
Scaphisoma boleti (Panzer, 1793)	S			M													2, 5	Marczak et al. 2023a
Scaphisoma boreale (Lundblad, 1952)	S			M											VU		2, 5, 19, 21	Marczak et al. 2023a
Scaphisoma inopinatum (Löbl, 1967)	S			M									R					
Scaphisoma obenbergeri Löbl, 1963	S			M									R					
Scaphisoma subalpinum Reitter, 1880	S			M													5, 6, 13	
Scydmaeninae																		
!*Euconnus claviger* (Müller et Kunze, 1822)	S									Mr							5, 6, 12	
!*Euconnus maklinii* (Mannerheim, 1844)	S									Mr							24	
Euconnus pubicollis (Müller et Kunze, 1822)	S	G															15	
!*Euconnus rutilipennis* (Müller et Kunze, 1822)		G	H												EN		15	
Microscydmus minimus (Chaudoir, 1845)	S	G								Mr							5, 16, 19, 20	
Microscydmus nanus (Schaum, 1844)	S	G								Mr							2, 5	Marczak et al. 2023a
Neuraphes carinatus (Mulsant et Rey, 1861)	S									Mr							2, 5, 12, 20, 25	Marczak et al. 2023a
Neuraphes elongatulus (Müller et Kunze, 1822)	S	G															15	
Neuraphes plicicollis (Reitter, 1880)	S	G											R				16, 20	
Scydmaenus hellwigii (Herbst, 1792)	S	G								Mr							5, 20, 25	
Scydmaenus rufus Müller et Kunze, 1822	S	G																
Scydmaenus tarsatus Müller et Kunze, 1822		G																
Scydmoraphes minutus (Chaudoir, 1845)	S	G								Mr			R				5	
Sepedophilus bipunctatus (Gravenhorst, 1802)	S	G		M													1, 2, 5, 7, 11, 15	Marczak et al. 2023a; Marczak et al. 2023c
Stenichnus collaris subseriatus Franz, 1960	S	G															1, 2, 5, 12, 15, 16, 19, 20, 25	Marczak et al. 2023a
Stenichnus godarti (Latreille, 1806)	S									Mr							2, 5, 6, 12, 13, 15, 16	Marczak et al. 2023a
Stenichnus pusillus (Müller et Kunze, 1822)		G								Mr							2	Marczak et al. 2023a

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
!*Stenichnus scutellaris* (Müller et Kunze, 1822)	S	G								Mr								
Silphinae																		
Aclypea opaca (Linnaeus, 1758)		G																Kubisz, Pawłowski 1995
Aclypea undata (Müller, 1776)		G																Kubisz, Pawłowski 1995
Dendroxena quadrimaculata (Scopoli, 1771)							A										21	Plewa et al. 2011a
Necrodes littoralis (Linnaeus, 1758)									N						NT			Kubisz, Szwałko 1991
Nicrophorus humator (Gleditsch, 1767)				M				K	N									
Nicrophorus interruptus Stephens, 1830				M				K	N									
Nicrophorus investigator (Zetterstedt, 1824)				M					N								2	Kubisz, Szwałko 1991; Skłodowski 2011
Nicrophorus vespillo (Linnaeus, 1758)		G		M				K	N								3, 13	Fornal et al. 1986; Skłodowski 2011
Nicrophorus vespilloides Herbst, 1783				M				K	N								2, 5, 7, 9, 12, 21	Marczak et al. 2023c
Nicrophorus vestigator (Herschel, 1807)				M				K	N									Kubisz, Pawłowski 1995
Oiceoptoma thoracicum (Linnaeus, 1758)		G		M				K	N								2, 6, 7, 12, 17, 21	Haitlinger 2004; Skłodowski 2011; Konarzewski, Kupryjanowicz 2021; Marczak et al. 2023c
Phosphuga atrata (Linnaeus, 1758)	S	G															2, 3, 11, 12, 15, 16, 21	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Silpha carinata Herbst, 1783		G							N									
Silpha obscura Linnaeus, 1758		G							N								12, 25	Skłodowski 2011
Silpha tristis Illiger, 1798		G							N								18, 21	
Thanatophilus dispar (Herbst, 1793)		G							N									Kubisz, Pawłowski 1995
Thanatophilus sinuatus (Fabricius, 1775)		G							N								2	
Staphylininae																		
Anthobium atrocephalum (Gyllenhal, 1827)		G															12	
Atrecus longiceps (Fauvel, 1873)	S																5, 6	
Bisnius fimetarius (Gravenhorst, 1802)		G						K										
!*Bisnius subuliformis* (Gravenhorst, 1802)	S																20, 23	
Emus hirtus (Linnaeus, 1758)	S	G						K	N									Kubisz, Szwałko 1991

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Erichsonius cinerascens (Gravenhorst, 1802)		G	H														1,2	Marczak et al. 2023a
Gabrius appendiculatus Sharp, 1910		G	H															
Gabrius breviventer (Sperk, 1835)		G	H														10	
Gabrius osseticus (Kolenati, 1846)		G	H															
Gabrius splendidulus (Gravenhorst, 1802)	S										2						2, 5, 6, 11, 12, 13, 15, 25	Marczak et al. 2023a
Gabrius trossulus (Nordmann, 1837)		G	H														2	Marczak et al. 2023a
Gyrohypnus angustatus Stephens, 1833		G				Sn											2, 3, 10	Nowosad 1990; Marczak et al. 2023a
Gyrohypnus punctulatus (Paykull, 1789)		G				Sn												
Heterothops praevius Erichson, 1839	S	G				Sn												Nowosad 1990
Hypnogyra angularis (Ganglbauer, 1895)	S																2, 5, 7, 12	Marczak et al. 2023a
Leptacinus sulcifrons (Stephens, 1833)		G	H															
Nudobius lentus (Gravenhorst, 1802)	S										2						1, 2, 5, 13, 15	
Ocypus nitens (Schrank, 1781)		G															12	Kubisz, Pawłowski 1995
Ontholestes murinus (Linnaeus, 1758)		G						K	N									Kubisz, Szwałko 1991
Ontholestes tessellatus (Geoffroy, 1785)		G						K	N									
Othius punctulatus (Goeze, 1777)		G																
Othius subuliformis Stephens, 1833		G																Kubisz, Szwałko 1991
Phacophallus parumpunctatus (Gyllenhal, 1827)		G				Sn											2	Marczak et al. 2023a
Philonthus addendus Sharp, 1867		G						K	N								23	Kubisz, Szwałko 1991
Philonthus atratus (Gravenhorst, 1802)		G	H															Roubal 1910; Burakowski et al. 1980
Philonthus carbonarius (Gravenhorst, 1802)		G															10	
Philonthus cognatus Stephens, 1832		G															21	
Philonthus concinnus (Gravenhorst, 1802)		G						K	N									
Philonthus corvinus Erichson, 1839		G	H															Roubal 1910; Burakowski et al. 1980
Philonthus debilis (Gravenhorst, 1802)		G															25	
Philonthus decorus (Gravenhorst, 1802)		G		M													22	Kubisz, Szwałko 1991

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Philonthus fumarius (Gravenhorst, 1806)		G	H														2	Marczak et al. 2023a
Philonthus laevicollis (Lacordaire, 1835)		G		M				K										Kubisz, Szwałko 1991
Philonthus mannerheimi Fauvel, 1869		G	H					K										
Philonthus marginatus (Müller, 1764)		G		M				K	N									Roubal 1910; Burakowski et al. 1980
Philonthus micans (Gravenhorst, 1802)		G	H														2	Marczak et al. 2023a
Philonthus quisquiliarius (Gyllenhal, 1810)		G	H															Kubisz, Szwałko 1991
!*Philonthus rectangulus* Sharp, 1874		G		M				K	N									
Philonthus sanguinolentus (Gravenhorst, 1802)		G						K										Roubal 1910; Burakowski et al. 1980
Philonthus splendens (Fabricius, 1793)		G						K										
Quedionuchus plagiatus (Mannerheim, 1843)	S																2, 22	
Quedius brevicornis (Thomson, 1860)	S											Nd					2, 23	Marczak et al. 2023a
Quedius dilatatus (Fabricius, 1787)	S	G										Nd					7	Bieńko et al. 2017; Marczak et al. 2023c
Quedius fuliginosus (Gravenhorst, 1802)		G	H														2, 13, 15	Marczak et al. 2023a
Quedius invreae Gridelli, 1924	S			M									R		VU		2	Marczak et al. 2023a
!*Quedius lateralis* (Gravenhorst, 1802)	S	G		M														
Quedius limbatus (Heer, 1839)		G	H															
Quedius lucidulus Erichson, 1839		G		M													20	
Quedius maurus (Sahlberg, 1830)	S	G										Nd					2	
Quedius mesomelinus (Marsham, 1802)	S	G		M		Sn						Nd					21	
Quedius microps Gravenhorst, 1847	S											Nd					2	Marczak et al. 2023a
Quedius scitus (Gravenhorst, 1806)	S																2, 3, 5	Marczak et al. 2023a
Quedius xanthopus Erichson, 1839	S	G		M							2						2, 6, 13, 15, 21, 23	
Staphylinus caesareus Cederhielm, 1798		G						K	N									
Staphylinus erythropterus Linnaeus, 1758		G						K									5, 6, 12	Kubisz, Pawłowski 1995
Xantholinus linearis (Olivier, 1795)	S	G				Sn		K	N			Nd					12	Kubisz, Szwałko 1991
Xantholinus longiventris Heer, 1839		G	H															
Xantholinus tricolor (Fabricius, 1787)		G																

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Steninae																		
Stenus bifoveolatus Gyllenhal, 1827		G	H														15	
Stenus boops Ljungh, 1810		G	H															
Stenus calcaratus Scriba, 1864		G	H										R					Kubisz, Pawłowski 1995
Stenus cicindeloides (Schaller, 1783)		G	H														25	
Stenus clavicornis (Scopoli, 1763)		G																
Stenus comma LeConte, 1863		G	H															
Stenus flavipalpis Thomson, 1860		G	H												EN		15	
Stenus flavipes Stephens 1833		G	H														15	
Stenus humilis Erichson, 1839		G															7, 12, 20, 25	
Stenus impressus Germar, 1824		G	H															
Stenus juno (Paykull, 1789)		G	H														2	Marczak et al. 2023a
Stenus latifrons Erichson, 1839		G	H														19	
Stenus lustrator Erichson, 1839		G	H															
Stenus palustris Erichson, 1839		G	H														19	
!*Stenus similis* (Herbst, 1784)		G	H														2, 25	
Tachyporinae																		
Bolitobius cingulatus Mannerheim, 1830	S	G															7	Kubisz, Szwałko 1991; Marczak et al. 2023c
Carphacis striatus (Olivier, 1795)	S			M													19	
Ischnosoma splendidum (Gravenhorst, 1806)		G																
Lordithon exoletus (Erichson, 1839)	S			M													6	
Lordithon lunulatus (Linnaeus, 1760)	S			M							2						2, 5, 6, 12, 19	Marczak et al. 2023a
Lordithon thoracicus (Fabricius, 1777)		G		M													11	
Lordithon trinotatus (Erichson, 1839)		G		M													12	Roubal 1910; Burakowski et al. 1980
Mycetoporus brucki (Pandellé, 1869)	S																5	
Mycetoporus lepidus (Gravenhorst, 1806)		G									2						5, 6, 19, 24	
Mycetoporus rufescens (Stephens, 1832)		G	H															
Parabolitobius formosus (Gravenhorst, 1806)		G	H	M													16	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Sepedophilus bipunctatus (Gravenhorst, 1802)	S	G		M													1, 2, 5, 7, 11, 15	Marczak et al. 2023a, 2023c
Sepedophilus littoreus (Linnaeus, 1758)	S	G		M							2						5, 6, 12	
Sepedophilus marshami (Stephens, 1832)	S	G		M													1	
Sepedophilus testaceus (Fabricius, 1793)	S	G		M													13, 19, 21	
Sepedophilus wankowiczi (Pandellé, 1869)	S	G		M													2, 5, 12, 13, 21	Marczak et al. 2023a
Tachinus bipustulatus (Fabricius, 1793)	S	G															2	Marczak et al. 2023a
Tachinus corticinus Gravenhorst, 1802		G	H														15	
Tachinus fimetarius Gravenhorst, 1802		G					A	K									15	
Tachinus laticollis Gravenhorst, 1802		G		M				K	N								19	
Tachinus marginellus (Fabricius, 1781)		G		M				K									16	Kubisz, Szwałko 1991
Tachinus pallipes (Gravenhorst, 1806)		G		M				K	N									
Tachinus rufipes (Linnaeus, 1758)		G						K									2	Marczak et al. 2023a
Tachinus subterraneus (Linnaeus, 1758)	S	G		M		Sn											2	Marczak et al. 2023a
Tachyporus chrysomelinus (Linnaeus, 1758)		G															23	
Tachyporus dispar (Paykull, 1789)		G															18	
Tachyporus hypnorum (Fabricius, 1775)		G																
Tachyporus pulchellus Mannerheim, 1843		G	H															
Tachyporus pusillus Gravenhorst, 1806		G																
Tachyporus solutus Erichson, 1839		G															1	Nowosad 1990
DERMESTIDAE																		
Attageninae																		
Attagenus pellio (Linnaeus, 1758)						Sn	A		N									
Attagenus schaefferi (Herbst, 1792)	S						A		N									Kubisz, Pawłowski 1995
Dermestinae																		
Dermestes laniarius Illiger, 1801		G				Sn			N								6	
Dermestes lardarius Linnaeus, 1758	S					Sn			N			Nd					12, 13	
Dermestes murinus Linnaeus, 1758						Sn			N			Nd					13	
Megatominae																		
!*Anthrenus flavidus* Solsky, 1876						Sn			N									

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Anthrenus fuscus Olivier, 1790	S					Sn	A		N			Nd						
Anthrenus museorum (Linnaeus, 1761)	S					Sn	A		N			Nd					2, 3	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Anthrenus pimpinellae (Fabricius, 1775)						Sn	A		N			Nd					15	Kubisz, Szwałko 1991
Anthrenus polonicus Mroczkowski, 1951	S					Sn	A		N								13	
Anthrenus scrophulariae (Linnaeus, 1758)	S						A		N			Nd						
Anthrenus verbasci (Linnaeus, 1767)						Sn			N									
Ctesias serra (Fabricius, 1792)	S								N				R				2, 7	Marczak et al. 2023c
!*Globicornis corticalis* (Eichhoff, 1863)	S						A		N				R				15	
Globicornis emarginata (Gyllenhal, 1808)	S								N				R				5	Mroczkowski 1975
Megatoma undata (Linnaeus, 1758)	S						A		N								1, 2, 3, 5, 7, 9, 10, 12, 13, 19, 20, 21, 22, 24	Kubisz, Szwałko 1991; Marczak et al. 2023c
BOSTRICHIDAE																		
Bostrichinae																		
Bostrichus capucinus (Linnaeus, 1758)	S										2					LC	3	
Lyctinae																		
!*Lyctus linearis* (Goeze, 1777)	S																	
!*Lyctus pubescens* Panzer, 1792	S																	
PTINIDAE																		
Anobiinae																		
Anobium punctatum (De Geer, 1774)	S					Sn												
Cacotemnus rufipes (Fabricius, 1792)	S																5, 16	
Cacotemnus thomsoni (Kraatz, 1881)	S																2, 5, 16	Marczak et al. 2023c
Hadrobregmus pertinax (Linnaeus, 1758)	S																2, 3, 5, 6, 7, 13, 15	Marczak et al. 2023c
!*Hemicoelus fulvicornis* (Sturm, 1837)	S												R				15	
Microbregma emarginatum (Duftschmid, 1825)	S																2, 7, 13, 21, 22	Marczak et al. 2023c
Priobium carpini (Herbst, 1793)	S																5, 13	
Stegobium paniceum (Linnaeus, 1758)						Sn												Kubisz, Pawłowski 1995
Dorcatominae																		
Caenocara affine (Sturm, 1837)	S			M													6, 15, 16	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Dorcatoma chrysomelina Sturm, 1837	S			M													2, 5, 12, 15, 23	Marczak et al. 2023c
Dorcatoma dresdensis Herbst, 1792	S			M													2, 5, 12, 15, 23	Marczak et al. 2023c
Dorcatoma flavicornis (Fabricius, 1792)	S			M													5	
!*Dorcatoma janssoni* Büsche et Lundberg, 2002	S			M														
Dorcatoma lomnickii Reitter, 1903	S			M													2, 5, 6, 9	Marczak et al. 2023c
Dorcatoma minor Zahradník, 1993	S			M													2, 6	Marczak et al. 2023c
Dorcatoma punctulata Mulsant et Rey, 1864	S			M													2, 13	Marczak et al. 2023c
Dorcatoma robusta Strand, 1938	S			M													2, 5	Kubisz, Szwałko 1991; Marczak et al. 2023c
Dorcatoma substriata Hummel, 1829	S			M											DD		2	
Ernobiinae																		
Episernus tatarinovae Toskina et Nikitsky, 2003	S												R				2	Borowski et al. 2020
Ernobius abietinus (Gyllenhal, 1808)	S																5	
Ernobius abietis (Fabricius, 1792)	S																2, 12, 21	Marczak et al. 2023c
!*Ernobius longicornis* (Sturm, 1837)	S																24	
Ernobius mollis (Linnaeus, 1758)	S																	Kubisz, Pawłowski 1995
Ernobius pini (Sturm, 1837)	S																	Kubisz, Szwałko 1991
Xestobium rufovillosum (De Geer, 1774)	S																	Plewa et al. 2011a
Eucradinae																		
Ptinomorphus imperialis (Linnaeus, 1767)	S																2	Marczak et al. 2023c
Ptilininae																		
Ptilinus fuscus (Geoffroy in Fourcroy, 1785)	S																2, 7	Marczak et al. 2023c
Ptilinus pectinicornis (Linnaeus, 1758)	S																2, 7	Marczak et al. 2023c
Ptininae																		
Bruchoptinus rufipes (Olivier, 1790)	S																7, 13, 19	Marczak et al. 2023c
Pseudoptinus coarcticollis (Sturm, 1837)	S							K									10, 13	
Ptinus dubius Sturm, 1837									N									
Ptinus fur (Linnaeus, 1758)						Sn			N			Nd						

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
!*Ptinus pilosus* Müller, 1821	S											Nd					19	
Ptinus raptor Sturm, 1837	S								N			Nd					6	Kubisz, Szwałko 1991
Ptinus schlerethi (Reitter, 1884)	S								N			Nd	R		DD			
Ptinus subpillosus Sturm, 1837	S								N			Nd					2, 12, 13, 22, 24	Marczak et al. 2023c
BYTURIDAE																		
Byturus ochraceus (Scriba, 1790)							A										2, 5, 13, 14, 15, 16 20, 23	
Byturus tomentosus (De Geer, 1774)							A										7, 11, 12, 13, 17, 19, 21, 23	Marczak et al. 2023c
PELTIDAE																		
Peltis ferruginea (Linnaeus, 1758)	S			M												LC	2, 3, 5, 6, 11, 13, 16, 18, 20, 21, 23	Marczak et al. 2023c
Peltis grossa (Linnaeus, 1758)	S			M							2			1	VU	LC	1, 2, 5, 7, 10, 12, 13, 15, 22	Kubisz, Szwałko 1991; Kwiatkowski, Marczak 2020b; Mokrzycki et al. 2022; Marczak et al. 2023c
LOPHOCATERIDAE																		
Grynocharis oblonga (Linnaeus, 1758)	S													2		LC	2, 7, 13, 15, 19	Miłkowski et al. 2019; Marczak et al. 2023c
TROGOSSITIDAE																		
Nemozoma caucasicum Ménétries, 1832	S												R			DD	7	Marczak et al. 2023c
Nemozoma elongatum (Linnaeus, 1761)	S															LC	2, 5, 12, 19	Kubisz, Szwałko 1991; Marczak et al. 2023c
THYMALIDAE																		
Thymalus limbatus (Fabricius, 1787)	S			M													2, 6, 13	Plewa et al. 2014; Marczak et al. 2023c
RHADALIDAE																		
Aplocnemus impressus (Marsham, 1802)	S																	
Aplocnemus nigricornis (Fabricius, 1792)	S																	
MELYRIDAE																		
Dasytinae																		
Dasytes fusculus (Illiger, 1801)	S						A										23	
Dasytes niger (Linnaeus, 1761)	S						A				2						3, 5, 7, 15, 16, 17, 22, 24	Kubisz, Szwałko 1991; Marczak et al. 2023c
Dasytes plumbeus (Müller, 1776)	S						A										2, 3, 5, 7, 14, 15, 16, 19, 20, 22, 23, 24	Kubisz, Szwałko 1991
Dasytes virens (Marsham, 1802)	S						A						R				2, 5, 17	
Dolichosoma lineare (Rossi, 1794)					X		A										2, 15, 17	Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995; Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Malachiinae																		
Anthocomus equestri s (Fabricius, 1781)																		
Anthocomus fasciatus (Linnaeus, 1758)													R					Kubisz, Pawłowski 1995
Anthocomus rufus (Herbst, 1784)																		Kubisz, Pawłowski 1995
Axinotarsus marginalis (Castelnau, 1840)	S												R					
Clanoptilus marginellus (Olivier, 1790)																		
Cordylepherus viridis (Fabricius, 1787)	S		H				A										1, 3, 7, 13, 15, 17	
Malachius aeneus (Linnaeus, 1758)	S																	Roubal 1910; Burakowski et al. 1986
Malachius bipustulatus (Linnaeus, 1758)	S						A										2, 13, 15, 17, 19, 25	Marczak et al. 2023c
CLERIDAE																		
Clerinae																		
Thanasimus femoralis (Zetterstedt, 1828)	S																2, 3, 5, 10, 13, 20, 21, 25	Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995
Thanasimus formicarius (Linnaeus, 1758)	S										2						1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 13, 15, 16, 19, 20, 23, 24	Fornal et al. 1986; Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995; Marczak et al. 2023c
Trichodes apiarius (Linnaeus, 1758)																	2, 12	Kubisz, Pawłowski 1995
Korynetinae																		
Dermestoides sanguinicollis (Fabricius, 1787)	S													2	EN			Marczak i Kwiatkowski 2023
Korynetes caeruleus (De Geer, 1775)	S																	
Necrobia violacea (Linnaeus, 1758)									N									
Tillinae																		
Tillus elongatus (Linnaeus, 1758)	S																2, 7, 16, 19, 20	Marczak et al. 2023c
LYMEXYLIDAE																		
Hylecoetinae																		
Elateroides dermestoides (Linnaeus, 1761)	S			M							2						2, 3, 5, 7, 9, 10, 12, 13, 15, 17, 19, 20, 21, 23, 24	Fornal et al. 1986; Kubisz, Pawłowski 1995; Marczak et al. 2023c
Elateroides flabellicornis (Schneider, 1791)	S			M									R					Kubisz, Szwałko 1991
Lymexylinae																		
Lymexylon navale (Linnaeus, 1758)	S										2						5	
RIPIPHORIDAE																		
Pelecotoma fennica (Paykull, 1799)	S												R		DD		2	Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
MORDELLIDAE																		
Curtimorda maculosa (Naezén, 1794)	S			M							2		R				5, 6, 7	Marczak et al. 2023c
!*Hoshihananomia perlata* (Sulzer, 1776)	S			M									R		LC		20	
Mordella holomelaena Apfelbeck, 1914	S			M			A										1, 2, 11, 15, 20	Kubisz, Szwałko 1991; Kubisz et al. 2015; Marczak et al. 2023c
Mordellaria aurofasciata (Comolli, 1837)	S			M	X		A						R		EN		2, 7	Marczak et al. 2023c
Mordellistena humeralis (Linnaeus, 1758)	S			M			A										2, 20	Marczak et al. 2023c
Mordellistena neuwaldeggiana (Panzer, 1796)	S			M			A										2	Marczak et al. 2023c
Mordellistena parvula (Gyllenhal, 1827)							A											
Mordellistena pseudonana Ermisch, 1956					X		A											Kubisz et al. 2010a, 2015
Mordellistena pumila (Gyllenhal, 1810)							A										2, 11	
Mordellistena secreta Horak, 1983							A						R					
Mordellistena variegata (Fabricius, 1798)	S			M			A										2	Marczak et al. 2023c
Mordellochroa abdominalis (Fabricius, 1775)	S			M			A										7	Marczak et al. 2023c
Tomoxia bucephala Costa, 1854	S			M			A										2, 3, 5, 7, 9, 10, 12, 13, 15, 16, 19, 20, 21, 22, 23, 24	Kubisz, Szwałko 1991; Borowiec, Kubisz 1999; Kubisz et al. 2010a, 2015; Marczak et al. 2023c
Variimorda villosa (Schrank, 1781)	S			M			A										1, 20	Kubisz, Szwałko 1991; Kubisz et al. 2010a, 2015
ADERIDAE																		
Anidorus nigrinus (Germar, 1842)	S			M													2	Marczak et al. 2023c
Euglenes oculatus (Paykull, 1798)	S			M									R				7	Kubisz, Szwałko 1991; Kubisz et al. 2014; Marczak et al. 2023c
Euglenes pygmaeus (De Geer, 1775)	S			M									R				2	Kubisz, Szwałko 1991; Jałoszyński et al. 2013; Kubisz et al. 2014
Phytobaenus amabilis Sahlberg, 1834	S			M									R				2, 6	Kwiatkowski, Marczak 2020b; Marczak et al. 2023c
Pseudanidorus pentatomus (Thomson, 1864)	S			M									R				15	
SCRAPTIIDAE																		
Anaspidinae																		
Anaspis flava (Linnaeus, 1758)	S			M			A										5, 7, 9, 14	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Anaspis frontalis (Linnaeus, 1758)	S			M			A										2, 6, 7, 10, 11, 14, 15, 17, 19, 20, 21, 23, 24	Kubisz 2006; Kubisz et al. 2014; Marczak et al. 2023c
Anaspis rufilabris (Gyllenhal, 1827)	S			M			A										1, 2, 5, 7, 9, 10, 11, 12, 13, 14, 15, 19 20, 22, 23, 25	Kubisz 2006; Kubisz et al. 2014; Marczak et al. 2023c
Anaspis thoracica (Linnaeus, 1758)	S			M			A										1, 2, 5, 6, 7, 12, 13, 14, 15, 16, 20, 21, 23, 24	Marczak et al. 2023c
!*Cyrtanaspis phalerata* (Germar, 1847)	S			M			A						R				15	
Scraptiinae																		
Scraptia fuscula Müller, 1821	S			M													2	Marczak et al. 2023c
!*Scraptia testacea* Allen, 1940	S			M									R				6	
OEDEMERIDAE																		
Calopodinae																		
Calopus serraticornis (Linnaeus, 1758)	S															LC	6, 9, 20	Kubisz, Pawłowski 1995; Kubisz 2006; Kubisz et al. 2014
Oedemerinae																		
Anogcodes melanurus (Fabricius, 1787)	S						A									LC	2	Marczak et al. 2023c
Anogcodes rufiventris (Scopoli, 1763)	S						A									LC		Roubal 1910; Kubisz 2006
Anogcodes ustulatus (Scopoli, 1763)	S						A											
Chrysanthia geniculata (Schmidt, 1846)	S						A									LC	2, 22, 25	Kubisz, Szwałko 1991; Kubisz 2006; Kubisz et al. 2014; Marczak et al. 2023c
Nacerdes carniolica (Gistel, 1834)	S						A						R			LC	2	Marczak et al. 2023c
Oedemera femorata (Scopoli, 1763)							A										2, 3, 7, 11, 20, 25	Kubisz 2006; Kubisz et al. 2014; Kolasa et al. 2018; Kajtoch et al. 2019; Marczak et al. 2023c
Oedemera lurida (Marsham, 1802)							A										7, 17, 23	Kubisz 2006
Oedemera virescens (Linnaeus, 1767)							A										2, 6, 11, 14, 15, 17, 20, 25	Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995; Kubisz 2006; Kubisz et al. 2014
BORIDAE																		
Boros schneideri (Panzer, 1796)	S										2		R	1	EN	VU	16, 20	Kwiatkowski, Marczak 2020a, 2020b; Średziński 2022
PYTHIDAE																		
Pytho depressus (Linnaeus, 1767)	S										2					LC	1, 2, 3, 5, 6, 7, 10, 11, 13, 15, 23	Kubisz, Pawłowski 1995; Kubisz et al. 2014; Plewa et al. 2014; Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
SALPINGIDAE																		
Rabocerus foveolatus (Ljungh, 1823)	S												R				12	
Rabocerus gabrieli (Gerhardt, 1901)	S																2	Marczak et al. 2023c
Salpingus planirostris (Fabricius, 1787)	S																1, 2, 6, 7, 8, 9, 12, 13, 15, 16, 19, 22, 23	Marczak et al. 2023c
Salpingus ruficollis (Linnaeus, 1761)	S										2						2, 3, 5, 6, 7, 10, 12, 15, 16, 19, 20, 21, 22, 24	Kubisz, Pawłowski 1995; Kubisz et al. 2015; Marczak et al. 2023c
Sphaeriestes castaneus (Panzer, 1796)	S																12	
PYROCHROIDAE																		
Pyrochroa coccinea (Linnaeus, 1761)	S						A				2						2, 7, 10, 12, 15, 18, 19, 20, 21, 22, 25	Kubisz, Pawłowski 1995; Kubisz et al. 2015
Schizotus pectinicornis (Linnaeus, 1758)	S						A				2						2, 3, 5, 6, 7, 10, 11, 13, 15, 16, 18, 19, 21, 23, 25	Marczak et al. 2023d
ANTHICIDAE																		
Anthicinae																		
Omonadus floralis (Linnaeus, 1758)																		Kubisz, Pawłowski 1995; Kubisz et al. 2015
Notoxinae																		
Notoxus monoceros (Linnaeus, 1760)		G															2, 3, 7, 14, 17, 23, 24, 25	Roubal 1910; Kubisz, Pawłowski 1995; Kubisz et al. 2015; Marczak et al. 2023c
MELOIDAE																		
Meloe proscarabaeus Linnaeus, 1758		G															12	Kubisz, Pawłowski 1995; Kubisz et al. 2015
!*Meloe violaceus* Marsham, 1802		G																
TETRATOMIDAE																		
Eustrophinae																		
Eustrophus dermestoides (Fabricius, 1792)	S			M													2	Marczak et al. 2023c
Hallomeninae																		
Hallomenus axillaris (Illiger, 1807)	S			M													5	
Tetratominae																		
Tetratoma ancora Fabricius, 1790	S			M													7, 12, 20	Marczak et al. 2023c
Tetratoma fungorum Fabricius, 1790	S			M													2, 12	Marczak et al. 2023c
MELANDRYIDAE																		
Abdera affinis (Paykull, 1799)	S			M													21	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Abdera flexuosa (Paykull, 1799)	S			M													3, 5, 19	
Dolotarsus lividus (Sahlberg, 1833)	S			M							2						2, 5, 7, 13, 15, 16, 23	Marczak et al. 2023c
Hypulus quercinus (Quensel, 1790)	S			M									R					Bieńko et al. 2017; Mokrzycki et al. 2022
Melandrya caraboides (Linnaeus, 1760)	S			M									R				2	Marczak et al. 2023c
Melandrya dubia (Schaller, 1783)	S			M							2						2, 7, 21, 22	Plewa et al. 2014; Mokrzycki et al. 2022
Orchesia fasciata (Illiger, 1798)	S			M													10, 12, 16, 19, 20, 21	Kubisz, Szwałko 1991; Kubisz et al. 2010b
Orchesia luteipalpis Mulsant et Guillebeau, 1857	S			M									R				5, 16, 19	
Orchesia micans (Panzer, 1793)	S			M													2, 5, 6, 10, 11, 12, 16, 20, 23	Marczak et al. 2023c
Orchesia minor Walker, 1837	S			M													7, 19	Marczak et al. 2023c
Orchesia undulata Kraatz, 1853	S			M													2, 7, 10, 12, 16, 19, 21, 23	Marczak et al. 2023c
Phloiotrya rufipes (Gyllenhal, 1810)	S			M													13, 15, 19	
Phryganophilus auritus Motschulsky, 1845	S			M									R	1	VU		2, 5, 7, 12, 24	Kwiatkowski, Marczak 2020b; Marczak et al. 2023c
Serropalpus barbatus (Schaller, 1783)	S			M							2						2, 5, 7	Kubisz, Pawłowski 1995; Kubisz et al. 2010b, 2014; Marczak et al. 2023c
Wanachia triguttata (Gyllenhal, 1810)	S			M									R				5, 7	
Xylita laevigata (Hellenius, 1786)	S			M							2						2, 5, 6, 9, 10, 16, 23, 24	Kubisz, Szwałko 1991; Kubisz et al. 2010b, 2014; Marczak et al. 2023c
Zilora obscura (Fabricius, 1794)	S			M													7, 13	Marczak et al. 2023c
CIIDAE																		
Cis bidentatus (Olivier, 1790)	S			M													2, 15	
Cis boleti (Scopoli, 1763)	S			M													2, 5, 6, 7, 9, 12, 13, 15, 16, 19, 20, 22, 25	Marczak et al. 2023c
Cis castaneus (Herbst, 1793)	S			M													2, 5, 6, 7, 12, 13, 15, 16, 19, 20, 22	Marczak et al. 2023c
Cis comptus Gyllenhal, 1827	S			M													2, 3, 5, 19	Kubisz, Szwałko 1991; Kubisz et al. 2015
Cis dentatus Mellié, 1849	S			M													2, 3, 5, 6, 9, 10, 12	Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Cis fagi Waltl, 1839	S			M													2, 12	Marczak et al. 2023c
Cis festivus (Panzer, 1793)	S			M													2, 5, 6, 7, 9, 10, 12, 15, 16, 19, 21, 22, 24	Marczak et al. 2023c
Cis fissicornis Mellié, 1849	S			M														
Cis fusciclavis Nyholm, 1953	S			M													2, 5, 12, 15, 20, 21	Marczak et al. 2023c
Cis glabratus Mellié, 1849	S			M													2, 3, 5, 6, 11, 12, 13, 19	Marczak et al. 2023c
Cis jacquemartii Mellié, 1849	S			M													7, 11, 12, 13, 15, 16, 18, 19, 20	
Cis lineatocribratus Mellié, 1849	S			M													2, 5, 9, 16, 20	Marczak et al. 2023c
Cis micans (Fabricius, 1792)	S			M													2, 5, 6, 9, 12, 13, 15, 19, 20, 21, 22, 23, 24	Marczak et al. 2023c
Cis punctulatus Gyllenhal, 1827	S			M													2, 5, 6, 10, 12, 13, 19, 24	Marczak et al. 2023c
Cis quadridens Mellié, 1849	S			M									R				12, 13	
Cis rugulosus Mellié, 1849	S			M													2	
Cis submicans Abeille de Perrin, 1874	S			M													2 6, 12, 13, 15, 20, 22, 25	Marczak et al. 2023c
Dolichocis laricinus (Mellié, 1849)	S			M									R	1	VU		2	Marczak et al. 2023c
Ennearthron cornutum (Gyllenhal, 1827)	S			M													2, 5, 6, 9, 12, 13, 15, 16, 19, 20, 22, 23, 24, 25	Marczak et al. 2023c
Hadreule elongatula (Gyllenhal, 1827)	S			M									R		VU		2, 5, 12	Marczak et al. 2023c
Octotemnus glabriculus (Gyllenhal, 1827)	S			M													12, 15, 22	
Orthocis alni (Gyllenhal, 1813)	S			M													5, 6, 7, 9, 10, 12, 13, 15, 19, 20, 21, 22	
Orthocis juglandis (Reitter, 1885)	S			M									R				6	Królik et al. 2024
Orthocis reflexicollis (Abeille de Perrin, 1874)	S			M													2	Marczak et al. 2023c
Ropalodontus perforatus (Gyllenhal, 1813)	S			M													13	
Ropalodontus strandi Lohse, 1969	S			M													2, 5, 9	Marczak et al. 2023c
Sulcacis bidentulus (Rosenhauer, 1847)	S			M									R				2	Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Sulcacis fronticornis (Panzer, 1805)	S			M													2, 6, 15, 20	Marczak et al. 2023c
Sulcacis nitidus (Fabricius, 1792)	S			M													5, 6, 13, 15, 16, 20	
MYCETOPHAGIDAE																		
Litargus balteatus LeConte, 1856				M		Sn												
Litargus connexus (Geoffroy, 1785)	S			M							2					LC	2, 5, 7, 9, 13, 15, 16, 19, 23	Kubisz, Szwałko 1991; Kubisz et al. 2015; Marczak et al. 2023c
Mycetophagus ater (Reitter, 1879)	S			M										2	EN	DD	2, 7, 9, 12, 13, 19, 23	Mokrzycki et al. 2022; Marczak et al. 2023c
Mycetophagus atomarius (Fabricius, 1787)	S			M												LC	2, 7, 19	Mokrzycki et al. 2022; Marczak et al. 2023c
Mycetophagus decempunctatus Fabricius, 1801	S			M										2		LC	2	Marczak et al. 2023c
Mycetophagus fulvicollis Fabricius, 1792	S			M												LC	2, 3, 5, 7, 13, 16, 20	Marczak et al. 2023c
Mycetophagus multipunctatus Fabricius, 1792	S			M												LC	2, 7	Kubisz, Szwałko 1991; Kubisz et al. 2015; Marczak et al. 2023c
Mycetophagus piceus (Fabricius, 1777)	S			M												LC	2, 9, 15	Kubisz, Szwałko 1991; Kubisz et al. 2015; Marczak et al. 2023c
Mycetophagus populi Fabricius, 1798	S			M												LC	7, 9	Marczak et al. 2023c
Mycetophagus quadriguttatus Müller, 1821	S			M												LC	7	Marczak et al. 2023c
Mycetophagus quadripustulatus (Linnaeus, 1760)	S			M													2, 7, 12, 13, 154, 19, 24	Kubisz, Pawłowski 1995; Kubisz et al. 2015; Marczak et al. 2023c
Triphyllus bicolor (Fabricius, 1777)	S	G		M									R			LC	2	Bieńko et al. 2017; Mokrzycki et al. 2022; Marczak et al. 2023
Typhaea stercorea (Linnaeus, 1758)	S			M														Kubisz, Szwałko 1991; Kubisz et al. 2015
TENEBRIONIDAE																		
Alleculinae																		
Isomira thoracica (Fabricius, 1792)		G			X												7, 13, 14, 15, 17, 20	Iwan et al. 2010, 2012; Marczak et al. 2023c
Mycetochara axillaris (Paykull, 1799)	S			M												LC	5	
Mycetochara flavipes (Fabricius, 1792)	S			M												LC	7, 9, 25, 26	Marczak et al. 2023c
Mycetochara humeralis (Fabricius, 1787)	S			M												LC	2, 5	
Mycetochara roubali Mařan, 1935	S			M									R		DD	VU		
Omophlus pubescens (Linnaeus, 1767)		G					A										25	Kubisz, Pawłowski 1995; Iwan et al. 2010, 2012

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Platydema dejeanii Laporte et Brullé, 1831	S			M									R	2		VU	2, 7, 12, 19	Kwiatkowski, Marczak 2020b; Mokrzycki et al. 2022; Marczak et al. 2023c
Platydema violaceum (Fabricius, 1790)	S			M												LC	2, 6, 7	Marczak et al. 2023c
Prionychus ater (Fabricius, 1775)	S			M												LC	5	
Pseudocistela ceramboides (Linnaeus, 1758)	S															LC	2, 5, 7, 16	Kubisz, Szwałko 1991; Iwan et al. 2010, 2012; Marczak et al. 2023c
Diaperinae																		
Corticeus bicolor (Olivier, 1790)	S															LC	7	Marczak et al. 2023c
Corticeus fasciatus (Fabricius, 1790)	S													2		NT	2, 7, 15, 19	Mokrzycki et al. 2022; Marczak et al. 2023c
Corticeus fraxini (Kugelann, 1794)	S															VU	16	Kubisz, Szwałko 1991; Hilszczański 2008; Iwan et al. 2012
Corticeus linearis (Fabricius, 1790)	S															LC		
Corticeus longulus (Gyllenhal, 1827)	S												R			LC		Hilszczański 2008
Corticeus pini (Panzer, 1799)	S												R			LC	2	Marczak et al. 2023c
Corticeus suturalis (Paykull, 1800)	S												R	1		NT		Kubisz, Szwałko 1991; Hilszczański 2008; Iwan et al. 2010, 2012
Corticeus unicolor Piller et Mitterpacher, 1783	S															LC	2, 5, 7, 12, 22, 25	Marczak et al. 2023c
Crypticus quisquilius (Linnaeus, 1760)		G																
Diaperis boleti (Linnaeus, 1758)	S			M												LC	1, 2, 6, 7, 12, 13, 14, 15, 20, 24	Kubisz, Pawłowski 1995; Iwan et al. 2010, 2012; Konarzewski, Kupryjanowicz 2021; Marczak et al. 2023c
Neomida haemorrhoidalis (Fabricius, 1787)	S			M							2				NT	LC	2, 3, 10, 11, 12, 13	Kubisz, Szwałko 1991; Iwan et al. 2010, 2012; Kwiatkowski, Marcz ak 2020b; Marczak et al. 2023c
Scaphidema metallica (Fabricius, 1792)	S			M												LC	2, 6	Marczak et al. 2023c
Lagriinae																		
Lagria atripes Mulsant et Guillebeau, 1855		G			X								R				19, 24	
Lagria hirta (Linnaeus, 1758)		G															1, 2, 5, 8, 11, 12, 15, 20, 21, 22, 25	Kubisz, Pawłowski 1995; Iwan et al. 2010, 2012; Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Tenebrioninae																		
Alphitobius diaperinus (Panzer, 1796)				M		Sn											6	
Bolitophagus reticulatus (Linnaeus, 1767)	S			M													1, 2, 3, 7, 10, 12, 13, 15, 17, 18, 19, 20, 21, 25	Iwan et al. 2010, 2012; Marczak et al. 2023c
Eledona agricola (Herbst, 1783)	S			M													2, 15	Marczak et al. 2023c
Melanimon tibiale (Fabricius, 1781)		G																
Opatrum sabulosum (Linnaeus, 1761)		G																Kubisz, Pawłowski 1995; Iwan et al. 2010, 2012
Palorus depressus (Fabricius, 1790)	S																5, 13	
Stenomax aeneus (Scopoli, 1763)	S																2, 7, 13, 16, 19, 20, 22, 23	Marczak et al. 2023c
Tenebrio molitor Linnaeus, 1758						sn												Kubisz, Pawłowski 1995; Iwan et al. 2010, 2012
Tribolium confusum Jacquelin du Val, 1861						sn												
Tribolium destructor Uyttenboogaart, 1933						sn												Iwan et al. 2010, 2012
Uloma culinaris (Linnaeus, 1758)	S			M													17	
Uloma rufa (Piller et Mitterpacher, 1783)	S			M													2, 5, 13, 15, 17	Kubisz, Pawłowski 1995; Iwan et al. 2010, 2012; Marczak et al. 2023c
ZOPHERIDAE																		
Bitoma crenata (Fabricius, 1775)	S										2						2, 5, 6, 7, 13, 15, 16, 20, 22, 25	Kubisz, Szwałko 1991; Kubisz et al. 2015; Marczak et al. 2023c
Colydium elongatum (Fabricius, 1787)	S																2, 5, 7, 17, 20	Marczak et al. 2023c
Colydium filiforme Fabricius, 1792	S										2			2			2, 7	Mokrzycki et al. 2022; Marczak et al. 2023c
Synchita humeralis (Fabricius, 1792)	S			M													2, 5, 15, 19, 20, 23	Marczak et al. 2023c
BOTHRIDERIDAE																		
Bothrideres bipunctatus (Gmelin, 1790)	S														EN		2, 3, 6, 7	Kwiatkowski, Marczak 2020b; Mokrzycki et al. 2022; Marczak et al. 2023c
CERYLONIDAE																		
Cerylon deplanatum Gyllenhal, 1827	S			M													2	Ruta et al. 2020; Marczak et al. 2023c
Cerylon fagi Brisout de Barneville, 1867	S			M													2, 5, 12, 15, 19	Ruta et al. 2020; Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Cerylon ferrugineum Stephens, 1830	S			M													2, 5, 7, 8, 12, 13, 15, 16, 19, 21, 23, 24	Ruta et al. 2020; Marczak et al. 2023c
Cerylon histeroides (Fabricius, 1792)	S			M													2, 3,, 5, 6, 7, 8, 12, 13, 15, 16, 19, 22, 23, 24	Ruta et al. 2020; Marczak et al. 2023c
!*Cerylon impressum* Erichson, 1845	S			M							2							
LATRIDIIDAE																		
Corticariinae																		
Corticaria elongata (Gyllenhal, 1827)				M		Sn	A											
!*Corticaria fulva* (Comolli, 1837)				M		Sn							R				2	
Corticaria lapponica (Zetterstedt, 1838)	S			M										2				
Corticaria lateritia Mannerheim, 1844	S			M									R	2				
!*Corticaria longicornis* (Herbst, 1793)				M													23	
!*Corticaria pineti* Lohse, 1960	S			M									R					
Corticaria rubripes Mannerheim, 1844	S			M							2						6	
Corticaria serrata (Paykull, 1798)	S			M														
Corticarina lambiana (Sharp, 1910)	S			M													5, 13, 19, 23	
Corticarina minuta (Fabricius, 1792)	S			M							2							Roubal 1910; Burakowski et al. 1986c; Kubisz, Pawłowski 1995
Corticarina similata (Gyllenhal, 1827)	S			M													5, 23	
Cortinicara gibbosa (Herbst, 1793)	S	G		M							2						2, 3, 5, 6, 7, 10, 11, 12, 13, 15, 16, 17, 19, 20, 23, 24, 25	
Melanophthalma maura Motschulsky, 1866																	19	
Melanophthalma rispini Rücker et Johnson, 2007																	20	
Melanophthalma transversalis (Gyllenhal, 1827)			H														2, 17	
Latridiinae																		
Cartodere constricta (Gyllenhal, 1827)	S			M							2						12, 13	
Cartodere nodifer (Westwood, 1839)	S			M		Sn											2, 9, 13	
!*Enicmus atriceps* Hansen, 1962	S			M									R				6, 9, 23	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Enicmus fungicola Thomson, 1868	S			M													2, 5, 6, 9, 10, 12, 20, 23, 24	Marczak et al. 2023c
Enicmus planipennis Strand, 1940	S			M							2						5, 6, 12, 24	
Enicmus rugosus (Herbst, 1793)	S			M							2						2, 5, 6, 7, 9, 12, 15, 16, 19, 20, 21, 23, 24, 25	Marczak et al. 2023c
Enicmus testaceus (Stephens, 1830)	S			M													5, 6, 9, 15, 16, 19, 24	
Enicmus transversus (Olivier, 1790)	S			M													15, 16, 24	
Lathridius assimilis (Mannerheim, 1844)	S			M													2	Marczak et al. 2023c
Latridius consimilis (Mannerheim, 1844)	S			M													2	Marczak et al. 2023c
Latridius hirtus Gyllenhal, 1827	S			M													2, 5, 6, 7, 9, 12, 13, 15, 16, 20, 22, 23, 25	Marczak et al. 2023c
Latridius minutus (Linnaeus, 1767)	S			M		Sn					2	Nd					2, 3, 5, 12, 15, 25	
!*Latridius porcatus* Herbst, 1793	S	G		M		Sn											5, 20	
!*Stephostethus alternans* (Mannerheim, 1844)	S			M													12	
Stephostethus angusticollis (Gyllenhal, 1827)	S			M													6, 7, 13, 15, 19	Marczak et al. 2023c
Stephostethus pandellei (Brisout de Barneville, 1863)	S			M													5, 20, 23	
!*Stephostethus rugicollis* (Olivier, 1790)	S			M													5, 6	
Thes bergrothi (Reitter, 1880)				M		Sn												Roubal 1910; Burakowski et al. 1986c
CORYLOPHIDAE																		
Arthrolips picea (Comolli, 1837)	S												R				7	
Corylophus cassidoides (Marsham, 1802)		G															5	
!*Orthoperus atomus* (Gyllenhal, 1808)	S			M													5, 9	
Orthoperus corticalis (Redtenbacher, 1845)	S			M													2, 5	
Orthoperus nigrescens Stephens, 1829	S			M													2, 23	Marczak et al. 2023c
!*Orthoperus nikitskyi* Bowestead, 2000													R				5	
Orthoperus punctatus Wańkowicz, 1865	S			M													20, 24	
Orthoperus rogeri Kraatz, 1874	S			M							2						6, 12, 13, 19	
Sericoderus lateralis (Gyllenhal, 1827)	S			M														Mokrzycki et al. 2022

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
ENDOMYCHIDAE																		
Endomychinae																		
Endomychus coccineus (Linnaeus, 1758)	S			M													2, 3, 7, 12, 13, 15, 16, 17, 18, 19, 20, 21, 24	Marczak et al. 2023c
Leiestinae																		
Leiestes seminiger (Gyllenhal, 1808)	S			M										2	NT		2, 5, 7	Plewa et al. 2014; Kwiatkowski, Marczak 2020b; Marczak et al. 2023c
Lycoperdininae																		
Lycoperdina succincta (Linnaeus, 1767)				M														Kubisz, Szwałko 1991
Mycetina cruciata (Schaller, 1783)	S			M													2, 12, 19, 22, 24	Plewa et al. 2014; Marczak et al. 2023c
COCCINELLIDAE																		
Adalia bipunctata (Linnaeus, 1758)	S																2, 6, 21	Marczak et al. 2023c
Adalia conglomerata (Linnaeus, 1758)													R					
Adalia decempunctata (Linnaeus, 1758)																	12, 21, 25	Kubisz, Pawłowski 1995
Anatis ocellata (Linnaeus, 1758)																	3, 6, 7, 11, 13, 17, 20, 23	Marczak et al. 2023c
Anisosticta novemdecimpunctata (Linnaeus, 1758)			H															Kubisz, Pawłowski 1995
Aphidecta obliterata (Linnaeus, 1758)	S																15, 20, 23	
Calvia decemguttata (Linnaeus, 1767)																	2, 7, 11, 15, 19, 20, 23, 25	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Calvia quatuordecimguttata (Linnaeus, 1758)																	2, 5, 6, 15, 20, 23	Marczak et al. 2023c
Calvia quindecimguttata (Fabricius, 1777)													R				2	Marczak et al. 2023c
Ceratomegilla notata (Laicharting, 1781)													R				2, 5, 25	
Chilocorus bipustulatus (Linnaeus, 1758)	S																	
Chilocorus renipustulatus (Scriba, 1790)																	2, 5, 6, 7, 9, 11, 12, 15	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Coccidula rufa (Herbst, 1783)			H															
Coccidula scutellata (Herbst, 1783)			H															
Coccinella hieroglyphica Linnaeus, 1758													R				25	Kubisz, Szwałko 1991; Kubisz, Pawłowski 1995
Coccinella magnifica Redtenbacher, 1843																		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Coccinella quinquepunctata Linnaeus, 1758																	17, 21	Kubisz, Pawłowski 1995
Coccinella septempunctata Linnaeus, 1758																	1, 2, 3, 11, 13, 17, 18, 20, 21	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Coccinella undecimpunctata Linnaeus, 1758																		
Coccinula quatuordecimpustulata (Linnaeus, 1758)																	10, 11, 15, 16, 17, 25	Kubisz, Pawłowski 1995
Cynegetis impunctata (Linnaeus, 1767)													R				25	
Exochomus quadripustulatus (Linnaeus, 1758)	S																2, 3, 15, 21	Marczak et al. 2023c
Halyzia sedecimguttata (Linnaeus, 1758)	S			M													24	
Harmonia axyridis (Pallas, 1773)	S																2, 5, 15, 16, 20, 23	Marczak et al. 2023c
Harmonia quadripunctata (Pontoppidan, 1763)	S																17	
Hippodamia tredecimpunctata (Linnaeus, 1758)			H															Kubisz, Pawłowski 1995
Hippodamia variegata (Goeze, 1777)																		Roubal 1910; Burakowski et al. 1986c
Hyperaspis campestris (Herbst, 1783)																	21	
Hyperaspis concolor (Suffrian, 1843)																	17	
Hyperaspis reppensis (Herbst, 1783)					X													
Myrrha octodecimguttata (Linnaeus, 1758)	S																	Kubisz, Pawłowski 1995
Myzia oblongoguttata (Linnaeus, 1758)	S																	
!*Nephus bipunctatus* (Kugelann, 1794)																	2	
Oenopia conglobata (Linnaeus, 1758)																		
Oenopia impustulata (Linnaeus, 1767)													R				23	
Platynaspis luteorubra (Goeze, 1777)																	7	Marczak et al. 2023c
Propylea quatuordecimpunctata (Linnaeus, 1758)																	2, 6, 7, 11, 15, 16, 17, 19, 20, 21, 23, 25	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Psyllobora vigintiduopunctata (Linnaeus, 1758)	S			M													2, 5, 7, 11, 16, 21, 23, 25	Marczak et al. 2023c
!*Scymnus abietis* (Paykull, 1798)																	25	
Scymnus ferrugatus (Moll, 1785)																		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Scymnus frontalis (Fabricius, 1787)																	22	
Scymnus nigrinus Kugelann, 1794																		
Scymnus rubromaculatus (Goeze, 1777)																		
Scymnus schmidti Fürsch, 1958					X								R				10	
Stethorus pusillus (Herbst, 1797)																	2, 13	
Subcoccinella vigintiguatuorpunctata (Linnaeus, 1758)																	13, 15	Kubisz, Pawłowski 1995
Tytthaspis sedecimpunctata (Linnaeus, 1761)																	6, 15, 17, 18	Kubisz, Pawłowski 1995
!*Vibidia duodecimguttata* (Poda von Neuhaus, 1761)				M													17	
EROTYLIDAE																		
Dacne bipustulata (Thunberg, 1781)	S			M							2					LC	1, 2, 3, 5, 6, 7, 9, 10, 12, 13, 15, 19, 20, 21, 23	Marczak et al. 2023c
Triplax aenea (Schaller, 1783)	S			M												LC	2, 7, 12, 19	Marczak et al. 2023c
Triplax rufipes (Fabricius, 1787)	S			M												LC	7, 10, 12	Kubisz, Szwałko 1991; Marczak et al. 2023c
Triplax russica (Linnaeus, 1758)	S			M							2					LC	1, 2, 3, 5, 7, 10, 12, 13, 16, 20, 22, 23	Kubisz, Szwałko 1991; Marczak et al. 2023c
Triplax scutellaris Charpentier, 1825	S			M												LC	12, 16	Plewa, Borowski 2016
Tritoma bipustulata Fabricius, 1775	S			M												LC	2, 5, 6, 7, 10, 13, 19	Marczak et al. 2023c
Tritoma subbasalis (Reitter, 1896)	S			M									R	2		LC	2	Plewa et al. 2014; Marczak et al. 2023c
SPHINDIDAE																		
Aspidiphorinae																		
Aspidiphorus lareyniei Jacquelin du Val, 1859	S			M									R				15, 19	Królik, Lasoń 2020
Aspidiphorus orbiculatus (Gyllenhal, 1808)	S			M													2, 5, 7, 12, 15, 19	Marczak et al. 2023c
Sphindinae																		
Sphindus dubius (Gyllenhal, 1808)	S			M													2, 5, 7, 12, 15, 16, 24	Marczak et al. 2023c
MONOTOMIDAE																		
Monotominae																		
!*Monotoma conicicollis* Chevrolat, 1837										Mr			R				20	
Monotoma longicollis (Gyllenhal, 1827)		G																
Monotoma picipes Herbst, 1793						Sn				Mr								Kubisz, Szwałko 1991

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Rhizophaginae																		
Rhizophagus bipustulatus (Fabricius, 1792)	S			M													3, 5, 6, 10, 12, 13, 15, 19, 20, 23	Ruta et al. 2024
Rhizophagus brancsiki Reitter, 1905	S												R	2	EN		6	Ruta et al. 2024
Rhizophagus cribratus (Gyllenhal, 1827)	S			M									R				5, 13, 23	Ruta et al. 2024
Rhizophagus depressus (Fabricius, 1792)	S			M													13	Kubisz, Szwałko 1991
Rhizophagus dispar (Paykull, 1800)	S			M													1, 5, 6, 10, 12, 15, 19, 24	Hilszczański 2008; Ruta et al. 2024
Rhizophagus fenestralis (Linnaeus, 1758)	S			M													1, 3, 5, 10, 12, 15, 16, 22	Ruta et al. 2024
Rhizophagus ferrugineus (Paykull, 1800)	S			M							2							Hilszczański 2008
Rhizophagus nitidulus (Fabricius, 1798)	S			M							2						5, 12, 20, 24	Ruta et al. 2024
Rhizophagus perforatus Erichson, 1845	S												R				2	Marczak et al. 2023c
KATERETIDAE																		
Brachypterolus linariae (Stephens, 1830)					X		A										2, 6, 14, 15, 22, 23	Kubisz, Szwałko 1991; Lasoń 1997, 2023a
Brachypterolus pulicarius (Linnaeus, 1758)							A										6	Lasoń 2023a
Brachypterus fulvipes Erichson, 1843							A						R					Lasoń 2023a
Brachypterus urticae (Fabricius, 1792)							A										1, 2, 8, 11, 15, 22, 24	Lasoń 1997, 2023a
Heterhelus solani (Heer, 1841)							A						R				15	Lasoń 2023a
Kateretes pedicularius (Linnaeus, 1758)			H				A										2, 11, 25	Lasoń 2023a
Kateretes pusillus (Thunberg, 1794)			H				A						R					Lasoń 1997, 2023a
NITIDULIDAE																		
Cryptarchinae																		
Cryptarcha strigata (Fabricius, 1787)	S																2, 19, 21	Lasoń 1997, 2023a
Cryptarcha undata (Olivier, 1790)	S						A						R				19	
Glischrochilus grandis (Tournier, 1872)	S												R				5, 13	Mokrzycki et al. 2022; Lasoń 2023a
Glischrochilus hortensis (Geoffroy, 1785)	S										2						2, 12, 14, 23	Kubisz, Szwałko 1991; Lasoń 2023a; Lasoń et al. 2023b
Glischrochilus quadriguttatus (Fabricius, 1777)	S										2						2, 5, 6, 7, 10, 12, 13, 20	Lasoń 2023a; Lasoń et al. 2023b
Glischrochilus quadripunctatus (Linnaeus, 1758)	S																2, 5, 6, 7, 10, 13, 15, 16	Kubisz, Pawłowski 1995; Hilszczański 2008; Lasoń 2023a; Lasoń et al. 2023b

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Glischrochilus quadrisignatus (Say, 1835)	S																2, 6	Lasoń 2023a; Lasoń et al. 2023b
Glischrochilus tremulae Clayhills, Audisio et Cline, 2016	S												R				2, 10, 13	Lasoń 2023a
Pityophagus ferrugineus (Linnaeus, 1761)	S										2						2, 5, 24	Kubisz, Szwałko 1991; Lasoń 2023a; Lasoń et al. 2023b
Cybocephalinae																		
Cybocephalus politus (Gyllenhal, 1813)													R				16	Lasoń 2023a
Epuraeinae																		
Epuraea aestiva (Linnaeus, 1758)							A					Nd					15, 16, 23	Lasoń 2023a
Epuraea angustula Sturm, 1844	S												R				2, 7, 20	Lasoń 2023a; Lasoń et al. 2023b
Epuraea biguttata (Thunberg, 1784)	S																	Lasoń 2023a
Epuraea binotata Reitter, 1873	S												R					Lasoń 2023a
Epuraea deubeli Reitter, 1898	S												R					Lasoń 2023a
Epuraea distincta (Grimmer, 1841)	S			M													23	Lasoń 2023a
Epuraea guttata (Olivier, 1811)	S																2	Lasoń 2023a; Lasoń et al. 2023b
Epuraea laeviuscula (Gyllenhal, 1827)	S												R				13	Lasoń 2023a
Epuraea limbata (Fabricius, 1787)	S			M														Lasoń 2023a
Epuraea longula Erichson, 1845	S																25	Lasoń 2002, 2023a
Epuraea marseuli Reitter, 1873	S										2						2, 5, 7	Lasoń 2003, 2023a; Lasoń et al. 2023b
Epuraea melanocephala (Marsham, 1802)	S																2, 7	Lasoń 2023a
Epuraea muehli Reitter, 1908	S												R				15	Lasoń 2023a
Epuraea neglecta (Heer, 1841)	S																2, 7, 9, 15, 23	Lasoń 2023a; Lasoń et al. 2023b
Epuraea pallescens (Stephens, 1835)	S																2, 7, 15, 21	Lasoń 1997, 2023a; Lasoń i in 2023b
Epuraea pygmaea (Gyllenhal, 1808)	S										2						2, 5, 23	Lasoń 2023a; Lasoń et al. 2023b
Epuraea rufomarginata (Stephens, 1830)	S										2						5, 10, 12, 13	Lasoń 2023a
Epuraea terminalis (Mannerheim, 1843)	S			M														Lasoń 2023a
Epuraea thoracica Tournier, 1872	S										2		R				2, 5, 13	Lasoń 2023a; Lasoń et al. 2023b
Epuraea unicolor (Olivier, 1790)	S																5, 15, 23	Lasoń 2023a
Epuraea variegata (Herbst, 1793)	S			M													1, 2, 11, 12, 15	Lasoń 1997, 2023a

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Meligethinae																		
Afrogethes tristis (Sturm, 1845)					X		A										15	Lasoń 2023a
Astylogethes subrugosus (Gyllenhal, 1808)							A						R				15	Lasoń 2023a
Astylogethes substrigosus (Erichson, 1845)							A										17, 25	Lasoń 2023a
Boragogethes symphyti (Heer, 1841)							A										6, 12, 13, 15	Lasoń 2023a
Brassicogethes aeneus (Fabricius, 1775)							A										2, 5, 6, 10, 13, 14, 15, 16, 17, 19, 20, 23,25	Wojdyna 1981; Lasoń 1997, 2023a
Brassicogethes coeruleovirens (Förster, 1849)							A										6, 14, 15, 16, 17	Lasoń 2023a
Brassicogethes coracinus (Sturm, 1845)							A										11	Lasoń 2023a
Brassicogethes subaeneus (Sturm, 1845)							A										3, 10, 12, 13, 15, 16, 20, 22, 23	Lasoń 2003, 2023a
Brassicogethes viridescens (Fabricius, 1787)							A										2, 10, 15, 16, 17, 23, 25	Roubal 1910; Burakowski et al. 1986; Lasoń 2023a
Fabogethes brachialis (Erichson, 1845)					X													Lasoń 2023a
Fabogethes nigrescens (Stephens, 1830)																	17	Lasoń 2023a
Genistogethes carinulatus (Förster, 1849)																	17	Lasoń 2023a
Lamiogethes bidens (Brisout de Barneville, 1863)							A										23	Lasoń 1997, 2023a
Lamiogethes brunnicornis (Sturm, 1845)							A										12	Lasoń 2003, 2023a
Lamiogethes ochropus (Sturm, 1845)							A										17	Lasoń 2023a
Lamiogethes pedicularius (Gyllenhal, 1808)							A										14	Roubal 1910; Burakowski et al. 1986; Lasoń 2023a
Meligethes denticulatus (Heer, 1841)							A										6, 9, 10, 11, 13, 16, 20, 22, 23, 24	Kubisz, Szwałko 1991; Lasoń 2023a
Meligethes flavimanus Stephens, 1830							A						R				15	Lasoń 2023a
Sagittogethes ovatus (Sturm, 1845)							A										15, 23	Lasoń 2023a
Stachygethes ruficornis (Marsham, 1802)							A											Lasoń 2023a
Thymogethes acicularis Brisout de Barneville, 1863							A											Lasoń 2023a
Thymogethes exilis (Sturm, 1845)							A						R				16	Lasoń 2023a
Thymogethes lugubris (Sturm, 1845)					X		A											Lasoń 2023a

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Nitidulinae																		
Amphotis marginata (Fabricius, 1781)										Mr								Lasoń 2023a
Cychramus luteus (Fabricius, 1787)	S			M													1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 13, 15, 20, 22, 23, 24	Lasoń 1997, 2023a; Lasoń et al. 2023b
Cychramus variegatus (Herbst, 1792)	S			M													1, 2, 10, 12, 14, 15, 16, 20, 22	Lasoń 2023a; Lasoń et al. 2023b
Cyllodes ater (Herbst, 1792)	S			M													2, 5, 9, 12, 13, 15, 16, 19, 20, 24, 25	Lasoń 1997, 2023a; Lasoń et al. 2023b
Ipidia binotata Reitter, 1875	S										2						2, 5, 6, 9, 10, 12, 13, 16, 19, 20, 23, 24	Kubisz, Szwałko 1991; Kwiatkowski, Marczak 2020b; Mokrzycki et al. 2022; Lasoń 2023a; Lasoń et al. 2023b
Nitidula bipunctata (Linnaeus, 1758)									N									Kubisz, Pawłowski 1995
Omosita depressa (Linnaeus, 1758)	S								N								3, 5	Lasoń 2023a
Omosita discoidea (Fabricius, 1775)									N									Lasoń 2023a
Physoronia wajdelota Wankowicz, 1869	S			M									R				5, 12	Lasoń 2023a
Pocadius adustus Reitter, 1888	S			M													12, 18, 19	Lasoń 2023a
Pocadius ferrugineus (Fabricius, 1775)	S			M													16, 19	Kubisz, Szwałko 1991; Lasoń 2023a
Soronia grisea (Linnaeus, 1758)	S										2						19, 21	Lasoń 2023a
Soronia punctatissima (Illiger, 1794)	S																2, 25	Lasoń 1997, 2023a
Thalycra fervida (Olivier, 1790)	S			M									R					
CRYPTOPHAGIDAE																		
Atomariinae																		
Atomaria analis Erichson, 1846				M													5	
Atomaria apicalis Erichson, 1846				M		Sn												
Atomaria atricapilla Staphens, 1830				M													6, 12, 20	
Atomaria basalis Erichson, 1846				M														
Atomaria fimetaria (Fabricius, 1792)				M													2	Marczak et al. 2023c
!*Atomaria lohsei* Johnson et Strand, 1968				M														
!*Atomaria longicornis* Thomson, 1863				M														

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Atomaria morio Kolenati, 1846	S			M								Nd	R				2	Marczak et al. 2023c
Atomaria nigrirostris Stephens, 1830				M													2	Marczak et al. 2023c
!*Atomaria ornata* Heer, 1841				M													5	
Atomaria testacea Stephens, 1830				M														
Atomaria turgida Erichson, 1846				M													9, 20	
Atomaria vespertina Mäklin, 1853	S			M													2, 5, 9, 12, 24	Marczak et al. 2023c
!*Atomaria zetterstedti* (Zetterstedt, 1838)				M									R				9	
Ephistemus globulus (Paykull, 1798)				M														
Cryptophaginae																		
Antherophagus pallens (Linnaeus, 1758)				M													2	Marczak et al. 2023c
!*Caenoscelis ferruginea* (Sahlberg, 1820)				M							2		R				5	
Caenoscelis sibirica Reitter, 1889				M									R				5	
Cryptophagus acutangulus Gyllenhal, 1827				M		Sn											2	
Cryptophagus dentatus (Herbst, 1793)				M													2, 5, 6, 12, 13, 23, 24	Marczak et al. 2023c
Cryptophagus dorsalis Sahlberg, 1819	S			M													2, 3, 5, 6, 9, 10, 13, 22, 23, 24	Marczak et al. 2023c
Cryptophagus labilis Erichson, 1846	S			M													2, 5	Marczak et al. 2023c
Cryptophagus micaeus Rey, 1889				M													2	
Cryptophagus obsoletus Reitter, 1879				M									R					Borowski, Gazurek 2023
!*Cryptophagus parallelus* Brisout de Barneville, 1863	S			M									R					
Cryptophagus pubescens Sturm, 1845				M													2, 6	Roubal 1910; Burakowski et al. 1986b; Marczak et al. 2023c
Cryptophagus punctipennis Brisout de Barneville, 1863				M													6, 9, 24	
Cryptophagus quadridentatus Mannerheim, 1843	S			M														
Cryptophagus saginatus Sturm, 1845				M													2	Marczak et al. 2023c
Cryptophagus scanicus (Linnaeus, 1758)				M													2	Marczak et al. 2023c
Cryptophagus scutellatus Newman, 1834				M													24	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Micrambe abietis (Paykull, 1798)				M													2, 5, 9, 13	Marczak et al. 2023c
Pteryngium crenatum (Fabricius, 1798)	S			M													15, 16	
SILVANIDAE																		
Brontinae																		
Dendrophagus crenatus (Paykull, 1799)	S																2, 5, 6, 7, 8, 11, 12, 13, 21, 23, 24	Kubisz, Szwałko 1991; Plewa et al. 2014; Kwiatkowski, Marczak 2020b; Marczak et al. 2023c
Psammoecus bipunctatus (Fabricius, 1792)			H															
Uleiota planatus (Linnaeus, 1761)	S																2, 5, 6, 7, 12, 13, 19, 22, 25	
Silvaninae																		
!*Silvanoprus fagi* (Guérin, 1844)	S			M													6	
Silvanus bidentatus (Fabricius, 1792)	S			M							2						2, 5, 8, 13, 24	
Silvanus unidentatus (Olivier, 1790)	S			M													2	Kubisz, Szwałko 1991; Marczak et al. 2023c
CUCUJIDAE																		
Cucujus cinnaberinus (Scopoli, 1763)	S										2				LC	NT	1, 2, 3, 5, 6, 7, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 25	Bohdan 2008, 2009; Plewa et al. 2014; Kwiatkowski 2020; Kwiatkowski, Marczak 2020a, 2020b; Średziński 2022
Cucujus haematodes Erichson, 1845	S												R	1	LC	EN	2, 15	Kwiatkowski, Marczak 2020a; Średziński 2022
PHALACRIDAE																		
!*Olibrus affinis* (Sturm, 1807)		G			X		A											
Olibrus bicolor (Fabricius, 1792)		G					A											
Olibrus bimaculatus Küster, 1848		G			X		A											Kubisz, Pawłowski 1995
Olibrus corticalis (Panzer, 1797)	S						A										15	
Olibrus flavicornis (Sturm, 1807)		G			X		A											Kubisz, Szwałko 1991
Olibrus millefolii (Paykull, 1800)		G					A										5, 15	
Phalacrus caricis Sturm, 1807				M													5	
Phalacrus corruscus (Panzer, 1797)	S			M													15, 19	
Stilbus testaceus (Panzer, 1797)																		
LAEMOPHLOEIDAE																		
Cryptolestes corticinus (Erichson, 1846)	S																5	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Cryptolestes duplicatus (Waltl, 1839)	S																2, 7	Marczak et al. 2023c
Cryptolestes ferrugineus (Stephens, 1831)	S					Sn											2	Marczak et al. 2023c
!*Cryptolestes weisei* (Reitter, 1880)	S												R				5	
Leptophloeus alternans (Erichson, 1846)	S																5	Hilszczański 2008
NEMONYCHIDAE																		
Cimberis attelaboides (Fabricius, 1787)		G																
Doydirhynchus austriacus (Olivier, 1807)		G											R				12, 20	Kubisz, Pawłowski 1995; Stachowiak 2001; Mokrzycki et al. 2022
ANTHRIBIDAE																		
Anthribinae																		
Allandrus undulatus (Panzer, 1795)	S			M							2							
Anthribus nebulosus Forster, 1770																	2, 3, 5, 7, 9, 12, 14, 20, 21, 23, 24	Stachowiak 2002; Wanat et al. 2011; Marczak et al. 2023c; Wanat 2023
Dissoleucas niveirostris (Fabricius, 1798)	S			M													7, 25	Wanat et al. 2011; Marczak et al. 2023c; Wanat 2023c
Gonotropis dorsalis (Gyllenhal, 1813)	S			M									R				7	Wanat et al. 2011; Wanat 2023
Platyrhinus resinosus (Scopoli, 1763)	S			M							1						2	Marczak et al. 2023c
Platystomos albinus (Linnaeus, 1758)	S			M							2						2, 3, 5, 6, 7, 10, 12, 16, 19, 20, 22, 23	Wanat et al. 2011; Marczak et al. 2023c; Wanat 2023
Rhaphitropis marchica (Herbst, 1797)	S			M														
Tropideres albirostris (Schaller, 1783)	S			M							2						3, 6, 13, 19	Kubisz, Szwałko 1991; Kubisz et al. 2014
Choraginae																		
Choragus sheppardi Kirby, 1819	S			M									R				2	Marczak et al. 2023c
ATTELABIDAE																		
Apoderinae		G																
Apoderus coryli (Linnaeus, 1758)		G															2, 5, 6, 7, 11, 12, 13, 14, 15, 17, 20, 21, 22, 24	Marczak et al. 2023c; Wanat 2023
Compsapoderus erythropterus (Gmelin, 1790)		G															20, 25	
Attelabinae																		
Attelabus nitens (Scopoli, 1763)		G															7	Knutelski, Lasoń 1995; Marczak et al. 2023c; Wanat 2023

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Rhynchitinae																		
Byctiscus betulae (Linnaeus, 1758)		G															7, 11, 12, 15, 23	Wanat 2023
Byctiscus populi (Linnaeus, 1758)		G																
Caenorhinus megacephalus (Germar, 1823)													R				25	
Deporaus betulae (Linnaeus, 1758)		G															1, 7, 11, 13, 14, 15, 20, 21, 23	Wanat 2023
Involvulus cupreus (Linnaeus, 1758)		G															6, 11, 20, 24	
!*Lasiorhynchites caeruleocephalus* (Schaller, 1783)		G																
Neocoenorhinus germanicus (Herbst, 1797)		G																Wanat 2023
Neocoenorrhinus pauxillus (Germar, 1824)		G																
Tatianaerhynchites aequatus (Linnaeus, 1767)		G																
Temnocerus coeruleus (Fabricius, 1798)		G																
Temnocerus longiceps (Thomson, 1888)		G																
Temnocerus nanus (Paykull, 1792)		G																
BRENTIDAE																		
Apioninae																		
Apion cruentatum Walton, 1844		G																
Apion haematodes Kirby, 1808		G																
Apion rubiginosum Grill, 1893		G																
Aspidapion aeneum (Fabricius, 1775)		G																
Aspidapion radiolus (Marsham, 1802)																		
Aspidapion validum (Germar, 1817)													R					Wanat, Ulanowski 2023
Betulapion simile Kirby, 1811																	1, 3, 5, 7, 10, 11, 14, 19, 23	Wanat 2023
Catapion seniculus (Kirby, 1808)																		
!*Ceratapion carduorum* (Kirby, 1808)																	17, 25	
Ceratapion gibbirostre (Gyllenhal, 1813)																	25	
Ceratapion onopordi (Kirby, 1808)		G															18	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Ceratapion penetrans (Germar, 1817)																		
Cyanapion columbinum (Germar, 1817)																		Wanat 2023
Cyanapion platalea (Germar, 1817)																		
Cyanapion spencii (Kirby, 1808)																		
Diplapion detritum (Mulsant et Rey, 1858)					X												25	
Diplapion stolidum (Germar, 1817)																		
Eutrichapion ervi (Kirby, 1808)																	24, 25	
Eutrichapion viciae (Paykull, 1800)																	7, 14	Wanat 2023
Eutrichapion vorax (Herbst, 1797)																		
Exapion difficile (Herbst, 1797)																		Kubisz, Pawłowski 1995
Exapion elongatulum (Desbrochers des Loges, 1891)																		Knutelski, Lasoń 1995
Exapion formaneki (Wagner, 1829)													R					Kubisz, Pawłowski 1995
Exapion fuscirostre (Fabricius, 1775)																		
Holotrichapion pisi (Fabricius, 1801)																	17	
Holotrichapion pullum (Gyllenhal, 1833)																		
Ischnopterapion loti (Kirby, 1808)																		
Ischnopterapion virens (Herbst, 1797)																	7, 14	Wanat 2023
Kalcapion pallipes (Kirby, 1808)																	7	Wanat 2023
Melanapion minimum (Herbst, 1797)																	14, 25	Wanat 2023
Mesotrichapion punctirostre (Gyllenhal, 1839)					X								R				16	
Omphalapion dispar (Germar, 1817)																		Wanat 2023
Omphalapion hookerorum (Kirby, 1808)																	17	
Omphalapion laevigatum (Paykull, 1792)																		Wanat 2023
Oxystoma cerdo (Gerstaecker, 1854)																	7	Wanat 2023
Oxystoma craccae (Linnaeus, 1767)																		Kubisz, Pawłowski 1995
Oxystoma pomonae (Fabricius, 1798)																		Kubisz, Pawłowski 1995
Oxystoma subulatum (Kirby, 1808)																	2	Kubisz, Pawłowski 1995

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Perapion curtirostre (Germar, 1817)																	7, 25	Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995; Wanat 2023
Perapion marchicum (Herbst, 1797)		G																Knutelski, Lasoń 1995; Wanat 2023
Perapion oblongum (Gyllenhal, 1839)																	3	
Perapion violaceum (Kirby, 1808)																	2	Kubisz, Pawłowski 1995
Protapion apricans (Herbst, 1797)																	3, 7, 17	
Protapion assimile (Kirby, 1808)																	6, 7	
Protapion filirostre (Kirby, 1808)																	17, 23	Kubisz, Pawłowski 1995
Protapion fulvipes (Fourcroy, 1785)																	7, 14, 15, 23	Wanat 2023
Protapion nigritarse (Kirby, 1808)																	25	
Protapion ononidis (Gyllenhal, 1827)																		
Protapion trifolii (Linnaeus, 1768)																		Roubal 1910; Knutelski, Lasoń 1995
Pseudoperapion brevirostre (Herbst, 1797)																	25	Wanat 2023
Pseudostenapion simum (Germar, 1817)																		
Rhopalapion longirostre (Olivier, 1807)																		
Squamapion vicinum (Kirby, 1808)																	7, 25	Wanat 2023
Stenopterapion meliloti (Kirby, 1808)																		Kubisz, Pawłowski 1995
Stenopterapion tenue (Kirby, 1808)																	2, 7, 14, 25	Marczak et al. 2023c
Taeniapion urticarium (Herbst, 1784)																		Wanat 2023
Taphrotopium sulcifrons (Herbst, 1797)																		Knutelski, Lasoń 1995
Nanophyinae																		
Nanophyes brevis Boheman, 1845			H															
Nanophyes globiformis (Kiesenwetter, 1864)			H															
Nanophyes marmoratus Goeze, 1777			H														25	
CURCULIONIDAE																		
Bagoinae																		
Bagous tubulus Caldara et O'Brien, 1994			H															
Baris artemisiae (Herbst, 1795)																		Knutelski, Lasoń 1995; Wanat 2023

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Limnobaris dolorosa (Goeze, 1777)			H														25	
Limnobaris t-album (Linnaeus, 1758)			H															
Brachycerinae																		
Notaris acridulus (Linnaeus, 1758)																		
Notaris scirpi (Fabricius, 1792)																	1	
Ceutorhynchinae																		
Amalus scortillum (Herbst, 1795)		G															13, 19	
Ceutorhynchus assimilis (Paykull, 1792)		G																
Ceutorhynchus cochleariae (Gyllenhal, 1813)		G															6, 13, 14, 17	Wanat 2023
Ceutorhynchus constrictus (Marsham, 1802)		G															7	Wanat 2023
Ceutorhynchus contractus (Marsham, 1802)		G																Wanat 2023
Ceutorhynchus erysimi (Fabricius, 1787)		G															14	Kubisz, Pawłowski 1995; Wanat 2023
Ceutorhynchus obstrictus (Marsham, 1802)		G															7, 11, 13, 20, 25	Kubisz, Pawłowski 1995; Wanat 2023
Ceutorhynchus pallidactylus (Marsham, 1802)		G																Knutelski, Lasoń 1995
Ceutorhynchus typhae (Herbst, 1795)		G															13, 14	Wanat 2023
Coeliastes lamii (Fabricius, 1792)		G															7	Wanat 2023
Coeliodes rana (Fabricius, 1787)		G															5	
Coeliodinus phrymos (Alonso-Zarazaga et Colonnelli, 2017)		G															16, 19, 22	
Coeliodes transversealbofasciatus (Goeze, 1777)		G															12, 13	
Glocianus distinctus (Brisout de Barneville, 1870)		G																
Glocianus maculaalba (Herbst, 1795)		G											R		VU			Ruszkowski 1933; Kuntze 1936; Smreczyński 1974; Burakowski et al. 1997
Glocianus punctiger (Sahlberg, 1835)		G																
Marmaropus besseri Gyllenhal, 1837																		
Micrelus ericae (Gyllenhal, 1813)		G																
Microplontus campestris (Gyllenhal, 1837)		G																
Microplontus millefolii (Schultze, 1897)															LC			

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Mogulones abbreviatulus (Fabricius, 1792)		G															17	
Mogulones geographicus (Goeze, 1777)		G																
Mogulones larvatus (Schultze, 1897)		G											R				7	Wanat 2023
Mogulones pallidicornis (Gougelet et Brisout de Barneville, 1860)		G															7	Wanat 2023
Mogulones raphani (Fabricius, 1792)		G																
Mononychus punctumalbum (Paykull, 1792)			H														2, 3, 24	
Nedyus quadrimaculatus (Linnaeus, 1758)		G															3, 6, 7, 13, 14, 15, 17, 18, 19, 22, 23	Knutelski, Lasoń 1995; Wanat 2023
Parethelcus pollinarius (Forster, 1771)		G															15	
Pelenomus commari (Panzer, 1794)			H														14	Wanat 2023
Pelenomus waltoni (Boheman, 1843)			H														14	Wanat 2023
Poophagus sisymbrii (Fabricius, 1776)			H															
Rhinoncus bosnicus Schultze, 1900													R					
Rhinoncus bruchoides (Herbst, 1784)																		
Rhinoncus inconspectus (Herbst, 1795)																		
Rhinoncus leucostigma (Marsham, 1802)																	3, 15	
Rhinoncus pericarpius (Linnaeus, 1758)																	7, 11, 14	Knutelski, Lasoń 1995; Wanat 2023
Rhinoncus perpendicularis (Reich, 1797)																	25	
Rhinoncus smreczynskii Wagner, 1937			H										R		LC		25	
Rutidosoma graminosum (Gistel, 1857)																	12	
Scleropteridius fallax Otto, 1897		G											R				7	Wanat 2023
Scleropterus serratus (Germar, 1824)																	7, 17	Wanat 2023
Stenocarus ruficornis (Stephens, 1831)		G																
Tapinotus sellatus (Fabricius, 1794)																	25	
Trichosirocalus troglodytes (Fabricius, 1787)		G															25	
Cossoninae																		
Cossonus cylindricus Sahlberg, 1835	S																2	Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Cossonus linearis (Fabricius, 1775)	S																2	Marczak et al. 2023c
Cossonus parallelepipedus (Herbst, 1795)	S																2, 5, 7	Marczak et al. 2023c
Rhyncolus ater (Linnaeus, 1758)	S																5, 6, 7, 11, 13, 15	Knutelski, Lasoń 1995; Kubisz, Pawłowski 1995; Wanat 2023
Rhyncolus elongatus (Gyllenhal, 1827)	S																2, 5	Marczak et al. 2023c
Rhyncolus sculpturatus Waltl, 1839	S																1, 2, 5, 7, 12, 13, 23, 24	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Cryptorhynchinae																		
Acalles camelus (Fabricius, 1792)	S																7, 15	Wanat 2023
Acalles echinatus (Germar, 1824)	S																7	
Cryptorhynchus lapathi (Linnaeus, 1758)	S																2, 23	
Curculioninae																		
Acalyptus carpini (Fabricius, 1792)		G																
Anoplus plantaris (Naezen, 1794)		G															7, 19, 23	Wanat 2023
Anoplus roboris Suffrian, 1840		G															17	
Anthonomus conspersus (Desbrochers des Loges, 1868)																	11, 13	
Anthonomus incurvus (Panzer, 1795)																	11, 17	
Anthonomus phyllocola (Herbst, 1775)																	7, 13, 16, 24	Wanat 2023
Anthonomus pomorum (Linnaeus, 1758)																		Knutelski, Lasoń 1995
Anthonomus pyri Gyllenhal, 1835																	13, 14	
Anthonomus rectirostris (Linnaeus, 1758)																	8, 13, 17, 19	
Anthonomus rubi (Herbst, 1795)																	6, 7, 11, 13, 14, 15, 16, 20, 22, 25	Knutelski, Lasoń 1995; Wanat 2023
Archarius crux Fabricius, 1776		G															14	Wanat 2023
Archarius pyrrhoceras (Marsham, 1802)		G															2	Marczak et al. 2023c
Archarius salicivorus (Paykull, 1792)		G															11, 13, 20, 23, 24	Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995; Marczak et al. 2023c
Brachonyx pineti (Paykull, 1792)		G															6, 10, 12, 13	Kubisz, Pawłowski 1995
!*Bradybatus fallax* Gerstäcker, 1860																		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Bradybatus kellneri Bach, 1854																	6, 7	Wanat 2023
Cionus hortulanus (Geoffroy, 1795)																	2	Kubisz, Pawłowski 1995; Burakowski et al. 1997
Cionus scrophulariae (Linnaeus, 1758)																	2	Kubisz, Pawłowski 1995; Burakowski et al. 1997
Cionus thapsus (Fabricius, 1792)																		
Cionus tuberculosus (Scopoli, 1763)																	6, 13, 24, 25	
Cleopomiarus distinctus (Boheman, 1845)													R				2	
Curculio glandium Marsham, 1802		G															6, 13, 19	
Curculio nucum Linnaeus, 1758		G															2, 12, 20, 21	Marczak et al. 2023c
Curculio rubidus Gyllenhal, 1836		G																
Curculio venosus Gravenhorst, 1807		G															19, 21	
Curculio villosus Fabricius, 1781		G																
Dorytomus dejeani Faust, 1883		G															13	
Dorytomus dorsalis (Linnaeus, 1758)		G															7, 11	Knutelski, Lasoń 1995; Wanat 2023
Dorytomus longimanus (Forster, 1771)		G																Knutelski, Lasoń 1995
Dorytomus majalis (Paykull, 1800)		G																
Dorytomus melanophthalmus (Paykull, 1792)		G															18, 20	
Dorytomus rubirostris (Gravenhorst, 1807)		G															21, 22	
Dorytomus taeniatus (Fabricius, 1781)		G																
Dorytomus tortrix (Linnaeus, 1761)		G															13, 25	
Dorytomus tremulae (Fabricius, 1787)		G																Knutelski, Lasoń 1995
Ellescus bipunctatus (Linnaeus, 1758)		G	H															
Ellescus scanicus (Paykull, 1792)		G															2, 6	Marczak et al. 2023c
Gymnetron melanarium (Germar, 1821)																	17, 25	Knutelski, Lasoń 1995
Gymnetron rostellum (Herbst, 1795)																		Wanat 2023
Gymnetron stimulosum (Germar, 1821)													R				20	
Isochnus foliorum (Müller, 1764)																	14	Wanat 2023

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Isochnus sequensi (Stierlin, 1894)																		
Mecinus labilis (Herbst, 1795)																		
Mecinus pascuorum (Gyllenhal, 1813)																	25	Knutelski, Lasoń 1995; Wanat 2023
Mecinus pyraster (Herbst, 1795)																	3, 25	
Miarus ajugae (Herbst, 1795)																	5	Knutelski, Lasoń 1995
Orchestes fagi (Linnaeus, 1758)																	14	
Orchestes jota (Fabricius, 1787)																	3, 22, 25	
Orchestes pilosus (Fabricius, 1781)																		
Orchestes quercus (Linnaeus, 1758)																		
Orchestes rusci (Herbst, 1795)		G															7, 11, 23	Wanat 2023
Orchestes testaceus (Müller, 1776)																	14	Wanat 2023
Rhamphus pulicarius (Herbst, 1795)		G															7, 14	Wanat 2023
Rhinusa antirrhini (Paykull, 1800)																	13, 14, 22	Wanat 2023
Rhinusa asellus (Gravenhorst, 1807)																		
Rhinusa linariae (Panzer, 1796)																		
Rhinusa neta (Germar, 1821)																	13	
Rhinusa tetra (Fabricius, 1792)																		
Rhynchaenus xylostei Clairville, 1796																		Knutelski, Lasoń 1995
Sibinia pellucens (Scopoli, 1772)																		
Sibinia pyrrhodactyla (Marsham, 1802)		G															7, 14, 25	Wanat 2023
Sibinia sodalis Germar, 1824		G																
Sibinia viscariae (Linnaeus, 1761)		G																
Stereonychus fraxini (De Geer, 1775)																	7	Wanat 2023
Tachyerges pseudostigma (Tempère, 1982)																	14	Kubisz, Pawłowski 1995; Burakowski et al. 1997; Wanat 2023
Tachyerges rufitarsis Schönherr, 1821																		
Tachyerges salicis (Linnaeus, 1758)																	7, 17, 25	Wanat 2023

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Tachyerges stigma (Germar, 1821)																	2, 12, 14, 25	Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995
Tychius aureolus Kiesenwetter, 1851		G			X													
Tychius junceus (Reich, 1797)		G																
Tychius medicagnis Brisout de Barneville, 1862		G			X													
Tychius picirostris (Fabricius, 1787)		G															15	Kubisz, Pawłowski 1995
Tychius quinquepunctatus (Linnaeus, 1758)		G																
Tychius stephensi Schoenherr, 1836		G																
Dryophthorinae																		
Dryophthorus corticalis (Paykull, 1792)	S																5	
Sitophilus granarius (Linnaeus, 1758)						Sn												
Entiminae																		
Barynotus obscurus (Fabricius, 1775)		G																Knutelski, Lasoń 1995
Brachyderes incanus (Linnaeus, 1758)		G															12, 13, 16, 21	Knutelski, Lasoń 1995
Brachysomus echinatus (Bonsdorff, 1785)		G															2, 6, 7, 19	Marczak et al. 2023c; Wanat 2023
Charagmus gressorius (Fabricius, 1792)		G															15, 16, 25	
Charagmus griseus (Fabricius, 1775)		G																Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995; Wanat 2023
Chlorophanus viridis (Linnaeus, 1758)		G															13, 25	Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995
Exomias pellucidus (Boheman, 1843)		G																
Otiorhynchus carinatopunctatus (Retzius, 1783)		G															5, 6, 7, 11, 13, 14	Wanat 2023
Otiorhynchus ligustici (Linnaeus, 1758)		G																Knutelski, Lasoń 1995
Otiorhynchus ovatus (Linnaeus, 1758)		G															6, 7, 14	Kubisz, Pawłowski 1995; Wanat 2023
Otiorhynchus raucus (Fabricius, 1776)		G															6, 13, 17, 19	Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995
Otiorhynchus rotundus Marseul, 1872		G																
!*Otiorhynchus sulcatus* (Fabricius, 1775)		G															17	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Otiorhynchus tristis (Scopoli, 1763)		G															17	Knutelski, Lasoń 1995
Phyllobius arborator (Herbst, 1797)		G															2, 3, 5, 7, 11, 13, 14, 15, 17, 25	Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995; Wanat 2023
Phyllobius argentatus (Linnaeus, 1758)		G															2, 3, 5, 6, 7, 11, 13, 16, 21, 23, 24	Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995; Marczak et al. 2023; Wanat 2023c
Phyllobius glaucus (Scopoli, 1793)		G															1, 5, 6, 7, 14, 17, 20, 23	Wanat 2023
Phyllobius maculicornis Germar, 1824		G															2, 7	Marczak et al. 2023c
Phyllobius oblongus (Linnaeus, 1758)		G															13, 17	
Phyllobius pomaceus Gyllenhal, 1834		G															2, 3, 7, 14, 15, 17, 21, 25	Knutelski, Lasoń 1995; Marczak et al. 2023; Wanat 2023c
Phyllobius pyri (Linnaeus, 1758)		G															7, 17	Wanat 2023
Phyllobius vespertinus (Fabricius, 1792)		G															6	Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995
Phyllobius virideaeris (Laicharting, 1781)		G															2, 13, 14, 17, 25	Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995; Wanat 2023
Polydrusus aeratus (Gravenhorst, 1807)		G															5, 17, 19	
Polydrusus cervinus (Linnaeus, 1758)		G															1, 3, 22	
Polydrusus formosus (Mayer, 1779)		G																
Polydrusus mollis (Strøm, 1768)		G															2	Marczak et al. 2023c
Polydrusus picus (Fabricius, 1792)		G															13, 14	
Polydrusus pilosus (Gredler, 1866)		G											R				13, 14	Knutelski, Lasoń 1995; Wanat 2023
Polydrusus pterygomalis (Boheman, 1840)		G																
Polydrusus tereticollis (De Geer, 1775)		G																
Romualdus scaber (Linnaeus, 1758)		G																
Sciaphilus asperatus (Bonsdorff, 1785)		G															3, 7, 14, 15, 16, 177	Wanat 2023
Sitona ambiguus Gyllenhal, 1834		G															15, 23	Stachowiak 1993; Knutelski, Lasoń 1995
Sitona cylindricollis (Fahraeus, 1840)		G																Kubisz, Pawłowski 1995
Sitona hispidulus (Fabricius, 1776)		G																

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Sitona humeralis Stephens, 1831		G																
Sitona languidus Gyllenhal, 1834		G			X													Stachowiak 1993; Knutelski, Lasoń 1995
Sitona lateralis Gyllenhal, 1834		G																
Sitona lineatus (Linnaeus, 1758)		G															15	Kubisz, Pawłowski 1995
Sitona macularius (Marsham, 1802)		G															3	Knutelski, Lasoń 1995
Sitona obsoletus (Gmelin, 1790)		G																Kubisz, Pawłowski 1995
Sitona puncticollis Stephens, 1831		G																Knutelski, Lasoń 1995
Sitona striatellus Gyllenhal, 1834		G															6, 15, 23, 25	Stachowiak 1993; Knutelski, Lasoń 1995
Sitona sulcifrons (Thunberg, 1798)		G															3, 14, 17	
Sitona suturalis Stephens, 1831		G															3, 13, 17	
Strophosoma capitatum (De Geer, 1775)		G															3, 5, 6, 7, 9, 11, 13, 14, 15, 16, 17, 19, 20, 22, 23, 24, 25	Knutelski, Lasoń 1995; Marczak et al. 2023c; Wanat 2023
Tanymecus palliatus (Fabricius, 1787)		G																Wanat 2023
Trachyphloeus scabriculus (Linnaeus, 1771)		G																
Tropiphorus elevatus (Herbst, 1795)		G															2, 7, 14	Kubisz, Pawłowski 1995; Wanat 2023
Hyperinae																		
Hypera arator (Linnaeus, 1758)																	2, 6, 13, 25	Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995; Marczak et al. 2023c; Wanat 2023
Hypera arundinis (Paykull, 1792)			H												VU			Roubal 1910; Burakowski et al. 1995
Hypera conmaculata (Herbst, 1795)			H														6, 7, 13, 14, 15	Wanat 2023
Hypera diversipunctata (Schrank, 1798)			H															
Hypera meles (Fabricius, 1775)																	6, 15	Kubisz, Pawłowski 1995
Hypera miles (Paykull, 1792)																		
Hypera nigrirostris (Fabricius, 1775)																		
Hypera plantaginis (De Geer, 1775)																		
Hypera postica (Gyllenhal, 1813)																	17, 20	Kubisz, Pawłowski 1995

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Hypera viciae (Gyllenhal, 1813)																		
Lixinae																		
Bothynoderes affinis (Schrank, 1781)																		Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995
Cleonis pigra (Scopoli, 1763)		G																Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995
Coniocleonus hollbergii (Fahraeus, 1842)		G																Knutelski, Lasoń 1995
!*Coniocleonus nebulosus* (Linnaeus, 1758)		G															12	
Coniocleonus turbatus (Fåhraeus, 1842)		G																
Cyphocleonus dealbatus (Gmelin, 1790)		G			X													Wanat 2023
Larinus carlinae (Olivier, 1807)																		
Larinus sturnus (Schaller, 1783)															VU		3	
Larinus turbinatus Gyllenhal, 1836																	12, 25	
Lixus bardanae (Fabricius, 1787)																		
Lixus cylindrus (Fabricius, 1781)													R		VU			Mazur 2004
Lixus iridis Olivier, 1807																	6, 7, 17	Marczak et al. 2023c
Rhinocyllus conicus (Frölich, 1792)																	3, 15, 25	
Mesoptiliinae																		
Magdalis duplicata Germar, 1818	S																5, 7	Wanat 2023
Magdalis exarata (Brisout de Barneville, 1862)	S																	
Magdalis frontalis (Gyllenhal, 1827)	S																	
Magdalis linearis (Gyllenhal, 1827)	S																12	
Magdalis memnonia (Gyllenhal, 1837)	S																2	Knutelski, Lasoń 1995; Marczak et al. 2023c
Magdalis nitida (Gyllenhal, 1827)	S																12	
Magdalis ruficornis (Linnaeus, 1758)	S																7	Wanat 2023
Magdalis violacea (Linnaeus, 1758)	S																	Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995
Magdalis armigera (Geoffroy in Fourcroy, 1785)	S																	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Magdalis carbonaria (Linnaeus, 1758)	S																23	
Magdalis cerasi (Linnaeus, 1758)	S																	
Magdalis phlegmatica (Herbst, 1797)	S																	
Molytinae																		
Hylobius abietis (Linnaeus, 1758)	S	G									2						2, 3, 6, 7, 20, 22, 25	Kubisz, Pawłowski 1995; Marczak et al. 2023c; Wanat 2023
Hylobius excavatus (Laicharting, 1781)	S																14	Wanat 2023
Hylobius pinastri (Gyllenhal, 1813)	S	G									2						3, 5, 6, 7, 11, 12, 13, 14, 15, 20, 21, 22, 25	Wanat 2023
Hylobius transversovittatus (Goeze, 1777)			H															
Lepyrus capucinus (Schaller, 1783)		G															15	Knutelski, Lasoń 1995
Pissodes castaneus (De Geer, 1775)	S																	
Pissodes harcyniae (Herbst, 1795)	S																	Kubisz, Pawłowski 1995
Pissodes pini (Linnaeus, 1758)	S																2, 6, 10, 12, 13, 14	Kubisz, Pawłowski 1995; Knutelski, Lasoń 1995
Pissodes piniphilus (Herbst, 1797)	S																6	
Trachodes hispidus (Linnaeus, 1758)	S																7, 15, 19, 20	Wanat 2023
Scolytinae																		
Anisandrus dispar (Fabricius, 1792)	S			M													5, 7, 9, 13, 21, 23	Kuntze 1936; Ruszkowski 1933; Marczak et al. 2023c
Cryphalus asperatus (Gyllenhal, 1813)	S																2, 3, 5, 6, 7, 12, 13, 20, 23	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Crypturgus cinereus (Herbst, 1794)	S										2						2, 3, 5, 7, 23	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Crypturgus hispidulus Thomson, 1870	S										2						2, 3, 5, 6, 7, 9, 10, 12, 13, 15, 16, 20, 21, 22, 24	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Crypturgus pusillus (Gyllenhal, 1813)	S										2						2, 5, 21	Nunberg 1929; Marczak et al. 2023c
Crypturgus subcribrosus Eggers, 1933	S										2		R				2	Marczak et al. 2023c
Dendroctonus micans (Kugelann, 1794)	S														VU		5, 6, 9, 23	Kubisz, Pawłowski 1995
Dryocoetes alni (Georg, 1856)	S																2, 7, 10	Marczak et al. 2023c
Dryocoetes autographus (Ratzeburg, 1837)	S										2						2, 5, 6, 7, 9, 12, 24	Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Ernoporus tiliae (Panzer, 1793)	S																2, 7	Marczak et al. 2023c
Hylastes angustatus (Herbst, 1794)	S																5, 13	
Hylastes ater (Paykull, 1800)	S																5, 13, 24	Nunberg 1929; Fornal et al. 1986
Hylastes attenuatus Erichson, 1836	S										2						2	Marczak et al. 2023c
Hylastes cunicularius Erichson, 1836	S										2						2, 6, 7, 13, 24	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Hylastes opacus Erichson, 1836	S										2						2, 7	Marczak et al. 2023c
Hylesinus crenatus (Fabricius, 1787)	S																2, 7, 15, 22	Marczak et al. 2023c
Hylesinus varius (Fabricius, 1775)	S																2, 5, 7, 10, 12, 13, 15, 21, 22, 23	Nunberg 1929; Marczak et al. 2023c
!*Hylesinus watchli orni* (Fuchs, 1906)	S																	
Hylurgops palliatus (Gyllenhal, 1813)	S										2						1, 2, 3, 5, 6, 7, 12, 13, 16, 20, 21, 24	Fornal et al. 1986; Kubisz, Pawłowski 1995; Marczak et al. 2023c
Hylurgus ligniperda (Fabricius, 1787)	S																2	Kubisz, Pawłowski 1995
Ips acuminatus (Gyllenhal, 1827)	S										2						6	Średziński 2022
Ips amitinus (Eichhoff, 1872)	S										2						5, 12	Nunberg 1929; Kubisz, Pawłowski 1995
Ips duplicatus (Sahlberg, 1836)	S										2						5, 13, 19, 20, 21	Kubisz, Pawłowski 1995; Hilszczański 2008
Ips sexdentatus (Börner, 1776)	S										2						12, 20, 21	Nunberg 1929
Ips typographus (Linnaeus, 1758)	S																2, 3, 14	Nunberg 1929; Fornal et al. 1986; Kubisz, Pawłowski 1995; Hilszczański 2008; Konarzewski, Kupryjanowicz 2021; Średziński 2022; Marczak et al. 2023c
Orthotomicus laricis (Fabricius, 1792)	S										2						6, 21	
Orthotomicus proximus (Eichhoff, 1868)	S																21	Nunberg 1929
Phloeosinus thujae (Perris, 1855)	S										2						13	
Phloeotribus spinulosus (Rey, 1883)	S																13	
Pityogenes bidentatus (Herbst, 1784)	S										2						5, 6, 10, 12, 15, 24	
Pityogenes chalcographus (Linnaeus, 1760)	S										2						1, 2, 3, 5, 7, 9, 10, 12, 13, 15, 21, 24, 25	Nunberg 1929; Kubisz, Pawłowski 1995; Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Pityogenes quadridens (Hartig, 1834)	S																23	
Pityogenes trepanatus (Nördlinger, 1848)	S																2	Marczak et al. 2023c
!*Pityophthorus lichtensteinii* (Ratzeburg, 1837)	S																20, 23	
Pityophthorus micrographus (Linnaeus, 1758)	S																5, 10	Kubisz, Pawłowski 1995
!*Pityophthorus morosovi* Spessivtsev, 1926	S																	
Pityophthorus pityographus (Ratzeburg, 1837)	S																1, 2, 3, 5, 6, 7, 9, 10, 12, 13, 16, 20, 22, 23, 24	Marczak et al. 2023c
Polygraphus poligraphus (Linnaeus, 1758)	S										2						2, 5, 6, 7, 10, 11, 12, 15,, 20, 21, 25	Nunberg 1929; Kubisz, Pawłowski 1995; Marczak et al. 2023c
!*Polygraphus punctifrons* Thomson, 1886	S																	
Polygraphus subopacus Thomson, 1871	S												R				2	Marczak et al. 2023c
Scolytus carpini (Ratzeburg, 1837)	S																7	Marczak et al. 2023c
Scolytus intricatus (Ratzeburg, 1837)	S																19, 21	
Scolytus mali (Bechstein, 1805)	S																2	Marczak et al. 2023c
Scolytus multistriatus (Marsham, 1802)	S																2, 7	Marczak et al. 2023c
Scolytus ratzeburgii Janson, 1856	S										2						1, 2, 3, 5, 10, 12, 13, 15, 17, 21, 22	Nunberg 1929; Konarzewski, Kupryjanowicz 2021; Marczak et al. 2023c
Scolytus rugulosus (Müller, 1818)	S																15	
Scolytus scolytus (Fabricius, 1775)	S																	
Tomicus minor (Hartig, 1834)	S										2						2, 6, 7, 12, 21, 22	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Tomicus piniperda (Linnaeus, 1758)	S										2						1, 2, 5, 6, 7, 9, 11, 12, 13, 16, 25	Nunberg 1929; Marczak et al. 2023c
Trypodendron domesticum (Linnaeus, 1758)	S			M													3, 5, 6, 7, 10, 12	Nunberg 1929; Marczak et al. 2023c
Trypodendron lineatum (Olivier, 1795)	S			M							2						2, 3, 5, 6, 7, 9, 12, 13, 15, 16, 24, 25	Fornal et al. 1986; Fornal i Jaskulska 1987; Kubisz, Pawłowski 1995; Marczak et al. 2023c
Trypodendron signatum (Fabricius, 1792)	S			M							2						2, 3, 5, 6, 7, 9, 10, 12, 13, 20, 22, 24	Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
!*Trypophloeus binodulus* (Ratzeburg, 1837)	S																	
Trypophloeus granulatus (Ratzeburg, 1837)	S																2	Marczak et al. 2023c
Xyleborinus attenuatus (Blandford, 1894)	S			M													2, 6, 7	Marczak et al. 2023c
Xyleborinus saxesenii (Ratzeburg, 1837)	S			M							2						1, 2, 3, 5, 7, 10, 19, 20, 23, 24	Marczak et al. 2023c
Xyleborus cryptographus (Ratzeburg, 1837)	S			M													2, 9, 12, 20	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Xyleborus dryographus (Ratzeburg, 1837)	S			M													2	Marczak et al. 2023c
Xyleborus monographus (Fabricius, 1792)	S			M													2, 13	Marczak et al. 2023c
!*Xylechinus pilosus* (Ratzeburg, 1837)	S										2						5, 6, 9	
Xylosandrus germanus (Blandford, 1894)	S			M													2	Marczak et al. 2023c
CERAMBYCIDAE																		
Cerambycinae																		
Anaglyptus mysticus (Linnaeus, 1758)	S						A									LC	2	Marczak et al. 2023d
Aromia moschata (Linnaeus, 1758)	S						A									LC	12, 21, 25	Kubisz, Pawłowski 1995; Konarzewski, Kupryjanowicz 2021; Marczak et al. 2023d
Callidium aeneum (De Geer, 1775)	S															LC	3, 16	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Callidium coriaceum Paykull, 1800	S												R			LC	3, 5, 16, 19, 21, 22, 25	Gutowski et al. 1999; Marczak et al. 2023d
Callidium violaceum (Linnaeus, 1758)	S															LC	11, 12, 13	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Chlorophorus varius (Müller, 1766)	S						A									LC	12, 21	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Clytus arietis (Linnaeus, 1758)	S						A									LC	2, 7, 12, 20, 23	Marczak et al. 2023d
Cyrtoclytus capra (Germar, 1823)	S						A						R			LC	2	Marczak et al. 2023d
Hylotrupes bajulus (Linnaeus, 1758)	S					Sn										LC		Kubisz, Pawłowski 1995; Marczak et al. 2023d
Leioderes kollari Redtenbacher, 1849	S												R			LC	21	Tatur-Dytkowski et al. 2017; Marczak et al. 2023d
Molorchus minor (Linnaeus, 1758)	S						A									LC	1, 2, 3, 5, 6, 7, 10, 11, 12, 13, 15, 16, 19, 21, 22, 23, 24, 25	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Molorchus umbellatarum (Schreber, 1759)	S						A									LC	2	Marczak et al. 2023d

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Obrium brunneum (Fabricius, 1792)	S						A									LC	3, 5	Marczak et al. 2023d
Obrium cantharinum (Linnaeus, 1767)	S												R			LC	2, 5, 18	Marczak et al. 2023d
Phymatodes alni (Linnaeus, 1767)	S															LC	2, 19, 23	Marczak et al. 2023d
Phymatodes testaceus (Linnaeus, 1758)	S															LC	2, 13, 19, 23	Marczak et al. 2023d
Plagionotus arcuatus (Linnaeus, 1758)	S															LC	2, 13, 19, 23	Marczak et al. 2023d
Plagionotus detritus (Linnaeus, 1758)	S										2					LC	21, 23	Gutowski 1995; Marczak et al. 2023d
Pyrrhidium sanguineum (Linnaeus, 1758)	S															LC	7	Marczak et al. 2023d
Ropalopus macropus (Germar, 1824)	S															LC	21	
Xylotrechus antilope (Schönherr, 1817)	S															LC	23	Marczak et al. 2023d
Xylotrechus rusticus (Linnaeus, 1758)	S										2					LC	2, 3, 6, 7, 10, 13, 15, 16, 18, 21, 22, 25	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Lamiinae																		
Acanthocinus aedilis (Linnaeus, 1758)	S										2						6, 11, 12, 13, 16, 25	Kubisz, Pawłowski 1995; Konarzewski, Kupryjanowicz 2021; Marczak et al. 2023d
Acanthocinus griseus (Fabricius, 1792)	S										2						2, 10, 11, 15, 16	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Aegomorphus clavipes (Schrank von Paula, 1781)	S										2		R				2	Gutowski et al. 1999, Marczak et al. 2023d
Agapanthia intermedia Ganglbauer, 1884					X								R		LC		25	Marczak et al. 2023d
Agapanthia villosoviridescens (De Geer, 1775)																	2, 5, 7, 11 11, 12, 13, 21	Marczak et al. 2023d
Exocentrus lusitanus (Linnaeus, 1767)	S																	
Lamia textor (Linnaeus, 1758)	S																21	Konarzewski, Kupryjanowicz 2021; Marczak et al. 2023d
Leiopus nebulosus (Linnaeus, 1758)	S			M													7, 11, 13, 15, 20, 21, 23, 25	Gutowski et al. 2010a; Marczak et al. 2023d
Leiopus punctulatus (Paykull, 1800)	S												R				2, 7, 15	Gutowski 1995, Gutowski et al. 1999; Marczak et al. 2023d
Leiopus taeniatus (Gmelin, 1790)	S			M													2, 12, 15, 19, 20, 21, 22, 25	Gutowski et al. 2010a; Marczak et al. 2023d
Menesia bipunctata (Zubkov, 1829)	S												R				13	Marczak et al. 2023d
Monochamus galloprovincialis (Olivier, 1800)	S										2					LC	6, 11, 12, 14, 15	Kubisz, Pawłowski 1995; Marczak et al. 2023d

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Monochamus saltuarius occidentalis Sláma, 2017	S															LC		Plewa et al. 2011b; Marczak et al. 2023d
Monochamus sartor urussovii (Fischer von Waldheim, 1805)	S												R			LC	2, 3, 16	Kolasa et al. 2018; Plewa et al. 2018; Kajtoch et al. 2019; Marczak et al. 2023d
Monochamus sutor (Linnaeus, 1758)	S										2					LC		Kubisz, Pawłowski 1995; Marczak et al. 2023d
Oberea oculata (Linnaeus, 1758)	S																2, 4	Marczak et al. 2023d
Oberea pupillata (Gyllenhal, 1817)	S												R					Kubisz, Pawłowski 1995; Gutowski 1995; Marczak et al. 2023d
Oplosia cinerea (Mulsant, 1839)	S																2, 7, 17, 19	Marczak et al. 2023d
Phytoecia cylindrica (Linnaeus, 1758)													R					Marczak et al. 2023d
Phytoecia virgula (Charpentier, 1825)					X													Marczak et al. 2023d
Pogonocherus decoratus Fairmaire, 1855	S																16	Marczak et al. 2023d
Pogonocherus fasciculatus (De Geer, 1775)	S			M													2, 12, 19, 24	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Pogonocherus hispidulus (Piller et Mitterpacher, 1783)	S																2, 19, 20	Marczak et al. 2023d
Pogonocherus hispidus (Linnaeus, 1758)	S																	
Saperda carcharias (Linnaeus, 1758)	S																11, 16	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Saperda perforata (Pallas, 1773)	S															LC	2, 3, 7, 10, 12, 13, 15, 18, 21, 25	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Saperda populnea (Linnaeus, 1758)	S																2, 12, 13, 16, 25	Marczak et al. 2023d
Saperda scalaris (Linnaeus, 1758)	S										2					LC	1, 2, 3, 6, 7, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 25	Marczak et al. 2023d
Saperda similis Laicharting, 1784	S												R		DD			Gutowski et al. 1999; Plewa et al. 2011a; Marczak et al. 2023d
Stenostola ferrea (Schrank, 1776)	S												R				15	Marczak et al. 2023d
Tetrops gilvipes adlbaueri Lazarev, 2012	S																13, 17, 20	Kurzawa et al. 2020; Marczak et al. 2023d
Tetrops praeustus (Linnaeus, 1758)	S																9, 13, 23, 24	Kurzawa et al. 2020; Marczak et al. 2023d
Lepturinae																		
Acmaeops septentrionis (Thomson, 1866)	S	G									2		R			LC	2, 12	Plewa 2010; Marczak et al. 2023d

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Alosterna tabacicolor (De Geer, 1775)	S						A									LC	2, 3, 7, 9, 11, 12, 14, 15, 19, 21, 25	Konarzewski, Kupryjanowicz 2021; Marczak et al. 2023d
Anastrangalia dubia reyi (Heyden, 1889)	S						A									LC	1, 3, 5, 11, 12, 13, 15, 20, 25	Gutowski 1995; Plewa et al. 2014; Marczak et al. 2023d
Anastrangalia sanguinolenta (Linnaeus, 1760)	S						A										2, 7, 12	Marczak et al. 2023d
Anoplodera rufipes (Schaller, 1783)	S						A						R			LC		Marczak et al. 2023d
Anoplodera sexguttata (Fabricius, 1775)	S						A									LC		Marczak et al. 2023d
Carilia virginea (Linnaeus, 1758)	S						A						R			LC		Marczak et al. 2023d
Cortodera femorata (Fabricius, 1787)	S	G															2, 3, 5, 7, 19, 21	Marczak et al. 2023d
Dinoptera collaris (Linnaeus, 1758)	S						A									LC	1, 2, 3, 5, 7, 11, 12, 13, 14, 15, 21, 23, 24, 25	Marczak et al. 2023d
Etorofus pubescens (Fabricius, 1787)	S						A				2					LC		Gutowski 1995
Evodinus borealis (Gyllenhal, 1827)	S	G					A						R	1	LC	LC	2, 6, 7	Plewa, Borowski 2016; Marczak et al. 2023d
Grammoptera abdominalis (Stephens, 1831)	S						A									LC		Marczak et al. 2023d
Grammoptera ruficornis (Fabricius, 1781)	S						A									LC	7, 11, 12	Marczak et al. 2023d
Judolia sexmaculata (Linnaeus, 1758)	S						A									LC	2, 3, 7, 12, 20, 24	Plewa et al. 2014; Marczak et al. 2023d
Leptura aethiops Poda von Neuhaus, 1761	S						A									LC	2, 20, 25	Marczak et al. 2023d
Leptura annularis Fabricius, 1801	S						A									LC	2, 3, 7, 17	Marczak et al. 2023d
Leptura quadrifasciata Linnaeus, 1758	S						A				2					LC	2, 3, 6, 7, 10, 12, 13, 15, 16, 18, 20, 21, 22, 23, 25	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Leptura thoracica Creutzer, 1799	S						A						R	1	VU	NT	2	Marczak et al. 2023d
Lepturobosca virens (Linnaeus, 1758)	S						A						R			LC	2	Marczak et al. 2023d
Necydalis major Linnaeus, 1758	S										2					LC	2, 21	Gutowski et al. 1999; Marczak et al. 2023d
Nivellia sanguinosa (Gyllenhal, 1827)	S						A						R	2		EN	2	Marczak et al. 2023d
Oxymirus cursor (Linnaeus, 1758)	S															LC	2, 7, 13, 16, 20, 24	Marczak et al. 2023d
Pachyta quadrimaculata (Linnaeus, 1758)	S						A									LC	2, 5, 7, 12, 13, 19, 20	Marczak et al. 2023d
Pachytodes cerambyciformis (Schrank von Paula, 1781)	S						A									LC	2, 3, 7, 15, 20, 25	Marczak et al. 2023d

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Pseudovadonia livida bicarinata (Arnold, 1869)	S	G			X		A										2, 3, 7, 13	Marczak et al. 2023d
Rhagium inquisitor (Linnaeus, 1758)	S															LC	1, 2, 3, 5, 6, 7, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 24	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Rhagium mordax (De Geer, 1775)	S						A									LC	1, 2, 3, 6, 7, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25	Marczak et al. 2023d
Rhagium sycophanta (Schrank von Paula, 1781)	S												R			LC		Gutowski et al. 1999; Mokrzycki et al. 2022
Rhamnusium bicolor (Schrank von Paula, 1781)	S															NT		
Rutpela maculata (Poda von Neuhaus, 1761)	S						A									LC	2, 7, 12, 21	Marczak et al. 2023d
Rutpela nigra (Linnaeus, 1758)	S						A									LC	1, 2, 4, 13, 15, 24	Marczak et al. 2023d
Stenocorus meridianus (Linnaeus, 1758)	S						A						R			LC	2, 7, 12, 23	Marczak et al. 2023d
Stenurella bifasciata (Müller, 1776)	S						A									LC	7, 25	Marczak et al. 2023d
Stenurella melanura (Linnaeus, 1758)	S						A									LC	1, 2, 5, 7, 12, 13, 15, 20, 21, 25	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Stictoleptura maculicornis (De Geer, 1775)	S						A									LC	1, 2, 3, 5, 7, 9, 11, 15, 19, 21, 22, 25	Marczak et al. 2023d
Stictoleptura rubra (Linnaeus, 1758)	S			M			A			Mr						LC	2, 3, 5, 7, 9, 11, 12, 13, 15 16, 20, 21, 22, 25	Kubisz, Pawłowski 1995; Skłodowski 2011; Marczak et al. 2023d
Stictoleptura variicornis (Dalman, 1817)	S						A						R	2	DD	LC	2	
Strangalia attenuata (Linnaeus, 1758)	S						A									LC	2, 7, 20, 21, 25	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Prioninae																		
Ergates faber (Linnaeus, 1760)	S												R		VU	LC	5	Gutowski et al. 2012c; Średziński 2022
Prionus coriarius (Linnaeus, 1758)	S															LC	2, 12, 16, 21, 25	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Spondylidinae																		
Arhopalus rusticus (Linnaeus, 1758)	S										2					LC	2, 3, 11, 12, 13, 15, 20, 21	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Asemum striatum (Linnaeus, 1758)	S										2					LC	11	Kubisz, Pawłowski 1995; Marczak et al. 2023d

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Spondylis buprestoides (Linnaeus, 1758)	S										2					LC	2, 5, 7, 9, 11, 12, 16, 21, 25	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Tetropium castaneum (Linnaeus, 1758)	S															LC	2, 7, 11 12, 20, 21, 25	Kubisz, Pawłowski 1995; Marczak et al. 2023d
Tetropium fuscum (Fabricius, 1787)	S															LC	2, 3, 5, 7, 9, 11, 12, 13, 15, 16, 21, 22, 24, 25	Capecki 1980; Burakowski et al. 1990a; Hilszczański 2008; Marczak et al. 2023d
Tetropium gabrieli Weise, 1905	S												R					
MEGALOPODIDAE																		
Zeugophora flavicollis (Marsham, 1802)		G																
CHRYSOMELIDAE																		
Bruchinae																		
Bruchidius marginalis (Fabricius, 1776)																		
Bruchus affinis Frölich, 1799																		Kubisz, Pawłowski 1995
Bruchus atomarius (Linnaeus, 1761)																	7, 17, 24	
!*Bruchus brachialis* Fåhraeus, 1839					X								R		DD			
Bruchus loti Paykull, 1800																		
!*Bruchus luteicornis* Illiger, 1794																		
!*Callosobruchus chinensis* (Linnaeus, 1758)						Sn												
Spermophagus calystegiae (Lukjanovitch et Ter-Minassian, 1957)																		
Zabrotes subfasciatus (Bohemann, 1833)						Sn												
Cassidinae																		
Cassida denticollis Suffrian, 1844																	3	
Cassida flaveola Thunberg, 1794																	21	
!*Cassida hemisphaerica* Herbst, 1799																		
Cassida nebulosa Linnaeus, 1758						Sn												Kubisz, Pawłowski 1995
Cassida panzeri Weise, 1907					X								R					
Cassida prasina Illiger, 1798																		
Cassida rubiginosa Müller, 1776																	2	Marczak et al. 2023c
Cassida sanguinolenta Müller, 1776																	25	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Cassida vibex Linnaeus, 1767																	17	Kubisz, Pawłowski 1995
Cassida viridis Linnaeus, 1758																	2, 7	Marczak et al. 2023c
Cassida vittata Villiers, 1789																	5	
Hispa atra Linnaeus, 1767																	25	
Chrysomelinae																		
!*Chrysolina analis* (Linnaeus, 1767)																		
Chrysolina coerulans (Scriba, 1791)			H															Kubisz, Pawłowski 1995
Chrysolina fastuosa (Scopoli, 1763)																	21	Kubisz, Pawłowski 1995
!*Chrysolina graminis* (Linnaeus, 1758)																	12	
Chrysolina gypsophilae (Küster, 1845)																		Burakowski et al. 1990b
!*Chrysolina herbacea* (Duftschmid, 1825)			H															
Chrysolina polita (Linnaeus, 1758)			H														3	
Chrysolina sanguinolenta (Linnaeus, 1758)																		
Chrysolina staphylea (Linnaeus, 1758)																	18	Burakowski et al. 1990b; Kubisz, Pawłowski 1995
Chrysolina sturmi (Westhoff, 1882)																	12	
Chrysolina varians (Schaller, 1783)																	2, 7, 15	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Chrysomela cuprea Fabricius, 1775																		
Chrysomela lapponica Linnaeus, 1758																		Kubisz, Pawłowski 1995
Chrysomela populi Linnaeus, 1758																	12, 13, 17, 20, 21	Kubisz, Pawłowski 1995
Chrysomela saliceti (Weise, 1884)																		
Chrysomela tremula Fabricius, 1787																	15	
Chrysomela vigintipunctata (Scopoli, 1763)																	2	Marczak et al. 2023c
Colaphus sophiae (Schaller, 1783)																		
Gastrophysa polygoni (Linnaeus, 1758)																	9, 20	
Gastrophysa viridula (De Geer, 1775)																		
Gonioctena decemnotata (Marsham, 1802)																	11, 20	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
!*Gonioctena quinquepunctata* (Fabricius, 1787)																	6	
Gonioctena viminalis (Linnaeus, 1758)																	25	
Labidostomis longimana (Linnaeus, 1760)					X												17	
Leptinotarsa decemlineata (Say, 1824)																	15	Wojdyna 1981; Kubisz, Pawłowski 1995
Phaedon cochleariae (Fabricius, 1792)																	17	
Phratora atrovirens (Cornelius, 1857)																	18, 21	
Phratora laticollis (Suffrian, 1851)																	12, 15, 16, 20, 21, 24	
Phratora tibialis (Suffrian, 1851)																		
Phratora vitellinae (Linnaeus, 1758)																	2, 6, 7, 12	Marczak et al. 2023c
Phratora vulgatissima (Linnaeus, 1758)																	2, 3	Marczak et al. 2023c
Plagiodera versicolora (Laicharting, 1781)																	2, 7, 17, 21, 23	Marczak et al. 2023c
Plagiosterna aenea (Linnaeus, 1758)																	1, 2, 7, 11, 12, 14, 15, 17, 20, 23	Marczak et al. 2023c
Prasocuris junci (Brahm, 1790)			H										R				12	
Prasocuris marginella (Linnaeus, 1758)			H															
Prasocuris phellandrii (Linnaeus, 1758)			H															
Criocerinae																		
Crioceris duodecimpunctata (Linnaeus, 1758)																		Kubisz, Pawłowski 1995
Lema cyanella (Linnaeus, 1758)		G															17, 18, 25	
Lilioceris lilii (Scopoli, 1763)		G																
Lilioceris merdigera (Linnaeus, 1758)		G															7	Marczak et al. 2023c
Oulema gallaeciana Heyden, 1870																	5, 23	
Oulema melanopus (Linnaeus, 1758)																	7, 10, 15, 19, 24	Kubisz, Pawłowski 1995; Marczak et al. 2023c
Cryptocephalinae																		
Clytra quadripunctata (Linnaeus, 1758)										Mr							14, 19, 25	
Coptocephala unifasciata (Scopoli, 1763)																		
Cryptocephalus aureolus Suffrian, 1847																		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
!*Cryptocephalus coryli* (Linnaeus, 1758)																		
Cryptocephalus fulvus (Goeze, 1777)																		
Cryptocephalus hypochoeridis (Linnaeus, 1758)																		Kubisz, Szwałko 1991
Cryptocephalus labiatus (Linnaeus, 1760)																		Kubisz, Szwałko 1991
Cryptocephalus moraei (Linnaeus, 1758)																		Kubisz, Szwałko 1991
Cryptocephalus nitidulus Fabricius, 1787													R				2	Marczak et al. 2023c
Cryptocephalus nitidus (Linnaeus, 1758)													R				20	Kubisz, Pawłowski 1995
Cryptocephalus ocellatus (Drapiez, 1819)																	2	
Cryptocephalus octopunctatus (Scopoli, 1763)																	2	Marczak et al. 2023c
Cryptocephalus parvulus Müller, 1776													R				23	
Cryptocephalus pusillus (Fabricius, 1777)																	2	Marczak et al. 2023c
Cryptocephalus querceti Suffrian, 1848													R					Kubisz, Pawłowski 1995
Cryptocephalus sericeus Linnaeus, 1758																		
Smaragdina salicina (Scopoli, 1763)							A										13	
Donaciinae																		
Donacia bicolora Zschach, 1788			H															
!*Donacia cinerea* Herbst, 1784			H															
Donacia crassipes Fabricius, 1775			H															
!*Donacia impressa* Paykull, 1799			H															
Donacia semicuprea Panzer, 1796			H															
Plateumaris sericea (Linnaeus, 1761)			H															
Eumolpinae																		
Bromius obscurus (Linnaeus, 1758)																	6, 20	
Galerucinae																		
Agelastica alni (Linnaeus, 1758)																	2, 7, 11, 12, 15, 17, 18, 20, 23	Marczak et al. 2023c
Altica aenescens (Weise, 1888)																	23	
Altica brevicollis Foudras, 1861																	2, 6, 15, 24	Marczak et al. 2023c

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
!*Altica lythri* Aubé, 1843																		
!*Altica palustris* (Weise, 1888)																	16	
!*Altica quercetorum saliceti* Weise, 1888																	2, 10, 14, 19, 20	
!*Altica tamaricis* Schrank, 1785																		
Aphthona lutescens (Gyllenhal, 1813)			H														5	
Aphthona nonstriata (Goeze, 1777)			H														24	
Batophila rubi (Paykull, 1799)																		
Chaetocnema aridula (Gyllenhal, 1827)																	2	Marczak et al. 2023c
Chaetocnema concinna (Marsham, 1802)																	7, 21	Marczak et al. 2023c
Chaetocnema hortensis (Geoffroy, 1785)																	2	Marczak et al. 2023c
Chaetocnema picipes Stephens, 1831			H										R					
!*Chaetocnema procerula* (Rosenhauer, 1856)			H										R		VU		6	
Chaetocnema sahlbergii (Gyllenhal, 1827)			H														2	Marczak et al. 2023c
Crepidodera aurata (Marsham, 1802)																	1, 2, 7, 17	Marczak et al. 2023c
!*Crepidodera aurea* (Geoffroy, 1785)																		
Crepidodera fulvicornis (Fabricius, 1792)																	2, 7, 14, 17, 24	Marczak et al. 2023c
Epitrix pubescens (Koch, 1803)		G																
Galeruca tanaceti (Linnaeus, 1758)																	17, 18, 21	
Galerucella calmariensis (Linnaeus, 1767)			H															
Galerucella grisescens (Joannis, 1865)			H														15, 21	
Galerucella lineola (Fabricius, 1781)																	1, 3, 14, 17, 18, 21	
Galerucella pusilla (Duftschmid, 1825)																	18	
Galerucella tenella (Linnaeus, 1760)																	15	
Hippuriphila modeeri (Linnaeus, 1760)																	2	Marczak et al. 2023c
Lochmaea capreae (Linnaeus, 1758)																	1, 3, 11, 17, 24, 25	
Lochmaea crategi (Forster, 1771)							A										13	
!*Lochmaea suturalis* (Thomson, 1866)													R					

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Longitarsus melanocephalus (De Geer, 1775)																		
!*Longitarsus nasturtii* (Fabricius, 1792)																		
!*Longitarsus parvulus* (Paykull, 1799)																		
Lythraria salicariae (Paykull, 1800)			H														1, 15, 19, 24, 25	
!*Mantura chrysanthemi* (Koch, 1803)																	14	
Mantura rustica (Linnaeus, 1767)																		
Neocrepidodera ferruginea (Scopoli, 1763)																	1, 17	
Neocrepidodera transversa (Marsham, 1802)																		
Phyllobrotica quadrimaculata (Linnaeus, 1758)		G	H														5	Kubisz, Pawłowski 1995
!*Phyllotreta atra* (Fabricius, 1775)																		
!*Phyllotreta exclamationis* (Thunberg, 1784)																		
Phyllotreta flexuosa (Illiger, 1794)																	2, 17	Marczak et al. 2023c
Phyllotreta nemorum (Linnaeus, 1758)																	2, 11	Marczak et al. 2023c
Phyllotreta tetrastigma (Comolli, 1837)																	2	Marczak et al. 2023c
Phyllotreta undulata Kutschera, 1860		G																
Phyllotreta vittula (Redtenbacher, 1849)		G															12	
!*Podagrica menetriesi* (Faldermann, 1837)													R					
Psylliodes affinis (Paykull, 1799)																		
!*Psylliodes chalcomera* (Illiger, 1807)					X								R				17	
Psylliodes cucullata (Illiger, 1807)																		
Sphaeroderma testaceum (Fabricius, 1775)																	2	

Table 3. Numbers of species found in Knyszyńska Forest, in individual beetle families, against the background of species richness in Poland

Family	Number of species in Knyszyńska Forest	Number of species in Poland	% of Polish fauna
Aderidae	5	7	71.4
Anthicidae	2	18	11.1

Family	Number of species in Knyszyńska Forest	Number of species in Poland	% of Polish fauna
Anthribidae	9	23	39.1
Attelabidae	15	27	55.6
Bolboceratidae	1	2	50.0
Boridae	1	1	100.0
Bostrichidae	3	10	30.0
Bothrideridae	1	7	14.3
Brentidae	60	121	49.6
Buprestidae	38	90	42.2
Byrrhidae	7	26	26.9
Byturidae	2	2	100.0
Cantharidae	24	79	30.4
Carabidae	158	520	30.4
Cerambycidae	101	197	51.3
Cerylonidae	5	6	83.3
Chrysomelidae	138	488	28.3
Cicindelidae	3	5	60.0
Ciidae	29	46	63.0
Clambidae	1	12	8.3
Cleridae	7	23	30.4
Coccinellidae	48	76	63.2
Colonidae	3	19	15.8
Corylophidae	9	17	52.9
Cryptophagidae	33	115	28.7
Cucujidae	2	5	40.0
Curculionidae	292	872	33.5
Dascillidae	1	1	100.0
Dermestidae	16	49	32.7
Dryopidae	2	12	16.7
Dytiscidae	66	144	45.8
Elateridae	49	138	35.5
Elmidae	3	18	16.7
Endomychidae	4	10	40.0
Erotylidae	7	19	36.8
Eucinetidae	1	2	50.0
Eucnemidae	15	22	68.2
Geotrupidae	4	7	57.1
Gyrinidae	3	13	23.1
Haliplidae	5	19	26.3
Helophoridae	10	29	34.5
Heteroceridae	2	12	16.7
Histeridae	35	82	42.7
Hydraenidae	9	44	20.5
Hydrochidae	2	6	33.3
Hydrophilidae	40	79	50.6

Family	Number of species in Knyszyńska Forest	Number of species in Poland	% of Polish fauna
Kateretidae	7	11	63.7
Laemophloeidae	5	18	27.8
Lampyridae	1	3	33.3
Latridiidae	33	78	42.3
Leiodidae	33	124	26.6
Lophocateridae	1	2	50.0
Lucanidae	5	7	71.4
Lycidae	6	9	66.7
Lymexylidae	3	3	100.0
Megalopodidae	1	5	20.0
Melandryidae	17	27	63.0
Meloidae	2	12	16.7
Melyridae	13	44	29.5
Monotomidae	12	24	50.0
Mordellidae	14	52	26.9
Mycetophagidae	13	14	92.9
Nemonychidae	2	3	66.7
Nitidulidae	68	128	53.1
Nosodendridae	1	1	100.0
Noteridae	2	2	100.0
Oedemeridae	9	22	40.9
Peltidae	2	2	100.0
Phalacridae	9	23	39.1
Ptiliidae	11	62	17.7
Ptinidae	36	91	39.6
Pyrochroidae	2	3	66.7
Pythidae	1	3	33.3
Rhadalidae	2	6	33.3
Ripiphoridae	1	3	33.3
Salpingidae	5	13	38.5
Scarabaeidae	53	130	40.8
Scirtidae	14	22	63.6
Scraptiidae	7	16	43.8
Silvanidae	6	12	50.0
Sphaeritidae	1	1	100.0
Sphindidae	3	3	100.0
Staphylinidae	348	1435	24.3
Tenebrionidae	36	78	46.2
Tetratomidae	4	6	66.7
Throscidae	7	11	63.6
Thymalidae	1	1	100.0
Trogidae	2	7	28.6
Trogossitidae	2	5	40.0
Zopheridae	4	15	26.7

4.2. Characteristics of protected and rare species

Among the listed beetles, many rare species were found that deserve special attention. These include species covered by the "Nature 2000" program, for example: *Rhysodes sulcatus*, *Boros schneideri*, *Cucujus cinnaberinus* (found on many localities), *Osmoderma barnabita*, and *Oxyporus mannerheimii*. These are forest species, the first four being saproxylic; the last is a mycetophilic species, associated with both terrestrial and arboreal cap fungi.

The above-mentioned species are also under legal (strict) protection in Poland under the *Regulation of the Minister of Environment of December 16, 2016 on the protection of animal species.* These species also include a very rare one – *Cucujus haematodes*, found, among others, in Budzisk and Las Cieliczański Reserves.

Coleoptera listed under partial protection include *Carabus convexus*, *C. coriaceus*, *C. glabratus*, *C. menetriesi*, *Calosoma inquisitor*, *Ceruchus chrysomelinus*, *Stictoleptura variicornis*, and *Leptura thoracica*. Representatives of the ground beetle family (Carabidae) are predators that hunt various invertebrates; longhorn and stag beetles are typical saproxylic species.

Many (90) species of beetles found in KF are on the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002): *Boros schneideri* (EN – endangered) (Boridae); *Bothrideres bipunctatus* (EN) (Bothrideridae); *Agrilus integerrimus* (NT – near threatened), *A. pseudocyaneus* (EN) (Buprestidae); *Malthinus facialis* (DD – incomplete data) (Cantharidae); *Acupalpus exiguus* (VU – vulnerable), *Amara cursitans* (VU), *Broscus cephalotes* (DD), *Carabus convexus* (NT), *C. menetriesi* (EN), *Omophron limbatum* (NT), *Oodes helopioides* (VU), *Patrobus septentrionis* (CR – critically endangered), *Rhysodes sulcatus* (EN), *Trechus austriacus* (CR) (Carabidae); *Agapanthia intermedia* (LC – least concern), *Ergates faber* (VU), *Evodinus borealis* (LC), *Leioderes kollari* (DD), *Leptura thoracica* (VU), *Saperda similis* (DD), *Stictoleptura variicornis* (DD) (Cerambycidae); *Bruchus brachialis* (DD), *Chaetocnema procerula* (VU) (Chrysomelidae); *Dolichocis laricinus* (VU), *Hadreule elongatula* (VU) (Ciidae), *Dermestoides sanguinicollis* (EN) (Cleridae); *Cucujus cinnaberinus* (LC), *C. haematodes* (LC) (Cucujidae); *Dendroctonus micans* (VU), *Glocianus maculaalba* (VU), *Hypera arundinis* (VU), *Larinus sturnus* (VU), *Lixus cylindrus* (VU), *Microplontus millefolii* (LC), *Rhinoncus smreczynskii* (LC) (Curculionidae); *Agabus striolatus* (NT), *Hydroporus brevis* (VU), *Hydroporus elongatulus* (VU) *Ilybius wasastjernae* (VU) (Dytiscidae); *Ampedus hjorti* (EN), *A. melanurus* (VU), *A. tristis* (DD), *Crepidophorus mutilatus* (DD), *Drilus concolor* (DD) *Pseudanostirus globicollis* (DD), *Stenagostus rufus* (NT) (Elateridae); *Leiestes seminiger* (NT) (Endomychidae); *Hylis olexai* (DD), *Isorhipis marmottani* (VU), *Otho sphondyloides* (VU), *Rhacopus sahlbergi* (EX? – probably extinct) (Eucnemidae); *Abraeus parvulus* (VU), *Platylomalus complanatus* (VU) (Histeridae); *Cercyon tristis* (LC), *Hydrophilus piceus* (NT) (Hydrophilidae); *Agathidium confusum* (VU), *Catops tristis* (EN), *Liodopria serricornis* (EN), *Sciodrepoides alpestris* (NT) (Leiodidae); *Ceruchus chrysomelinus* (VU), *Dorcus parallelipipedus* (VU) (Lucanidae); *Phryganophilus auritus* (VU) (Melandryidae); *Rhizophagus brancsiki* (EN) (Monotomidae); *Hoshihananomia perlata* (LC), *Mordellaria aurofasciata* (EN) (Mordellidae); *Mycetophagus ater* (EN) (Mycetophagidae); *Peltis grossa* (VU) (Peltidae); *Ptiliolum schwarzi* (CR) (Ptiliidae); *Dorcatoma substriata* (DD), *Ptinus schlerethi* (DD) (Ptinidae); *Pelecotoma fennica* (DD) (Ripiphoridae); *Copris lunaris* (NT), *Euheptaulacus sus* (DD), *Onthophagus illyricus* (DD), *Oryctes nasicornis* (NT), *Osmoderma barnabita* (VU), *Psammodius asper* (VU) (Scarabaeidae); *Euconnus rutilipennis* (EN), *Euplectus kirbii* (DD), *Necrodes littoralis* (NT), *Oxyporus mannerheimii* (VU), *Plectophloeus nitidus* (DD), *Quedius invreae* (VU), *Scaphisoma balcanicum* (DD), *S. boreale* (VU), *Stenus flavipalpis* (EN) (Staphylinidae); *Mycetochara roubali* (DD), *Neomida haemorrhoidalis* (NT) (Tenebrionidae); *Aulonothroscus laticollis* (EN) (Throscidae) (Table 2).

Seven species are listed in the *Polish Red Book of Animals. Invertebrates* [*Polska Czerwona Księga Zwierząt. Bezkręgowce*] (Głowaciński & Nowacki 2004): *Agrilus pseudocyaneus*, *Aulonotroscus laticollis*, *Boros schneideri*, *Dermestoides sanguinicollis*, *Lixus cylindrus*, *Osmoderma barnabita*, and *Rhysodes sulcatus*.

There is also a large group of species included in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018), as well as in the list of the relict saproxylic beetles of Central Europe (Eckelt et al. 2018) (Table 2).

The following descriptions discuss species protected by Polish law, red-listed and rarely found in Poland. The locations of these species within KF are shown on maps if they were located accurately enough. However, maps have been omitted for selected species included in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018), which are common in Poland and within KF. Photographs of most of the presented species are included, and in some cases, photos of their habitats are also presented. The order of families is arranged systematically after Cai et al. (2022). However, subfamilies and species within subfamilies are arranged alphabetically (as in Table 2).

Species names were mostly used from the *Catalogue of Palaearctic Coleoptera* (Löbl & Smetana 2003, 2007, 2008, 2010, 2011, 2016; Löbl & Löbl 2015; Danilevsky 2020), Chrysomelidae according to Borowiec et al. (2011), and Curculionoidea after Alonso-Zarazaga et al. (2023).

Each species has been characterized using a uniform scheme: "Material analyzed", "Distribution", "Biology and ecology", and "Notes" (if any). The category "Analyzed material" includes all data including unpublished material – original data: number of specimens, where they were caught/observed, dates, habitats, type of trap, names of finders, etc. Here we include information collected by the authors, as well as unpublished data from reports, reserve protection plans, engineering and master's theses. The "Analyzed material" category also provides data from the literature, i.e., a synthesis of information from the literature on KF, which gives an idea of which data were available for the characterization of the described species. In the case of very rare and protected species that are prone to being caught by collectors, exact data on the location of their sites has been omitted. "Distribution" contains data on the range of the described species worldwide and in Poland. "Biology and ecology" – mainly data from KF, if any, but also general information from the literature. "Notes" – information on conservation status (legally protected in Poland, relict, Polish *Red Book* and *Red List*, *European Red List of Saproxylic Beetles*, species from the Habitats Directive appendices) and other remarks.

Abbreviations used: ad – around, near; coll. – collection; cult. – cultivated, bred; det. – identified; ex. – individual (specimen); exx. – individuals (specimens); ex cult. – cultivated from/by; inf. – information; leg. – collected or observed.

Dytiscidae

Agabus guttatus (Paykull, 1798) (Fig. 46)

Material examined (Fig. 47)

Data from the literature: in KF, it inhabits springs and initial sections of watercourses. It has been recorded in the Krzemianka and Las Cieliczański nature reserves (Greń et al. 2022a).

Distribution

A species found in almost all of Europe (except its extreme southern parts), it has also been reported from Western Siberia (Burakowski et al. 1976; Nilsson & Hájek 2021). In Poland, it is known from numerous localities over almost its entire area (23 zoogeographical regions), found more frequently and numerously in the mountains and foothills.

Fig. 46. *Agabus guttatus* (Paykull, 1798) (Dytiscidae) (photo L. Borowiec)

Biology and ecology

A crenophile living most often in streams, creeks, and springs, as well as puddles, found most often in shallow, poorly vegetated places with gravelly or sandy bottoms (Burakowski et al. 1976; Galewski & Tranda 1978).

In KF, 85 specimens were caught in the headwaters of the Krzemianka River in Krzemianka Reserve (Fig. 48), and dozens more were observed. The bottom of the vast, flat spring here is gravelly, quite hard, overgrown with mosses. The outflow of water is abundant, at first there is a shallow flow of water along gravel, quickly forming connecting streams and after several meters it already forms a rapid stream. Beetles were caught both under stones and clumps of mosses, and in the initial section of the stream.

Notes

A species belonging to a small group of crenophiles (species associated with springs) in Poland (Pakulnicka 1999).

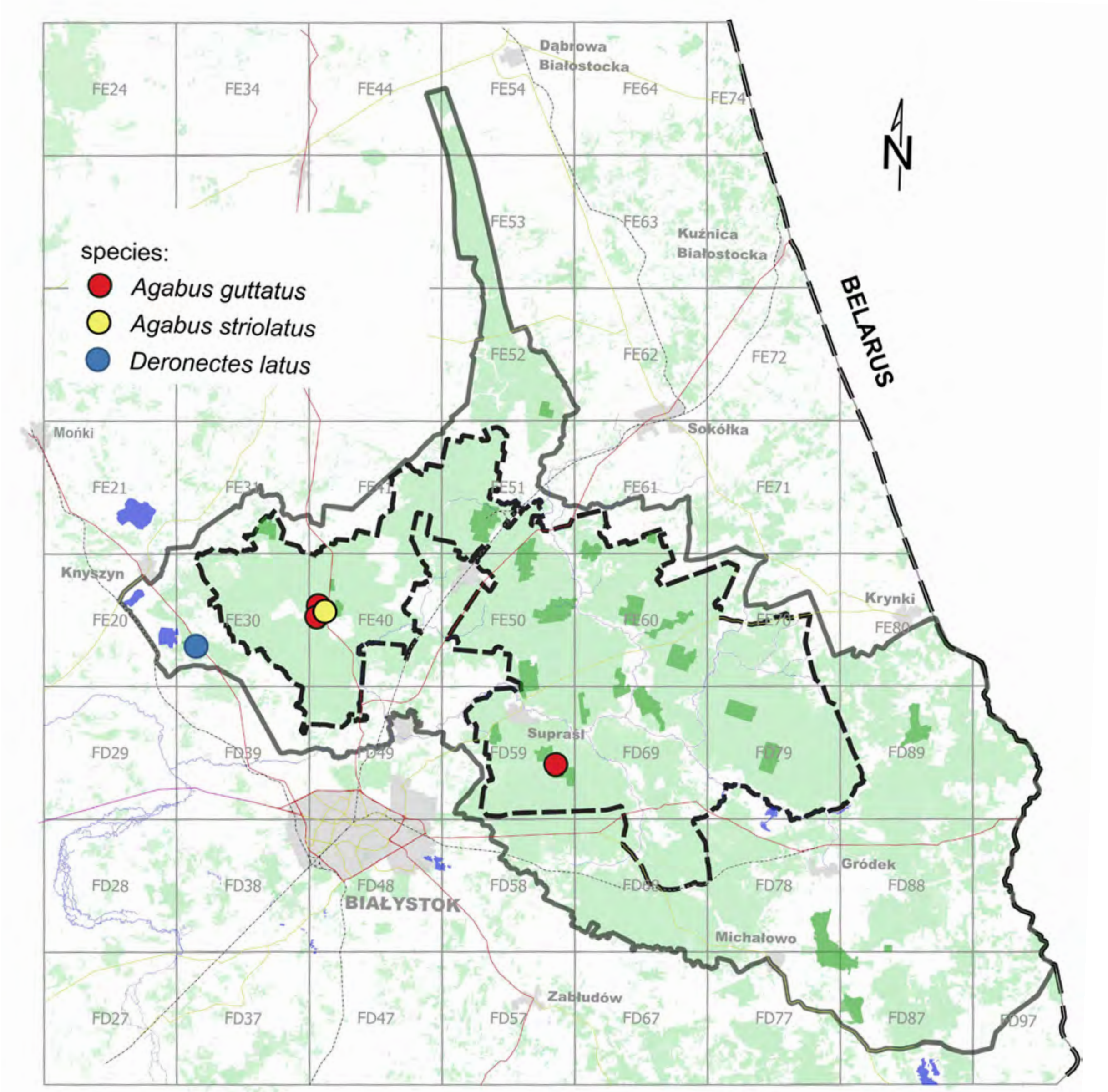


Fig. 47. Localities of *Agabus guttatus*, *A. striolatus*, and *Deronectes latus* (Dytiscidae) in Knyszyńska Forest

Fig. 48. Krzemianka Reserve, seepage spring area – habitat of *Agabus guttatus* (photo R. Greń)

***Agabus striolatus* (Gyllenhal, 1808)** (Fig. 49)

Fig. 49. *Agabus striolatus* (Gyllenhal, 1808) (Dytiscidae) (photo L. Borowiec)

Material examined (Fig. 47)

Data from the literature: one individual was caught in KF in Krzemianka Reserve (Greń et al. 2022a).

Distribution

A species found in Northern and Central Europe (Burakowski et al. 1976; Nilsson & Hájek 2021). In Poland, it is known from the Baltic Coast (Burakowski et al. 1976; Greń 2009), the Masurian Lake District (Kordylas 1994), the Mazovian Lowland (Burakowski et al. 1976; Galewski & Tranda 1978), Białowieża Forest (Burakowski et al. 1976; Galewski & Tranda 1978; Mielewczyk 2001; Buczyński & Przewoźny 2006), Lower Silesia (Burakowski et al. 1976; Greń 2009; Greń et al. 2016), and generally from Galicia and Małopolska (Burakowski et al. 1976). Reports of its occurrence in the Western Sudetes (Biesiadka 1973, 1991; Burakowski et al. 1976; Galewski & Tranda 1978) and the Świętokrzyskie Mountains (Przewoźny et al. 2010) have recently been corrected as erroneous (they were based on the misidentification of specimens of *Agabus melanarius* Aubé, 1837) (Greń et al. 2022a). In KF, caught at one locality in Krzemianka Reserve (Fig. 50). Rare and scarce everywhere, only single specimens caught.

Biology and ecology

Lives in small bodies of standing water, less often free-flowing, within wet, swampy forest types, especially alder and riparian forests (Hebauer 1975; Burakowski et al. 1976; Cuppen & Cuppen 1983; Nilsson & Cuppen 1983; Foster 2010). A cold-hardy species, so that the farther south one goes, the more the development period increasingly shifts to the winter season. In southern Germany, the Netherlands, and the UK, it was caught most abundantly in the autumn-winter-spring period (Hebauer 1975; Cuppen & Cuppen 1983). In KF, one specimen was caught in a shallow, small pool of stagnant water in an alder forest. The bottom of the pool, almost devoid of vegetation, was covered with a thick layer of fallen leaves and silt.

Notes

It is considered a boreal, northern, cold-hardy species (Hebauer 1975; Cuppen & Cuppen 1983).

Fig. 50. Krzemianka Reserve, floodplains in the alder forest – habitat of *Agabus striolatus*, *Laccornis oblongus*, *Hydroporus brevis*, *H. elongatulus*, and *H. glabriusculus* (photo R. Greń)

Deronectes latus (Stephens, 1829) (Fig. 51)

Material examined (Fig. 47)

Data from the literature: in KF, caught in the Kulikówka River in Kulikówka Reserve (Greń et al. 2022a).

Distribution

A species with a predominantly Central European range, also known from Fennoscandia and the British Isles. In Poland, it occurs throughout the country, but is much more common in mountainous and foothill areas than in the lowland (Burakowski et al. 1976; Klausnitzer 1996; Koch 1989; Przewoźny & Lubecki 2006). In KF, despite intensive searches, it has been found only in the Kulikówka River.

Biology and ecology

Rheophilus, caught not only in the mountains (like the related *Deronectes platynotus*), but also in the middle, sandy, and sandy-gravel sections of streams and creeks, and only occasionally in standing water (Burakowski et al. 1976; Klausnitzer 1996; Koch 1989; Przewoźny & Lubecki 2006).

The Kulikówka River, in which it was caught in the company of other rheophilic beetles (*Elmis aenea*, *E. maugetii*, *Oulimnius tuberculatus*), has a sandy bottom and a swift current (Fig. 52).

Fig. 51. ***Deronectes latus*** **(Stephens, 1829) (Dytiscidae)** (photo M. Ciepliński)

Fig. 52. Kulikówka Reserve – habitat of rheophilic species: ***Elmis maugetii*****,** ***E. aenea*****,** ***Oulimnius tuberculatus*****,** ***Deronectes latus*****, and** ***Platambus maculatus*** (photo R. Greń)

Notes

Being a species that requires clean water to live (like most rheophilic beetle species), its presence indicates the very good conservation state of the river.

Hydroporus brevis **Sahlberg, 1834** (Fig. 53)

Fig. 53. *Hydroporus brevis* Sahlberg, 1834 (Dytiscidae) (photo M. Ciepliński)

Material examined (Fig. 54)

Data from the literature: one individual was caught in KF in Krzemianka Reserve (Greń et al. 2022a).

Distribution

The species is widespread in Northern Europe and Siberia (Burakowski et al. 1976; Nilsson & Hájek 2021). Until recently, it was known in Poland from only two localities: the Zimna Woda (German *Kaltwasser*) district of Lubin and the Miłkowice district of Legnica in Lower Silesia based on data from over a century ago (Gerhardt 1894a, 1894b, 1897, 1910; Scholz 1934; Horion 1935, 1941; Kinel 1949). J. Gerhardt's (1870) report of its occurrence in the Karkonosze (Giant) Mountains was based on the erroneous designation of *Hydroporus discretus* Fairm. et Bris. (Gerhardt 1894a). On the other hand, general information about its occurrence in the Masurian Lake District referred to localities beyond the Polish border (Burakowski et al. 1976). Currently, the only known localities of its occurrence in Poland are located in Krzemianka Reserve in KF (Podlasie) (Greń et al. 2022a) and the Klonówka Range in Świętokrzyski National Park (the Świętokrzyskie Mountains) (Lubecki et al. 2023).

Biology and ecology

It lives in small, forested bodies of water with rotting leaves on the bottom, overgrown by sedges, grasses, and sphagnum (Galewski & Tranda 1978). According to Zaytsev (1972), it occurs in shallow puddles formed from melting snow in the spring.

In KF, one specimen was caught among fallen leaves at the bottom of a shallow, small pool of stagnant water in an alder forest (Fig. 50).

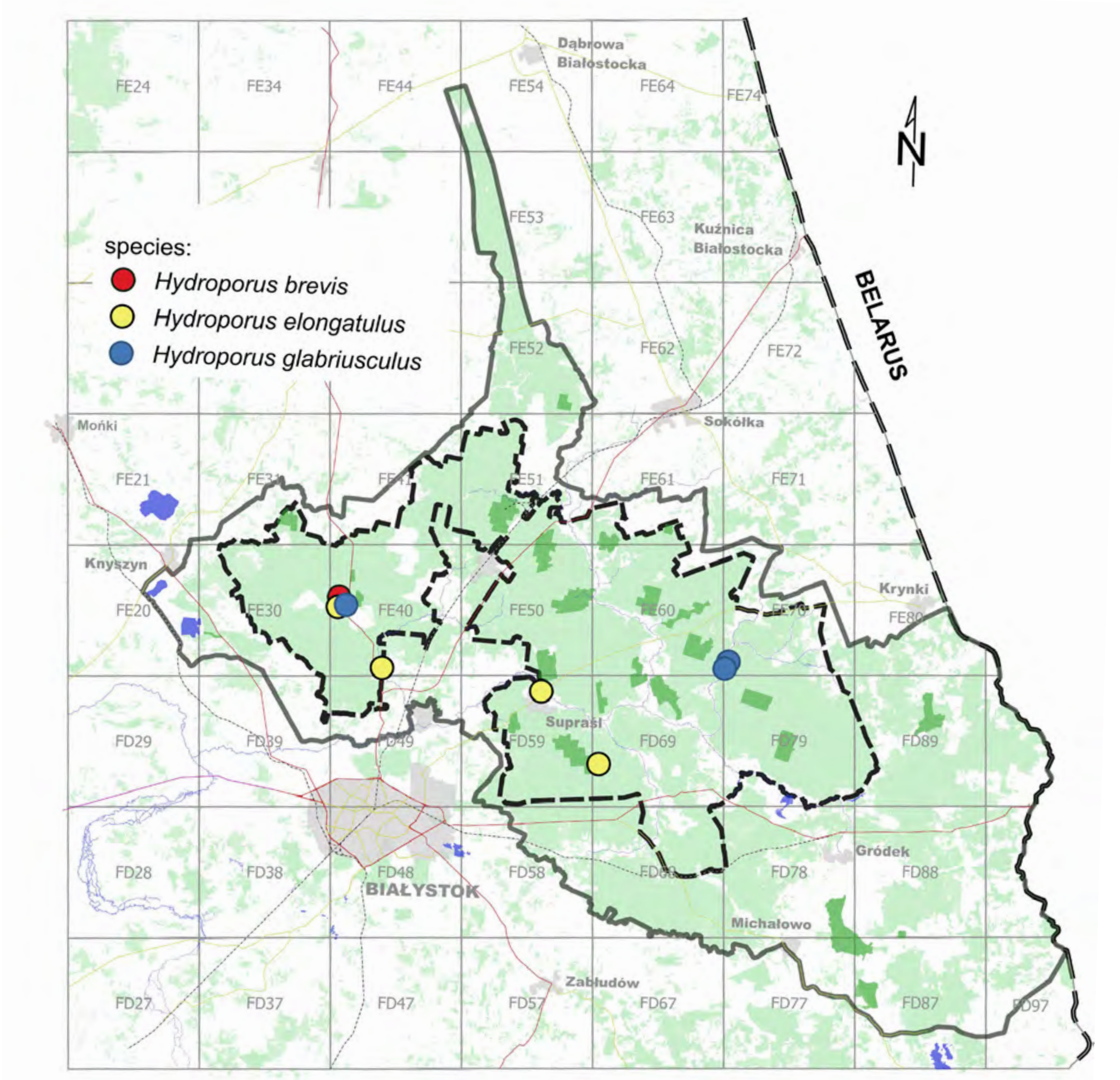


Fig. 54. Localities of *Hydroporus brevis*, *H. elongatulus* and *H. glabriusculus* (Dytiscidae) in Knyszyńska Forest

Notes

Based on the literature and range analysis, this is a boreal, northern, cold-hardy species.

Hydroporus elongatulus Sturm, 1835 (Fig. 55)

Material examined (Fig. 54)

Data from the literature: in KF, it has been recorded in the Czarna River valley near Wólka-Przedmieście, oxbow lakes and floodplains of the Supraśl River in Supraśl, Krzemianka Reserve, and Żednia Forest District, compartment 96 in an alder forest (Greń et al. 2022a).

Distribution

The species occurs in Northern, Central and Eastern Europe and Siberia (Burakowski et al. 1976; Galewski & Tranda 1978; Nilsson & Hájek 2021). In Poland, localities are known to be scattered throughout the country, from the Baltic Coast to the Sudetes and the Carpathians, but it is caught relatively rarely and in small numbers. In KF, five specimens were caught in four localities.

Fig. 55. ***Hydroporus elongatulus*** **Sturm, 1835 (Dytiscidae)** (photo L. Borowiec)

Biology and ecology

Occurs in small, shallow bog and swamp pools (Burakowski et al. 1976). In KF, it was caught in pools located both in open areas with full sunlight (Supraśl, Wólka Przedmieście) and shaded ones in alder forests (Fig. 50).

Notes

Defined as a northern species (Hebauer 1975).

Hydroporus glabriusculus (**Aubé, 1838)** (Fig. 56)

Material examined (Fig. 54)

Data from the literature: in KF, found in the Krynki Forest District, compartment 382, in a beaver floodplain on the Skrabacynka River (a tributary of the Słoja river), and in Krzemianka Reserve in a flooded alder forest (Greń et al. 2022a).

Distribution

The current compact range of the species covers northern Eurasia, the taiga and tundra zones. *H. glabriusculus* is widespread in Scandinavia, especially in its northern part (Nilsson & Persson 1989), its range extending from Finnish Lapland and the Kola Peninsula to much of northern and central Siberia, east to Yakutia, and south to Novgorod and Zabaikal (Bilton 1992). In Germany, it has been red-listed as highly endangered (Spitzenberg et al. 2016).

In Poland, it is rare and scarce, more common only in the northern and eastern parts. Earlier distribution data were summarized by Burakowski et al. (1976). In later years, it was still reported from the Baltic Coast (Galewski & Tranda 1978), the Masurian Lake District (Pakulnicka et al. 1998; Buczyński et al. 2010, 2014; Gutowski et al. 2020a), the Mazovian Lowland (Jaskuła et al. 2010), Białowieża Forest (Greń et al. 2017), Lower Silesia (Galewski & Tranda 1978; Greń 2009b; Greń et al. 2016), the Kraków-Wieluń Upland (Klasiński 2015), the Świętokrzyskie Mountains (Lubecki et al. 2023), the Lublin Upland (Buczyński & Przewoźny 2008, 2010; Anonim 2016; Buczyńska & Buczyński 2019; Buczyński et al. 2019), and the Western Sudetes (Galewski & Tranda 1978; Mielewczyk 2003a, 2003b).

Fig. 56. *Hydroporus glabriusculus* (Aubé, 1838) (Dytiscidae) (photo M. Ciepliński)

Biology and ecology

In Western and Central Europe, it occurs in scattered, isolated populations in mesotrophic and eutrophic bogs, whose development usually dates back to the early postglacial (Schaeflein 1979; Foster 1982; Bilton 1992). According to Foster (2010), this species occurs only in untransformed, relict boggy areas (Fig. 50), and is therefore a good indicator of environmental conditions. It lives in swampy and boggy waters in forested areas (Galewski & Tranda 1978).

Notes

It is considered a glacial relict (Schaeflein 1979; Foster 1982; Bilton 1992).

Ilybius wasastjernae (Sahlberg, 1824) (Fig. 57)

Material examined (Fig. 58)

Data from the literature: in KF, it occurs in the peatland area of the Jesionowe Góry Reserve. A total of 14 specimens were caught in pools forming in the windthrows and water-filled depressions of the peatland (Greń et al. 2022a, 2022b).

Distribution

A species with a circumboreal distribution, found in Northern and Central Europe, Siberia, Alaska, Canada, and the northern United States (Michigan, Wisconsin) (Nilsson & Holmen 1995; Larson et al.

2000). In Europe, *Ilybius wasastjernae* is known from Austria, Belarus, Czech Republic, Denmark, Finland, Germany, Latvia, Norway, Poland, Russia, Sweden, the United Kingdom, Italy, and Ukraine (Nilsson & Hájek 2021).

Ilybius wasastjernae is one of the rarest species of predaceous diving beetles in Poland. Until recently, it was known the country only from the Baltic Coast in the vicinity of Gdańsk: Sobieszewo, Stogi, Westerplatte, Wisłoujście (Kniephof 1935), and Białogóra Reserve (Buczyński et al. 2012), the Pomeranian Lake District from Lake Krzemno near Czaplinek (Kordylas 1990), and Białowieża Forest (Biggs et al. 2004). Field surveys conducted in recent years in various Polish regions found it in three other, previously unknown localities: Słowińskie Błota Reserve (the Baltic Coast), Bagno Kusowo Reserve (the Pomeranian Lake District), and Świętokrzyski National Park (the Świętokrzyskie Mountains).

Fig. 57. *Ilybius wasastjernae* (Sahlberg, 1824) (Dytiscidae) (photo M. Ciepliński)

Biology and ecology

It is classified as a taiga species (in the northern part of its range) or associated with peatlands (in the southern part of its range). In Scandinavia, it occurs in small floodplains in peatlands and spruce forests (Nilsson & Holmen 1995). In Russia, it has been recorded in pools formed in windthrows (Zaytsev 1972). According to Dettner (1974), this is the main microhabitat of this species in Central Europe. Similar habitat preferences of *I. wasastjernae* have been reported in Italy (Toledo & Carlin 2019), but the authors also found it in open, unforested, high peatland. It seems that, especially in southern and lowland areas, *I. wasastjernae* needs shaded and cold-water pools, such as those in windthrows, which act as refuges for cold-loving species. Most contemporary records from Poland indicate that the main microhabitats of this species are pools that formed in wetland windthrows. The biotopes in which *I. wasastjernae* was caught in KF (Fig. 59) match descriptions provided by other coleopterologists of this species' microhabitats surprisingly well.

Field surveys were conducted on May 16, 2020 and May 9, 2021 in the Jesionowe Góry Reserve. The hydrological conditions prevailing in 2020 were quite different from those in 2021. There was a drought in 2020 during the period in question, the bog was almost completely dry. During several hours of searching, water was found about 1 m below ground level in only one pit with sides of about 80 cm. dug in the peat bog, and in one windthrow with a small puddle of muddy water in its trench. One specimen of *I. wasastjernae* was caught in this puddle. On the other hand, after a period of precipitation in the spring of 2021, the peat bog had abundant water and all of the windthrows, pits, and depressions in the area were filled with water. *I. wasastjernae* was caught in pools of water forming under the windthrows, with the beetles always occurring singly and only in the cool water of the deeper, shaded parts of the pools (Fig. 59).

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Due to the habitats in which it lives and its rarity, it is considered highly endangered in all European countries where it has been found. It is considered a glacial relict, a boreal-mountain species, tyrphophilic or tyrphobiontic (Dettner 2004; Bussler 2009; Toledo & Carlin 2019).

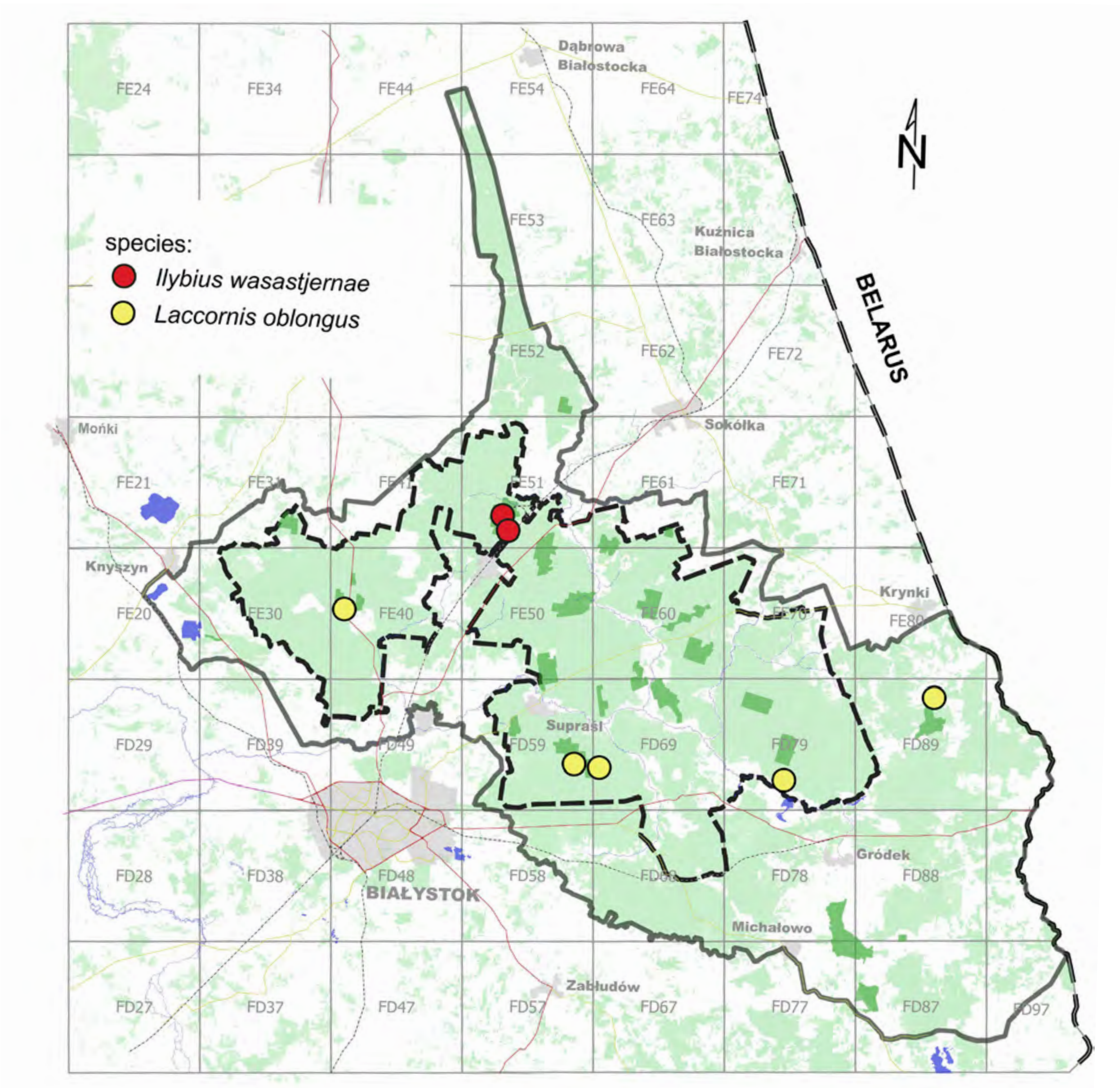


Fig. 58. Localities of *Ilybius wasastjernae* and *Laccornis oblongus* (Dytiscidae) in Knyszyńska Forest

Fig. 59. Jesionowe Góry Reserve, a water reservoir in a spruce windthrow – habitat of *Ilybius wasastjernae* (photo C. Greń)

Laccornis oblongus (Stephens, 1835) (Fig. 60)

Fig. 60. *Laccornis oblongus* (Stephens, 1835) (Dytiscidae) (photo A. Czuba & C. Greń)

Material examined (Fig. 58)

Data from the literature: in KF, it occurs throughout the area and has been caught in the Las Cieliczański and Krzemianka Reserves, Żednia Forest District in compartment 96, Waliły Forest District in compartment 180, and in the Nietupa River near Górka (Greń et al. 2022a).

Distribution

A species with a circumboreal distribution from the British Isles and northern France through Central and Northern Europe to Western Siberia and Canada (Burakowski et al. 1976; Cuppen & Dettner 1987; Nilsson & Hájek 2021). In Poland, it is known from 13 zoogeographical regions scattered throughout the country. In Podlasie, of KF, it is reported from the Bug River valley (Przewoźny et al. 2006; Buczyński & Przewoźny 2006a) and Stawy Siedleckie Reserve (Przewoźny & Kot 2014). It is found throughout the area of KF.

Biology and ecology

A tyrphophile found mainly in the standing waters of bogs, swamps, and forest ponds with decayed leaves on the bottom. Rarely found in flowing waters (Burakowski et al. 1976; Cuppen & Dettner 1987; Foster 2010). In KF 27 specimens were caught in various types of small ponds, mainly in peat bogs and alder forests (Figs. 61, 62).

Fig. 61. Las Cieliczański Reserve, peaty depression of the land – habitat of *Laccornis oblongus* (photo C. Greń)

Fig. 62. Nietupa Reserve, beaver floodplains on the Nietupa River – habitat of *Laccornis oblongus* (photo R. Greń)

Carabidae

Rhysodes sulcatus (Fabricius, 1787) (Fig. 63)

Material examined (Fig. 64)

Original data: found in the Góra Pieszczana Reserve (FD79) and its vicinity (Sikora et al. 2018, 2021; Bohdan 2022). Due to the fact that information about the sites of this species is sensitive, more precise locations are not provided.

Data from the literature: the species is observed in the Góra Pieszczana Reserve (FD79) (Plewa et al. 2010), as well as in the Czarna Białostocka Forest District (Marczak & Kwiatkowski 2023).

Distribution

In Europe, *Rhysodes sulcatus* is known from a small number of localities located in the northeastern part of the continent and from the eastern part of Central Europe, Asia Minor, and the Caucasus (Burakowski et al. 1976). This beetle was still recorded in many countries during the last century, but now is probably disappearing as a result of logging primeval forests and removing dying, old trees from forests.

The species has been found in a small number of localities in Poland. Current lcalities of *Rhysodes sulcatus* are located in Białowieża Forest (Gutowski 2001), KF (Plewa et al. 2010; Marczak & Kwiatkowski 2023), the Świętokrzyskie Mountains (Bidas & Buchholz 2007; Buchholz et al. 2021), Roztocze (Byk 2000), the Przemyskie Foothills (Buchholz et al. 2011, 2013), the Bieszczady Mountains (Olbrycht et al. 2019), and Silesia (Plewa et al. 2010; Bury et al. 2021).

Biology and ecology

Considered a relict species, it is associated with natural forests, where it inhabits heavily decayed and moist standing or fallen tree trunks. Development takes place in decayed wood or in the abandoned tunnels of other saproxylic beetles. A detailed description of the pupa and larvae and information on the biology of the species can be found in the work of Burakowski (1975).

The basic parameter determining the functioning of the *Rhysodes sulcatus* population is maintaining a continuous supply of deadwood of sufficient quality. The species develops in the wood of a variety of species, both coniferous (fir *Abies* Mill., less frequently spruce *Picea* A. Dietr.), and deciduous (beech *Fagus* L., oak *Quercus* L., birch *Betula* L.), with a clear preference for fragments (trunks, logs) of considerable thickness and moisture content. Due to its secretive habits, this species is rarely observed (Sienkiewicz 2012).

Notes

Strictly protected species (Rozporządzenie ... 2016), also included in Annexes II and IV of the Habitats Directive. Listed as DD (data deficient) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018), and as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Fig. 63. *Rhysodes sulcatus* (Fabricius, 1787) (Carabidae) (photo J.M. Gutowski)

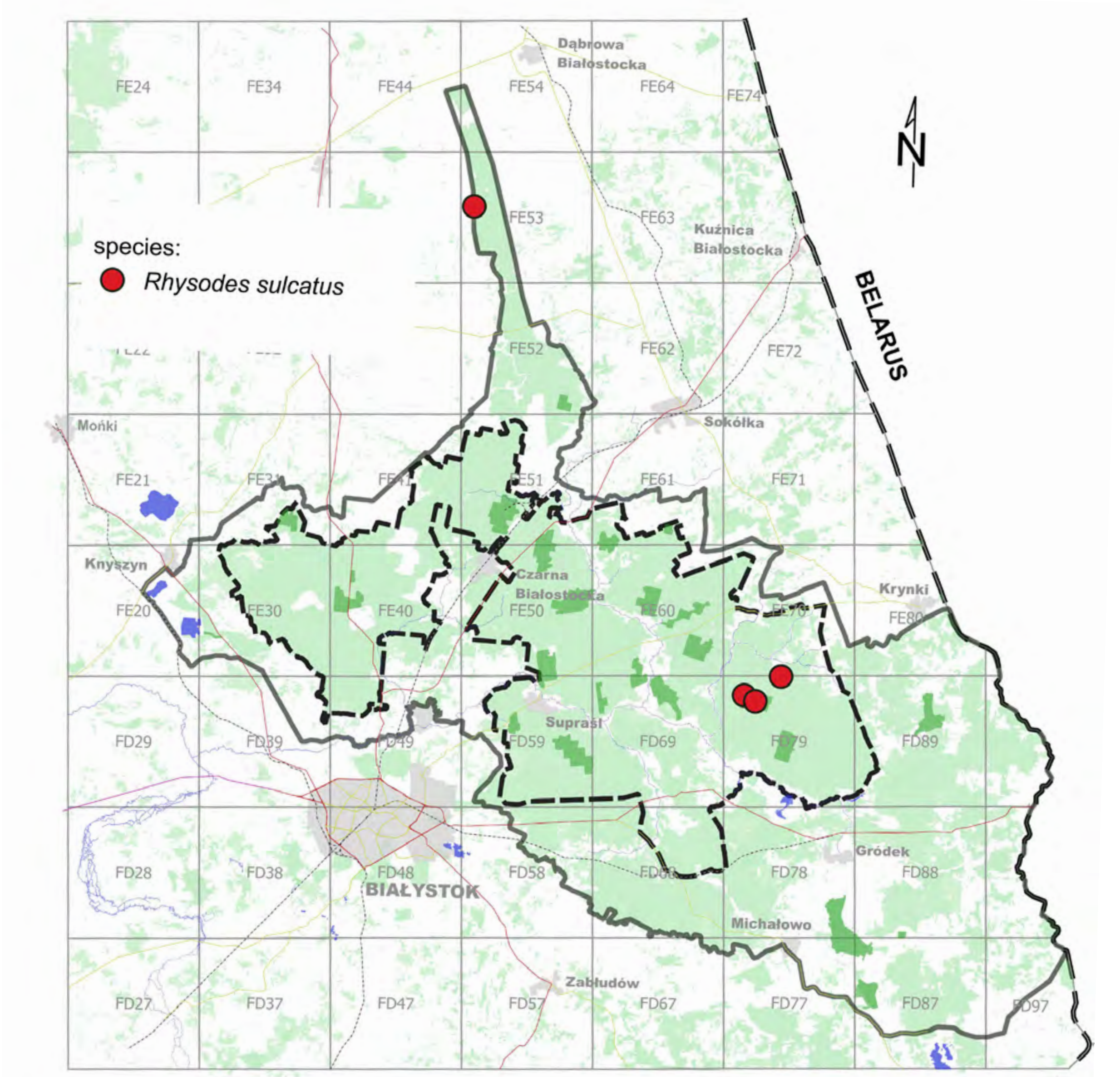


Fig. 64. Localities of *Rhysodes sulcatus* (Carabidae) in Knyszyńska Forest

Broscus cephalotes (Linnaeus, 1758) (Fig. 65)

Material examined (Fig. 66)

Original data: Czarna Białostocka Forest District, Bogusze Forest Subdistrict, compartment 208, Starodrzew Szyndzielski Reserve (FE52), based on a photograph of an individual taken (2010) by Ł. Radziwon (Plan ochrony... Starodrzew Szyndzielski 2011; Radziwon 2012).

Data from the literature: found in Piłatowszczyzna (FD79) in August 1990 (Kubisz & Pawłowski 1995).

Distribution

A widely distributed species in Europe, not reported from the extreme southern and northern parts of Europe; it reaches eastward to the European part of Russia and the Caucasus. In Asia, it has so far been recorded only from Turkey, Iran, and Western Siberia. In Poland, it has been reported from many localities, but there are no reports from the southern, mountainous region (Burakowski et al. 1973). The most recent data come from Gdynia (Konopko et al. 2017), Markowa near Rzeszów, Żdanów near Zamość (Olbrycht & Kucharska-Świerszcz 2018), and Świętokrzyski National Park (Buchholz et al. 2021), among others.

Fig. 65. ***Broscus cephalotes*** **(Linnaeus, 1758) (Carabidae)** (photo M. Miłkowski)

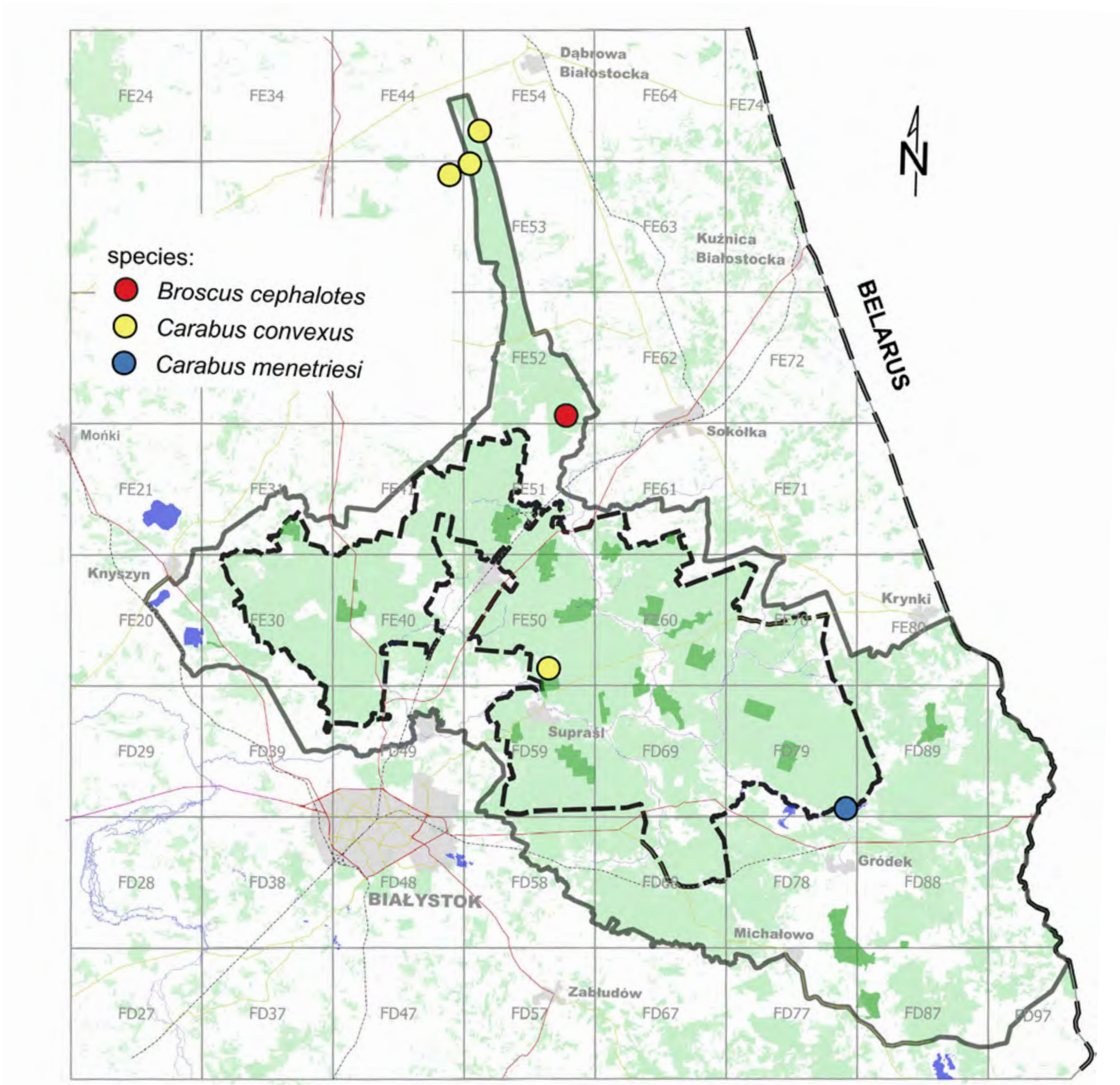


Fig. 66. Localities of ***Broscus cephalotes*****,** ***Carabus convexus*****, and** ***C. menetriesi*** **(Carabidae) in Knyszyńska Forest**

Biology and ecology

Inhabits sunny, moderately moist sites, especially with sandy or loamy-sandy soils; often found on cultivated land (Burakowski et al. 1973).

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). The authors of this monograph believe that this common species should be removed from the Red List.

Carabus convexus Fabricius, 1775 (Fig. 67)

Fig. 67. ***Carabus convexus*** **Fabricius, 1775 (Carabidae)** (photo M. Miłkowski)

Material examined (Fig. 66)

Original data: Supraśl Forest District, Jałówka Reserve (FE50), 20.05.2023 – 1 ex., leg. & det. M. Sosnowski. Czarna Białostocka Forest District, Dąbrowa Forest Subdistrict, Bachmackie Kolonie (FE53), 09.2007-05.2008 – 4 exx.; Suchodolina (FE54), 09.2007-05.2008 – 3 exx.; Wrońszczyzna (FE44), 07.2008 – 1 ex., all in a Barber pitfall trap, leg. & det. G. Tarwacki (Lipiński et al. 2009).

Distribution

Species widely distributed in Europe, from Spain to the European part of Russia and the Caucasus. In Asia, reported from Kazakhstan and Western Siberia. In Poland, it is known from many localities throughout the country (Burakowski et al. 1973).

Biology and ecology

Lives on warm soils sparsely covered with trees and shrubs; more common in the mountains than in the lowlands (Burakowski et al. 1973).

Notes

Five subspecies have been distinguished in Europe, of which only the nominate species occurs in Poland. Listed as NT (near threatened) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Carabus menetriesi **Hummel, 1827** (Fig. 68)

Material examined (Fig. 66)

Data from the literature: found in Piłatowszczyzna (FD79) in August 1990 (Kubisz & Pawłowski 1995; Pawłowski 2005).

Fig. 68. *Carabus menetriesi* Hummel, 1827 (Carabidae) (photo M. Przybylski)

Distribution

An Eastern European species. The nominate subspecies, which inhabits Poland, has the western limit of its distribution in Poland and Slovakia, which is also the limit of its southern range in Europe. To the east, in turn, it reaches Western Siberia. In Poland, the species is considered rare; data on its occurrence were summarized by Burakowski et al. (1973) and Pawłowski (2005).

Biology and ecology

Lives in peatlands and swampy forest soils.

Notes

Three subspecies have been distinguished in Europe, of which only the nominate occurs in Poland. Listed as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Acupalpus exiguus **(Dejean, 1829)** (Fig. 69)

Material examined (Fig. 70)

Original data: Żednia Forest District, Las Cieliczański Reserve, compartment 99 (FD59), 21.05.2020 – 1 ex., leg. & det. C. Greń; Czarna Białostocka Forest District, Taboły Reserve, compartment 74/75 (FE50), 13.05-3.06.2020 – 1 ex., violet Lindgren funnel trap, leg. J.M. Gutowski, det. T. Gazurek; Supraśl Forest District, Stare Biele Reserve (FE60), 3.06-9.07.2020 – 1 ex., violet Lindgren funnel trap, leg. J.M. Gutowski, det. T. Gazurek.

Fig. 69. ***Acupalpus exiguus*** **(Dejean, 1829) (Carabidae)** (photo G. Tarwacki)

Distribution

Species widely distributed in Europe, from France to the European part of Russia and the Caucasus, in the north it inhabits the countries of Fennoscandia. In Asia, it is found in Turkey, Kazakhstan and Western Siberia. In Poland, its occurrence is concentrated mainly in lowland areas and the northern part of the country (Burakowski et al. 1974). More recent data is from the Pomeranian Lake District (Stachowiak & Wilcz 2001), the Masurian Lake District (Gutowski et al. 2010b), Białowieża Forest (Aleksandrowicz & Wojas 2001), the Mazovian Lowland (Pietrykowska-Tudruj et al. 2006), the Wielkopolska-Kujawy Lowland (Ruta & Melke 2011), Podlasie, the Lublin Upland (Sienkiewicz 1999), and the Świętokrzyskie Mountains (Huruk 2006).

Biology and ecology

Most often found in post-flood inflows and under the decaying leaves of shrubs and grasses. It inhabits lowland peatlands and swampy areas (Burakowski et al. 1974).

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

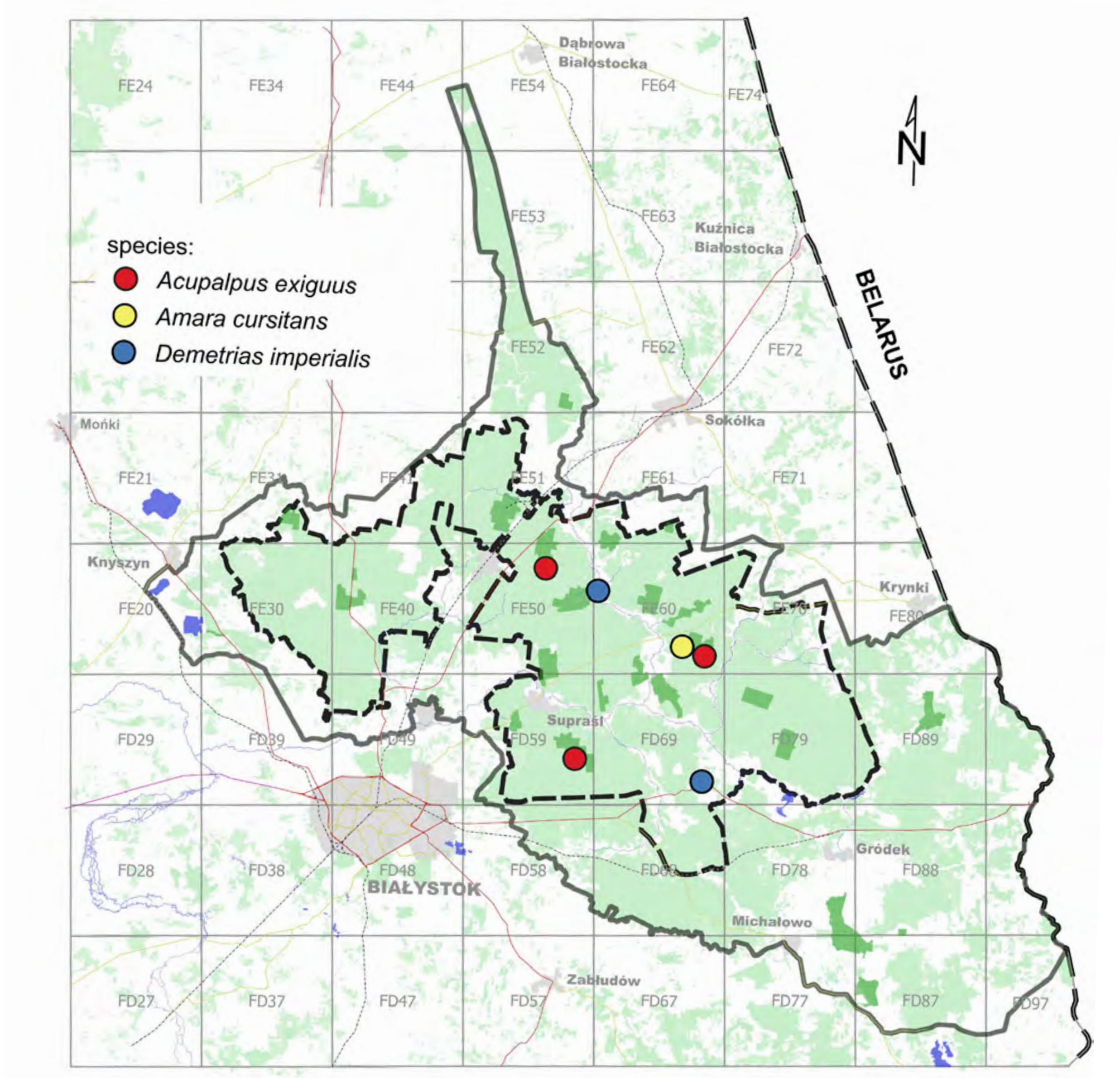


Fig. 70. Localities of *Acupalpus exiguus*, *Amara cursitans* and *Demetrias imperialis* (Carabidae) in Knyszyńska Forest

Amara cursitans Zimmermann, 1832 (Fig. 71)

Material examined (Fig. 70)

Data from the literature: Supraśl Forest District, ad Kopna Góra, compartment 272 (FE60), 22.08.1985 – 1 ex. (Kubisz & Pawłowski 1995; Wojas 1995).

Distribution

The species is widely distributed in Europe, occurring from Spain and England to the Caucasus and the European part of Russia, in the north it inhabits the countries of Fennoscandia. In Asia, it is reported from Kazakhstan and Turkey. The literature reports that it is rarely found in both Europe and in Poland; it is known in the lowlands from a small number of localities. Older, scant information from Poland was compiled by Burakowski et al. (1974), Szyszko (1983), Wojas (1995), and Kubisz & Pawłowski (1995), while material collected after 2000 reports on specimens from the Western Beskid Mountains (Kędzior et al. 2016), from Grąbków in the Pomeranian Lake District (Aleksandrowicz et al. 2008), from Spychów in the Masurian Lake District (Skłodowski 2017), and Białowieża Forest (Byk et al. 2006).

Fig. 71. *Amara cursitans* Zimmermann, 1832 (Carabidae) (photo K. Ox)

Biology and ecology

According to the literature, it is found in the soil, by the roots of fescue grasses *Festuca* L. It inhabits dry sandy and sandy-gravel soils in open, sparsely vegetated sunny areas (Burakowski et al. 1974).

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Demetrias imperialis (Germar, 1824) (Fig. 72)

Material examined (Fig. 70)

Original data: Dworzysk (FE60), 11.06.2020 – 1 ex.; Sofipol (FD69), 7.06.2020 – 1 ex.; leg. M.A. Mazur, det. T. Gazurek.

Distribution

The species is widely distributed in Europe, occurring from Spain and England to the European part of Russia, in the north it inhabits the countries of Fennoscandia. In Asia, it has been reported from Turkey, Kazakhstan, Kyrgyzstan, and Western Siberia, in northern Africa it has been reported from Algeria. In Poland, it is known from a number of localities in the central and northern parts of the country, while in the south it is sparsely reported and known on the basis of older reports. Information prior to 2000 was compiled by Burakowski et al. (1974) and Bercio & Folwaczny (1979), while later reports refer, among others, to the Pomeranian Lake District (Tończyk et al. 2004), the Masurian Lake District (Gawroński & Oleksa 2007), the Wielkopolska-Kujawy Lowland (Sienkiewicz et al. 2009), and the Łódź Upland (Jaskuła et al. 2002).

Biology and ecology

It lives on the clay banks of standing eutrophic waters, especially those overgrown with common reed *Phragmites communis* Trin., bulrush *Typha latifolia* L., and various species of sedges *Carex* L. Found usually beneath decaying plants on the surface of the ground or higher up on the stems or leaves of the plants mentioned above (Burakowski et al. 1974).

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Fig. 72. ***Demetrias imperialis*** **(Germar, 1824) (Carabidae)** (photo G. Tarwacki)

Oodes helopioides (Fabricius, 1792) (Fig. 73)

Material examined (Fig. 74)

Original data: Knyszyn Forest District, Karczmisko Reserve, compartment 144 (FE40), leg. R. Plewa; Supraśl (FD59), 20.05.2023, leg. & det. P. Sienkiewicz.

Data from the literature: this species is also reported by Jaskuła & Rachalewski (2011) on the basis of surveys conducted in 2010-2011 in two reserves – Karczmisko (FE40) and Krzemianka (FE40), but without specifying exact locations.

Distribution

A widely distributed species in Europe, it occurs from Spain and England to the European part of Russia, and inhabits the Fennoscandian countries in the north. In Asia, it has been reported from Turkey, Iran, Kazakhstan, the eastern and western areas of Siberia. In northern Africa, it has been reported from Morocco. In Poland, it is known from the area of the whole country and numerous contemporary reports. According to some authors, it is frequently found and even common (Stachowiak 1998; Aleksandrowicz 2004).

Biology and ecology

An eminently hygrophilous species, it is most likely to inhabit clayey soils on the banks of standing water, sometimes found in peat bogs. It lives in close proximity to water, especially in heavily shaded areas (Burakowski et al. 1974).

Fig. 73. *Oodes helopioides* (Fabricius, 1792) (Carabidae) (photo G. Tarwacki)

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002), as well as in the *Red List of Beetles (Coleoptera) of the Silesian Province* (Greń et al. 2012), and is reported as a rare species. This is probably due to scant data from the literature and the destruction of its habitat (Sienkiewicz et al. 2009).

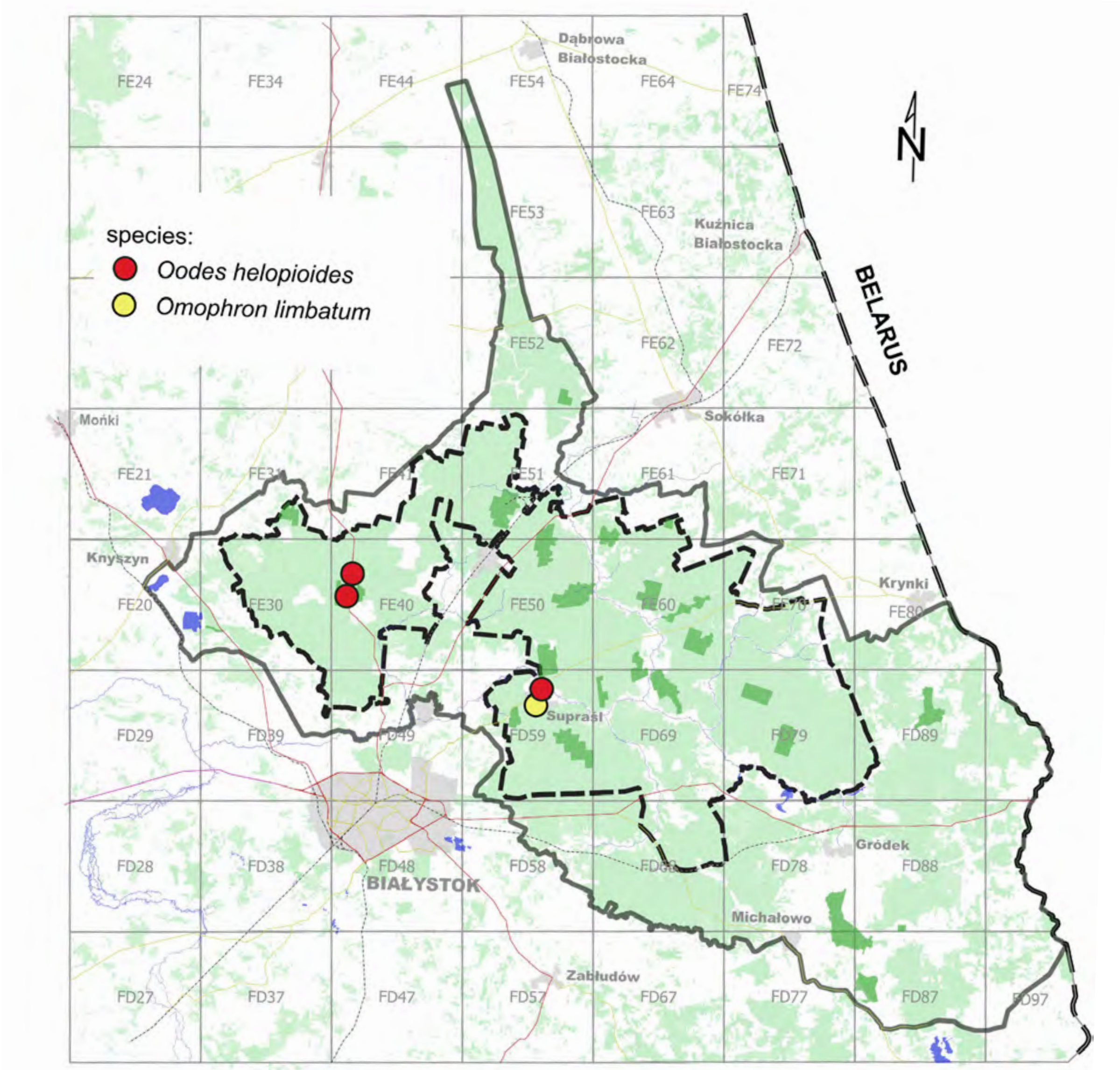


Fig. 74. Localities of *Oodes helopioides* and *Omophron limbatum* (Carabidae) in Knyszyńska Forest

Omophron limbatum (Fabricius, 1777) (Fig. 75)

Fig. 75. *Omophron limbatum* (Fabricius, 1777) (Carabidae) (photo M. Miłkowski)

Material examined (Fig. 74)

Original data: Supraśl (FD59), 14.06.1998 – 1 ex., sandy riverbank, leg. & det. A. Lasoń.

Distribution

Widely distributed species in Europe, found from Spain and England to the European part of Russia, absent in its northern part. In Asia, reported from Turkey, further through several countries in south and central Asia, reaching eastern Siberia. In northern Africa, it is reported from Algeria and Tunisia. In Poland, it is known from the whole country and numerous contemporary reports.

Biology and ecology

An eminently hygrophilous species, it lives on barren sandy soils with an admixture of clay, inhabiting sparsely vegetated banks of still or slow-moving waters (Burakowski et al. 1973).

Notes

Listed as NT (near threatened) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002); listed as VU (vulnerable) in the *Red List of Beetles (Coleoptera) of the Silesian Province* (Greń et al. 2012)

***Patrobus septentrionis australis* Sahlberg, 1875** (Fig. 76)

Fig. 76. *Patrobus septentrionis australis* Sahlberg, 1875 (Carabidae) (photo L. Borowiec)

Material examined (Fig. 77)

Data from the literature: Kopna Góra ad Supraśl (FE60), 25.08.1985 – 1 ex., attracted to artificial light (Wojas 1992).

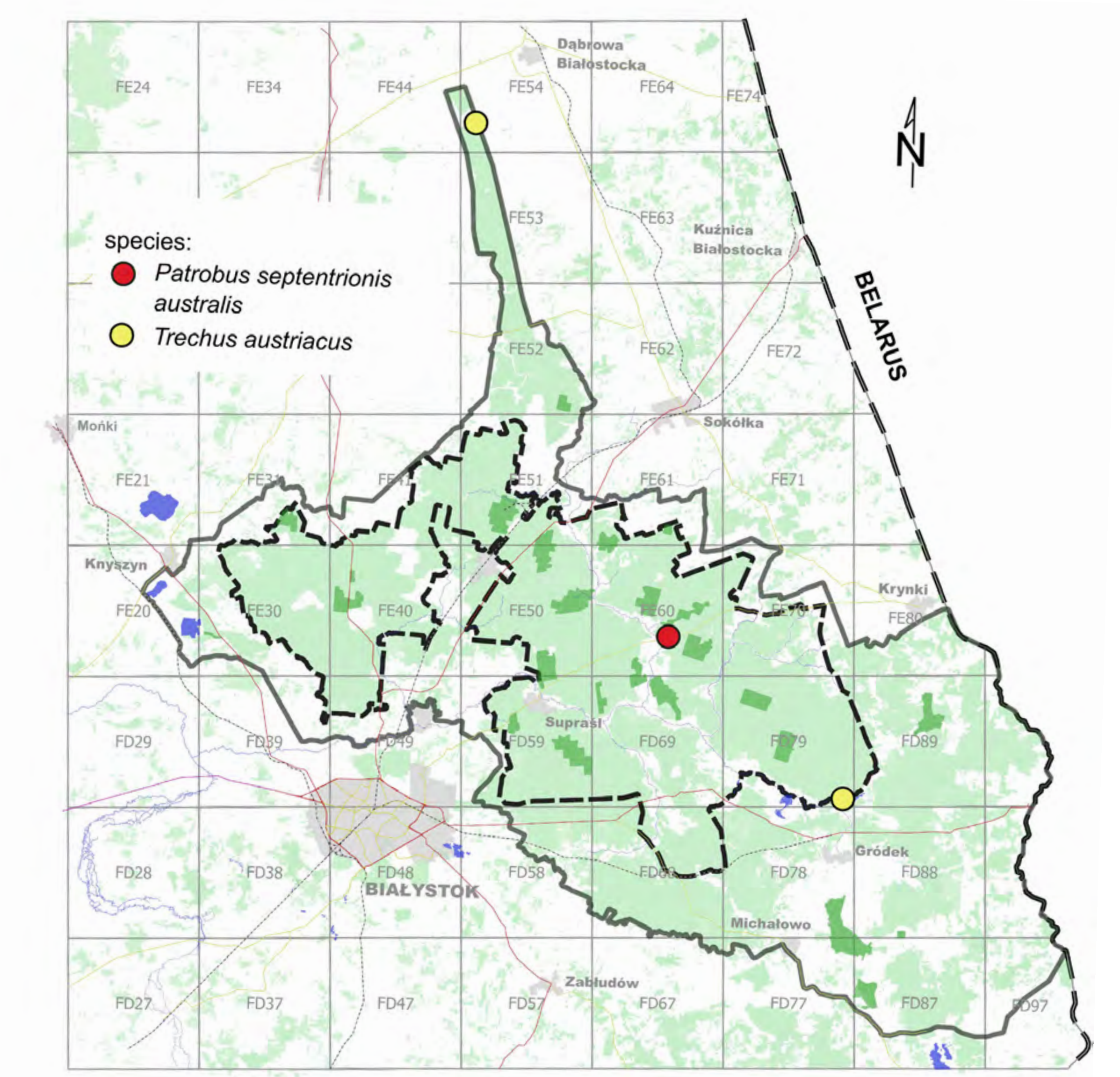


Fig. 77. Localities of *Patrobus septentrionis australis* and *Trechus austriacus* (Carabidae) in Knyszyńska Forest

Distribution

The subspecies *P. septentrionis australis*, the only one that occurs in Poland's fauna, is limited in range to the countries of Central and Northern Europe, where in many it is known from only a small number of reports. In Western Europe, France is the farthest area in which it has been reported, the eastern limit of its range is Belarus and Estonia. From Poland, it has been reported from the Pomeranian Lake District (Gutowski & Ruta 2004; Tończyk et al. 2004), the Wielkopolska-Kujawy Lowland (Sienkiewicz & Konwerski 2004), the Mazovian Lowland (Banaszak et al. 2004), the Małopolska Upland (Jaskuła et al. 2002), Roztocze (Rizun 1998), as well as the Western Beskid and Kraków-Wieluń Upland (Kuśka & Pawłowski 1989).

Biology and ecology

A hygrophilous species, it inhabits clayey and silty shores of standing and slow-moving waters (Burakowski et al. 1973).

Notes

Listed as CR (critically endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Trechus austriacus **Dejean, 1831** (Fig. 78)

Fig. 78. ***Trechus austriacus*** **Dejean, 1831 (Carabidae)** (photo G. Tarwacki)

Material examined (Fig. 77)

Original data: Czarna Białostocka Forest District, Dąbrowa Forest Subdistrict, Suchodolina (FE54), 05.2007 – 2 exx., Barber pitfall trap, leg. & det. G. Tarwacki (Lipiński et al. 2009).

Data from the literature: found in Piłatowszczyźna (FD79) in May 1994 (Kubisz & Pawłowski 1995).

Distribution

Species distributed in Europe from France, Italy, and Greece in the south to Lithuania and the European part of Russia in the north. From Asia, recorded only from Turkey and eastern Siberia. In Poland, it is known from Podlasie (Kubisz & Pawłowski 1995), the Mazovian Lowland (Burakowski et al. 1973; Pawłowski 1975; Czechowski 1979; Banaszak et al. 2004), the Małopolska Upland (Jaskuła & Grabowski 2001; Jaskuła et al. 2002), Roztocze (Rizun 1998), the Kraków-Wieluń Upland (Jaskuła & Stępień 2012), and Upper Silesia (Kubisz et al. 1998).

Biology and ecology

According to the literature, it inhabits caves and old cellars (Burakowski et al. 1973).

Notes

Listed as CR (critically endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Scirtidae

Contacyphon punctipennis Sharp, 1872 (Fig. 79)

Fig. 79. *Contacyphon punctipennis* Sharp, 1872 (Scirtidae) (photo R. Ruta)

Material examined (Fig. 80)

Data from the literature: known in KF from only one locality in the Kopna Góra (FE60) (Kubisz & Szwałko 1991; Burakowski et al. 2000).

Distribution

Eurasian species, distributed in Central and Northern Europe and Siberia. Very rare in Poland, it was first reported from Podlasie (Kubisz & Szwałko 1991), then found in the Pomeranian Lake District (Aleksandrowicz 2009) and the Masurian Lake District (Szawaryn et al. 2021).

Biology and ecology

According to the *Catalogue of the Fauna of Poland* (Burakowski et al. 2000), it was captured in acidic peatlands.

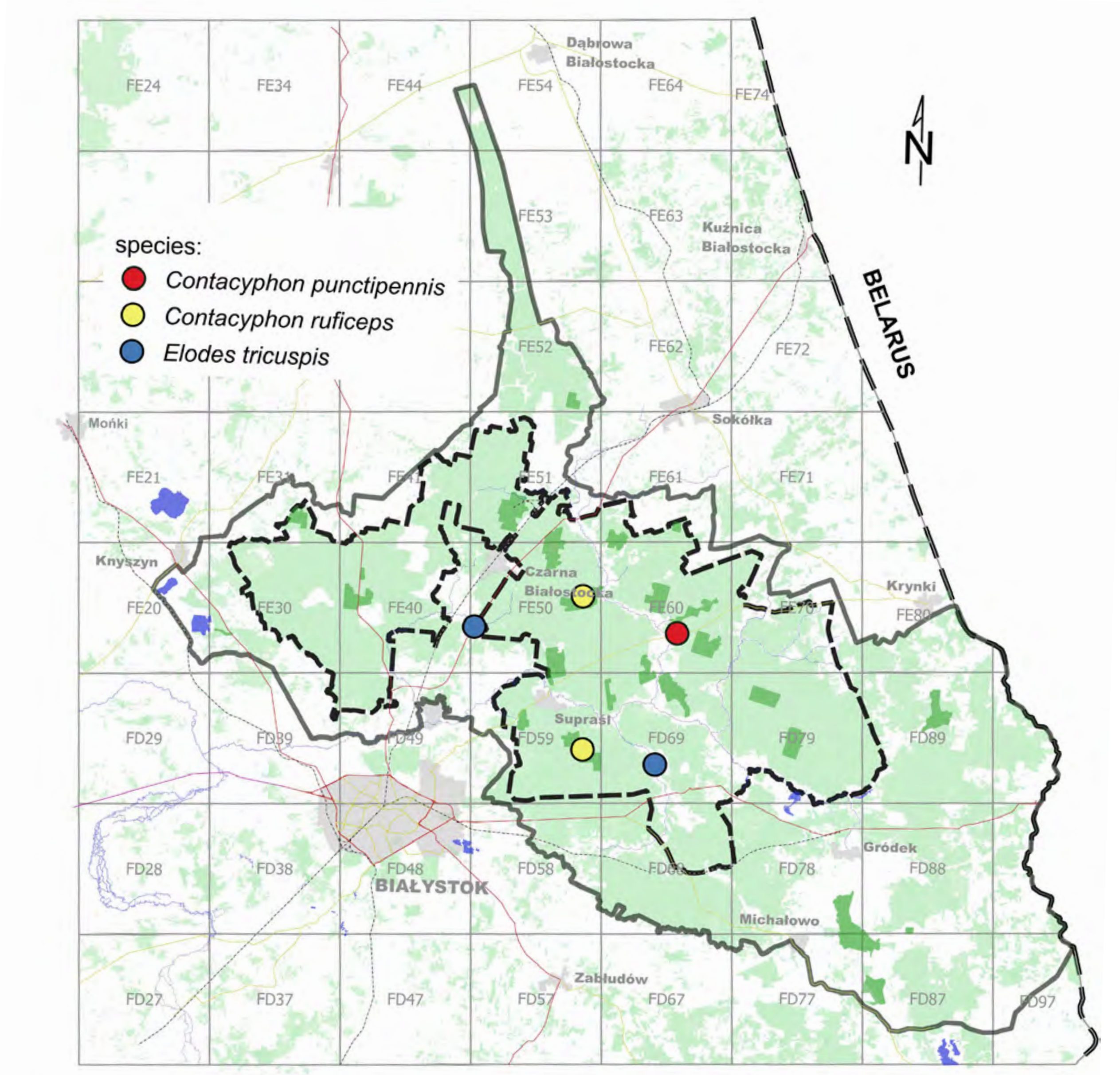


Fig. 80. Localities of *Contacyphon punctipennis*, *C. ruficeps*, and *Elodes tricuspis* (Scirtidae) in Knyszyńska Forest

Contacyphon ruficeps (Tournier, 1868) (Fig. 81)

Material examined (Fig. 80)

Original data: Żednia Forest District, Las Cieliczański Reserve (FD59), 16.06.2010 – 1 ex., leg. J.M. Gutowski, det. R. Ruta (Plan ochrony... Cieliczański Forest 2011). Data from the literature: known in KF from Budzisk Reserve (FE50), 1-30.06.2019 – 1 ex. (Szawaryn et al. 2021).

Distribution

A species distributed mainly in Central and Southern Europe, in addition, known from Latvia, Sweden, Turkey, and Georgia (Klausnitzer 2016). In Poland, the beetle is extremely rare, known so far from only eight zoogeographical regions (Burakowski et al. 2000; Szawaryn et al. 2021).

Biology and ecology

Its bionomics is poorly studied. Captured mainly in swampy meadows, shady stream banks, and heavily overgrown puddles (Burakowski et al. 1983).

Fig. 81. ***Contacyphon ruficeps*** **(Tournier, 1868) (Scirtidae)** (photo R. Ruta)

Elodes tricuspis **(Nyholm, 1985)** (Fig. 82)

Fig. 82. ***Elodes tricuspis*** **(Nyholm, 1985) (Scirtidae)** (photo R. Ruta)

Material aalyzed (Fig. 80)

Original data: Kołodno (FD69), 7.06.2020 – 1 ex., leg. M.A. Mazur, det. A. Lasoń.
Data from the literature: Horodnianka, along the Bartoszycha River (FE50), 27.05.2020 – 9 exx. (Szawaryn et al. 2021).

Distribution

Species mainly distributed in Central and Northern Europe (Klausnitzer 2016). In Poland, the species is very rare. Generally reported by Lohse (1979) from Pomerania. The first certain data are from the Świętokrzyskie Mountains (Byk 2007), later caught in Podlasie (Szawaryn et al. 2021).

Biology and ecology

Habitat requirements unknown.

Eucinetidae

Eucinetus haemorrhoidalis (Germar, 1818) (Fig. 83)

Fig. 83. ***Eucinetus haemorrhoidalis*** **(Germar, 1818) (Eucinetidae)** (photo A. Lasoń)

Material examined (Fig. 84)

Data from the literature: Kopna Góra ad Supraśl (FE60), 25.08.1985 – 1 ex., attracted to artificial light (Kubisz & Szwałko 1991).

Distribution

A species found almost throughout Europe (unknown from the Iberian Peninsula), northern Africa, eastward through Siberia, reaching Japan and the northern provinces of China (Vít 2006). Also in Poland, *E. haemorrhoidalis* is widely distributed and known from almost all zoogeographic regions (Burakowski et al. 1983; Burakowski 1991; Miłkowski 2020).

Biology and ecology

Despite its wide distribution in Poland, this species is secretive, usually caught by chance and as single specimens. It can be found in a wide variety of habitats, whether wet, along water, forest, meadow, sandy or even xerothermic. Adults are active in the evenings and at night, and during the daytime they sit hidden in plant litter, usually at the site of future larval development. *E. haemorrhoidalis* is trophically associated with underground fungi, but the adults feed on molds (probably on the spores of sac fungi), hence they are sometimes found in moldy plant material, often woody. The author of the present study (J. Borowski) caught adults by sifting heaps of moldy hay or the sawdust substrate near rotting stumps and moldy branches lying on the ground.

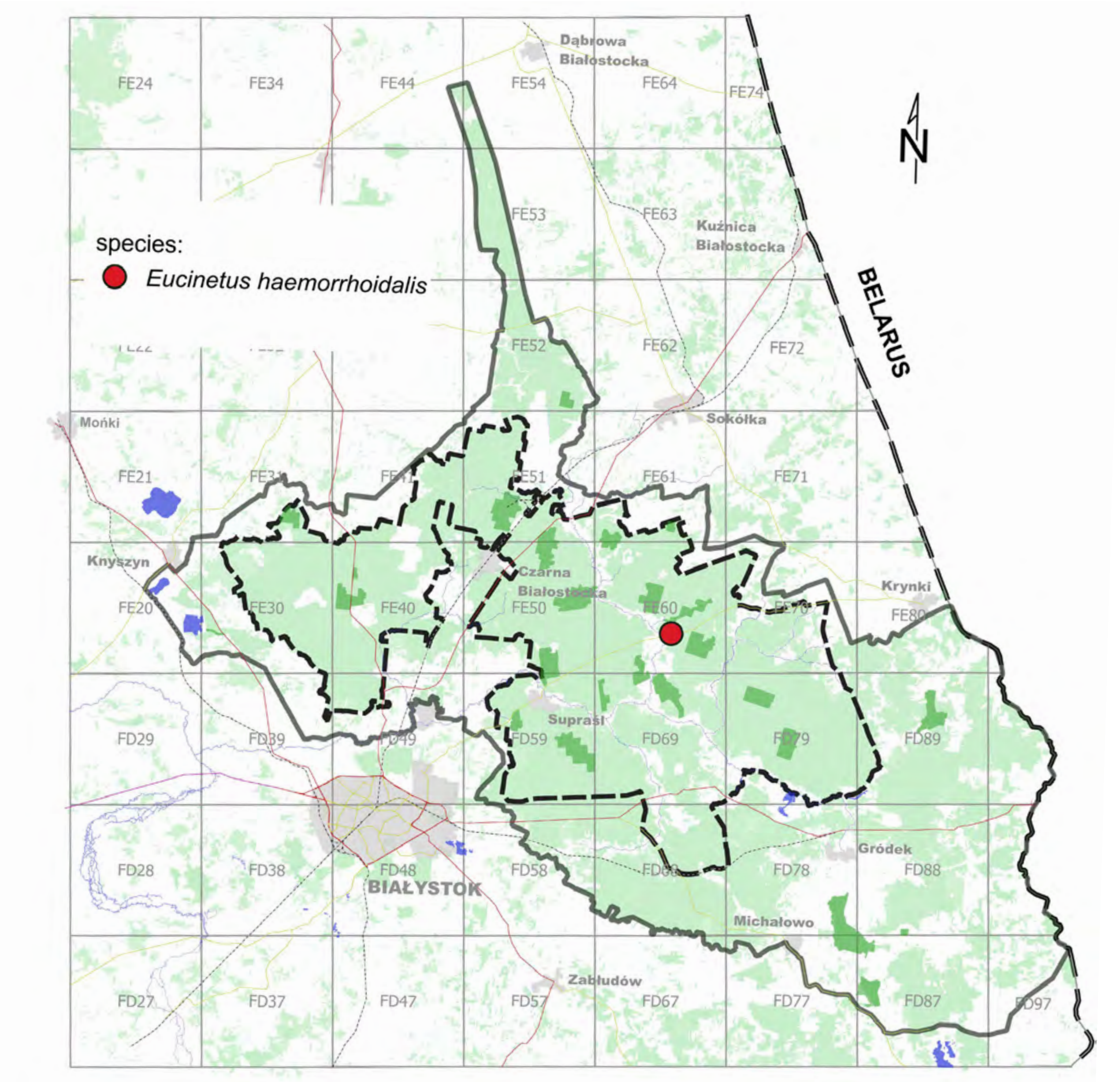


Fig. 84. Locality of *Eucinetus haemorrhoidalis* (Germar, 1818) (Eucinetidae) in Knyszyńska Forest

Buprestidae

Agrilus auricollis Kiesenwetter, 1857 (Fig. 85)

Material examined (Fig. 86)

Original data: Supraśl Forest District, Krasne Reserve (FD59), 10.11.2009 – larval gallery and exit hole on elms *Ulmus* sp. (Fig. 87) (Plan ochrony... Krasne 2011).

Distribution

Known from almost all European countries and Turkey (Löbl & Löbl 2016). In Poland, a rare species with insufficiently known distribution (Burakowski et al. 1985). More recent data comes from Kozienice Forest (Gutowski & Miłkowski 2008), Brynek in Upper Silesia (Szołtys & Grzywocz 2014), the area around Hrubieszów, the Świętokrzyskie Mountains, Koluszki (Borowski et al. 2000; Borowski 2016), as well as Białowieża Forest (Gutowski & Ługowoj 2000; Gutowski et al. 2019).

Fig. 85. ***Agrilus auricollis*** **Kiesenwetter, 1857 (Buprestidae)** (photo R. Królik)

Biology and ecology

Various species of elm *Ulmus* L., less frequently linden *Tilia* L., hornbeam *Carpinus* L., hackberry *Celtis* L., and fig *Ficus* L. are most often reported as larval host plants (Jendek & Poláková 2014). Thin trunks and branches are inhabited. Prefers sunny places (Burakowski et al. 1985; Gutowski original information).

Notes

A new species for Podlasie.

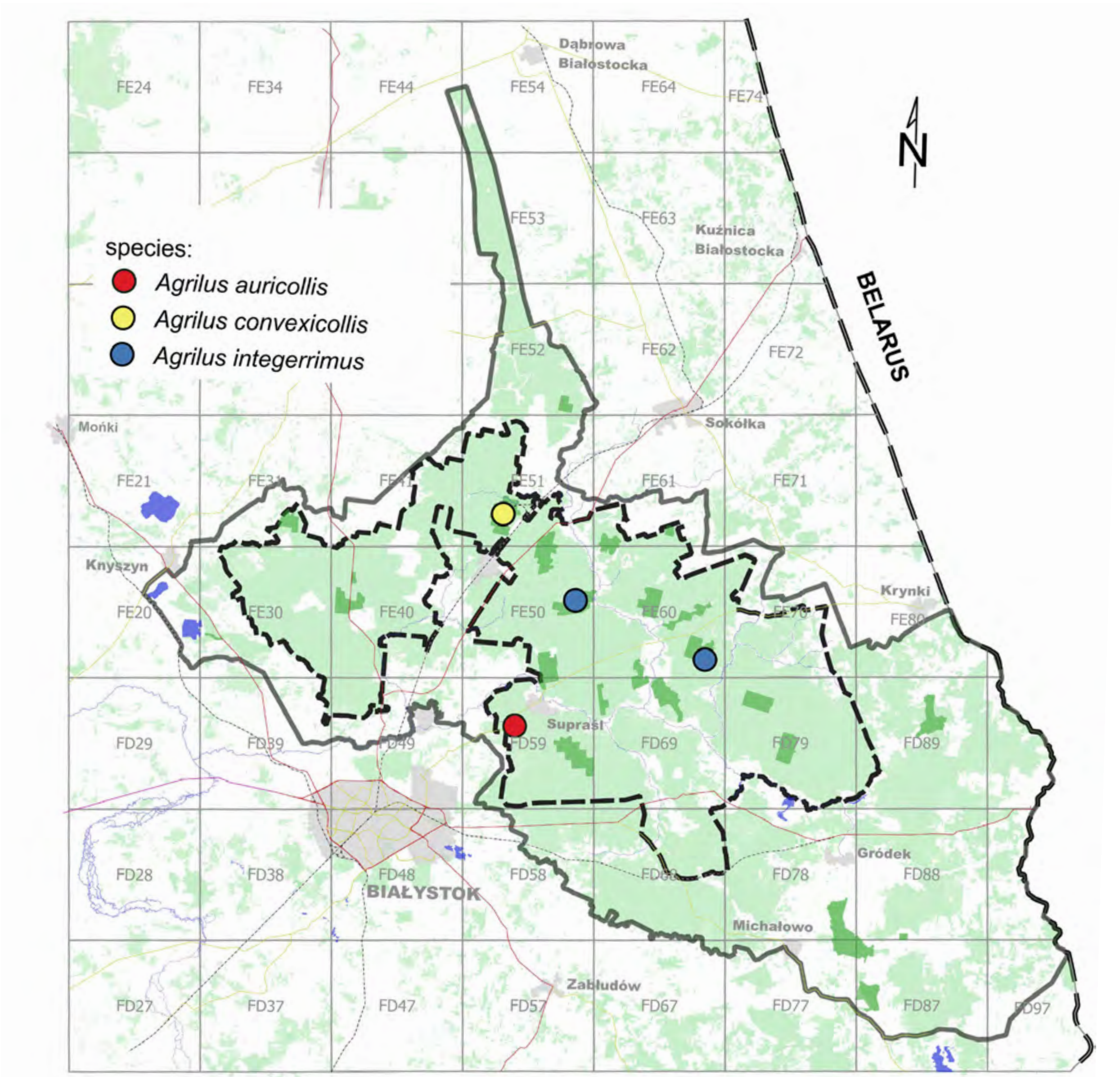


Fig. 86. Localities of *Agrilus auricollis*, *A. convexicollis*, and *A. integerrimus* (Buprestidae) in Knyszyńska Forest

Fig. 87. Larval gallery and exit hole of *Agrilus auricollis* (Buprestidae) (photo K. Supko)

Agrilus convexicollis Redtenbacher, 1847 (Fig. 88)

Material examined (Fig. 86)

Original data: Czarna Białostocka Forest District, Jesionowe Góry Reserve (FE51), 23.06.2002 – 1 ex., moist coniferous forest with spruce, 4.10.2003 – 1 ex., fresh forest with ash, Moericke trap, leg. J. Sawoniewicz, det. J.M. Gutowski; Czarna Białostocka Forest District, Budzisk Reserve (FE50), 4.09.2006 – 1 ex., Moericke trap, leg. J. Sawoniewicz, det. J.M. Gutowski. Information on these specimens was used in the Conservation Plan for Budzisk Reserve (2011) and the Conservation Plan for Jesionowe Góry Reserve (2011).

Fig. 88. ***Agrilus convexicollis* Redtenbacher, 1847 (Buprestidae)** (photo R. Królik)

Distribution

Known from almost all European countries and Turkey (Löbl & Löbl 2016). Quite rare in Poland (Burakowski et al. 1985). More recent information comes from the Kozienice Forest (Gutowski & Miłkowski 2008), the Świętokrzyskie Mountains (Bidas 2015a), Rogów near Koluszki (Borowski 2016), Białowieża Forest (Gutowski et al. 2019), the Zwoleńka valley (Gutowski & Miłkowski 2020), and Kampinos National Park (Marczak et al. 2020a).

Biology and ecology

It develops primarily on ash trees *Fraxinus* L., less frequently on privet *Ligustrum* L., euonymus *Euonymus* L., olive *Olea* L., and lilac *Syringa* L. (Jendek & Poláková 2014). Larvae live in thin twigs and feed under the bark and in wood (Gutowski & Miłkowski 2008).

Notes

A new species for Podlasie.

Agrilus integerrimus (Ratzeburg, 1837) (Fig. 89)

Fig. 89. ***Agrilus integerrimus*** **(Ratzeburg, 1837) (Buprestidae)** (photo R. Królik)

Material examined (Fig. 86)

Original data: Czarna Białostocka Forest District, Budzisk Reserve (FE50), 11.06.1995 – 1 ex., mixed coniferous forest, clearing, leg. A. Lasoń, det. J.M. Gutowski; Supraśl Forest District, Stare Biele Reserve ad Kopna Góra (FE60), 3.06-9.07.2020 – 2 exx., green Lindgren funnel trap, leg. & det. J.M. Gutowski.

Data from the literature: Budzisk Reserve (FE50) from Marczak et al. (2023c).

Distribution

Occurs in Southern and Central Europe, also recorded from the southern provinces of Finland and Transcaucasia. Its vertical range includes areas from 200 to 1200 m above sea level (Bílý 2002). In Poland, it probably occurs throughout the area, but is caught infrequently. Information on distribution was collected by Burakowski et al. (1985). More recent data comes from Roztocze (Gutowski 1992), the Świętokrzyskie Mountains (Bidas 1997), Białowieża Forest (Gutowski & Ługowoj 2000), Kujański Forest near Złotów (Ruta et al. 2014), and Suwalski Landscape Park (Gutowski et al. 2020a).

Biology and ecology

Occurs in deciduous and mixed forests, preferring fairly moist habitats. Larvae develop under the bark and in the wood of the shoots of mezereum – *Daphne mezereum* L., also in other mezereum species in several countries. It inhabits sunny shrubs. Larvae feed in the underground and aboveground parts of the plant, in shoots 10-30 mm thick. The tunnels follow the axis of the shoots, and the pupal cell is located under the bark, sometimes in the wood. Development takes one year. Imagines occur from May to August; they have been observed biting the edges of mezereum leaves (Bílý 2002; Burakowski et al. 1985; Gutowski & Ługowoj 2000).

Notes

Listed as NT (near threatened) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002), as well as in the *Red List of Beetles (Coleoptera) of the Silesian Province* (Greń et al. 2012).

A new species for Podlasie.

Agrilus pseudocyaneus Kiesenwetter, 1857 (Fig. 90)

Fig. 90. *Agrilus pseudocyaneus* Kiesenwetter, 1857 (Buprestidae) (photo R. Królik)

Material examined (Fig. 91)

Data from the literature: known in KF from two localities: Sochonie (FD49), 7.07.1996 – 3 exx.; Budzisk Reserve, compartment 124b (FE50), 1-30.06.2019 – 2 exx. (Marczak et al. 2020b).

Distribution

Known in Europe from Finland, Belarus, the southern and central European part of Russia, Poland, Ukraine, Austria, Switzerland, as well as from Western Siberia (Löbl & Löbl 2016). Rare everywhere. Until recently, it was known in Poland only from the Bieszczady Mountains and Białowieża Forest (Gutowski 1993; Gutowski & Ługowoj 2000; Gutowski et al. 2019). It has recently been found in KF (Marczak et al. 2020b).

Biology and ecology

The species is biologically associated with aspen *Populus tremula* L. Larvae feed under the bark and in the wood of dead and dying branches and thin trunks. Imagines can be found in June and July on freshly fallen or felled trees in sunny places (Gutowski & Ługowoj 2000).

Notes

Listed as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

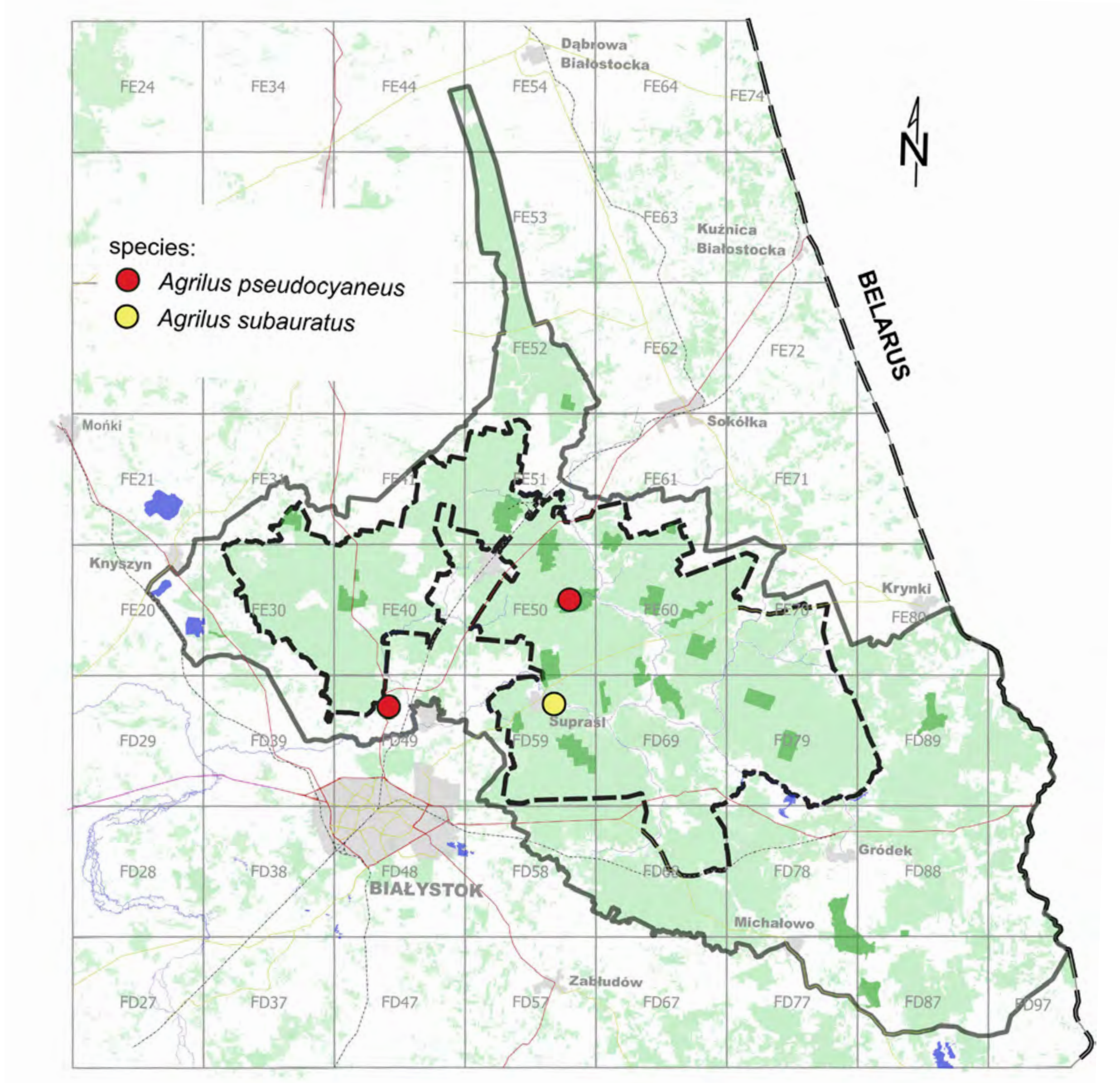


Fig. 91. Localities of *Agrilus pseudocyaneus* and *Agrilus subauratus* (Buprestidae) in Knyszyńska Forest

Agrilus subauratus **Gebler, 1833** (Fig. 92)

Fig. 92. ***Agrilus subauratus*** **Gebler, 1833 (Buprestidae)** (photo R. Królik)

Material examined (Fig. 91)

Original data: found near Supraśl (FD59) at the end of June 1994 – 1 ex., leg. L. Sawicki, det. J.M. Gutowski.

Distribution

Known from most European as well as Asian countries: western and eastern Siberia, Kyrgyzstan, Kazakhstan, and Mongolia (Löbl & Löbl 2016). In Poland, it is quite rare, but locally occurs in greater numbers (Burakowski et al. 1985; Gutowski & Miłkowski 2008). Reported by Burakowski et al. (1985) in Podlasie. More recent data are from Kozienice Forest (Gutowski & Miłkowski 2008), Białowieża Forest (Gutowski 2010), the Świętokrzyskie Mountains (Bidas 2015a), the Rogów area (Borowski 2016), and Kampinos National Park (Marczak et al. 2020a).

Biology and ecology

The species is biologically associated mainly with willows *Salix* L., but also with poplars *Populus* L. (Jendek & Poláková 2014). It inhabits moist forests and thickets with a high proportion of willows. Imagines can be found from June to August in sunny places (Burakowski et al. 1985; Gutowski & Miłkowski 2008).

Trachys fragariae Brisout de Barneville, 1874 (Fig. 93)

Fig. 93. *Trachys fragariae* Brisout de Barneville, 1874 (Buprestidae) (photo A. Jadwiszczak)

Material examined (Fig. 94)

Original data: Supraśl Forest District, Woronicza Reserve (FE60), 9.06.2020 – 2 exx., leg. & det. M.A. Mazur.

Distribution

A Southern European species, extending into Central Europe, recorded in Portugal, Spain, France, Italy, Greece, Bulgaria, Bosnia and Herzegovina, Switzerland, Austria, Germany, Poland, Czech Republic, Slovakia, Hungary, Ukraine, and the southern and central European part of Russia (Löbl & Löbl 2016). In recent years, new localities have been discovered in Lithuania (Tamutis et al. 2011) and Kaliningrad Oblast (Russia) (Alekseev 2020). In Poland, it is known from a small number of localities scattered in different parts of the country (Burakowski et al. 1985). More recent information comes from the vicinity of Konin (Myssura 2002), the Byszewickie Hills in the Noteć River valley, and the xerothermic grasslands near Ślesin (Ruta 2006), Ligota Dolna in Silesia, Wisła-Obłaziec in the Western Beskid (Szołtys & Grzywocz 2014), and Biebrza National Park (Plewa et al. 2021).

Biology and ecology

A species that prefers warm, open environments (steppes, xerothermic grasslands, psammophilous grasslands, dry meadows). Larvae excavate tunnels in the leaves of plants in the Rosaceae family, such as creamy strawberry *Fragaria viridis* Duch., wild strawberry *F. vesca* L., silverweed *Potentilla anserina* L., spring cinquefoil *P. neumanniana* Rchb., sulphur cinquefoil *P. recta* L., and creeping cinquefoil *P. reptans* L. After leaving their pupal cells, the beetles emerge in the second half of summer, usually overwintering in the soil and litter under their host plants. In early spring, they appear on plants and live until June. Eggs are usually laid on the upper side of leaves, and the chambered tunnels are located on the terminal parts of leaves. Larval development takes about 24 days, with a total development time of about 44 days. *Trachys fragariae* can have two generations per year (Burakowski et al. 1985; Bílý 2002).

Notes

This southern species is probably shifting its range northward as the climate warms. A new species for Podlasie.

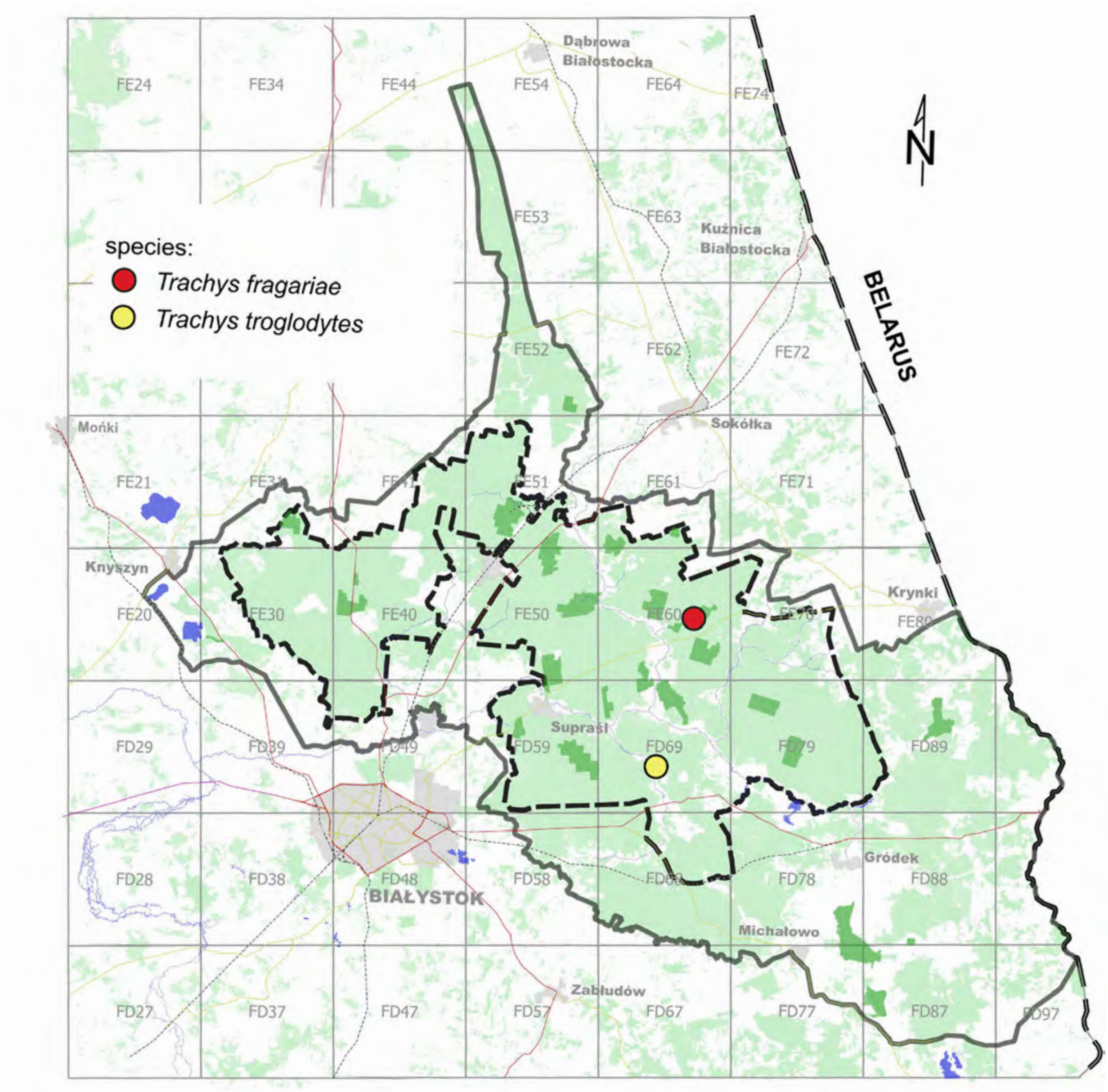


Fig. 94. Localities of *Trachys fragariae* and *T. troglodytes* (Buprestidae) in Knyszyńska Forest

Trachys troglodytes Gyllenhal, 1817 (Fig. 95)

Material examined (Fig. 94)

Original data: Żednia Forest District, Kołodno (FD69), 7.06.2020 – 2 exx., leg. & det. M.A. Mazur.

Distribution

Known from most European countries (Löbl & Löbl 2016). Rare in Poland, reported from only a small number of localities (Burakowski et al. 1985). More recent data are from Roztocze (Gutowski 1992), the area around Kielce (Bidas 1997), and Olsztyn (Marczak & Lasecki 2011).

Fig. 95. *Trachys troglodytes* Gyllenhal, 1817 (Buprestidae) (photo L. Borowiec)

Biology and ecology

The species occurs in warm steppe-like sites on sunny slopes and uncultivated grasslands. Eggs are laid on the upper surface of leaves. Larvae tunnel the leaves, pupating in a tunnel chamber. Larval development takes 22–30 days. There are usually two generations per year. The imago overwinters. It develops in plants of the teasel family (Dipsaceae): field scabious *Knautia arvensis* (L.) Coult., *K. dipsacifolia* Kreutzer, *Scabiosa canescens* Waldst. & Kit., *S. columbaria* L., and devil's-bit *Succisa pratensis* Moench (Bílý 2002; Burakowski et al. 1985).

Notes

A new species for Podlasie.

Dicerca alni (Fischer von Waldheim, 1824) (Fig. 96)

Material examined (Fig. 97)

Original data: Supraśl Forest District, Krasne (FD59), late September 1989 – 1 dead imago in an alder trunk, leg. L. Sawicki, det. J.M. Gutowski; ad Supraśl (FD59), early June 1990 – 1 ex., leg. L. Sawicki, det. J.M. Gutowski; Supraśl Forest District, Krasne Reserve (FD59), 10.11.2009 – imago remains in an alder log, leg. & det. J.M. Gutowski (Plan ochrony... Krasne 2011); Czarna Białostocka Forest District, Taboły Reserve, compartment 74/75 (FE50), 13.05-3.06.2020 – 1 ex., violet Lindgren funnel trap, leg. & det. J.M. Gutowski; Supraśl Forest District, Stare Biele Reserve (FE60), 3.06-9.07.2020 – 1 ex., violet Lindgren funnel trap, leg. & det. J.M. Gutowski; Waliły Forest District, Chomontowszczyzna Reserve, compartment 63 (FD79), 1-23.06.2021 – 2 exx., violet Lindgren funnel trap, leg. K. Sućko, det. J.M. Gutowski.

Fig. 96. ***Dicerca alni*** **(Fischer von Waldheim, 1824) (Buprestidae)** (photo M. Piotrowski)

Distribution

Occurs throughout Europe, also recorded in northern Africa (Algeria, Tunisia) and Asia (Turkey, Kazakhstan) (Löbl & Löbl 2016). It is not often found in Poland (Burakowski et al. 1985), but this is partly due to the secretive habits of the imagines. Recently reported from Kozienice Forest (Gutowski & Miłkowski 2008), the Spalsko-Rogowskie Forests (Rutkiewicz et al. 2013), Białowieża, the area around Kuźnica Białostocka (Plewa et al. 2014), and Kampinos National Park (Marczak 2020), among others.

Biology and ecology

Occurs in moist but well sunlit habitats, often on the banks of rivers and streams. It inhabits the lower parts of the trunks of middle-aged and old trees. Preferred host plants are black alder *Alnus glutinosa* (L.) Gaertn. and grey alder *A. incana* (L.) Moench. but it also develops on small-leaved linden *Tilia cordata* Mill., European hornbeam *Carpinus betulus* L., European beech *Fagus sylvatica* L., common walnut *Juglans regia* L., and common hazel *Corylus avellana* L. Larvae live under the bark and in the wood of weakened, withering, and dead trees (Fig. 98). Its developmental cycle takes two to three years. Imagines can be found from May to late autumn (Burakowski et al. 1985; Bílý 2002; Gutowski & Miłkowski 2008; Gutowski original information).

Notes

Included in the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2018) in group 2 (relict *sensu lato*).

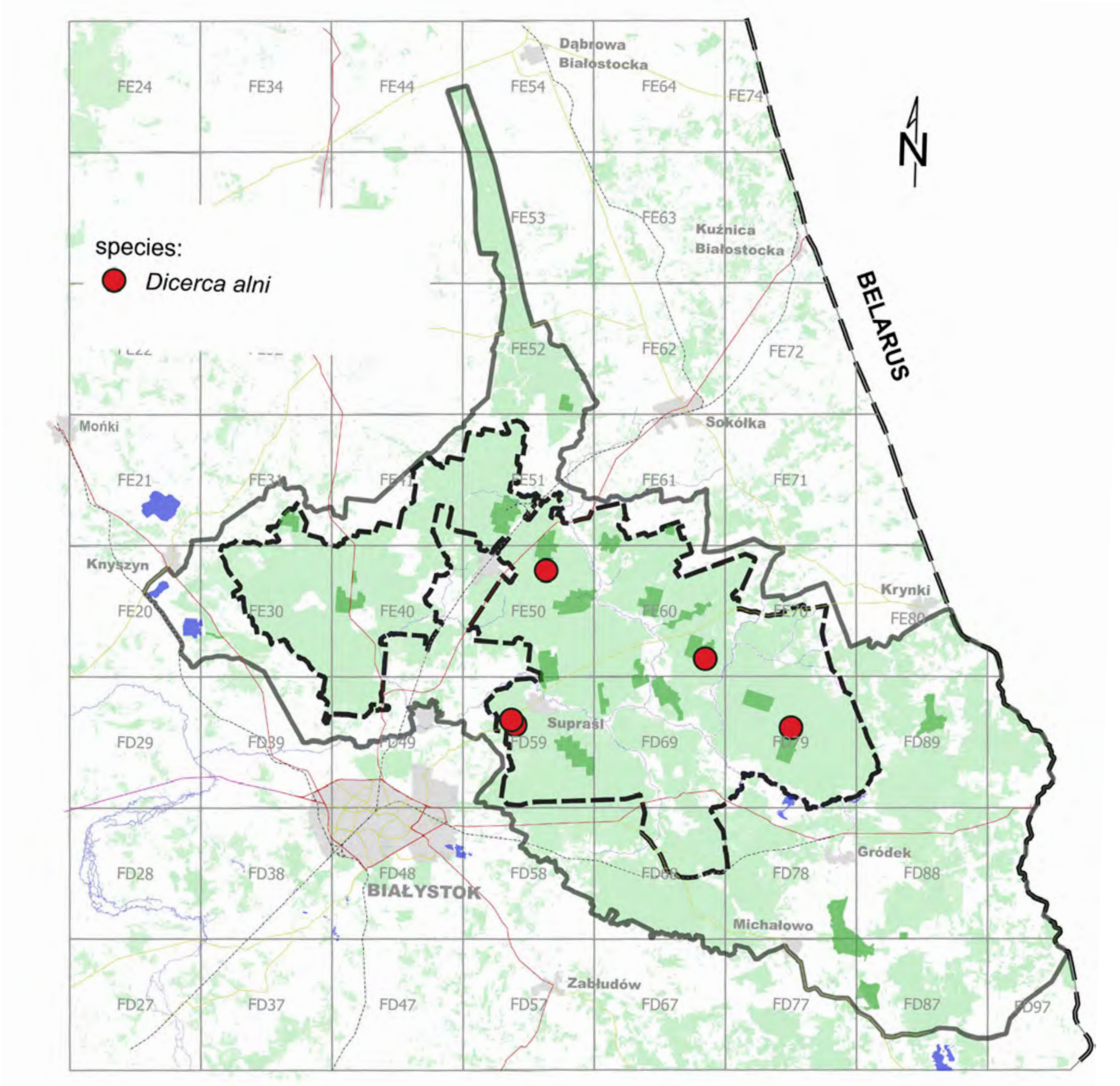


Fig. 97. Localities of *Dicerca alni* (Buprestidae) in Knyszyńska Forest

Fig. 98. A young larva of *Dicerca alni* feeding under the bark of a black alder tree (photo J. Tatur-Dytkowski)

***Lamprodila decipiens* (Gebler, 1847)** (Fig. 99)

Fig. 99. *Lamprodila decipiens* (Gebler, 1847) (Buprestidae) (photo J.M. Gutowski)

Material examined (Fig. 100)

Original data: Knyszyn Forest District, ad Nowiny-Zdroje, compartment 86 (53.31714, 23.04702, FE30), 10.06.2021 – 1 larva in a live shoot of goat willow *Salix caprea* L., old gravel pit, leg. & det. J.M. Gutowski.

Distribution

Known from most countries in Europe, also found in North Africa (Egypt) and Asia (Turkey, Iran, Turkmenistan, Kyrgyzstan, Uzbekistan, Kazakhstan, western and eastern Siberia in Russia) (Löbl & Löbl 2016). In Poland, it is very rarely reported (Burakowski et al. 1985), although this may be partly due to the secretive habits of larvae and imagines as well as insufficient knowledge of its biology among searchers. It has recently been reported from Kozienice Forest and Radom (Gutowski & Miłkowski 2008), Białowieża Forest (Gutowski 2010) and the Świętokrzyskie Mountains (Bidas 2012).

Biology and ecology

It is most often found in places with strong sunlight at the edges of tree stands, on dunes and in sand (gravel) pits, as well as in river valleys where there are clusters of willows. Larvae develop in the living branches and thin trunks of willows (1.5-15 cm), especially goat willow. They are most often found in the forks of the branches or trunk, although root collar colonization also occurs, especially in young trees growing on dunes, not covered by other plants. Foraging sites are difficult to find, the colonized plant shows no obvious signs of weakening. The leaves do not yellow, and the larva's feeding area occupies a relatively small area. At the site of the larva's feeding, the plant sometimes secretes a rusty sap, the cork layer turns brown, a thickening develops, and sometimes the branch is broken off by the wind. It is rare for an infested branch to die. Abandoned feeding sites scar over time, already becoming difficult to identify after a few years. Development usually takes 2 years. The following willow species have been identified as host plants for the larvae: eared willow *Salix aurita* L., goat willow *S. caprea* L., grey willow *S. cinerea* L., European violet willow *S. daphnoides* VILL., bitter willow *S. eleagnos* Scop., dark-leaved willow *S. myrsinifolia* Salisb., purple willow *S. purpurea* L., and basket willow *S. viminalis* L. In the Czech Republic, one case of larval development was also reported on the whitebeam *Sorbus aria* (L.) Crantz (Bílý 2002; Gutowski & Miłkowski 2008).

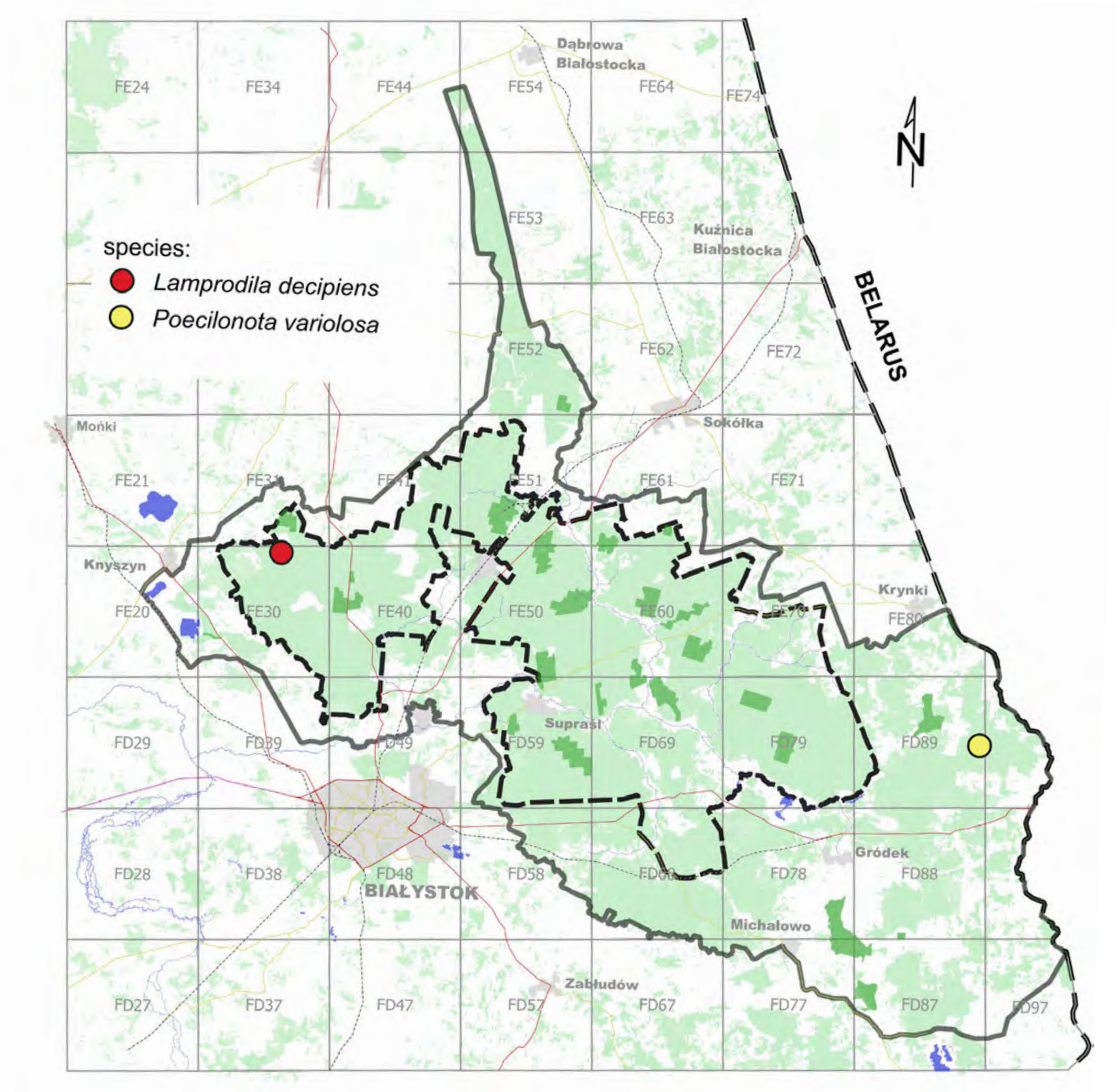


Fig. 100. Localities of *Lamprodila decipiens* and *Poecilonota variolosa* (Buprestidae) in Knyszyńska Forest

Notes

A new species for Podlasie.

Poecilonota variolosa (Paykull, 1799) (Fig. 101)

Fig. 101. *Poecilonota variolosa* (Paykull, 1799) (Buprestidae) (photo J.M. Gutowski)

Material examined (Fig. 100)

Original data: Krynki Forest District, Kruszyniany Forest Subdistrict, compartment 530 (FD89), 22.08.2022 – 1 ex., leg. & det. J. Hilszczański; specimens were observed four times in July and August 2023 in this locality, which has aspen trees with larval galleries, leg. & det. T. Jaworski & R. Plewa.

Distribution

Occurs in most of Europe, also known from western and eastern Siberia, Kazakhstan, and Mongolia (Löbl & Löbl 2016). In Poland, it is known from a very small number of localities (Burakowski et al. 1985). New information is from Chojnów (Wełnicki 2001), Kozienice Forest (Gutowski & Miłkowski 2008), Szepietowo (Greń & Wąsiński 2009), and Białowieża Forest (Gutowski 2010).

Biology and ecology

The species is trophically associated with poplars, the main host plant of the larvae is aspen *Populus tremula* L. It prefers sunny places, usually forest edges and roadside trees. Imagines are attracted to fresh aspen wood, mechanically damaged trunks, and those weakened by fire. Branches are less frequently colonized. It usually develops near lateral necroses on thick trunks of living trees. Two-year development cycle. Imagines emerge in June and July, feeding on the leaves of their host plants before copulating. In addition to aspen, the species has been confirmed developing on silver poplar *Populus alba* L. and black poplar *P. nigra* L. (Bílý 2002; Gutowski & Miłkowski 2008).

Throscidae

Aulonothroscus laticollis (Rybiński, 1897) (Fig. 102)

Fig. 102. ***Aulonothroscus laticollis*** **(Rybiński, 1897) (Throscidae)** (photo A. Lasoń)

Material examined (Fig. 103)

Data from the literature: Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 110 (FE50), 16.07.2016 – 2 exx., Netocia type trap on pedunculate oak *Quercus robur* L. (Mokrzycki et al. 2022). Also found in Budzisk Reserve (Marczak et al. 2023c).

Distribution

Species known from a small number of countries: France (Van Meer 1998), Spain (Irurzun 2014), Czech Republic (Mertlik & Jeniš 2013), Poland, Croatia, and Finland (Burakowski 2000). Everywhere found singly. From Poland, it was described on the basis of specimens found in Niepołomice Forest, but was later not found there. However, it is encountered regularly in Białowieża Forest (Burakowski 2000). The KF is the second, contemporary locality of this species in Poland.

Biology and ecology

The species is considered to be a relict of primeval forests, probably associated with mixed deciduous and coniferous forests. Knowledge about its biology is fragmented; larvae have been observed in France at the interface between the decaying and hard wood of oak (Van Meer 1998).

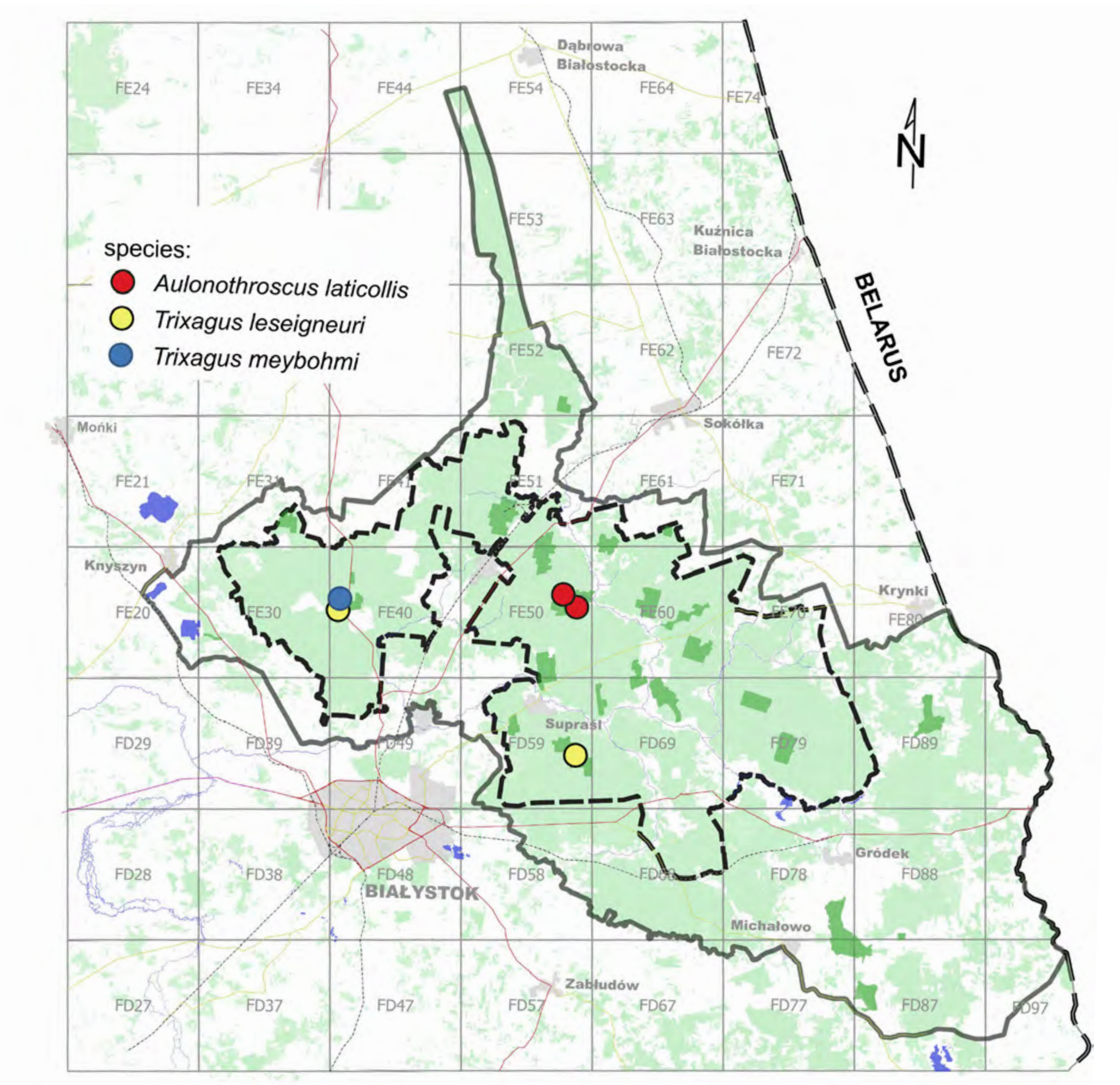


Fig. 103. Localities of *Aulonothroscus laticollis*, *Trixagus leseigneuri*, and *T. meybohmi* (Throscidae) in Knyszyńska Forest

Notes

Listed as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Trixagus leseigneuri Muona, 2002 (Fig. 104)

Material examined (Fig. 103)

Original data: Knyszyn Forest District, Krzemianka Reserve (FE40), 22.08.2020 – 2 exx., leg. & det. A. Lasoń; Żednia Forest District, Las Cieliczański Reserve (FD59), 8.06.2020 – 1 ex., leg. & det. A. Lasoń.

Distribution

Trixagus leseigneuri was separated in 2002 as a new taxon from *Trixagus carinifrons* (Muona, 2002). Its distribution has not yet been thoroughly determined, but it can be assumed that its range includes areas of

Western and Central Europe (Muona 2002; Mertlik & Leseigneur 2007). So far in Poland, it has been reported from Wielkopolska Province (Renner & Messutat 2007; Przewoźny 2011) and Świętokrzyski National Park (Buchholz et al. 2021), but a wider distribution of the species cannot be ruled out.

Fig. 104. *Trixagus leseigneuri* Muona, 2002 (Throscidae) (photo A. Lasoń)

Biology and ecology

Its biology is not known, but as with other species of the genus *Trixagus* Kugelann, the larvae probably feed on mycorrhizal fungi. Adult beetles were caught in the bark at the base of standing trees (Mertlik & Leseigneur 2007).

Notes

A new species for Podlasie.

Trixagus meybohmi Leseigneur, 2005 (Fig. 105)

Material examined (Fig. 103)

Original data: Knyszyn Forest District, Krzemianka Reserve (FE40), 22.08.2020 – 1 ex., mixed forest, beating sheet onto an entomological umbrella, leg. & det. A. Lasoń.

Distribution

Trixagus meybohmi was separated in 2005 as a new taxon from *Trixagus carinifrons* (Bonvouloir, 1859). Its distribution is not yet thoroughly investigated, but it can be assumed that its range covers almost all of Europe, and it has also been introduced to North America and Canada (Leseigneur 2005; Mertlik & Leseigneur 2007; Zając et al. 2020). From Poland, it has so far been found only in Silesia (Zając et al. 2020) and Świętokrzyski National Park (Buchholz et al. 2021), but a wider distribution of the species cannot be ruled out.

Fig. 105. *Trixagus meybohmi* Leseigneur, 2005 (Throscidae) (photo A. Lasoń)

Biology and ecology

The biology of the species is poorly understood. As with other species of the genus *Trixagus*, the larvae probably feed on mycorrhizal fungi (Zając et al. 2020). Adult forms are active from early spring until the last warm days of autumn.

Notes

A new species for Podlasie.

Eucnemidae

Dromaeolus barnabita (Villa et Villa, 1838) (Fig. 106)

Material examined (Fig. 107)

Original data: Czarna Białostocka Forest District, Sławno Forest Subdistrict, compartment 91 (FE52), 10-14.07.2023 – 1 male, bark beetle pheromone trap, leg. R. Plewa & T. Jaworski, det. R. Plewa.

Data from the literature: Czarna Białostocka Forest District, Sławno Forest Subdistrict, ad Połomin (FE53), 1-31.07.2022 – 1 ex. (Marczak et al. 2023b).

Distribution

A very rare species, known from a small number of scattered localities in Central and Southern Europe, also found in Algeria and the Caucasus (Burakowski et al. 1985). In Poland, it is known from several zoogeographical regions, reports are based on single specimens (Marczak et al. 2023b).

Fig. 106. *Dromaeolus barnabita* (Villa et Villa, 1838) (Eucnemidae) (photo A. Lasoń)

Biology and ecology

It develops mainly in dry branches, high in the crown of living or dying trees, or in recently broken or fallen trunks of oaks, less frequently hornbeams and lindens. Pupae appear in May, and adults appear in June and live until July (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

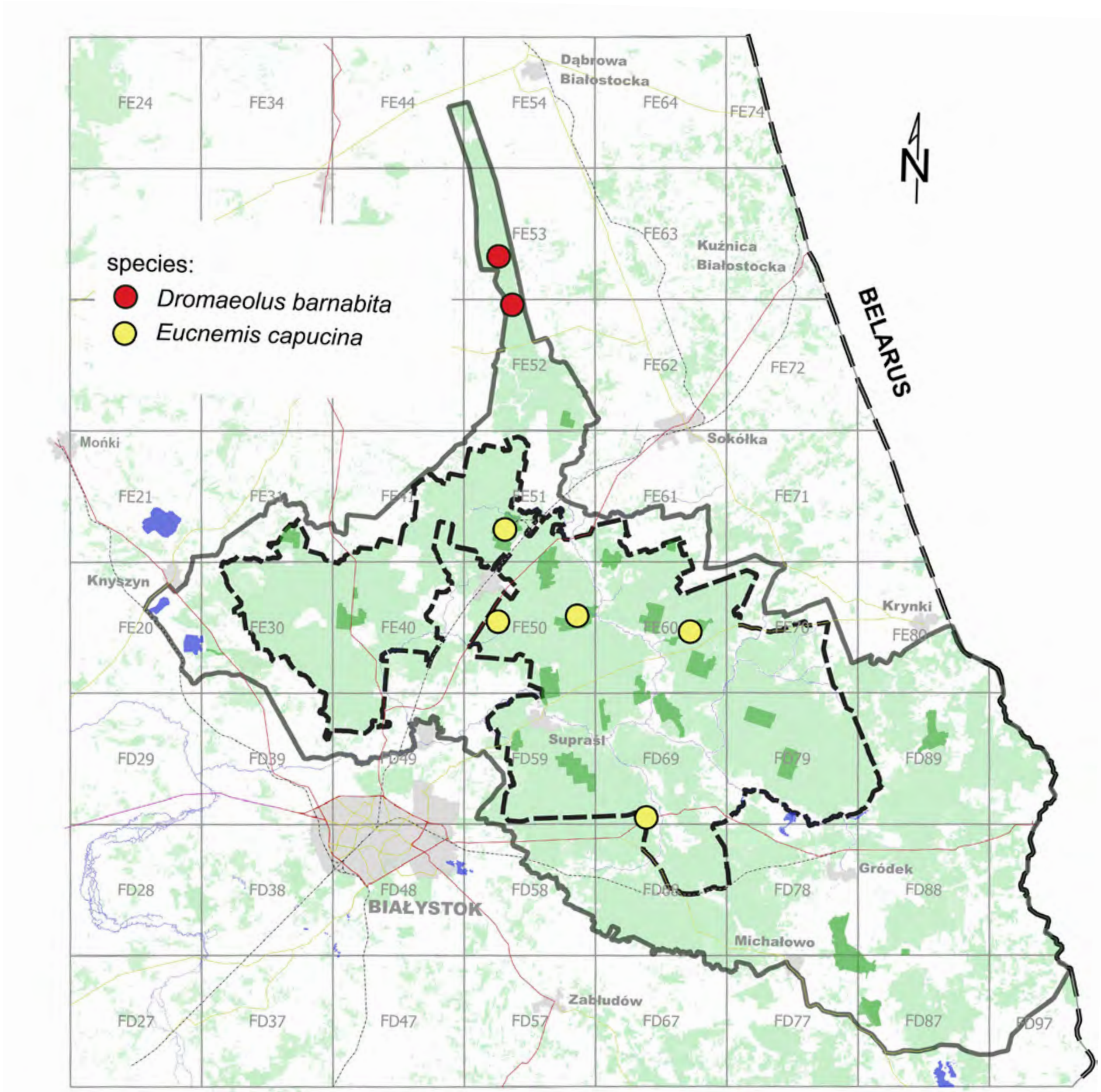


Fig. 107. Localities of *Dromaeolus barnabita* and *Eucnemis capucina* (Eucnemidae) in Knyszyńska Forest

***Eucnemis capucina* Ahrens, 1812** (Fig. 108)

Fig. 108. *Eucnemis capucina* Ahrens, 1812 (Eucnemidae) (photo A. Lasoń)

Material examined (Fig. 107)

Original data: Żednia Forest District, ad Królowy Most, compartment 167 (FD69), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń.

Data from the literature: Czarna Białostocka Forest District, Horodnianka Forest Subdistrict (FE50), 1-30.06.2021 – 1 ex., IBL-5 trap on pine; Budzisk Reserve (FE50), 1-31.07.2019 – 1 ex., IBL-5 trap on aspen, 1-31.07.2019 – 1 ex., IBL-5 trap on spruce; Jesionowe Góry Reserve (FE51), 1-30.06.2020 – 2 exx., IBL-5 trap on linden, 1-30.06.2020 – 1 ex., IBL-5 trap on hornbeam; Czarna Białostocka Forest District, Sławno Forest Subdistrict, ad Połomin (FE53), 1-31.07.2022 – 1 ex., IBL-5 trap on oak; Woronicza Reserve (FE60), 30.07.2022 – 1 ex., mixed coniferous forest, beating sheet (Marczak et al. 2023b).

Distribution

The species is distributed from the southern part of Northern Europe as far as the Pyrenees, Italy and Transylvania, reaching east to Western Siberia. In Poland, it probably occurs throughout the country except in the higher mountainous areas (Burakowski et al. 1985).

Biology and ecology

Larvae live in soft, moist, white- or yellow rotting wood, in the walls of hollows, in logs, and the hollow trunks of deciduous trees. Pupae overwinter. Mature insects appear in May–June and are secretive (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Hylis foveicollis (Thomson, 1874) (Fig. 109)

Fig. 109. ***Hylis foveicollis* (Thomson, 1874) (Eucnemidae)** (photo G. Tarwacki)

Material examined (Fig. 110)

Data from the literature: Jesionowe Góry Reserve (FE51), 1-30.06.2020 – 3 exx., IBL-5 trap on ash; 1-30.06.2020 – 1 ex., IBL-5 trap on linden; 1-31.07.2020 – 2 exx., IBL-5 trap on birch; 1-31.07.2020 – 1 ex., IBL-5 trap on linden (Marczak et al. 2023b).

Distribution

The species is known from the southern part of Sweden, Finland, Karelia, Denmark, and all Central European countries, where it is more often found in mountainous areas. It probably occurs throughout Poland except in the higher mountainous areas (Burakowski et al. 1985; Burakowski & Buchholz 1991).

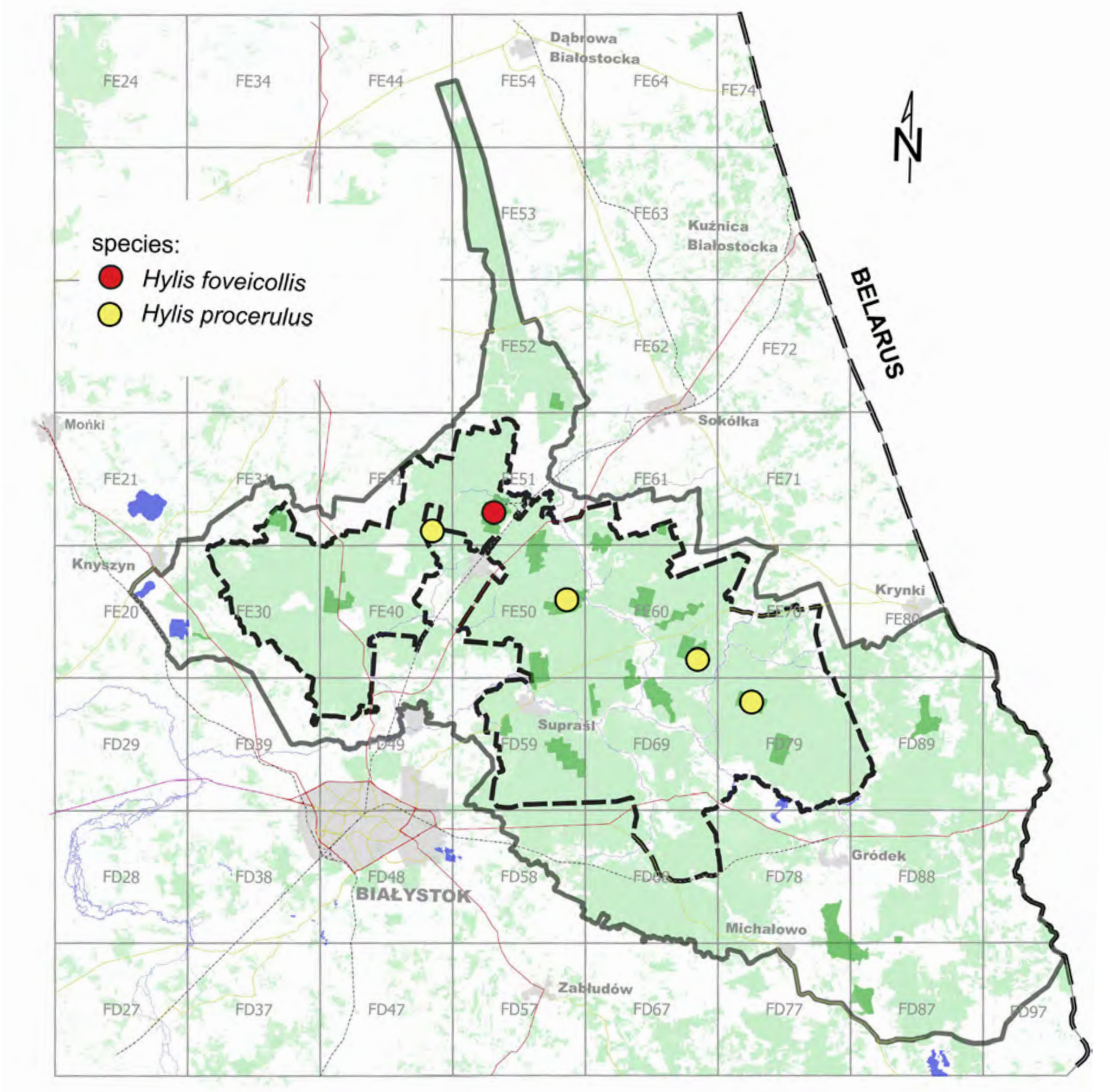


Fig. 110. Localities of *Hylis foveicollis* and *H. procerulus* (Eucnemidae) in Knyszyńska Forest

Biology and ecology

Considered a relict of primeval forests. Development takes place in the deadwood of deciduous trees, less frequently coniferous (Burakowski et al. 1985; Burakowski & Buchholz 1991).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Hylis olexai (Palm, 1955) (Fig. 111)

Material examined (Fig. 112)

Original data: Czarna Białostocka Forest District, Lebiedzin Forest Subdistrict (FE52), 19.07.2014 – 1 ex., leg. B. Kowal, det. T. Mokrzycki; Czarna Białostocka Forest District, Czarna Wieś Forest Subdistrict (FE41), 7.07-9.08.2015 – 8 exx., 28.06-12.09.2016 – 1 ex., leg. & det. R. Plewa (Borowski et al. 2016); Stare Biele Reserve (FE60), 2.07-26.08.2021 – 1 ex., violet Lindgren trap, leg. & det. K. Sućko; Góra Pieszczana Reserve (FD79), 27.07.2016 – 15 exx., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń.

Fig. 111. ***Hylis olexai*** **(Palm, 1955) (Eucnemidae)** (photo G. Tarwacki)

Data from the literature: Budzisk Reserve (FE50), 1-30.06.2019 – 22 exx., 1-31.07.2019 – 30 exx., IBL-5 trap on aspen, 1-30.06.2019 – 1 ex., 1-31.07.2019 – 1 ex., IBL-5 trap on common maple, 1-30.06.2019 – 3 exx., 1-31.07.2019 – 5 exx., IBL-5 trap on small-leaved linden, 1-30.06.2019 – 16 exx., 1-31.07.2019 – 34 exx., IBL-5 trap on spruce; Krzemianka Reserve (FE40), 20.06.2020 – 1 exx., beating sheet; Krzemienne Góry Reserve (FD69), 27.05.2022 – 3 exx., beating sheet; Międzyrzecze Reserve (FE60), 30.07.2022 – 2 exx., beating sheet; Jesionowe Góry Reserve (FE51), 1-31.07.2020 – 11 exx., IBL-5 trap on ash, 1 ex., IBL-5 trap on linden; Czarna Białostocka Forest District, Sławno Forest Subdistrict, ad Połomin (FE53), 1-31.07.2022 – 2 exx., IBL-5 trap on oak; Czarna Białostocka Forest District, Horodnianka Forest Subdistrict (FE50), 1-30.06.2021 – 1 ex., IBL-5 trap on pine (Marczak et al. 2023b).

Distribution

Noted mainly from Central Europe and southern Sweden, Finland and Karelia (Burakowski et al. 1985). In Poland, it is known from several zoogeographical regions, reports usually based on single specimens (Marczak et al. 2023b), but may be numerous locally (Burakowski & Buchholz 1991; Buchholz et al. 2021).

Biology and ecology

Development proceeds in the soft, rotting wood of spruce *Picea* Dietr., beech *Fagus* L., poplar *Populus* L., and chestnut *Aesculus* L. Adults appear in May and live until August (Burakowski et al. 1985).

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

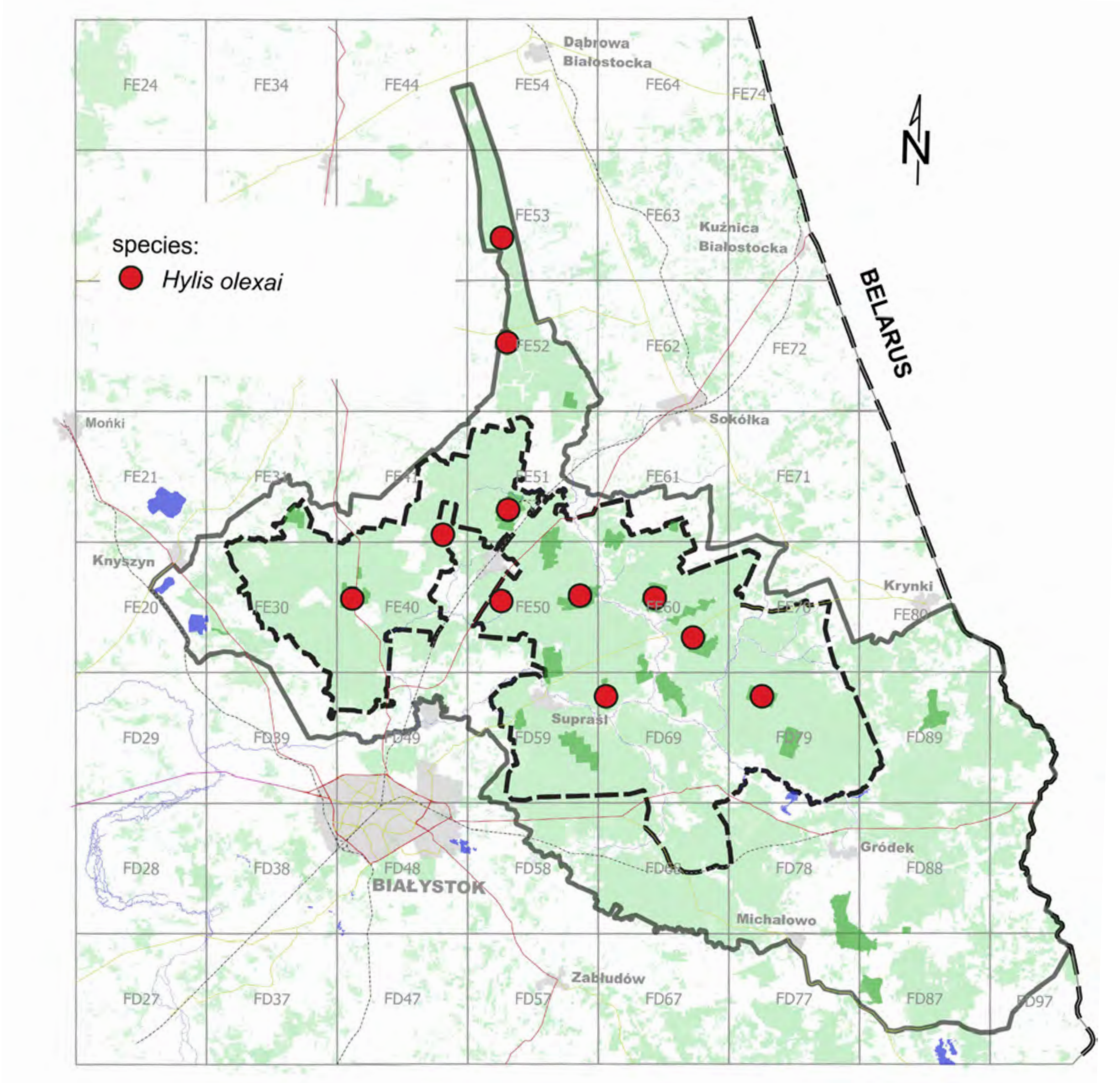


Fig. 112. Localities of *Hylis olexai* (Eucnemidae) in Knyszyńska Forest

Hylis procerulus (Mannerheim, 1823) (Fig. 113)

Material examined (Fig. 110)

Original data: Krynki Forest District, Góra Pieszczana Reserve (FD79), 27.07.2016 – 4 exx., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń; Czarna Białostocka Forest District, Czarna Wieś Forest Subdistrict (FE41), 11.05-28.06.2016 – 1 ex., leg. & det. R. Plewa (Borowski et al. 2016); Supraśl Forest District, Stare Biele Reserve, 3.06-9.07.2020 – 1 ex., violet Lindgren funnel trap, leg J.M. Gutowski, det. K. Sućko.

Data from the literature: Budzisk Reserve (FE50), 1-30.06.2019 – 4 exx., 1-31.07.2019 – 5 exx., IBL-5 in aspen, 1-30.06.2019 – 4 exx., IBL-5 in spruce (Marczak et al. 2023b).

Distribution

The species is mainly distributed in Central Europe, reaching north to the British Isles, southern parts of Sweden and Finland, south to the Pyrenees, central Italy, Bosnia, and Transylvania (Burakowski et al. 1985; Muona 1995). It is known from ten zoogeographical regions in Poland, reports usually based on single specimens (Marczak et al. 2023b), but is sometimes more numerous locally (Buchholz et al. 2021).

Fig. 113. ***Hylis procerulus*** **(Mannerheim, 1823) (Eucnemidae)** (photo A. Lasoń)

Biology and ecology

It develops in the trunks of coniferous trees that partially lack bark, mainly spruce; it is less common in deciduous trees. Pupation occurs in May, and adults appear in June and live until mid-July (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Isorhipis marmottani Bonvouloir, 1871 (Fig. 114)

Material examined (Fig. 115)

Original data: Stare Biele Reserve (FE60), 3.06-9.07.2020 – 1 ex., violet Lindgren funnel trap, leg. J.M. Gutowski, det. K. Sućko.

Data from the literature: Budzisk Reserve (FE50), 1-30.06.2019 – 1 ex., IBL-5 trap on Norway maple, 1-30.06.2019 – 1 ex., IBL-5 trap on small-leaved linden, 1-30.06.2019 – 3 exx., IBL-5 trap on spruce; Jesionowe Góry Reserve (FE51), 1-30.06.2020 – 1 ex., IBL-5 trap on birch, 4 exx., IBL-5 trap on ash (Marczak et al. 2023b).

Fig. 114. ***Isorhipis marmottani*** **Bonvouloir, 1871 (Eucnemidae)** (photo A. Lasoń)

Distribution

A rarely observed species, found primarily in France, but also reported from a small number of localities in Central Europe and the Scandinavian Peninsula (Burakowski et al. 1985; Muona 1995). It is known in Poland from several zoogeographical regions, reports based on single specimens (Rossa et al. 2018; Marczak et al. 2023b).

Biology and ecology

A species considered a relict of primeval forests. It undergoes larval development in the hard wood of deciduous trees (Burakowski et al. 1985).

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

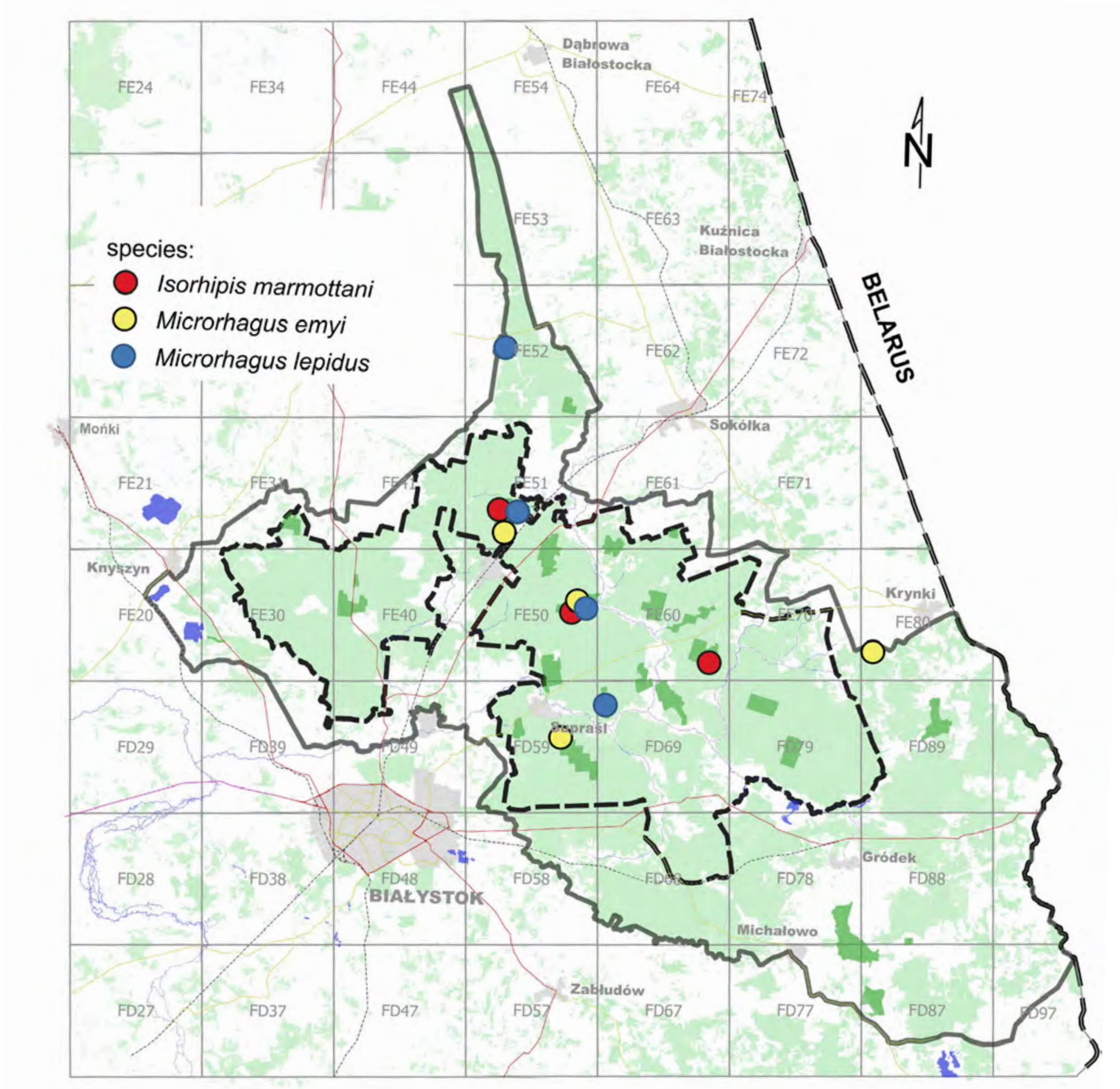


Fig. 115. Localities of *Isorhipis marmottani*, *Microrhagus emyi*, and *M. lepidus* (Eucnemidae) in Knyszyńska Forest

***Melasis buprestoides* (Linnaeus, 1761)** (Fig. 116)

Fig. 116. *Melasis buprestoides* (Linnaeus, 1761) (Eucnemidae) (photo K. Sućko)

Material examined

Original data: common species in Knyszynska Forest, reported from: the Jałówka (FE50), Jesionowe Góry (FE51), Krzemienne Góry (FD69), Las Cieliczański (FD59), Międzyrzecze (FE60), Stara Dębina (FE61), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), and Surażkowo (FE60) reserves, among others.

Data from the literature: Budzisk Reserve (FE50), 1-30.04.2019 – 2 exx., 1-31.05.2019 – 3 exx., IBL-5 trap on aspen, 1-31.05.2019 – 1 ex., IBL-5 trap on Norway maple, 1-31.05.2019 – 1 ex., IBL-5 trap on Norway spruce; Krzemianka Reserve (FE40), 20.06.2020 – 1 ex., beating sheet; Międzyrzecze Reserve (FE60), 25.03.2021 – 4 exx., ex cultivated from a fungus-infected hazel branch (imago 21.04.2021); Stara Dębina Reserve (FE61), 19.06.2020 – 1 ex., beating sheet; Czarna Białostocka Forest District, Sławno Forest Subdistrict, ad Połomin (FE53), 1-30.06.2022 – 1 ex., IBL-5 trap on oak; Horodnianka (FE50), 1-31.05.2021 – 1 ex., IBL-5 trap on the trunk of a felled ash tree; Jesionowe Góry Reserve (FE51), 1-31.05.2020 – 1 ex., IBL-5 trap on ash, 1-30.06.2020 – 1 ex., IBL-5 trap on hornbeam, 30.06.2020 – 1 ex., IBL-5 trap on birch, 30.06.2020 – 2 exx., IBL-5 trap on ash (Marczak et al. 2023b). Czarna Białostocka Forest District, Szyndziel Forest Subdistrict (FE52), 27.04-9.06.2008 – 3 exx.; Supraśl Forest District, Lipina Forest Subdistrict (FE60), 27.04-9.06.2008 – 2 exx. (Hilszczański et al. 2015).

Distribution

The species is distributed from the southern parts of Northern Europe as far as Spain, Italy, and [the former] Yugoslavia, reaching eastward to the Caucasus; in addition, it has been recorded from Siberia. In Poland, it probably occurs throughout the country (Burakowski et al. 1985).

Biology and ecology

Larvae live in the hard wood of trunks and thick branches of weakened or dying deciduous trees (Fig. 117); they also inhabit trees that have been recently felled or fallen, and even freshly treated construction wood. Wood of oaks, beeches, hornbeams, birches, alders, maples, poplars, willows, and hazel trees have been reported as host material. Pupation takes place in late summer. The adult overwinters (Burakowski et al. 1985).

Fig. 117. *Melasis buprestoides* in the larval gallery (imago and larva) (photo J.M. Gutowski)

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Microrhagus emyi (Rouget, 1856) (Fig. 118)

Fig. 118. ***Microrhagus emyi*** **(Rouget, 1856) (Eucnemidae)** (photo A. Lasoń)

Material examined (Fig. 115)

Original data: Krynki Forest District, Grzybowszczyzna Forest Subdistrict (FE80), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. K. Sućko.

Data from the literature: Budzisk Reserve (FE50), 1-30.06.2019 – 1 ex., IBL-5 trap on aspen; Las Cieliczański Reserve (FD59), 13.06.2022 – 1 ex., beating sheet; Jesionowe Góry Reserve (FE51), 1-31.07.2020 – 1 ex., IBL-5 trap on ash (Marczak et al. 2023b); Jesionowe Góry Reserve (FE51), 17.08.2002 – 2 exx., 12.07.2003 – 5 exx. (Byk et al. 2004).

Distribution

The species is known from several countries in Europe. The KF is its second locality in Poland after Białowieża Forest (Marczak et al. 2023b).

Biology and ecology

It inhabits old deciduous forests, especially riparian forests. Development proceeds in the rotten wood of oaks, willows, and hazel (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Microrhagus lepidus **Rosenhauer, 1847** (Fig. 119)

Fig. 119. ***Microrhagus lepidus*** **Rosenhauer, 1847 (Eucnemidae)** (photo A. Lasoń)

Material examined (Fig. 115)

Original data: Czarna Bialostocka Forest District, Lebiedzin Forest Subdistrict (FE52), 19.07.2014 – 1 ex., leg. B. Kowal, det. T. Mokrzycki.

Data from the literature: Jesionowe Góry Reserve (FE51), 1-30.06.2020 – 5 exx., IBL-5 trap on ash, 1-30.06.2020 – 1 ex., IBL-5 trap on linden, 1-31.07.2020 – 1 ex., IBL-5 trap on ash, 1-30.06.2020 – 2 exx., IBL-5 trap on hornbeam; Krzemienne Góry Reserve (FD69), 27.05.2022 – 1 ex., beating sheet (Marczak et al. 2023b).

Distribution

A rarely encountered species with an European distribution (Burakowski et al. 1985). It is known in Poland from several zoogeographical regions, reports based on single specimens (Marczak et al. 2023b).

Biology and ecology

Development takes place in the thick trunks of elm and willow trees with no bark. Adults fly from May to July (Burakowski et al. 1985).

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Microrhagus pygmaeus* (Fabricus, 1792)** (Fig. 120)

Fig. 120. *Microrhagus pygmaeus* (Fabricus, 1792) (Eucnemidae) (photo L. Borowiec)

Material examined (Fig. 121)

Original data: Czarna Białostocka Forest District, Czarna Wieś Forest Subdistrict (FE41), 7.07-9.08.2015 – 1 ex. (Borowski et al. 2016); Krynki Forest District, Góra Pieszczana Reserve (FD79), 27.07.2016 – 1 ex., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń.

Data from the literature: Jesionowe Góry Reserve (FE51), 12.07.2003 – 4 exx. (Byk et al. 2004); Budzisk Reserve (FE50), 1-31.05.2019 – 4 exx., IBL-5 trap on aspen, 1-31.07.2019 – 1 ex., IBL-5 trap on Norway maple; Jesionowe Góry Reserve (FE51), 1-30.06.2020 – 1 ex., IBL-5 trap on linden; Czarna Białostocka Forest District, Horodnianka Forest Subdistrict (FE50), 1-30.06.2021 – 1 ex., IBL-5 trap on pine (Marczak et al. 2023b).

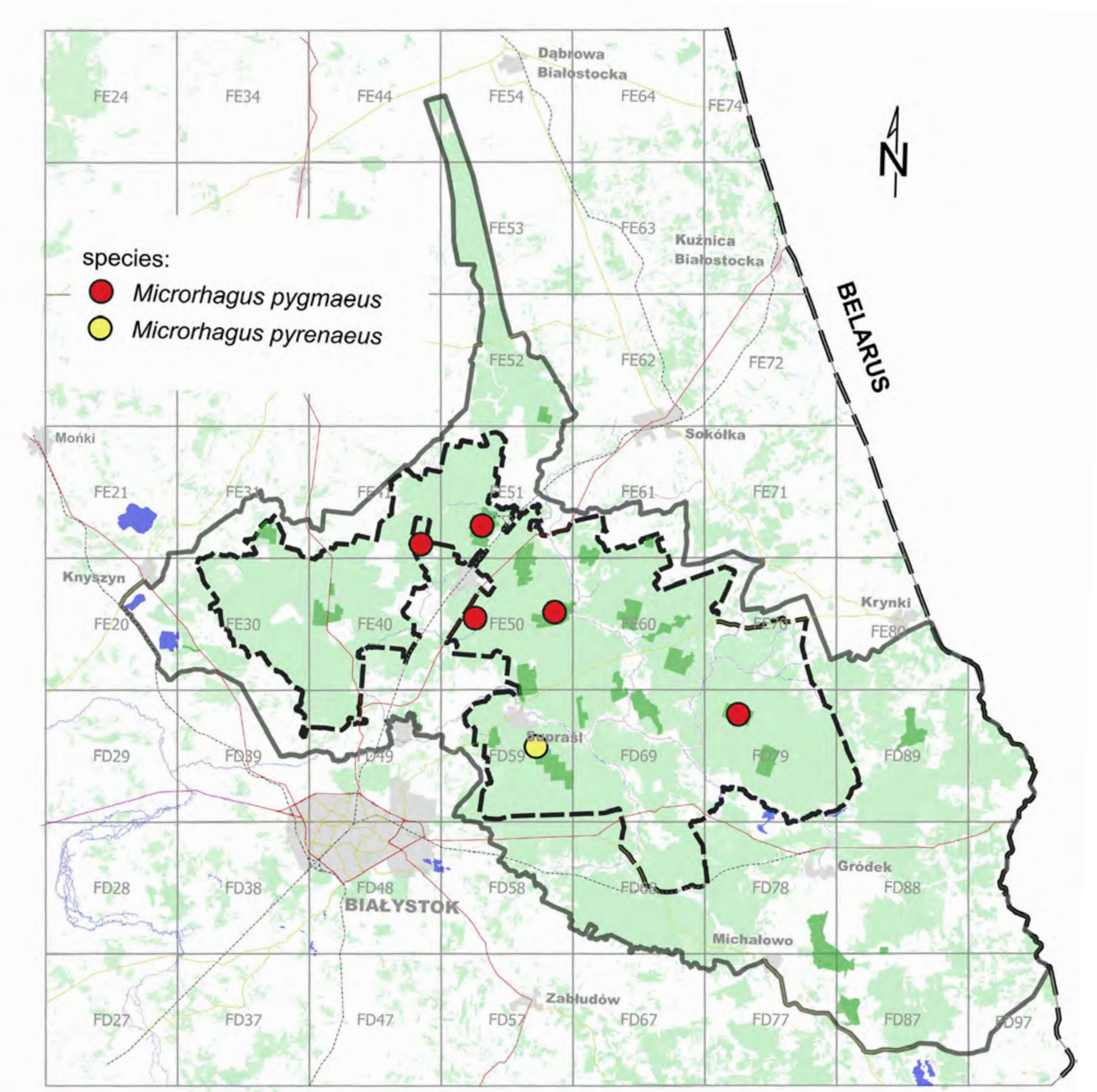


Fig. 121. Localities of *Microrhagus pygmaeus* and *M. pyrenaeus* (Eucnemidae) in Knyszyńska Forest

Distribution

The species is distributed from the Pyrenees to Scandinavia and Central Europe, and is also recorded from Ukraine and Algeria (Burakowski et al. 1985). It is known in Poland from several zoogeographical regions, reports based on single specimens (Marczak et al. 2023b).

Biology and ecology

Larvae develop in the soft wood of thick branches and the broken trunks of deciduous trees. Adults fly from the second half of May to June (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Microrhagus pyrenaeus **Bonvouloir, 1872** (Fig. 122)

Fig. 122. ***Microrhagus pyrenaeus*** **Bonvouloir, 1872 (Eucnemidae)** (photo G. Tarwacki)

Material examined (Fig. 121)

Data from the literature: Las Cieliczański Reserve (FD59), 13.06.2022 – 1 ex., mixed forest, beating sheet dead branches (Marczak et al. 2023b).

Distribution

The species is known from a very small number of localities in Central and Western Europe. In Poland, it is reported from only 4 zoogeographical regions (Marczak et al. 2023b).

Biology and ecology

Development proceeds in the branches of deciduous trees (alders, oaks) lying on the ground or in a shady place (Burakowski et al. 1985).

Notes

Listed as NT (near threatened) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). Included in the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2018) in group 2 (relict *sensu lato*).

***Otho sphondyloides* (Germar, 1818)** (Fig. 123)

Fig. 123. *Otho sphondyloides* (Germar, 1818) (Eucnemidae) (photo L. Borowiec)

Material examined (Fig. 124)

Original data: Jałówka Reserve (53.27360, 23.34972, FE50), 25.03.2021 – 3 exx. (dead) in the standing trunk of a dead aspen *Populus tremula* L. (Fig. 125), leg. & det. J.M. Gutowski.

Data from the literature: Budzisk Reserve (FE50), 1-30 .06. 2019 – 9 exx., 1-31.07.2019 – 8 exx., IBL-5 trap on aspen, 1-30.06.2019 – 1 ex., IBL-5 trap on Norway maple, 1-30.06.2019 – 3 exx., IBL-5 trap on small-leaved linden, 1-30.06.2019 – 1 ex., IBL-5 trap on spruce; Jesionowe Góry Reserve (FE51), 1-31.07.2020 – 1 ex., IBL-5 trap on linden (Kwiatkowski & Marczak 2020b; Marczak et al. 2023b).

Distribution

A little-known species with an Eurosiberian distribution. Noted everywhere on the basis of single observations. In Poland, known from four zoogeographical regions (Marczak et al. 2023b).

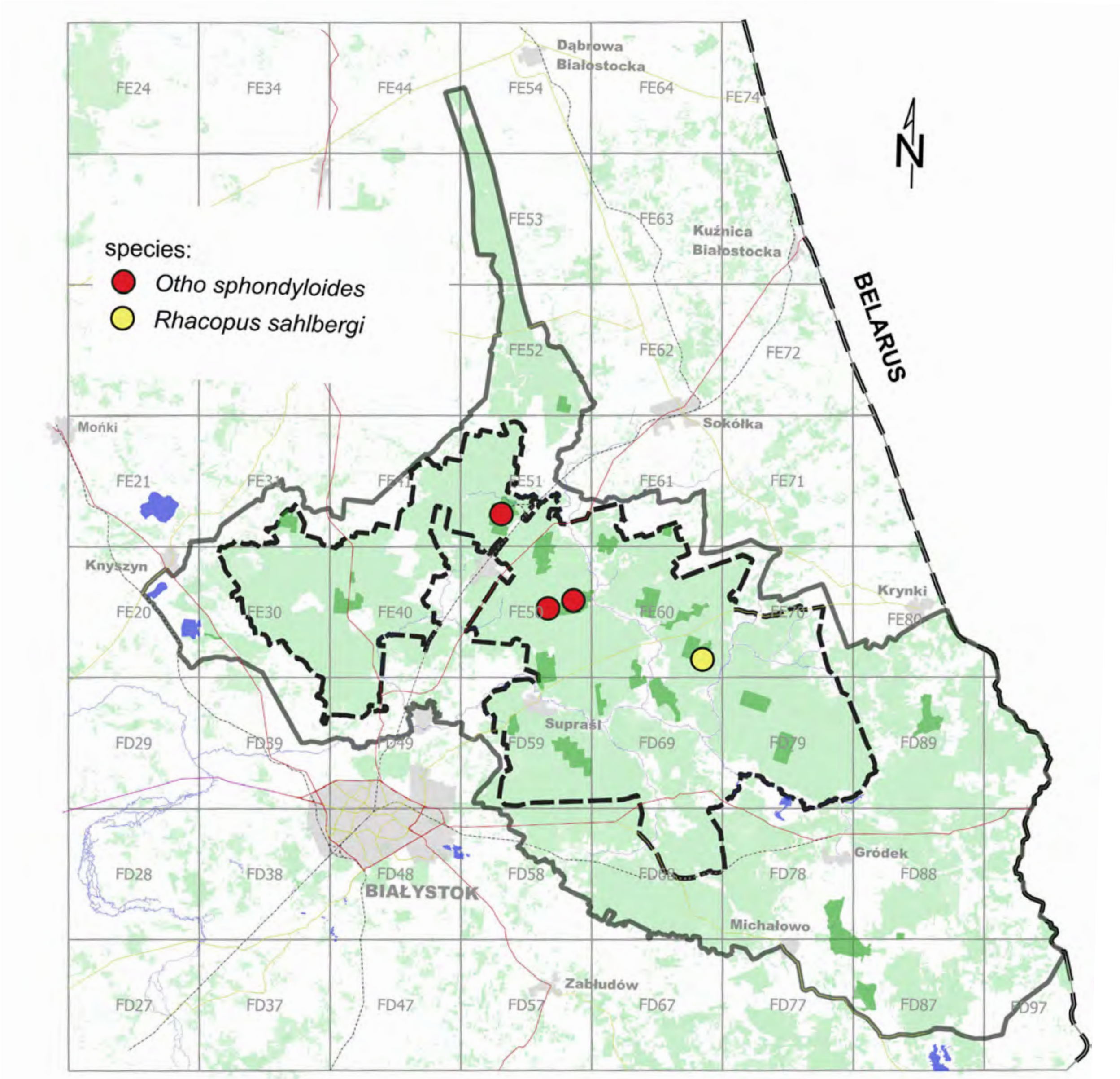


Fig. 124. Localities of *Otho sphondyloides* and *Rhacopus sahlbergi* (Eucnemidae) in Knyszyńska Forest

Biology and ecology

Larvae live in the moist, dead, white-rotting but still hard wood of thick branches, logs lying on the ground, as well as the standing and broken trunks of hornbeams, poplars, and oaks. Adults fly in June and July (Burakowski et al. 1985).

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Listed as DD (data deficient) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). Included in the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2018) in group 1 (relict *sensu stricto*).

Fig. 125. *Otho sphondyloides* (Eucnemidae) larval galleries on a dead aspen in Jałówka Reserve (photo J.M. Gutowski)

Rhacopus sahlbergi **(Mannerheim, 1823)** (Fig. 126)

Fig. 126. ***Rhacopus sahlbergi*** **(Mannerheim, 1823) (Eucnemidae)** (photo A. Lasoń)

Material examined (Fig. 124)

Original data: Stare Biele Reserve (53.23477, 23.52447, FE60), 3.06-9.07.2020 – 1 ex., violet Lindgren funnel trap, leg. J.M. Gutowski, det. K. Sućko.

Distribution

A species inhabiting the northern and central parts of Europe. In recent years, it has been found in three localities in Poland, including near the village of Czuprynowo, about 15 km east of Knyszyńska Forest (Hilszczański et al. 2015).

Biology and ecology

Development takes place in the moist, fungus-infected wood of thin oak and hazel branches lying on the ground (Burakowski et al. 1985).

Notes

Listed as ?EX (probably extinct) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Xylophilus corticalis* (Paykull, 1800)** (Fig. 127)

Fig. 127. ***Xylophilus corticalis* (Paykull, 1800) (Eucnemidae)** (photo A. Lasoń)

Material examined (Fig. 128)

Original data: Góra Pieszczana Reserve (FD79), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. K. Sućko; Góra Pieszczana Reserve (FD79), 27.07.2016 – 10 exx., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń; Krzemianka Reserve (FE40), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. K. Sućko; Supraśl Forest District, Klin Forest Subdistrict (FE60), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. K. Sućko; Supraśl Forest District, Kopna Góra Forest Subdistrict (FE60), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. K. Sućko.

Data from the literature: Supraśl Forest District, Iwniki Forest Subdistrict (FE60), 9.06-13.07.2008 – 9 exx.; Knyszyn Forest District, Krzemianka Forest Subdistrict (FE40), 9.06-13.07.2008 – 9 exx. (Hilszczański et al. 2015); Budzisk Reserve (FE50), 1-30.06.2019 -5 exx., IBL-5 trap on aspen, 1-30.06.2019 – 3 exx., in IB-5 trap on small-leaved linden, 1-30.06.2019 – 12 exx., IBL-5 trap on spruce; Jesionowe Góry Reserve (FE51), 1-30.06.2020 – 1 ex., 1-31.07.2020 – 1 ex., IBL-5 trap on linden (Marczak et al. 2023b).

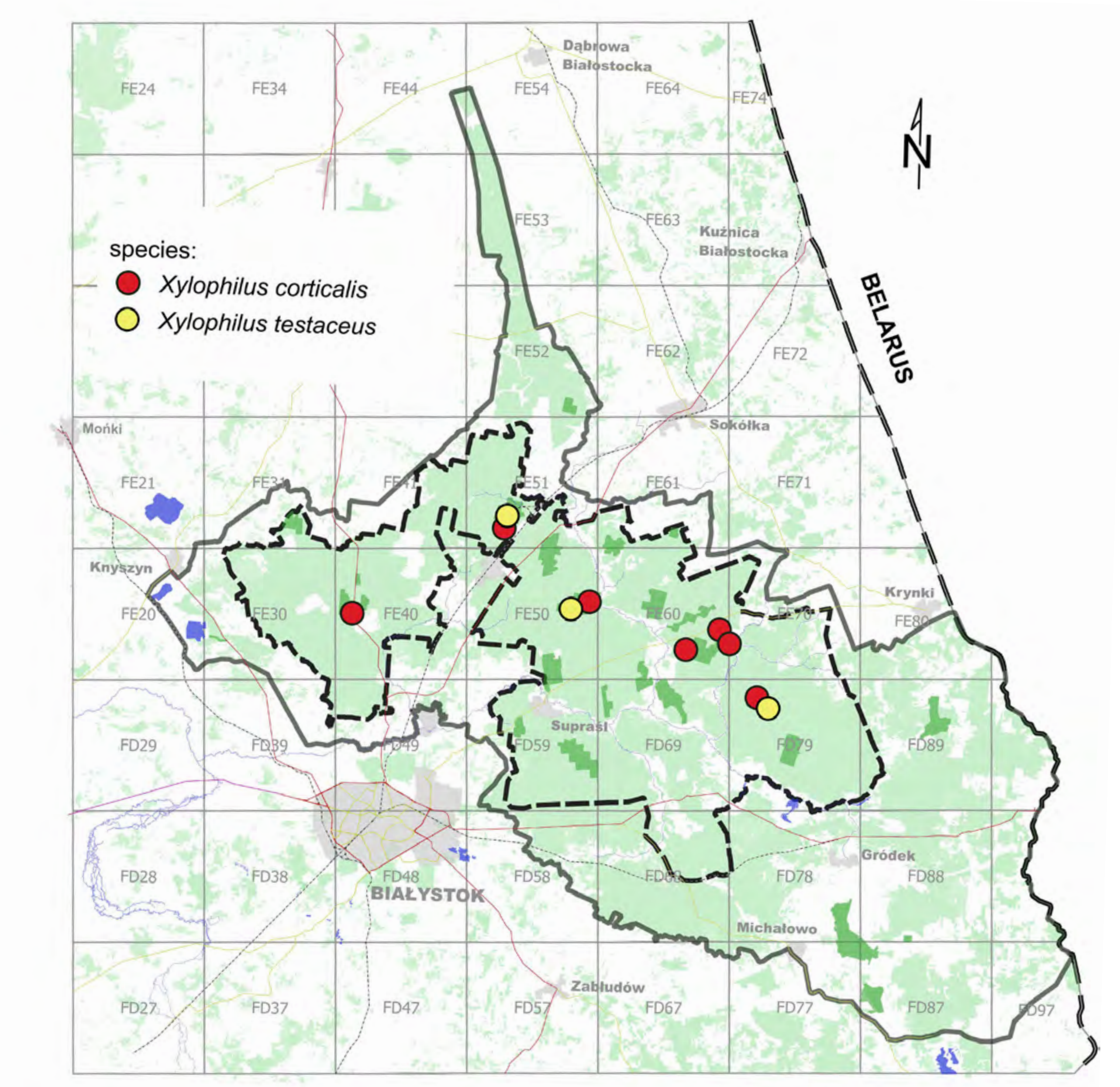


Fig. 128. Localities of *Xylophilus corticalis* and *X. testaceus* (Eucnemidae) in Knyszyńska Forest

Distribution

A European species, reported from a small number of scattered localities in different parts of the country (Burakowski et al. 1985). Relatively common in Poland, reports based on single specimens (Marczak et al. 2023b).

Biology and ecology

Larvae develop in the moist, rotting wood of trunks or broken trunks (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Xylophilus testaceus (Herbst, 1806) (Fig. 129)

Fig. 129. ***Xylophilus testaceus*** **(Herbst, 1806) (Eucnemidae)** (photo G. Tarwacki)

Material examined (Fig. 128)

Original data: Góra Pieszczana Reserve (FD79), 27.07.2016 – 1 ex., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń.

Data from the literature: found in Budzisk Reserve in dead aspen trees (Kwiatkowski & Marczak 2020b); Budzisk Reserve (FE50), 1-31.05.2019 – 1 ex., IBL-5 trap on aspen, 1-30.06.2019 – 1 ex., IBL-5 trap on spruce; Jesionowe Góry Reserve (FE51), 1-30.06.2020 – 5 exx., IBL-5 trap on ash (Marczak et al. 2023b).

Distribution

Species known from single localities in Central Europe (Burakowski et al. 1985). In Poland, known from several zoogeographical regions, reports based on single specimens (Marczak et al. 2023b).

Biology and ecology

It develops in the moist, soft, reddish-brown rotten wood of deciduous trees, especially willows and alders (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). Included in the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2018) in group 2 (relict *sensu lato*).

Elateridae

Omalisus fontisbellaquaei Geoffroy in Fourcroy, 1785 (Fig. 130)

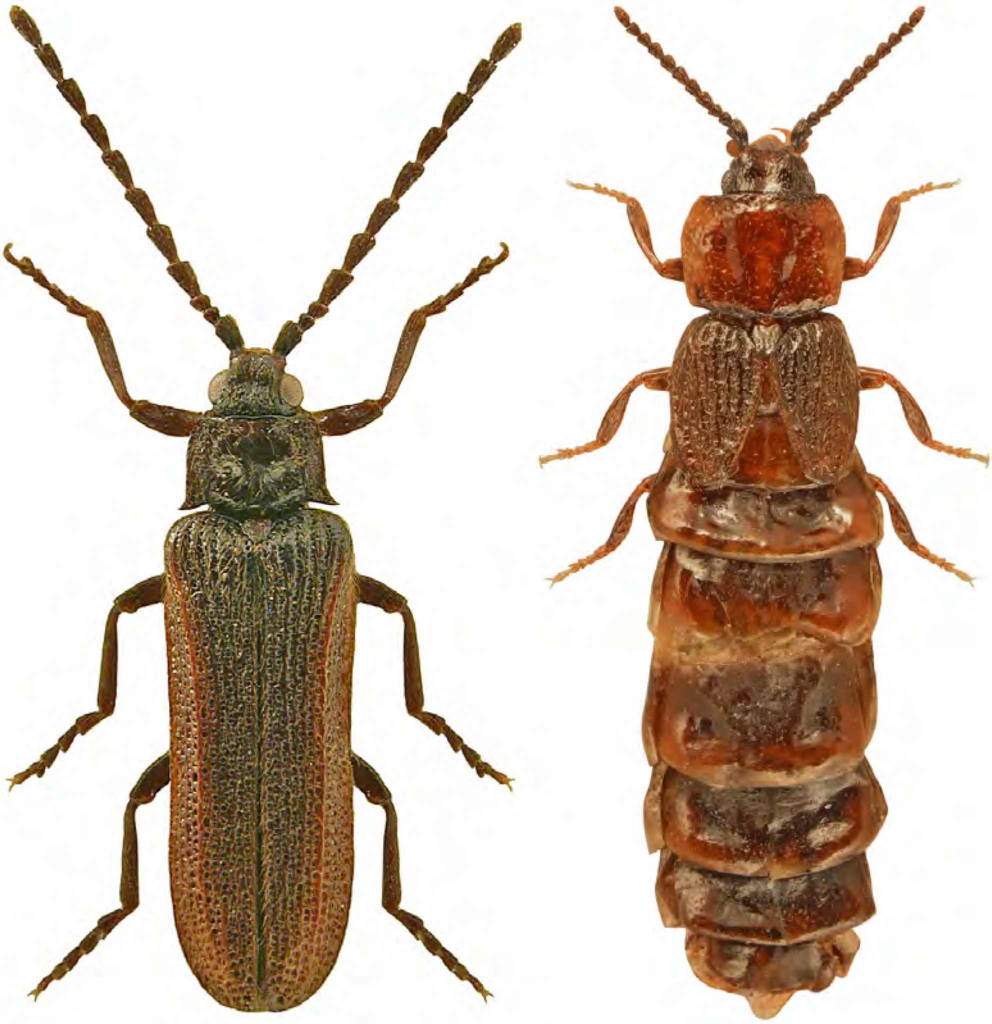


Fig. 130. *Omalisus fontisbellaquaei* Geoffroy in Fourcroy, 1785 (Elateridae): male and female (photo L. Borowiec)

Material examined (Fig. 131)

Data from the literature: Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

The species is widespread from Spain throughout Central Europe to Ukraine, reaching south to central Italy, Bulgaria, and Turkey (Bocák 2007). In Poland, it has been recorded in the southern and eastern parts of the country (Burakowski et al. 1985).

Biology and ecology

It inhabits lowland areas and lower mountainous locations, reaching about 1,200 m above sea level. Its bionomics is poorly understood. Larvae are predatory; they overwinter, pupate in the spring, and the imagines emerge in June and can be caught until July. Winged males are caught on grasses and other herbaceous plants, while wingless females reside in the ground zone of plants (Burakowski et al. 1985).

Notes

Until recently, the species was placed in a separate family called Omalisidae.

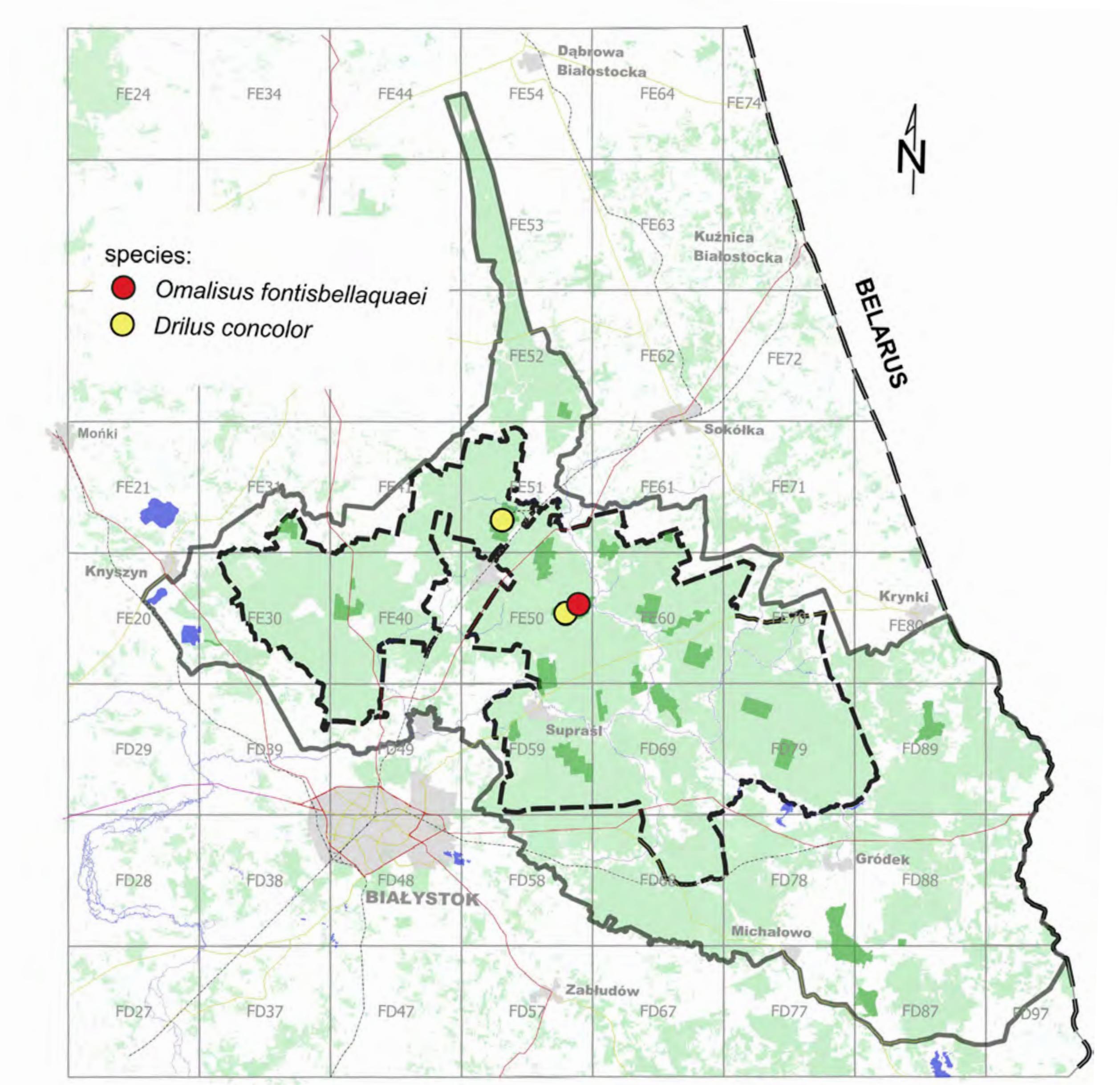


Fig. 131. Localities of *Omalisus fontisbellaquaei* and *Drilus concolor* (Elateridae) in Knyszyńska Forest

Drilus concolor Ahrens, 1812 (Fig. 132)

Material examined (Fig. 131)

Data from the literature: reported from the Budzisk (FE50) and Jesionowe Góry Reserves (FE51) (Marczak et al. 2023c).

Distribution

The species is distributed in Europe from Italy and Bulgaria in the south to the Scandinavian countries, where it is reported from Norway through Finland to Estonia. Ukraine marks the eastern range limit for this species. In Poland, it is a rare and sporadically encountered beetle, known from a small number of usually xerothermic localities. It occurs mainly in hilly areas and foothills, and is found less frequently in the lowlands. Older data for many zoogeographical regions were compiled by Burakowski et al. (1985), while more recent data include a report from the vicinity of Malta Lake in Poznań (Przewoźny 2007). There are very few new reports of this species, especially from the central and northern parts of the country.

Fig. 132. *Drilus concolor* Ahrens, 1812 (Elateridae) (photo L. Borowiec)

Biology and ecology

A species with an interesting biology – its larvae are predatory and feed on small shell-producing land snails. Pupation occurs in the spring in the shells, adults appear in May and live until July. Winged males are usually caught on low vegetation. Females, lacking wings and with a larval-like form, are very secretive and very rarely found. They reside on the surface of the soil among the parts of plants near the ground and in hollow snail shells (Burakowski 2003b).

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

This species was formerly included in the Drilidae family (Burakowski 2003b), but genetic and morphological studies conducted in recent years have changed its systematic position (subfamily Agrypninae in the click beetle – Elateridae) and status (tribe Drilini) (Kundrata & Bocak 2011).

Ampedus balteatus (Linnaeus, 1758) (Fig. 133)

Fig. 133. ***Ampedus balteatus*** **(Linnaeus, 1758) (Elateridae)** (photo G. Tarwacki)

Material examined

Original data: one of the most common species in Knyszyńska Forest. Repeatedly observed and caught, among others, from the Bahno w Borkach (FD69), Budzisk (FE50), Góra Pieszczana (FD79), Jałówka (FD59), Jesionowe Góry (FE51), Kozłowy Ług (FE61), Krasne (FD59), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), Międzyrzecze (FE60), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), and Wielki Las (FE31) reserves.

Data from the literature: Kopna Góra (FE60), May 1985; Piłatowszczyzna (FD79), May 1994 (Kubisz & Pawłowski 1995); Budzisk (FE50), and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c).

Distribution

A common European species, widely distributed in central, eastern, and northern parts of Europe, with eastern records from the forest zones of Siberia, Kazakhstan, Manchuria, and northern Mongolia. In Poland, it inhabits lowland and mountainous areas throughout the country (Burakowski et al. 1985).

Biology and ecology

A forest species, found in coniferous and mixed stands and peatlands. Development cycle takes at least 3 years. Development occurs in the heavily decomposed wood of pines (less frequently oaks and birches). Predatory larvae; after metamorphosis, the insects overwinter in pupal cells. Adults fly from May to July, readily inhabiting herbaceous vegetation (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Ampedus cinnaberinus (Eschscholtz, 1829) (Fig. 134)

Fig. 134. ***Ampedus cinnaberinus*** **(Eschscholtz, 1829) (Elateridae)** (photo G. Tarwacki)

Material examined (Fig. 135)

Original data: Supraśl Forest District, ad Jałówka Reserve (FD69), 23.05.2023 – 1 ex., mixed forest, leg. J.M. Gutowski & A. Lasoń, det. L. Buchholz.

Data from the literature: reported from Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

A species of intermittent local occurrence, distributed from Portugal to Kazakhstan, also reported in North Africa. In Poland, it is known from scattered localities in different parts of the country, everywhere found sporadically (Burakowski et al. 1985).

Biology and ecology

Associated with old deciduous forests with a high degree of deadwood. Larvae develop in the thick trunks and lying logs of deciduous trees. After pupating, the adults overwinter. Adults fly from late April to late June (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

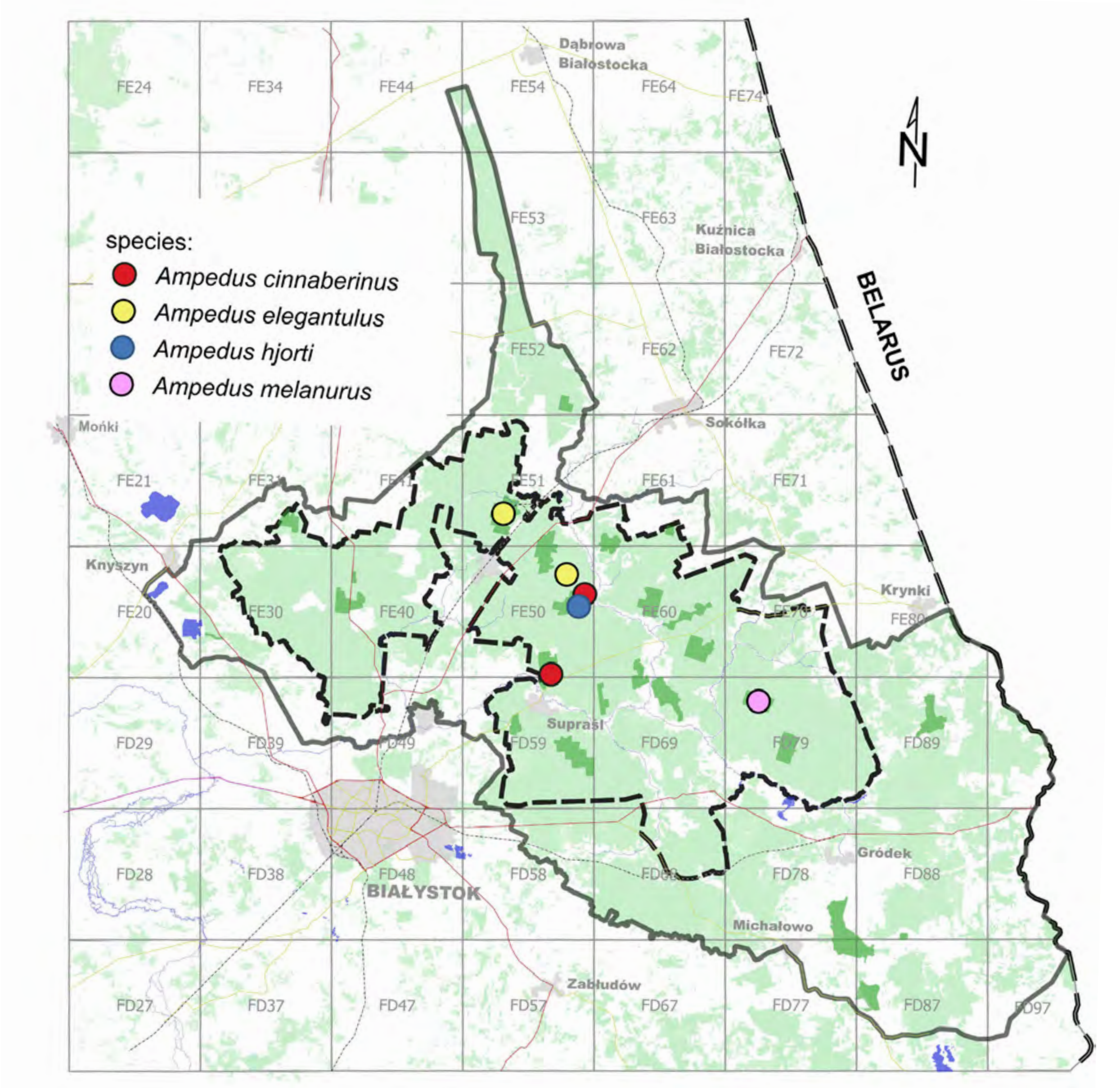


Fig. 135. Localities of *Ampedus cinnaberinus*, *A. elegantulus*, *A. hjorti*, and *A. melanurus* in Knyszyńska Forest

Ampedus elegantulus (Schönherr, 1817) (Fig. 136)

Material examined (Fig. 135)

Original data: Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 72 (FE50), 27.05.2016 – 1 ex., leg. I. Sztabkowska, det. T. Mokrzycki.

Data from the literature: reported from the Budzisk (FE50), and Jesionowe Góry Reserves (FE51) (Marczak et al. 2023c).

Distribution

The distribution area of this species includes the eastern, southern and central parts of Europe; it is also known from a small number of localities in Sweden, Denmark, France, Switzerland, Asia Minor, the Caucasus, and Siberia. In Poland, it probably occurs throughout the country (Burakowski et al. 1985).

Biology and ecology

Considered a relict of primeval forests. It inhabits mainly moist terrain in lowland areas and lower mountainous locations. The development cycle usually takes 4 years, the larvae live mostly in deciduous trees, less often in fir and spruce. The adults, after overwintering, appear in May and live until July, but because they are secretive, they generally are rarely found (Burakowski 1962; Burakowski et al. 1985).

Fig. 136. ***Ampedus elegantulus*** **(Schönherr, 1817) (Elateridae)** (photo J.M. Gutowski)

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Ampedus erythrogonus (Müller, 1821) (Fig. 137)

Material examined

Original data: one of the more frequently observed species of click beetles in Knyszyńska Forest. Reported, among others, from the Bahno w Borkach (FD69), Budzisk (FE50), Chomontowszczyzna (FD79), Góra Pieszczana (FD79), Jesionowe Góry (FE51), Karczmisko (FE40), Kozłowy Ług (FE61), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), Stare Biele (FE60), and Wielki Las (FE31) reserves.

Data from the literature: Kopna Góra (FE60), May 1986 (Kubisz & Pawłowski 1995); several localities from Knyszyńska Forest are reported by Plewa et al. (2014); Marczak et al. (2023c) reported it from the Budzisk (FE50) and Jesionowe Góry (FE51) reserves.

Distribution

The species is widespread in Central and Northern Europe, and is also recorded in Italy, France, Switzerland, and the Caucasus. In Poland, it is widely distributed, more common in the mountains than in lowland areas, where it occurs locally, mainly in old-growth forests with a natural structure. It is usually caught quite rarely and in small numbers (Burakowski et al. 1985).

Fig. 137. ***Ampedus erythrogonus*** **(Müller, 1821) (Elateridae)** (photo A. Lasoń)

Biology and ecology

It inhabits the heavily decayed, moist wood of spruce and pine, less frequently oak and maple, where the larva feeds in the soft layers of rotten wood. After emerging from the pupa, the mature form overwinters in the pupal cell (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Ampedus hjorti (Rye, 1905) (Fig. 138)

Material examined (Fig. 135)

Data from the literature: species reported from Budzisk Reserve (Marczak et al. 2023c).

Distribution

A species distributed mainly in Central Europe, also recorded from a small number of localities in Denmark and the southern part of Scandinavia. Rare in Poland, known from more than a dozen zoogeographical regions (Burakowski et al. 1985; Borowski et al. 2004; Byk & Byk 2004; Byk 2007; Buchholz 2008; Gutowski et al. 2010b, 2020b; Buchholz et al. 2021).

Fig. 138. ***Ampedus hjorti*** **(Rye, 1905) (Elateridae)** (photo G. Tarwacki)

Biology and ecology

Considered a relict of primeval forests, where it inhabits the reddish-brown rotten wood of old oaks, usually in hollows at the base of the trunk. It is not found in trunks or lying logs. After overwintering, adults appear in May and live until July, hidden in tree hollows and crevices during the day (Burakowski et al. 1985).

Notes

Listed as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Listed as VU (vulnerable) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Ampedus melanurus Mulsant et Guillebeau, 1855 (Fig. 139)

Material examined (Fig. 135)

Original data: Góra Pieszczana Reserve (FD79), 27.07.2016 – 1 ex., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń.

Distribution

A European species noted from France, Italy, Switzerland, and Central Europe. It is known in Poland from several zoogeographical regions located in the eastern and southeastern parts of the country (Buchholz & Ossowska 1998).

Biology and ecology

The species is closely associated with primeval forests. Larvae feed in the surface layer of decaying birch and fir wood, less frequently in other deciduous and coniferous species (Buchholz & Ossowska 1998).

Fig. 139. *Ampedus melanurus* Mulsant et Guillebeau, 1855 (Elateridae) (photo G. Tarwacki)

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Listed as DD (data deficient) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Ampedus nigrinus (Herbst, 1784) (Fig. 140)

Material examined

Original data: one of the more frequently observed species of click beetles in Knyszyńska Forest. Reported from the Bahno w Borkach (FD69), Budzisk (FE50), Góra Pieszczana (FD79), Jesionowe Góry (FE51), Karczmisko (FE40), Kozłowy Ług (FE61), Krzemienne Góry (FD69), Las Cieliczański (FD59), Stare Biele (FE60), Taboły (FE50), and Wielki Las (FE31) reserves, among others.

Data from the literature: Kopna Góra (FE60), May 1986 (Kubisz & Pawłowski 1995); Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

A widely distributed species in Europe, eastward through Siberia reaching northern Mongolia and the Far East; otherwise noted from Alaska and Canada. In Poland, it probably occurs throughout the country (Burakowski et al. 1985).

Fig. 140. ***Ampedus nigrinus*** **(Herbst, 1784) (Elateridae)** (photo A. Lasoń)

Biology and ecology

A species characteristic of moist coniferous and mixed forests, where it inhabits the heavily decomposed wood of mainly spruce and oak trees. Adult forms overwinter. The species flies very well so it is possible to find it far from its breeding sites (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Ampedus nigroflavus (Goeze, 1777) (Fig. 141)

Material examined (Fig. 142)

Data from the literature: species reported from Budzisk Reserve (FE50) (Marczak et al. 2023b).

Distribution

Species found from the southern part of Fennoscandia and Karelia throughout Central Europe to the southwestern part of the European continent. In Poland, it is distributed throughout the country (Burakowski et al. 1985).

Fig. 141. *Ampedus nigroflavus* (Goeze, 1777) (Elateridae) (photo M. Miłkowski)

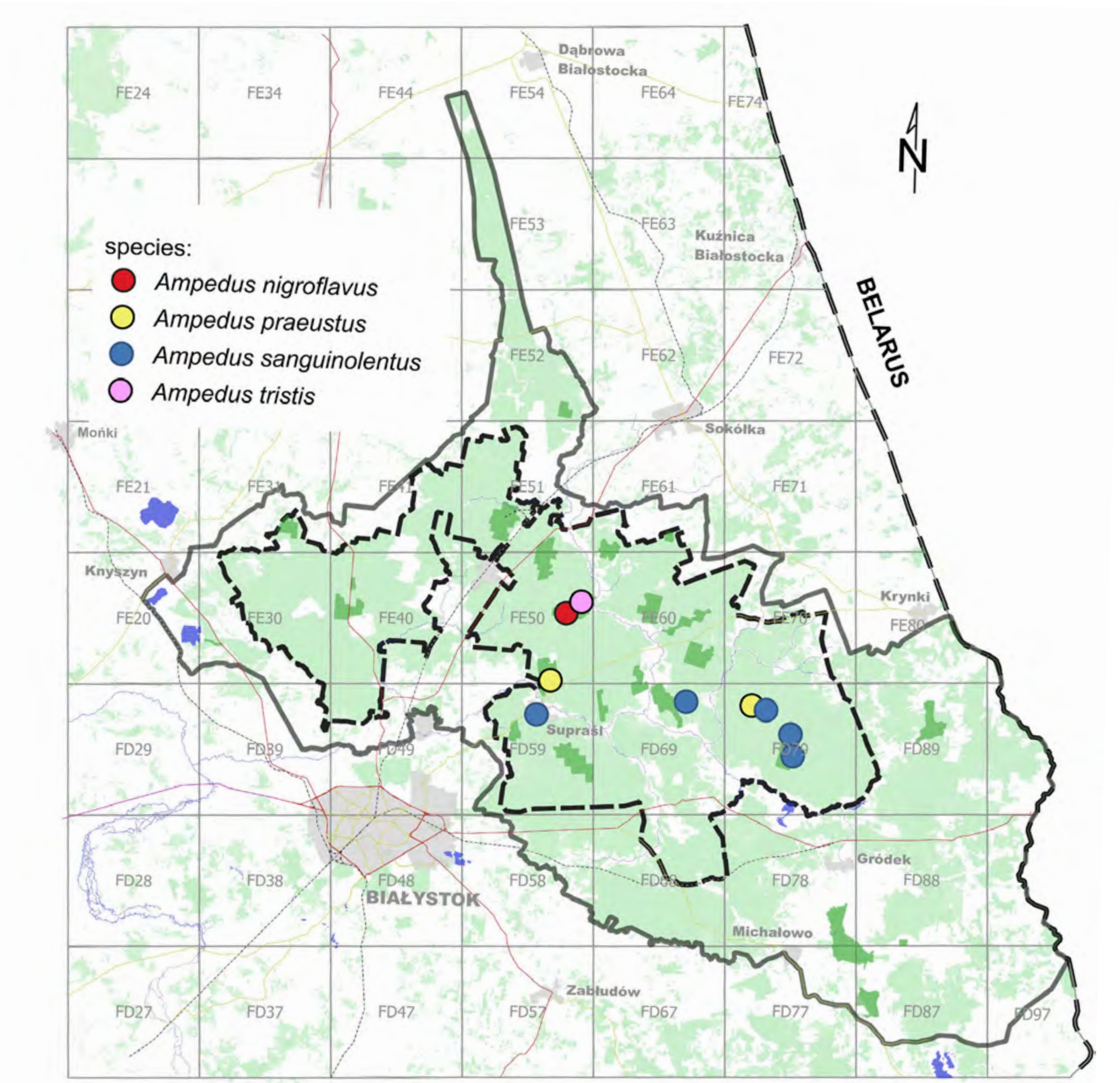


Fig. 142. Localities of *Ampedus nigroflavus*, *A. praeustus*, *A. sanguinolentus*, and *A. tristis* (Elateridae) in Knyszyńska Forest

Biology and ecology

Development takes place in the decayed wood of standing deciduous trees. Adults overwinter, flying out in May and living until July (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Ampedus pomonae (Stephens, 1830) (Fig. 143)

Fig. 143. ***Ampedus pomonae*** **(Stephens, 1830) (Elateridae)** (photo M. Miłkowski)

Material examined

Original data: often found in appropriate habitats in Knyszyńska Forest. Reported from, among others, the Chomontowszczyzna (FD79), Góra Pieszczana (FD79), Krzemianka (FE40), and Taboły (FE50) reserves.

Data from the literature: Kopna Góra (FE60), May 1986 (Kubisz & Pawłowski 1995).

Distribution

The species is widespread almost throughout Europe, reaching east to Siberia, and has also been recorded from Kazakhstan and Mongolia. In Poland, it is found throughout the country (Burakowski et al. 1985).

Biology and ecology

Larvae live in heavily decomposed, moist wood, especially in bogs and swampy areas. Adults overwinter after pupation, flying from May to July; they can be observed on the leaves of birches, alders, and willows (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Ampedus pomorum (Herbst, 1784) (Fig. 144)

Fig. 144. ***Ampedus pomorum*** **(Herbst, 1784) (Elateridae)** (photo M. Miłkowski)

Material examined

Original data: one of the more frequently observed species of click beetles in Knyszyńska Forest. Reported from, among others, the Budzisk (FE50), Chomontowszczyzna (FD79), Góra Pieszczana (FD79), Jałówka (FD59), Jesionowe Góry (FE51), Karczmisko (FE40), Kozłowy Ług(FE61), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), Surażkowo (FE60), and Taboły (FE50) reserves.

Data from the literature: Budzisk Reserve (FE50), 1982 (Kubisz & Pawłowski 1995); the Budzisk (FE50) and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c).

Distribution

A common species, widely distributed throughout Europe, also reported from Kazakhstan and Mongolia. It inhabits lowland areas and lower mountainous locations. In Poland, it is found throughout the country (Burakowski et al. 1985).

Biology and ecology

Larvae feed in the moist, soft, heavily decayed wood of deciduous and coniferous trees. Adult insects emerge in late April and fly until July.

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Ampedus praeustus (Fabricius, 1792) (Fig. 145)

Material examined (Fig. 142)

Original data: Góra Pieszczana Reserve (FD79), 27.07.2016 – 2 exx., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń; ad Jałówka Reserve (FE50), 20.05.2023 – 1 ex., leg. & det. M. Miłkowski.

Fig. 145. ***Ampedus praeustus*** **(Fabricius, 1792) (Elateridae)** (photo G. Tarwacki)

Distribution

An Eurasian species, distributed in Europe from Ireland, southern England, the central provinces of Fennoscandia and Karelia to the Mediterranean countries, reaching Lake Baikal in Siberia; also recorded from the Caucasus and northern Kazakhstan. In Poland, it is known from scattered localities in various parts of the country (Burakowski et al. 1985).

Biology and ecology

Development takes place in the lying trunks and logs of deciduous trees (mainly oak, birch), less frequently spruce and pine. Adult forms appear in spring and live until July. The species with a secretive lifestyle (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Ampedus sanguineus (Linnaeus, 1758) (Fig. 146)

Material examined

Original data: one of the more frequently observed species of click beetles in Knyszyńska Forest. Listed, among others, from the Góra Pieszczana (FD79), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), and Wielki Las (FE31) reserves.

Distribution

A widely distributed species reaching China in the east, Syria and Morocco in the south. In Poland, it occurs throughout the country (Burakowski et al. 1985).

Fig. 146. ***Ampedus sanguineus*** **(Linnaeus, 1758) (Elateridae)** (photo M. Miłkowski)

Biology and ecology

A species characteristic of older pine stands, where trunks lacking bark and log fragments are left behind. Larvae are predatory and saprophagous, adults fly from April to late June (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Ampedus sanguinolentus (Schrank von Paula, 1776) (Fig. 147)

Fig. 147. ***Ampedus sanguinolentus*** **(Schrank von Paula, 1776) (Elateridae)** (photo J. Kupryjanowicz)

Material examined (Fig. 142)

Original data: Chomontowszczyzna Reserve (FD79), 31.03-15.04.2021, 6-21.05.2021, 2.07-26.08.2021, 1 ex. each, violet Lindgren funnel trap, leg. & det. K. Sućko; Góra Pieszczana Reserve (FD79), 6-21.05.2021 – 1 ex., violet Lindgren funnel trap, leg. & det. K. Sućko; ad Jałówka Reserve (FE50), 20.05.2023 – 1 ex., leg. & det. B. Pacuk; Supraśl Forest District, ad Borki (FD69), 20.05.2023 – 1 ex., leg. & det. C. Greń.

Distribution

The species is distributed almost throughout Europe and Siberia except in extreme northern areas, and has also been recorded from northern parts of Kazakhstan and Mongolia, as well as from Sakhalin and Hokkaido Island in Japan. In Poland, it is distributed throughout the country (Burakowski et al. 1985).

Biology and ecology

Development takes place in the deadwood of deciduous trees, especially alders, oaks, lindens, and birches. After overwintering, adults appear in late April and live until July (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Ampedus tristis* (Linnaeus, 1758)** (Fig. 148)

Fig. 148. *Ampedus tristis* (Linnaeus, 1758) (Elateridae) (photo G. Tarwacki)

Material examined (Fig. 142)

Data from the literature: Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

A boreal-mountain species reported mainly from forest areas in Central and Northern Europe (Burakowski et al. 1985). In Poland, single specimens have so far been caught in a small number of zoogeographical regions. It is known from the Masurian Lake District, Podlasie, Białowieża Forest, the Western and Eastern Beskids, and the Bieszczady Mountains (Burakowski et al. 1985; Konwerski 1996; Gutowski et al. 2006).

Biology and ecology

Larvae live in decaying fallen trunks, lying logs and stumps of spruce, pine, and birch trees. The development cycle lasts four years, pupation occurs in August, the beetles overwinter in pupal cells, from which they emerge in May and live until July (Burakowski et al. 1985).

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). Included in the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2018) in group 2 (relict *sensu lato*).

Cardiophorus ruficollis **(Linnaeus, 1758)** (Fig. 149)

Fig. 149. ***Cardiophorus ruficollis*** **(Linnaeus, 1758) (Elateridae)** (photo G. Tarwacki)

Material examined

Original data: one of the more common species in Knyszyńska Forest. Reported from the Budzisk (FE50), Góra Pieszczana (FD79), Krzemienne Góry (FD69), Las Cieliczański (FD59), and Stare Biele (FE60) reserves, among others.

Data from the literature: Kopna Góra (FE60), May 1986 (Kubisz & Pawłowski 1995); Budzisk Reserve (Marczak et al. 2023c).

Distribution

An Eurasian species, distributed throughout most of Europe except in the British Isles, the northern part of Fennoscandia, and the Pyrenean Peninsula. In Poland, it is found throughout the country (Burakowski et al. 1985).

Biology and ecology

It inhabits well-lit and dry pine stands in lowland and lower mountainous areas. Larvae live in dry humus on sandy soils, and in bogs in the rather dry, usually crumbled rotten wood of stumps and trunks, mainly of pines, but also of oaks and birches. After overwintering, the imago appears in late April and lives until June (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Crepidophorus mutilatus* (Rosenhauer, 1847)** (Fig. 150)

Fig. 150. *Crepidophorus mutilatus* (Rosenhauer, 1847) (Elateridae) (photo G. Tarwacki)

Material examined (Fig. 151)

Data from the literature: species reported from Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

A rare species with a range restricted to Central European countries, otherwise reported from a small number of localities in eastern France, Finland, and Sweden (Burakowski et al. 1985). Recently found in Italy (Perisi et al. 2020). In Poland, the beetle is reported from several zoogeographical regions.

Biology and ecology

The larva lives mostly in living trees, inhabiting dead, soft wood fragments, especially on the inner walls of hollows, and in the damp, powdery humus inside hollows. Pupation occurs in April to May. The species with a secretive lifestyle (Burakowski et al. 1985).

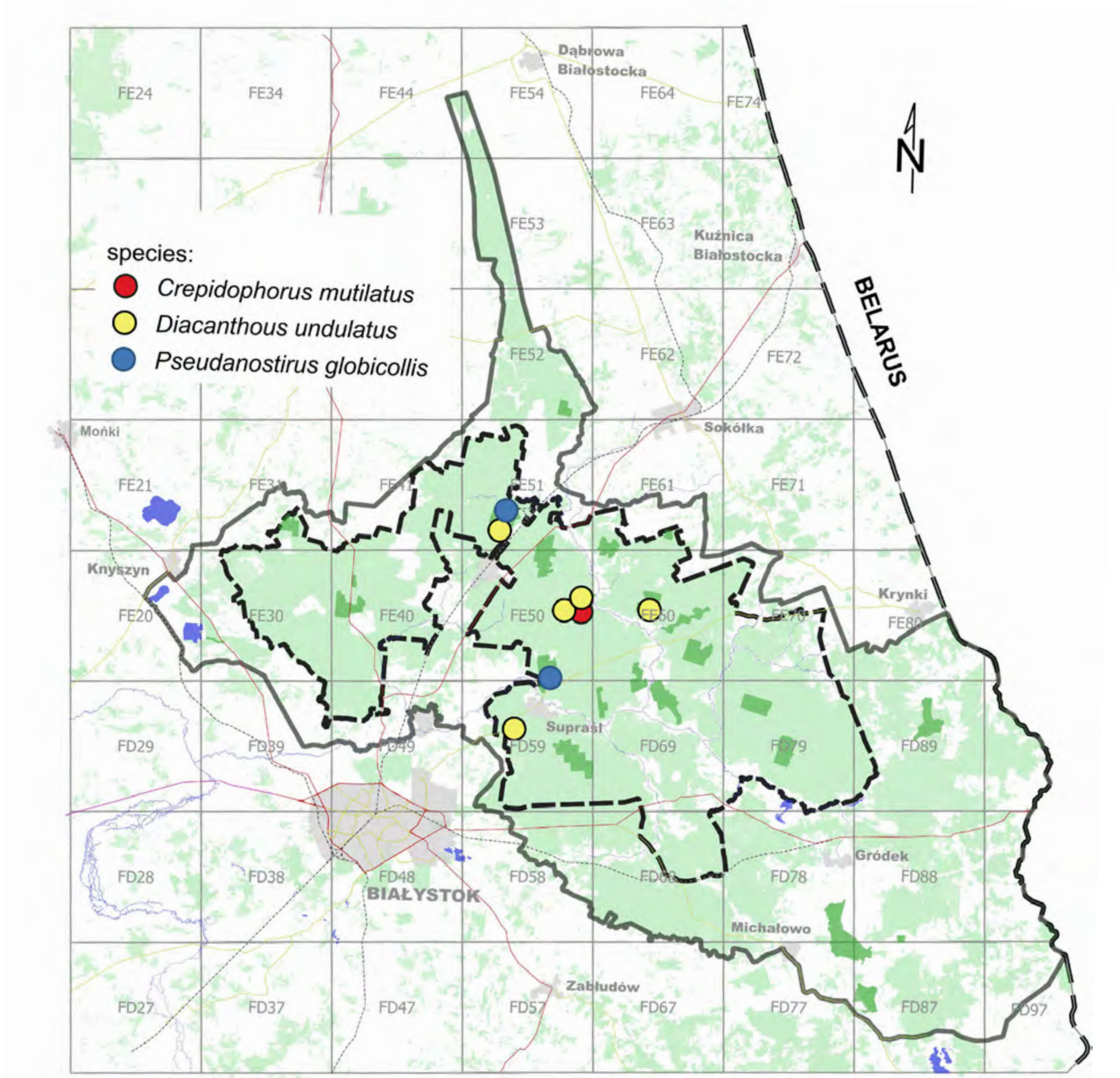


Fig. 151. Localities of *Crepidophorus mutilatus*, *Diacanthous undulatus*, and *Pseudanostirus globicollis* (Elateridae) in Knyszyńska Forest

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Listed as NT (near threatened) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Denticollis linearis **(Linnaeus, 1758)** (Fig. 152)

Material examined

One of the more frequently observed species of click beetles in Knyszyńska Forest. Reported from Budzisk (FE50), Jesionowe Góry (FE51), Krzemianka (FE40), Międzyrzecze (FE60), Stare Biele (FE60), Taboły FE50), and Woronicza (FE60) reserves, among others.

Data from the literature: Budzisk Reserve (FE50), 1982 (Kubisz & Pawłowski 1995).

Fig. 152. *Denticollis linearis* (Linnaeus, 1758) (Elateridae): A, B – colorful forms (photo M. Miłkowski)

Distribution

An Eurosiberian species, widespread mainly in Northern and Central Europe, reaching south to the Pyrenees, northern Italy and Bulgaria, and east through Siberia to northern parts of Kazakhstan and Mongolia, Kamchatka, Sakhalin, and the Kuril Islands. In Poland, it is found throughout the country (Burakowski et al. 1985).

Biology and ecology

Larvae mainly inhabit the sapwood of coniferous and deciduous trees and even shrubs growing in moist sites, found in fallen trunks, stumps, logs, and branches lying on the ground. Pupation occurs in the second half of April or May, and only the larvae overwinter (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Diacanthous undulatus **(De Geer, 1774)** (Fig. 153)

Fig. 153. ***Diacanthous undulatus*** **(De Geer, 1774) (Elateridae)** (photo J. Tatur-Dytkowski)

Material examined (Fig. 151)

Original data: Krasne Reserve (FD59), 10.11.2009 – 1 ex., leg. & det. J.M. Gutowski & K. Sućko (Plan ochrony... Krasne 2011); Międzyrzecze Reserve (FE60), 25.03.2020 – 1 ex., leg. & det. K. Sućko.

Data from the literature: reported from the Budzisk (Kwiatkowski & Marczak 2020b) and Jesionowe Góry (Marczak et al. 2023c) reserves.

Distribution

A boreal-mountainous species, distributed in a wide belt in the forested zone of the northern Palaearctic. It has also been reported from North America. In Poland, it is reported relatively rarely, mainly from the southern part of the country (Burakowski et al. 1985).

Biology and ecology

Larvae mostly feed in and under the bark, less often in the soft, rotting wood of the trunks and logs of deciduous and coniferous trees, especially spruce. Pupation occurs in April; the species with a secretive lifestyle (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Melanotus castanipes (Paykull, 1800) (Fig. 154)

Fig. 154. ***Melanotus castanipes*** **(Paykull, 1800) (Elateridae)** (photo G. Tarwacki)

Material examined

Original data: the species is common in Knyszyńska Forest, reported, among others, from the Budzisk (FE50), Góra Pieszczana (FD79), Jałówka (FD59), Karczmisko (FE40), Krzemianka (FE40), Krzemienne Góry (FD69), Międzyrzecze (FE60), Surażkowo (FE60), and Wielki Las (FE31) reserves.

Data from the literature: Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

Species reported from the countries of Central and Northern Europe, Belgium, mountainous areas of France and Italy; also recorded in western North America. In Poland, it has so far been reported from more than a dozen zoogeographical regions (Burakowski et al. 1985).

Biology and ecology

Larvae feed under the bark or in the rotting, soft and moist wood of fallen trunks, stumps, windthrows, logs. Pupation occurs in August–September in a chamber built by the larva in soft wood under the bark or deeper in the reddish-brown rotten wood. After overwintering in the pupal cell, the adults appear in May and live until July (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Melanotus villosus (Geoffroy, 1785) (Fig. 155)

Fig. 155. ***Melanotus villosus*** **(Geoffroy, 1785) (Elateridae)** (photo G. Tarwacki)

Material examined

Original data: a common species in Knyszyńska Forest. Known, among others, from the Budzisk (FE50), Chomontowszczyzna (FD79), Góra Pieszczana (FD79), Karczmisko (FE40), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), Międzyrzecze (FE60), Stara Dębina (FE61), Starodrzew Szyndzielski (FE52), and Wielki Las (FE31) reserves.

Data from the literature: found in Piłatowszczyzna (FD79) in June 1992 (Kubisz & Pawłowski 1995); Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

The species is widely distributed in all forest areas throughout Europe and Western Siberia, and has also been recorded in western North Africa, Asia Minor, the Caucasus, and Central Asia. In Poland, it is reported from almost the entire country (Burakowski et al. 1985).

Biology and ecology

Predatory larvae inhabit low hollows, rotten bark and fallen trunks, logs and stumps. After overwintering in the pupal cell, the adults emerge in May and live until July (Burakowski et al. 1985).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Pseudanostirus globicollis (Germar, 1843) (Fig. 156)

Fig. 156. ***Pseudanostirus globicollis*** **(Germar, 1843) (Elateridae)** (photo L. Borowiec)

Material examined (Fig. 151)

Original data: ad Jałówka Reserve (FE50), 20.05.2023 – 1 ex., leg. K. Komosiński, det. L. Buchholz.

Data from the literature: Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c).

Distribution

The species is distributed in the central and eastern parts of Europe. Found very rarely and sporadically, mostly singly, in all of its range. In Poland, this click beetle is one of the great rarities, currently known from only Białowieża Forest and Podlasie (Burakowski et al. 1985; Buchholz & Burakowski 1992; Marczak et al. 2023c).

Biology and ecology

Knowledge about the biology of this species is fragmented, but larvae are thought to develop in the soil and humus of natural, mixed deciduous forests (Buchholz & Burakowski 1992).

Stenagostus rufus (De Geer, 1774) (Fig. 157)

Fig. 157. ***Stenagostus rufus*** **(De Geer, 1774) (Elateridae)** (photo T. Mokrzycki)

Material examined

Data from the literature: species reported from Knyszynska Forest but without a specified location (Burakowski et al. 1985).

Distribution

A species inhabiting old coniferous forests, mainly in Central Europe; in addition, it has been recorded from a small number of localities in southern Scandinavia, Latvia, Spain, France, Switzerland, northern Italy, and Greece. In Poland, it is known from almost all zoogeographical regions, but most distribution data are based on archival reports (Burakowski et al. 1985).

Biology and ecology

It inhabits very sunny areas, in the thick trunks of dying pine trees, less frequently spruce. The development cycle takes at least five years. Larvae live in the lower part of the trunk or stump, usually below the surface of the ground. The larva overwinters. Pupation occurs in June, adults fly after dusk (Burakowski et al. 1985). A major threat to its population size is the debarking and milling of pine stumps – required breeding habitats for this species.

Notes

Listed as NT (near threatened) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Lycidae

Erotides cosnardi (Chevrolat, 1831) (Fig. 158)

Fig. 158. ***Erotides cosnardi*** **(Chevrolat, 1831) (Lycidae)** (photo S. Szafraniec)

Material examined (Fig. 159)

Original data: Supraśl Forest District, Kopna Góra Forest (FE60), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski.

Data from the literature: reported in Knyszyńska Forest from the Jesionowe Góry Reserve (FE51) (Marczak in. 2023c).

Distribution

A species distributed in the southern part of Northern and Central Europe, reaching the northern reaches of Spain, Italy, Romania, and Ukraine (Burakowski 2003a). In Poland, it has been reported from Białowieża Forest, Świętokrzyski National Park, and several localities in the southern part of the country (Byk 2001b, 2007; Burakowski 2003a).

Biology and ecology

The biology and ecology of the species remains unknown. It is presumed that the beetle is associated with deciduous trees. Adults are often found on the flowers of plants of the celery family growing around breeding sites (Burakowski 2003a).

Lopheros lineatus (Gorham, 1831) (Fig. 160)

Material examined (Fig. 159)

Data from the literature: in Knyszyńska Forest, it was recorded in Budzisk Reserve (FE50) (Marczak in. 2023c).

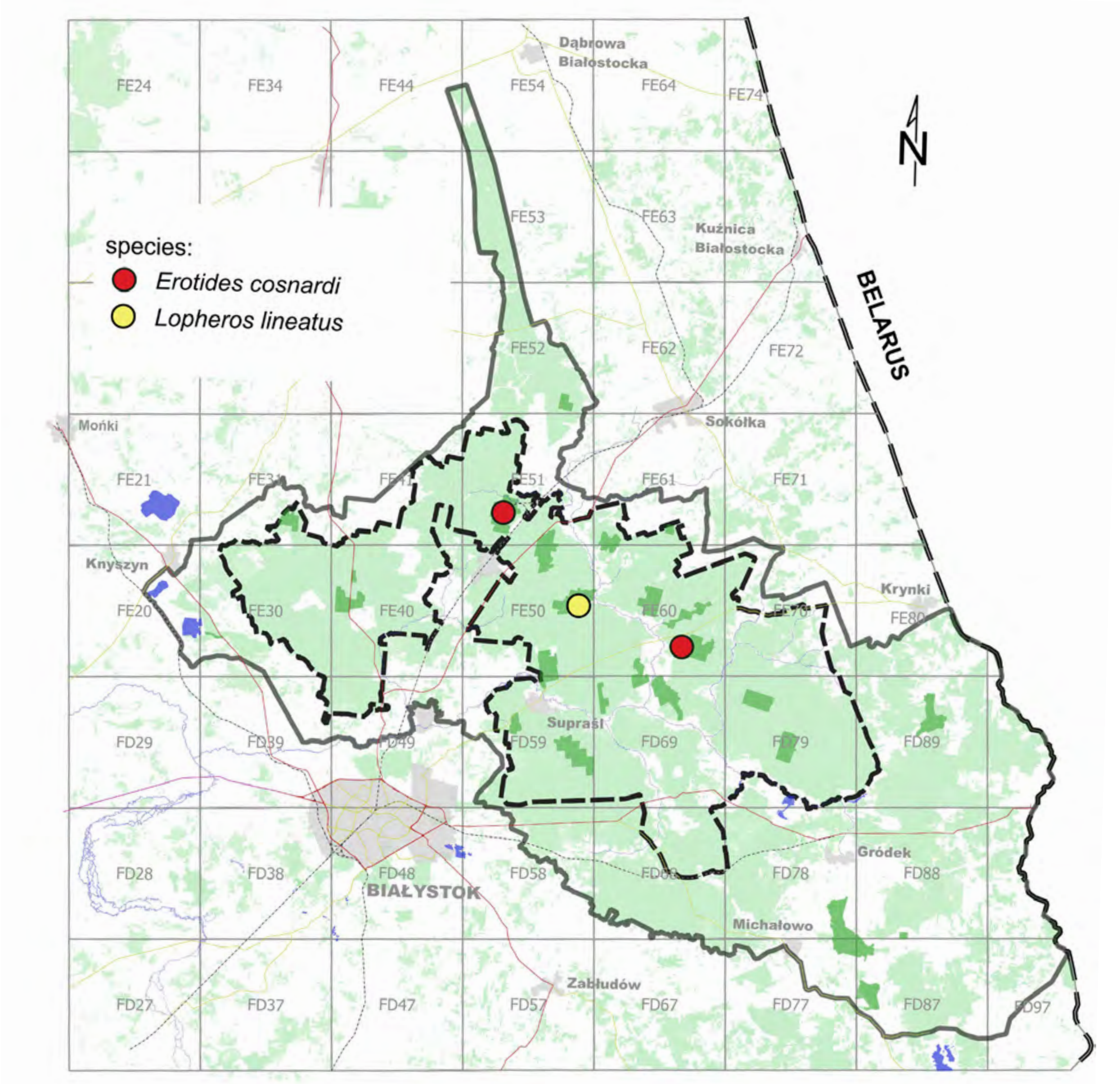


Fig. 159. Localities of *Erotides cosnardi* and *Lopheros lineatus* (Lycidae) in Knyszyńska Forest

Distribution

The species is so far known from Japan, the Russian Far East, Mordovia in the European part of Russia, and a locality in Białowieża Forest (Burakowski 2003a; Kazantsev et al. 2019).

Biology and ecology

The development cycle takes two to three years. Larvae feed in the rotten wood of ash *Fraxinus excelsior* L. trunks lying on the ground. Pupae and adults appear in early May. Imagines are short-lived, which may explain why this species is rarely observed (Burakowski 2003a). In Mordovia, several specimens were caught in late June/early July in traps suspended from small-leaved linden *Tilia cordata* Mill. In addition, the stand contained birch *Betula* spp. and Norway spruce *Picea abies* (L.) Karst. (Kazantsev et al. 2019).

Notes

Listed as LC (least concern) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Included in the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2018) in group 2 (relict *sensu lato*).

Fig. 160. ***Lopheros lineatus*** **(Gorham, 1831) (Lycidae)** (photo S.V. Kazantsev)

Cantharidae

Cantharis nigra (De Geer, 1774) (Fig. 161)

Fig. 161. ***Cantharis nigra*** **(De Geer, 1774) (Cantharidae)** (photo L. Borowiec)

Material examined (Fig. 162)

Original data: Nietupa Reserve (FD89), 23.06.2021 – 1 ex., leg. K. Sućko, det. M.A. Mazur.
Data from the literature: Budzisk Reserve (FE50) (Marczak et al. 2023c).

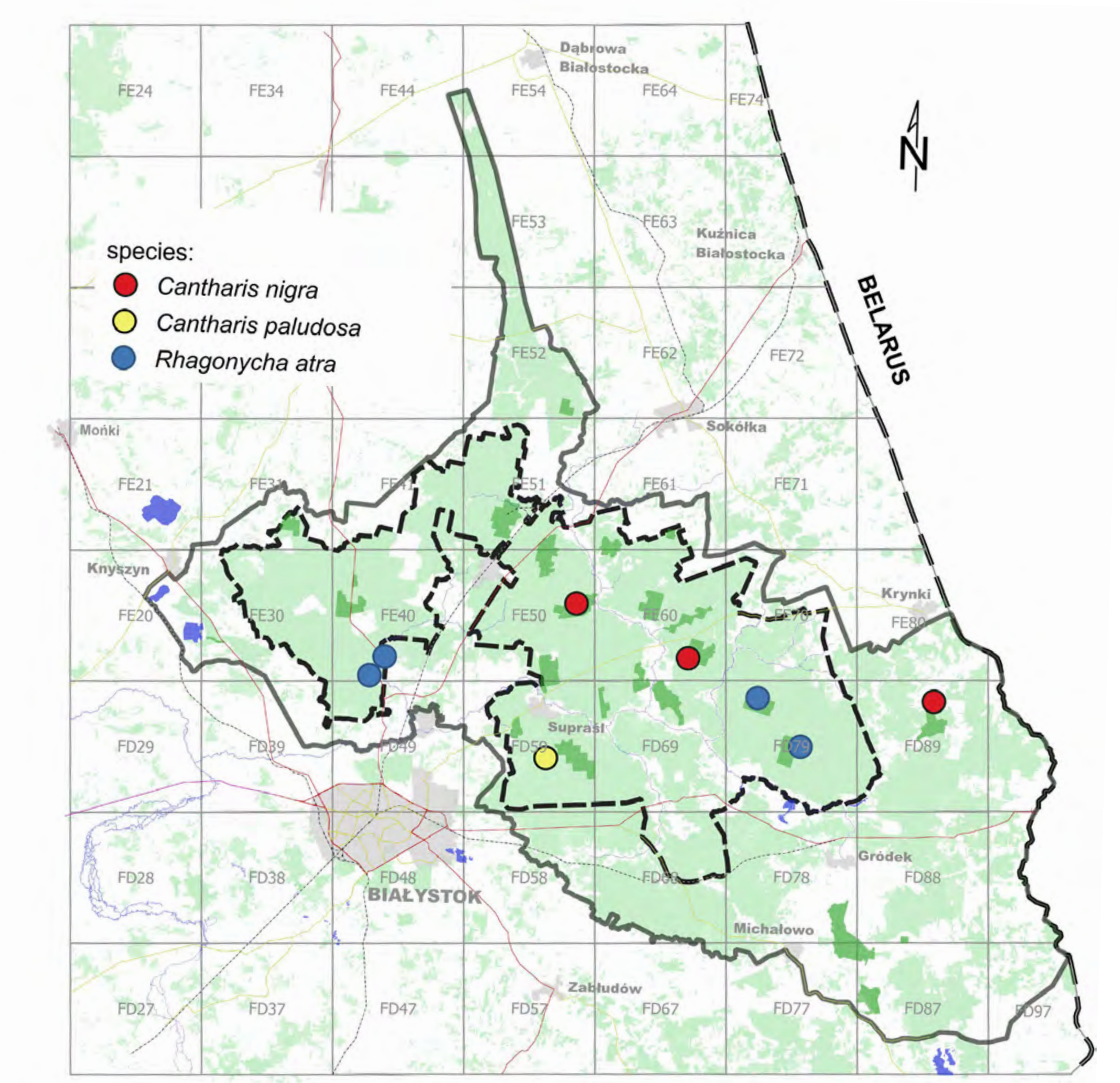


Fig. 162. Localities of *Cantharis nigra*, *C. paludosa*, and *Rhagonycha atra* (Cantharidae) in Knyszyńska Forest

Distribution

A European, lowland species; its range extends from France to Ukraine and from Scandinavia to Greece. It occurs in single, scattered localities in most of Poland, although not yet recorded in a few zoogeographical regions (Kuśka 1995). The aforementioned author did not report this species in Podlasie, but in the year his monograph was published on the soldier beetles of Poland, Chobotow (1995) reported it from two localities: Rudki near Ostrów Lubelski (FC30) and Łapy (FD27) near the border of Narew National Park.

Biology and ecology

Its biology is poorly understood. Both the larva and adults are probably predatory. This species clearly prefers wet and humid habitats. It is rarely captured, which may be because it usually resides in tree crowns (Chobotow 2002), making the use of yellow bowls (Moericke traps) suspended from high branches the surest way to confirm its occurrence.

Cantharis paludosa Fallén, 1807 (Fig. 163)

Material examined (Fig. 162)

Original data: Krasny Las (FD59), 2.06.1994 – 1 ex., leg. A. Lasoń, det. A. Kuśka.

Distribution

Eurasian species. In Poland, it is known mainly from the south of the country, in the north, it is reported from one locality in the Pomerania (Wejherowo), and Białowieża Forest (Kuśka 1995).

Biology and ecology

Hygrophilous species. Most often caught in swampy habitats, bogs, wet forests. Like many other soldier beetles, it is a spring species.

Fig. 163. *Cantharis paludosa* Fallén, 1807 (Cantharidae) (photo L. Borowiec)

Notes

The species is very small (5-6 mm) compared to other representatives of the genus. An almost completely dark body color, with only slightly lighter-colored forewing edges makes it easily confused with species of the genus *Rhagonycha* Esch.

A new species for Podlasie.

Rhagonycha atra (Linnaeus, 1767) (Fig. 164)

Material examined (Fig. 162)

Original data: Dojlidy Forest District, Rybniki Forest Subdistrict, compartment 110 (FE40), 7.06-13.07.2008 – 1 ex.; Katrynka Forest Subdistrict, compartment 149 (FE40), 7.06-13.7.2008 – 1 ex.; Krynki Forest District, Góra Pieszczana Reserve, compartment 454 (FD79), 7.06-13.07.2008 – 1 ex.; Waliły Forest District, Radunin Forest Subdistrict, compartment 61 (FD79), 7.06-13.07.2008 – 1 ex., all IBL-2 traps, leg. R. Plewa, det. M.A. Mazur.

Distribution

A mountainous species with a small number of localities in the lowlands. Known from the countries of Northern and Central Europe. It is rare in Poland, caught mainly in mountainous and foothill areas. It has been reported in the lowlands from single localities in the Pomeranian Lake District and the Masurian Lake District. Numerously caught in Moericke traps in Białowieża Forest (Kuśka 1994).

Biology and ecology

The details of its biology are not known. The species is caught in various types of forests, both deciduous and coniferous. It is significant that a large number of specimens are caught in traps, both barrier traps and yellow bowls, so perhaps the species is not as rare as faunal reports suggest. This may be due to the local short period of emergence of adult forms, which is common in soldier beetles.

Fig. 164. ***Rhagonycha atra* (Linnaeus, 1767) (Cantharidae)** (photo L. Borowiec)

Notes

Given the variability of species in the genus *Rhagonycha* Esch., *R. atra* can be difficult to distinguish from other, black representatives of the genus. According to Kuśka (1995), one sees frequent confusion in collections with the common *R. gallica* Pic and the much rarer *R. elongata* (Fallen). A good diagnostic feature here is body size: *R. atra* is noticeably smaller, and narrower and has a distinctly different male copulatory apparatus.

A new species for Podlasie.

Malthinus biguttatus **(Linnaeus, 1758)** (Fig. 165)

Fig. 165. ***Malthinus biguttatus*** **(Linnaeus, 1758) (Cantharidae)** (photo L. Borowiec)

Material examined (Fig. 166)

Original data: Waliły Forest District, Królowe Stojło Forest Subdistrict, compartment 82 (FD79), 23.06.2021 – 2 exx., leg. J.M. Gutowski, det. M.A. Mazur; Międzyrzecze Reserve (FE60), 30.07.2022 – 1 ex., leg. & det. A. Lasoń.

Distribution

A European species. In Poland, it is most recently known from single localities in Małopolska, the Świętokrzyskie Mountains, Niepołomice Forest (baza.biomap.pl), Roztocze (Chobotow 2002), and Białowieża Forest (Gutowski & Jaroszewicz 2001).

Biology and ecology

Biology virtually unknown. It is caught most often in various types of forests.

Notes

Data from the literature indicate a very poor understanding of both the distribution and ecology of most species in the entire subfamily Malthininae. This is due to the very small size, delicate body, difficulty in identification, and often short period of appearance of most representatives. As a result, this group is of little interest to most entomologists. These gaps in knowledge often lead to ambiguous and contradictory conclusions about individual species, and this is the case here. The *Catalogue of the Fauna of Poland* (Burakowski et al. 1985), which is the most common source of knowledge on Polish beetle species, indicates that this is a rare lowland species. In turn, according to Czech researchers (Dvořák 2010), it is a common species of mountain and foothill forests. Chobotow (2002) mentions that the species is most often caught as single specimens in Roztocze, although he also cites data from Tenenbaum (1913), who described it as a species that is "common everywhere". It was recorded in large numbers in Białowieża Forest by Kuśka (1994). Thus, it seems that both this and the other representatives of this group described below are much more common in the environment, and data on their distribution and abundance should be verified.

A new species for Podlasie.

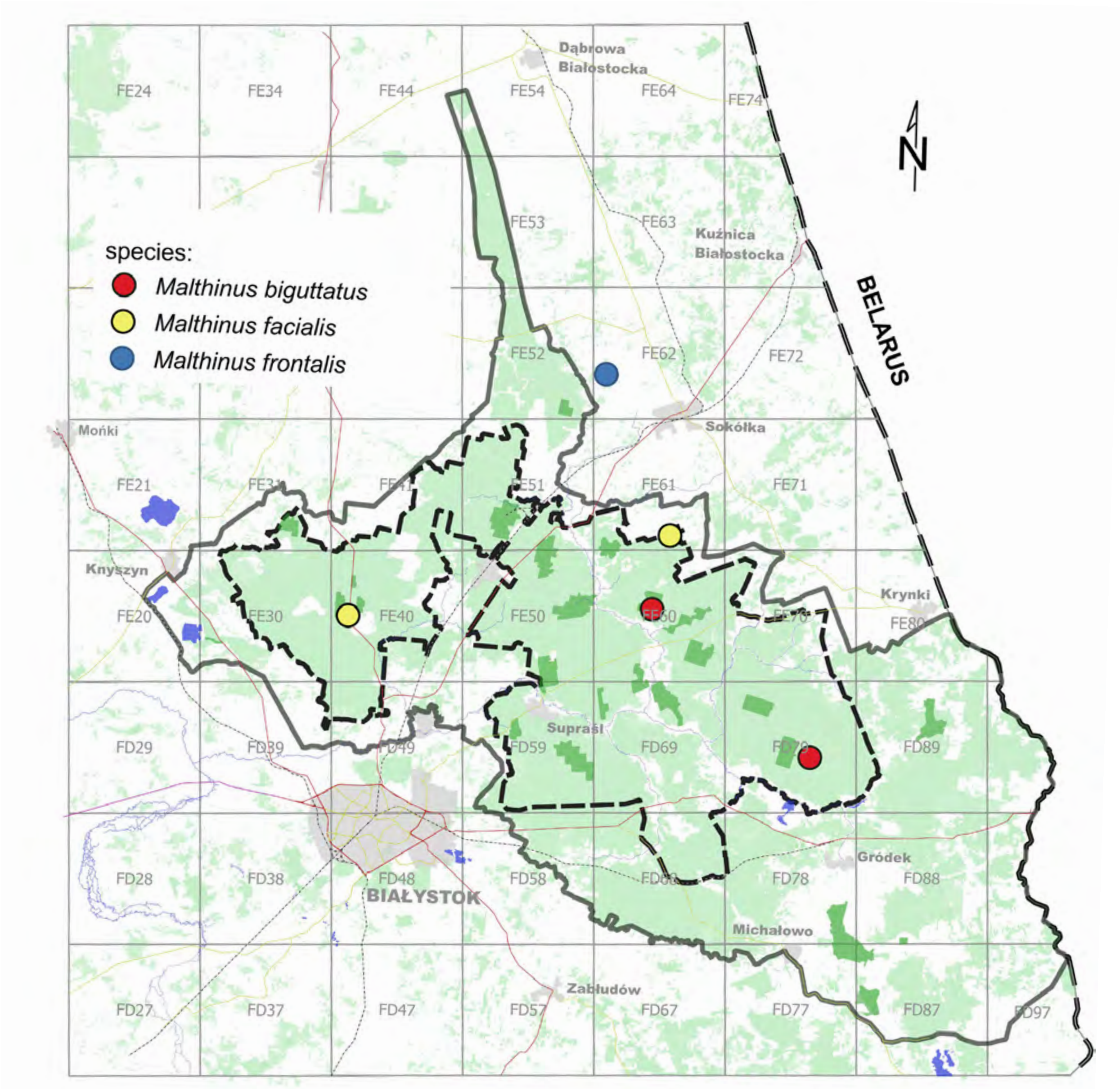


Fig. 166. Localities of *Malthinus biguttatus*, *M. facialis*, and *M. frontalis* (Cantharidae) in Knyszyńska Forest

Malthinus facialis Thomson, 1864 (Fig. 167)

Material examined (Fig. 166)

Original data: Krzemianka Reserve (FE40), 20.06.2020 – 1 ex., beating sheet dead branches, leg. & det. R. Królik; Stara Dębina Reserve (FE61), 19.06.2020 – 1 ex., beating sheet on dead branches, leg. & det. R. Królik.

Fig. 167. *Malthinus facialis* Thomson, 1864 (Cantharidae) (photo E. Gay)

Distribution

Its range covers the area of Central Europe, eastward to Asia Minor, and the Caucasus. In Poland, for a long time it was considered a great faunal rarity. The *Catalogue of the Fauna of Poland* lists only two localities in recent times (Burakowski et al. 1985). Chobotow (2002) reports its numerous occurrence in the vicinity of Lublin. It is also known from Białowieża Forest (Gutowski & Jaroszewicz 2001). It is reported in Podlasie from Rudka near Ostrów Lubelski (FC30) (Chobotow 1995).

Biology and ecology

A species occurring in deciduous forests with a high proportion of hornbeam, caught most often in the undergrowth (Chobotow 2002). In Knyszyńska Forest, it was beating sheet dead branches. Details of its biology are unknown.

Notes

The species is listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). It seems that the almost complete lack of reports on it in the 20th century is related to the factors mentioned in the notes for *Malthinus biguttatus*. According to Chobotow (2002), the species increased its abundance and appeared in new localities at the beginning of the 2000s. Without more accurate data, it is difficult to conclusively settle this question, especially since the mentioned study, despite its high value, is more than 20 years old.

Malthinus frontalis (Marsham, 1802) (Fig. 168)

Material examined (Fig. 166)

Original data: Czarna Białostocka Forest District, Bogusze Forest Subdistrict, compartment 410 (FE62), 3.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. M.A. Mazur.

Fig. 168. *Malthinus frontalis* (Marsham, 1802) (Cantharidae) (photo L. Borowiec)

Distribution

A European species. Rare in Poland, known from a small number of localities, most of which are already historical, although it probably occurs over a much wider area. Known from Białowieża Forest (Byk et al. 2006) and Nowa Jedlanka (FC30) in Podlasie (Chobotow 1995).

Biology and ecology

Details of its biology are unknown, but probably similar to *Malthinus biguttatus*, as they are often caught together. This species also seems to prefer to stay in the tree canopy, making it much more difficult to demonstrate its occurrence without traps.

Malthodes marginatus (Latreille, 1806) (Fig. 169)

Fig. 169. ***Malthodes marginatus*** **(Latreille, 1806) (Cantharidae)** (photo L. Borowiec)

Material examined (Fig. 170)

Original data: Czarna Białostocka Forest District, Bogusze Forest Subdistrict, compartment 410 (FE62), 3.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. M.A. Mazur; Żednia Forest District, Kołodno Forest Subdistrict, compartment 167 (FD69), 3.06-13.07.2008 – 2 exx., IBL-2 trap, leg. R. Plewa, det. M.A. Mazur.

Distribution

A European species, recorded both in the lowlands and in the higher parts of mountains. In Poland, it is caught infrequently and usually in single specimens, present in scattered localities in various zoogeographical regions. Reported in Podlasie from Rudka near Ostrów Lubelski (FC30) (Chobotow 1995).

Biology and ecology

Details of its biology and ecology are unknown. Burakowski et al. (1985) indicate that it was caught on shrubby alders and low spruces. According to Chobotow (2002), it is a species that inhabits various types of deciduous forests and the canopies of field woodlots.

Notes

Probably more widely distributed than the published data suggests, as are the other representatives of this subfamily.

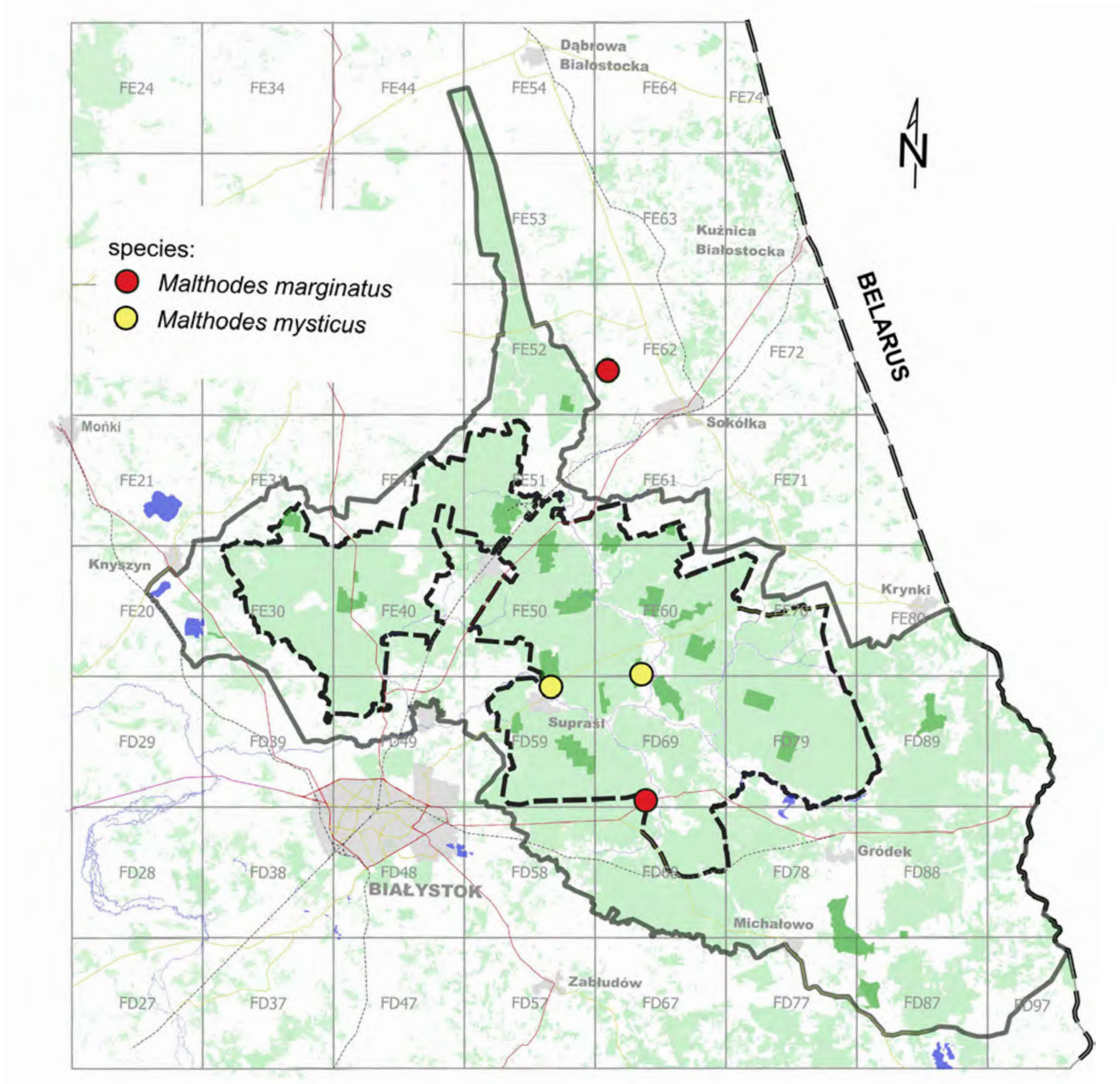


Fig. 170. Localities of *Malthodes marginatus* and *M. mysticus* (Cantharidae) in Knyszyńska Forest

Malthodes mysticus Kiesenwetter, 1852 (Fig. 171)

Material examined (Fig. 170)

Original data: Podsupraśl, vicinity of Jałówka Reserve (FD59), 3.07.1994 – 1 ex., leg. & det. A. Lasoń; Surażkowo Reserve (FE60), 20.07.2020 – 1 ex., leg. & det. A. Lasoń.

Distribution

A European species. In Poland, known from single, mostly historical, scattered localities, mostly in the southern zoogeographical regions (database.biomap.pl). Reported from Białowieża Forest by Kuśka (1994).

Biology and ecology

Details of its biology are unknown. Malthodes mysticus was collected from various trees and shrubs (Burakowski et al. 1985), and by S. Tenenbaum in wet meadows (Tenenbaum 1918).

Notes

A new species for Podlasie.

Fig. 171. ***Malthodes mysticus*** **Kiesenwetter, 1852 (Cantharidae)** (photo L. Borowiec)

Histeridae

Abraeus parvulus Aubé, 1842 (Fig. 172)

Fig. 172. ***Abraeus parvulus*** **Aubé, 1842 (Histeridae)** (photo R. Królik)

Material examined (Fig. 173)

Data from the literature: Budzisk Reserve (FE50) (Marczak et al. 2023c).

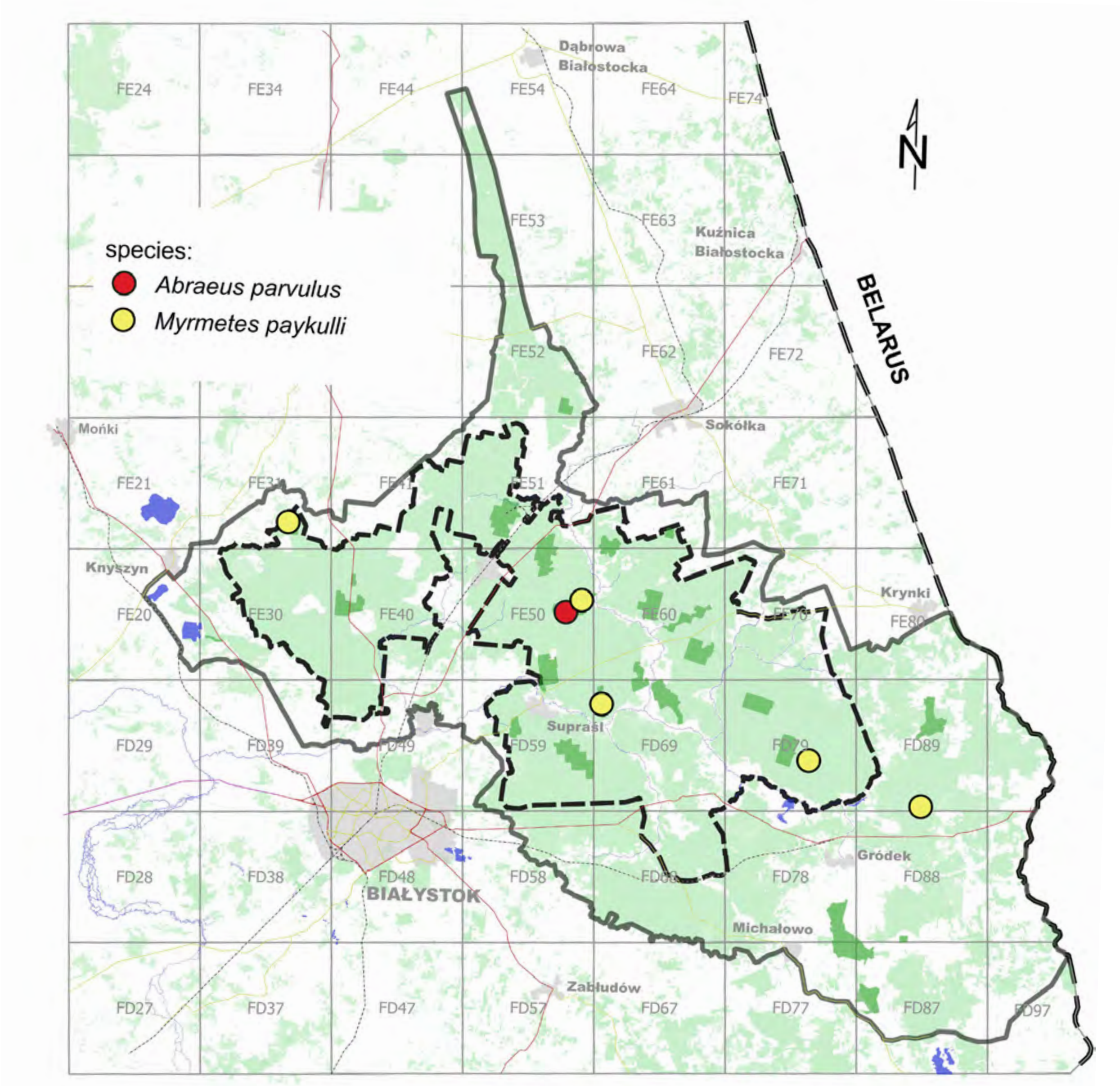


Fig. 173. Localities of *Abraeus parvulus* and *Myrmetes paykulli* (Histeridae) in Knyszyńska Forest

Distribution

A rare species, distributed mainly in Southern and Central Europe. Also reported from Portugal and Sweden (Lackner et al. 2015). It is a rare beetle in Poland, reported from the Masurian Lake District, Białowieża Forest, the area around Poznań, and Warszawa (Mazur 1973; Burakowski et al. 1978; Ruta et al. 2004; Byk et al. 2006).

Biology and ecology

It is found in old, hollow trees, leading a secretive way of life in sawdust or rotten wood in the vicinity of the nests of *Lasius brunneus* (Latr.), *L. fuliginosus* (Latr.), and *Formica sanguinea* Latr. ants (Mazur 1973; Burakowski et al. 1978).

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Myrmetes paykulli Kanaar, 1979 (Fig. 174)

Fig. 174. *Myrmetes paykulli* Kanaar, 1979 (Histeridae) (photo R. Królik)

Material examined (Fig. 173)

Original data: Dojlidy Forest District, Rybniki Forest Subdistrict, compartment 110 (FE40), 22.04-6.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. R. Królik; Knyszyn Forest District, Wielki Las Reserve, compartment 8 (FE31), 22.04-6.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. R. Królik; Waliły Forest District, Królowe Stojło Forest Subdistrict, compartment 104 (FD79), 22.04-6.06.2008 – 1 ex., IBL-2 trap, 7.06-10.07.2008 – 1 ex., IBL-2 trap, Smolarnia Forest Subdistrict, compartment 227 (FD89), 22.04-06.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. R. Królik; Krzemienne Góry Reserve (FD69), 13.06-13.07.2022 – 1 ex., leg. K. Sućko, det. R. Królik.

Data from the literature: Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

A myrmecophilic species distributed throughout almost all of Europe except its extreme western and northern areas. To the east it reaches Siberia and Afghanistan, and is also recorded from the Caucasus (Georgia) (Lackner et al. 2015). In Poland, with the exception of the high mountains, it probably occurs everywhere, but documented data is lacking from many zoogeographical regions (Mazur 1972; Burakowski et al. 1978).

Biology and ecology

Occurs in the anthills of large forest ants: *Formica rufa* L., *F. pratensis* Retz., and *F. sanguinea* Latr. (Mazur 1973; Burakowski et al. 1978).

Platylomalus complanatus (Panzer, 1797) (Fig. 175)

Material examined (Fig. 176)

Original data: Supraśl Forest District, Krzemienne Góry Reserve, compartment 191 (FD69), 24.04.2020 – 1 ex., leg. & det. A. Lasoń.

Fig. 175. *Platylomalus complanatus* (Panzer, 1797) (Histeridae) (photo R. Królik)

Data from the literature: Budzisk Reserve (FE50), numerous specimens under the bark of lying aspens (Kwiatkowski & Marczak 2020; Marczak et al. 2023c); Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c).

Distribution

A species distributed in almost all of Europe except the British Isles, it has also been recorded from northern Africa, the Caucasus, Cyprus, Syria, and Iran (Lackner et al. 2015). In Poland, it is a rare beetle, known from a small number of lowland localities.

Biology and ecology

It is caught under the bark of strongly sunlit deciduous trees (Mazur 1972).

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

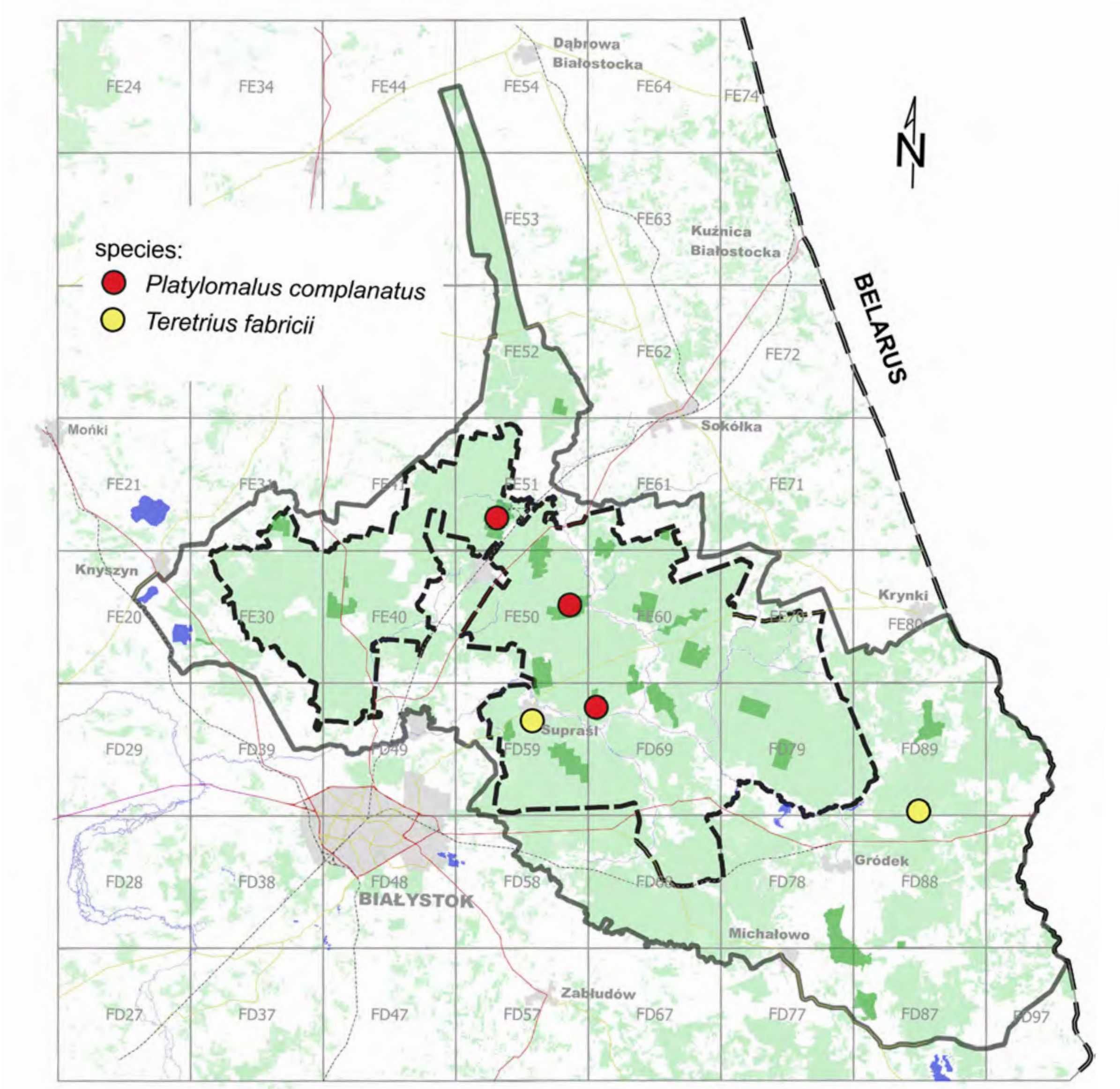


Fig. 176. Localities of *Platylomalus complanatus* and *Teretrius fabricii* (Histeridae) in Knyszyńska Forest

Teretrius fabricii Mazur, 1972 (Fig. 177)

Material examined (Fig. 176)

Original data: Waliły Forest District, Smolarnia Forest Subdistrict, compartment 227 (FD89), 22.04-6.06.2008 – 1 ex., 7.07-31.08.2008 – 2 exx., IBL-2 trap, leg. R. Plewa, det. R. Królik; Supraśl (FD59), 20.05.2023 – 1 ex., leg. & det. B. Pacuk.

Distribution

A species inhabiting almost all of Europe, except its extreme northern part. It is also reported from northern Africa, the Caucasus, the Middle East, Kazakhstan, Uzbekistan, and Mongolia (Lackner et al. 2015), as well as from Irkutsk and Ussuri Krai (Mazur 1972). In Poland, it occurs locally in lowland and hilly areas (Burakowski et al. 1978).

Biology and ecology

It is found most often on willows and poplars, in the tunnels of *Ptilinus fuscus* Geoffr. and *Lyctus linearis* (Goeze), where it attacks their larvae (Mazur 1972; Burakowski et al. 1978).

Fig. 177. ***Teretrius fabricii*** **Mazur, 1972 (Histeridae)** (photo R. Królik)

Hydrophilidae

Hydrophilus piceus **(Linnaeus, 1758)** (Fig. 178)

Fig. 178. ***Hydrophilus piceus*** **(Linnaeus, 1758) (Hydrophilidae)** (photo L. Borowiec)

Material examined (Fig. 179)

Original data: Czarna Białostocka Forest District, Starodrzew Szyndzielski Reserve (FE52), 14.07.2010 – 1 ex., 24.07.2010 – 1 ex., 29.08.2011 – 1 ex., leg. Ł. Radziwon, det. J.M. Gutowski (Radziwon 2012).

Data from the literature: reported from Knyszyńska Forest by Greń et al. (2022a) without specifying the source data mentioned above.

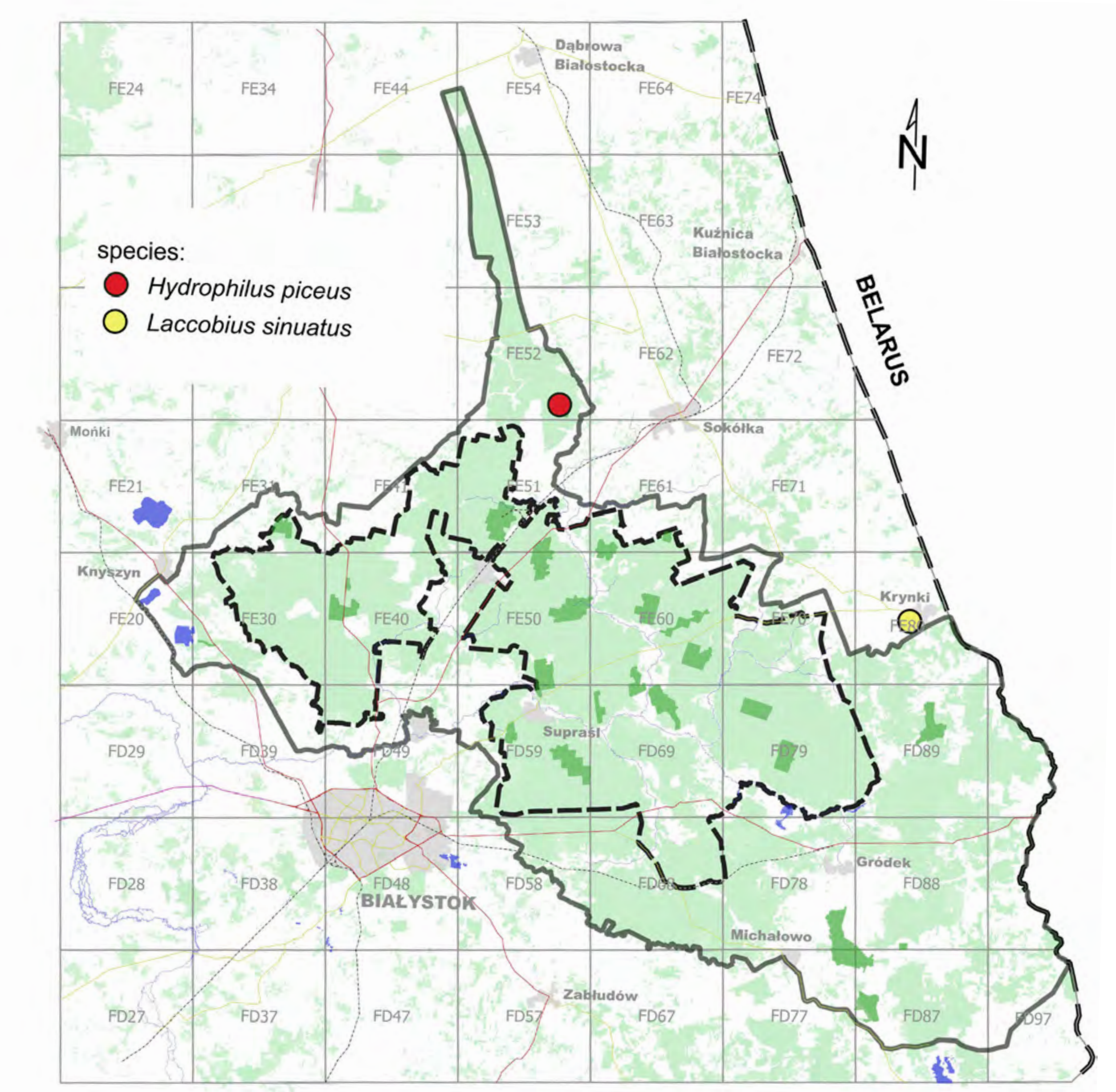


Fig. 179. Localities of *Hydrophilus piceus* and *Laccobius sinuatus* (Hydrophilidae) in Knyszyńska Forest

Distribution

A Palaearctic species, distributed from northern Africa through Europe, the Middle East, Siberia, and the Far East (Fikáček et al. 2015). In Poland, it is reported from the entire country, from the Baltic Sea to the mountains. Formerly found much more frequently, sometimes in large numbers of individuals, it is now definitely rarer (Burakowski et al. 1976; Galewski 1990; Przewoźny & Lubecki 2012).

Biology and ecology

Species inhabiting various types of standing and slow-moving waters in lowland and foothill areas. It is a species that flies very well, often flying to light. Adult water scavenger beetles are herbivorous, eating dead and fresh plant parts (Galewski 1990).

Notes

Listed as NT (near threatened) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Listed as CR (critically endangered) in the *Red List of Beetles (Coleoptera) of the Silesian Province* (Greń et al. 2012).

Cercyon granarius Erichson, 1837 (Fig. 180)

Fig. 180. *Cercyon granarius* Erichson, 1837 (Hydrophilidae) (photo M. Ciepliński)

Material examined (Fig. 181)

Data from the literature: caught in Knyszyńska Forest with IBL-2 traps in three localities: compartment 29 of Czarna Białostocka Forest District, compartment 144 of Knyszyn Forest District, and compartment 156 of Krynki Forest District (Greń et al. 2022a).

Distribution

The species is distributed in almost all of Europe, in Asia eastward reaching Mongolia and the Russian Far East (Hansen 2004; Przewoźny 2022). In Poland, the species is very rare and scarce. Known from eleven zoogeographical regions across the country.

Biology and ecology

It is found on water banks, in sand, silt, and among decaying organic debris (Boukal et al. 2007).

Three specimens were caught in Knyszyńska Forest, all in IBL-2 traps.

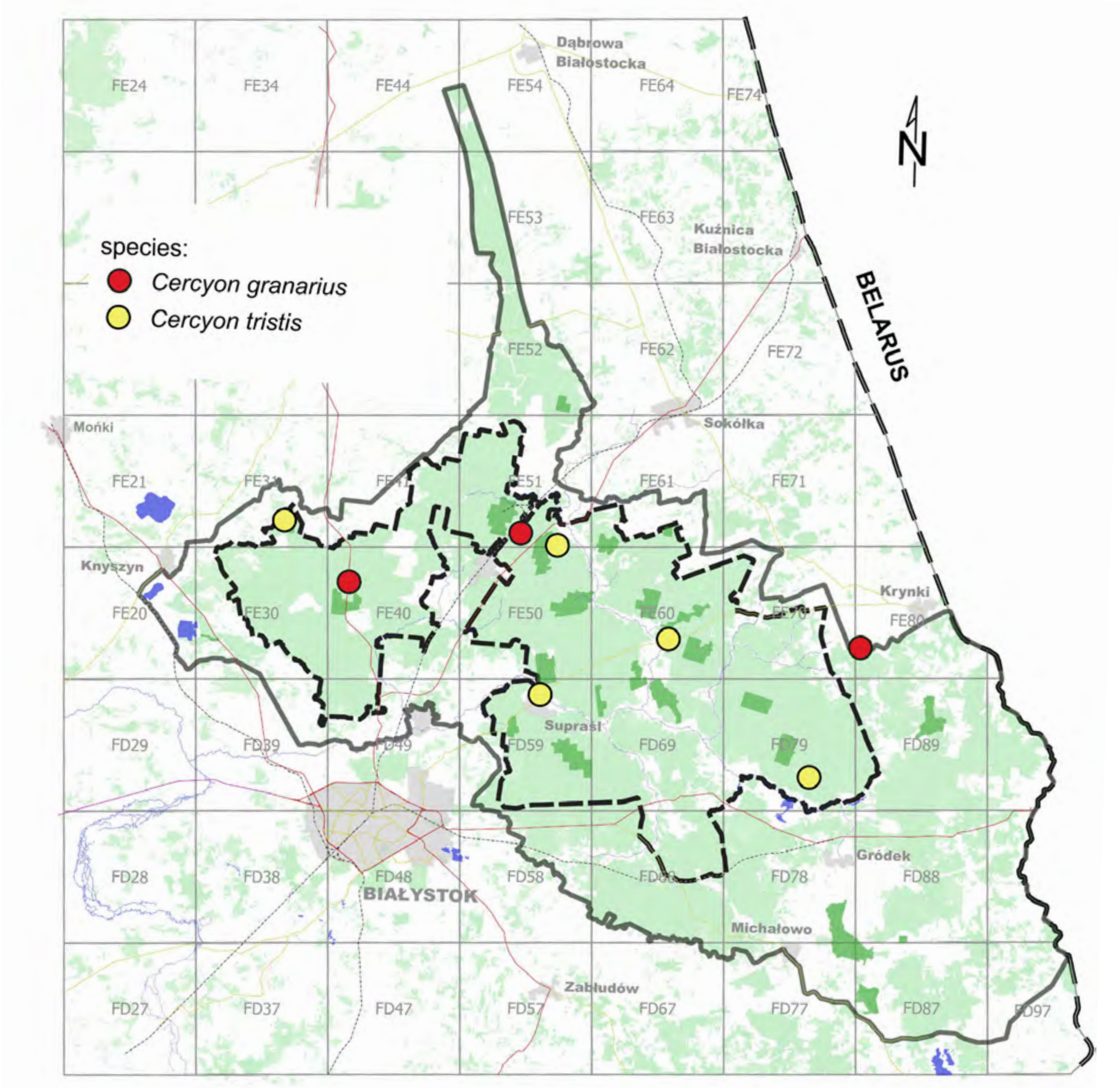


Fig. 181. Localities of *Cercyon granarius* and *C. tristis* (Hydrophilidae) in Knyszyńska Forest

Cercyon tristis (Illiger, 1801) (Fig. 182)

Material examined (Fig. 181)

Data from the literature: caught in Knyszyńska Forest in a beaver lodge in compartment 23 of Czarna Białostocka Forest District, in an oxbow lagoon of the Supraśl River in Supraśl, in Kopna Góra, in IBL-2 traps in compartment 8 of Knyszyn Forest District, and in compartment 178 of Waliły Forest District, (Kubisz & Szwałko 1991; Greń et al. 2022a).

Distribution

A species with a wide, Holarctic distribution. Known from almost all of Europe, eastward reaching Mongolia and the Russian Far East, northward to the Arctic Circle (Fikáček et al. 2015). In Poland, it occurs in both mountains and lowlands; distributed throughout the country.

Biology and ecology

The beetles of this species live among decaying organic debris, in sand, in silt in the water's edge zone, and are often found in post-flood inflows (Boukal et al. 2007).

Notes

Listed as LC (least concern) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Fig. 182A. *Cercyon tristis* (Illiger, 1801) (Hydrophilidae) (photo L. Borowiec)

Fig. 182B. Oxbow lake of the Supraśl River – habitat of *Cercyon tristis* (photo C. Greń)

***Laccobius sinuatus* (Motschulsky, 1849)** (Fig. 183)

Fig. 183. *Laccobius sinuatus* (Motschulsky, 1849) (Hydrophilidae) (photo M. Ciepliński)

Material examined (Fig. 179)

Data from the literature: caught in Krynki in Knyszyńska Forest in a small watercourse flowing out of a pond on Kościelna Street (Greń et al. 2022a).

Distribution

A Western Palaearctic species, widely distributed in Europe and northern Africa (Fikáček et al. 2015). In Poland, it is reported from sixteen zoogeographical regions in the entire country, from the Baltic Coast to the Carpathian Mountains (Burakowski et al. 1976; Greń et al. 2017).

Biology and ecology

It lives in sunny shallow bodies of water with sandy and sandy loamy banks, especially newly formed ones that are not covered with vegetation (Boukal et al. 2007). In Knyszyńska Forest, it was caught on the clay bank of a bend in a watercourse with minimal water flow.

Lucanidae

***Ceruchus chrysomelinus* (Hochenwarth, 1785)** (Fig. 184)

Material examined (Fig. 185)

Original data: Żednia Forest District, Las Cieliczański Reserve (53.158885, 23.388847, FD59), 14.04.2010 – 1 ex., leg. J.M. Gutowski & K. Sućko, det. J.M. Gutowski; Supraśl Forest District, Stare Biele Reserve (53.238450, 23.504350, FE60), 19.06.2022 – 2 exx., under spruce tree bark, leg. & det. A. Byk; Supraśl Forest District, Krzemienne Góry Reserve (FD69), 7.04.2010 – imago remains (Plan ochrony... Krzemienne Góry 2011; Kisiel 2012).

Data from the literature: Czarna Bialostocka Forest District, Jesionowe Góry Reserve (FE51) (Marczak et al. 2023 c).

C


D


Fig. 184. *Ceruchus chrysomelinus* (Hochenwarth, 1785) (Lucanidae): A – female, B – male, C – larva, D – larval gallery (photo J.M. Gutowski)

Distribution

In Europe, the species has been reported from Austria, Belarus, Bosnia and Herzegovina, Croatia, Czech Republic, Estonia, Finland, France, Germany, Italy, Liechtenstein, Latvia, Lithuania, Spain, Poland, the central and southern parts of the European territory of Russia, Romania, Serbia, Slovakia, Slovenia, Switzerland, Sweden, and Italy. In Asia, it was recorded from Russia (Western Siberia) (Bartolozzi et al. 2016). In Poland, it is found quite rarely and sporadically, in appropriate biotopes, sometimes in large numbers of individuals, more often in the eastern area of the country (Burakowski et al. 1983).

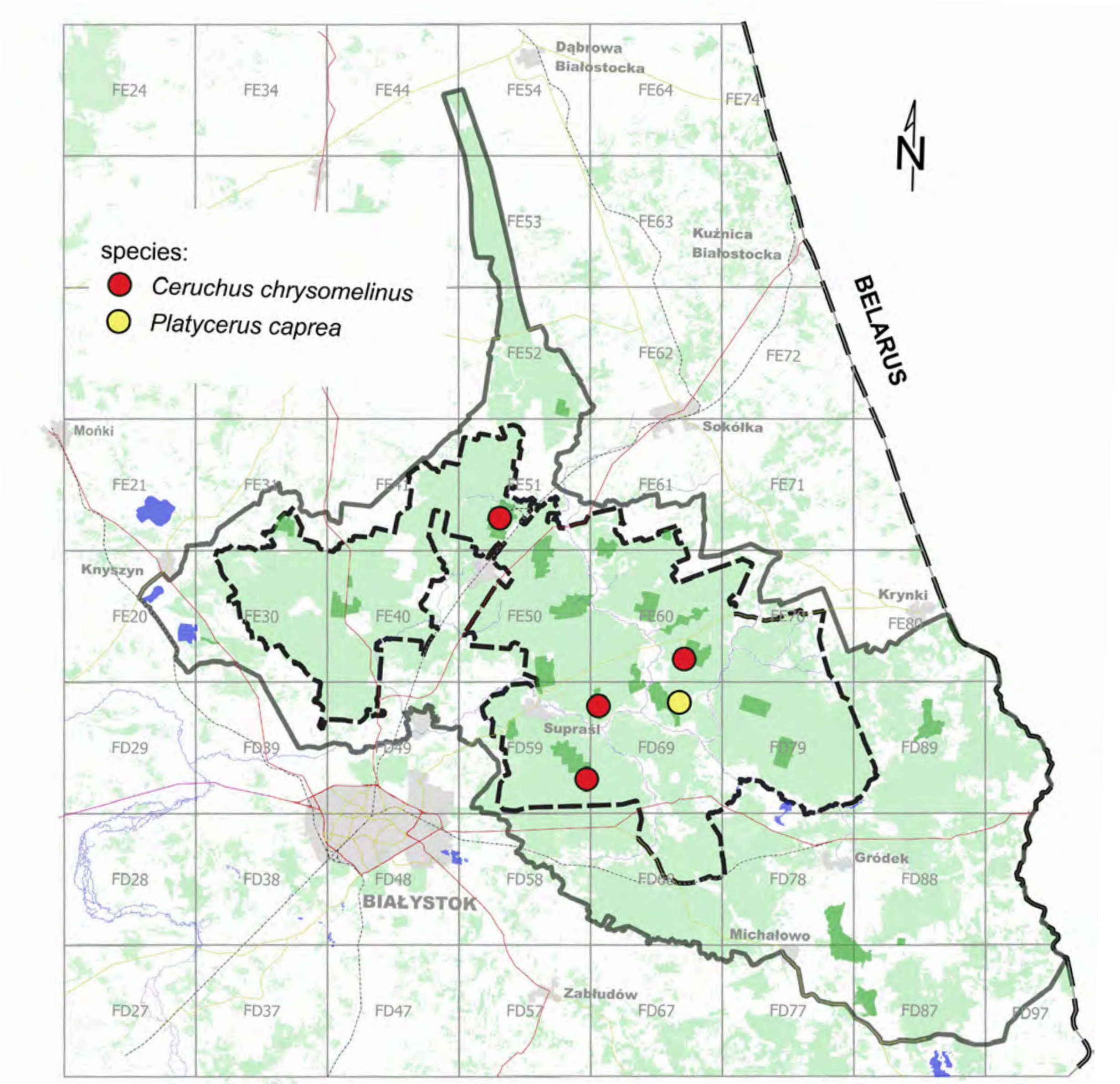


Fig. 185. Localities of *Ceruchus chrysomelinus* and *Platycerus caprea* (Lucanidae) in Knyszyńska Forest

Biology and ecology

It inhabits mainly damp, shady, old stands where fallen trees, logs, and branches are not removed. Larvae feed almost exclusively in lying, moist, decayed logs, less frequently in stumps and standing trunks with brown rotten wood. Host material in the north is mainly spruce and birch wood, while in the south it can also include fir, oak, beech, hornbeam, and elm. Pupation occurs in September and October, the adults overwinter in the pupal chamber and do not emerge to the surface until the following June (Burakowski et al. 1983). One generation lasts three or four years. The beetles fly during warm evenings. At this time, the females look for suitable places (properly decomposed wood) for the new generation to develop, and copulation takes place there. After copulation, the females burrow into the wood (or use natural cracks in the wood or the entry holes of other insects) and lay eggs (Kosibowicz & Jachym 2021).

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Listed as NT (near threatened) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

It is also on the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2018) in group 2 (relict *sensu lato*). Under partial protection in Poland.

The presence in forests of dead, old spruce, fir, and birch trees is a prerequisite for the preservation of *Ceruchus chrysomelinus* in Poland, because only adequate, large amounts of deadwood of these trees creates favorable conditions for the continuation and development of its population.

***Dorcus parallelipipedus* (Linnaeus, 1758)** (Fig. 186)

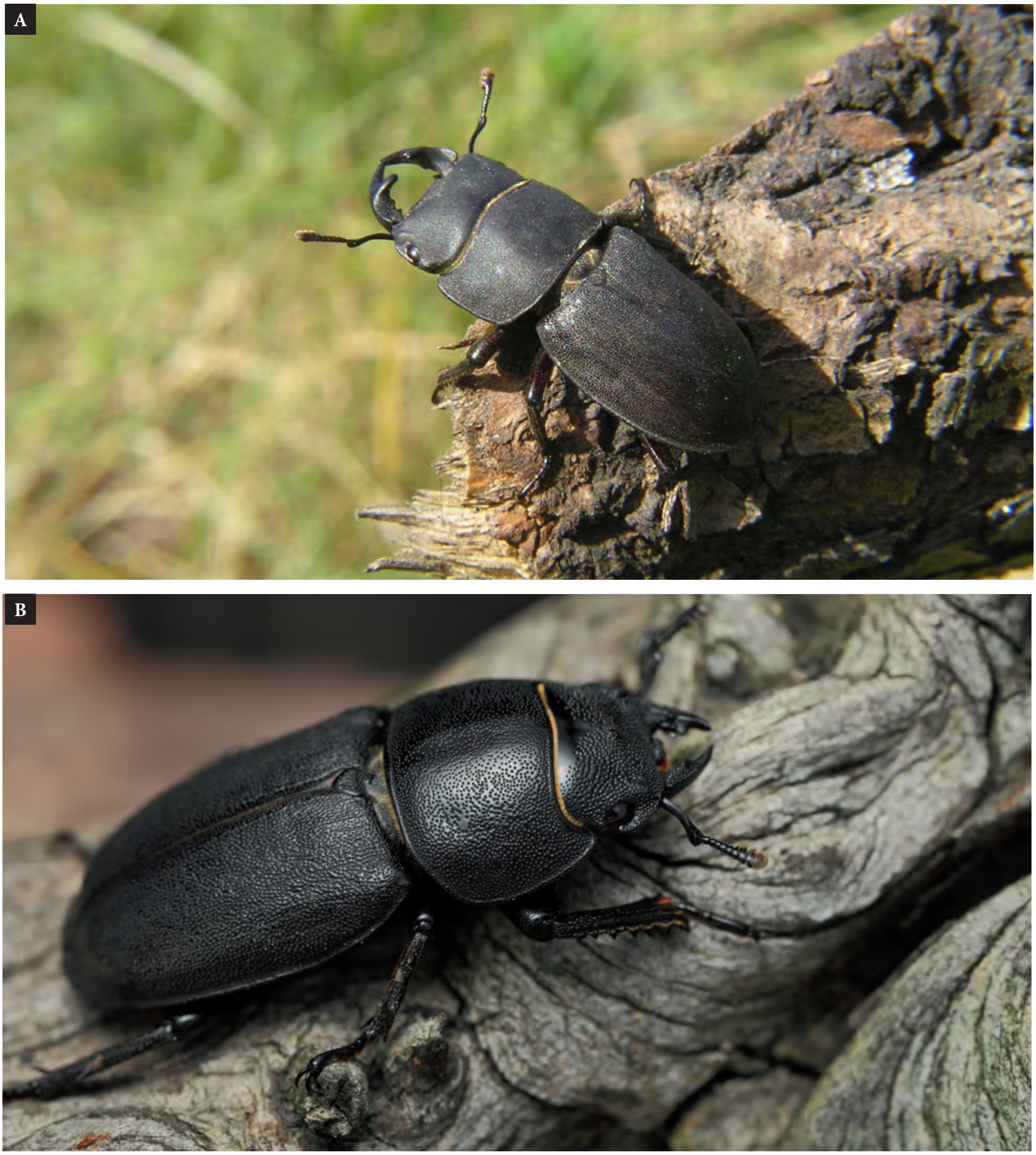


Fig. 186. *Dorcus parallelipipedus* (Linnaeus, 1758) (Lucanidae): A – male (photo A. Jadwiszczak), **B – female** (photo J. Kupryjanowicz)

Material examined (Fig. 187)

Original data: Czarna Białostocka Forest District, Jesionowe Góry Reserve (FE51), 23.06.2010 – 1 ex., leg. P. Klimczuk, det. J.M. Gutowski (Plan ochrony... Jesionowe Góry 2011); Czarna Białostocka Forest District, Starodrzew Szyndzielski Reserve (FE52), 16.07.2010 – 1 ex., 25.07.2010 – 1 ex., leg. Ł. Radziwon, det. J.M. Gutowski (Plan ochrony... Starodrzew Szyndzielski 2011; Radziwon 2012); Knyszyn Forest District, Krzemianka Reserve (FE40), 12.04.2011 – 1 ex., leg. K. Terlecki, det. J.M. Gutowski (Terlecki 2012); Czarna Białostocka Forest District, Dąbrowa Forest Subdistrict, Brzozowo Kolonia (FE54), 2.07.2013 – 1 ex., leg. B. Szestowicka, det. J.M. Gutowski (Szestowicka 2014); Supraśl Forest District, Klin Forest Subdistrict, Wierzchlesie (53.309820, 23.554730, FE71), 23.06. 2021 – 1 ex., gravel pit, leg. & det. J.M. Gutowski; Żednia Forest District, Pieszczaniki Forest Subdistrict, ad Kołodno (53.158000, 23.468600, FD69), 4.06. 2022 – 1 ex., leg., det. & coll. J.M. Gutowski.

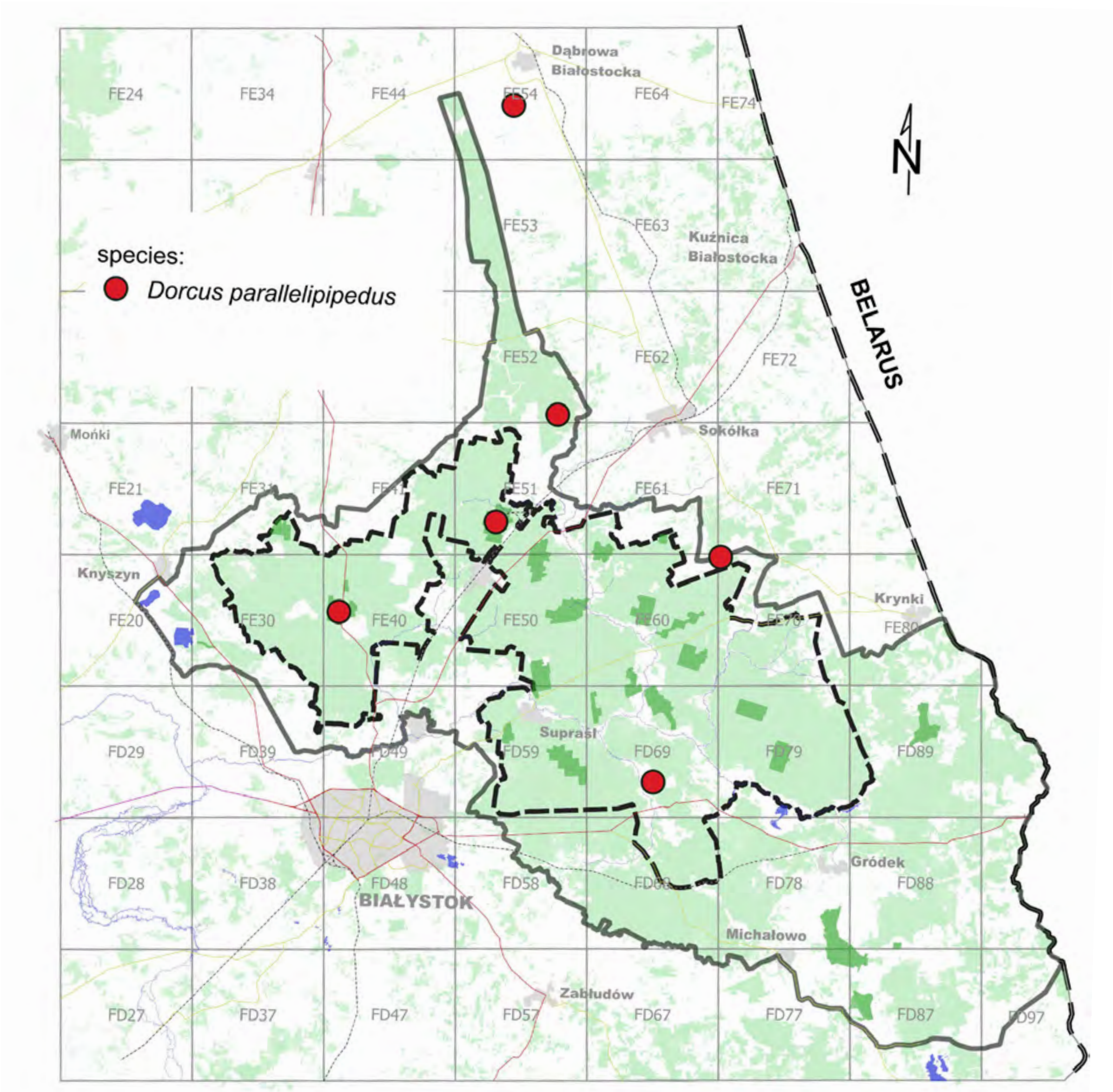


Fig. 187. Localities of *Dorcus parallelipipedus* (Lucanidae) in Knyszyńska Forest

Distribution

The species is widely distributed in Europe, from Portugal to the European part of Kazakhstan, and from Sweden to Greece; also recorded from the Caucasus. In Asia, reported from Iran, Israel, Russia (Western Siberia), Syria, and Turkey. Also known from Morocco (Bartolozzi et al. 2016). Known from numerous localities throughout Poland with the exception of high mountainous areas.

Biology and ecology

It is found in old deciduous and mixed forests, parks, roadside and riverside woodlots. It is most often found under the bark in decaying parts of the trunks, and branches of standing and fallen deciduous trees and in stumps, sometimes near oozing tree sap, and under pieces of wood on coastal beaches. Larvae feed in wood decomposed by the fungi causing white rot.

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Platycerus caprea (De Geer, 1774) (Fig. 188)

Fig. 188. *Platycerus caprea* (De Geer, 1774) (Lucanidae) (photo S. Szafraniec)

Material examined (Fig. 185)

Original data: Supraśl Forest District, compartment 311, ad Borki (53.209000, 23.497000, FD69), 20.05. 2023 – 1 ex., leg., det. & coll. C. Greń.

Distribution

The species is widely distributed in Europe, from Spain to the European part of Russia, and from Norway to Italy. In Asia, it has been reported from Kazakhstan and Russia (Far East, Siberia) (Bartolozzi et al. 2016). In Poland, it is reported from a small number of scattered localities in the northern and eastern parts of the country, although it is not a rare beetle and probably occurs throughout the country, both in the lowlands and mountains.

Biology and ecology

It is found in old deciduous and mixed forests, parks, roadside and riverside woodlots. Larvae feed in the damp and fungus-infected wood of branches lying on the ground, less often in the trunks and stumps of deciduous trees. Young beetles nibble on the tops of young deciduous tree shoots and this is where they are most often found. They also sit on leaves, branches, and stumps, and fly to oozing sap on trees.

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Platycerus caraboides* (Linnaeus, 1758)** (Fig. 189)

Fig. 189. ***Platycerus caraboides* (Linnaeus, 1758) (Lucanidae)** (photo A. Jadwiszczak)

Material examined

Original data: common species in Knyszyńska Forest, reported from many localities, including the Jałówka (FD59), Jesionowe Góry (FE51), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), Międzyrzecze (FE60), Nietupa (FD89), and Stara Dębina (FE61) reserves.

Data from the literature: Kopna Góra ad Supraśl (FE60) (Kubisz & Szwałko 1991); Piłatowszczyzna (FD79) (Kubisz & Pawłowski 1995); Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c).

Distribution

The species is widely distributed in Europe, from Portugal to the European part of Russia, and from Finland to Greece; also reported from the Caucasus. In Asia, reports are from China, Iran, Kazakhstan, Russia (Siberia), Syria, and Turkey. Also reported from Algeria, Morocco, and Tunisia (Bartolozzi et al. 2016). Common throughout Poland except in the high mountains.

Biology and ecology

It is found in old deciduous and mixed forests, parks, roadside and riverside woodlots. Larvae feed in the fungus-infected wood of trunks, stumps, and branches of deciduous trees. Like the previous species, young beetles nibble on the tops of young deciduous tree shoots and are most often found on them. They also sit on leaves, branches, and stumps, and fly to oozing sap on trees.

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Sinodendron cylindricum **(Linnaeus, 1758)** (Fig. 190)

Fig. 190. ***Sinodendron cylindricum*** **(Linnaeus, 1758) (Lucanidae)** (photo T. Mokrzycki)

Material examined

Original data: the species is found in Knyszyńska Forest at many localities, including the Budzisk (FE50), Jesionowe Góry (FE51), Krzemianka (FE40), Las Cieliczański (FD59), and Stare Biele (FE60) reserves.

Data from the literature: Rybniki ad Czarna Białostocka (FE40) (Kubisz & Szwałko 1991); Budzisk Reserve (FE50) (Kubisz & Pawłowski 1995; Marczak et al. 2023c); Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c).

Distribution

The species is widely distributed in Europe, from Spain to the European part of Russia, and from Norway to Italy. In Asia, it is reported from China, Kazakhstan, Mongolia, and Russia (Siberia) (Bartolozzi et al. 2016). Known from numerous localities throughout Poland, both in the lowlands and mountains.

Biology and ecology

It is present in old deciduous and mixed forests, parks, roadside and riverside woodlots. Found most often in decaying parts of trunks and standing branches, less often in fallen deciduous trees and stumps. Larvae feed in wood decomposed by the fungi causing white rot (Fig. 191), and less frequently brown rot.

Fig. 191. Feeding grounds of *Sinodendron cylindricum* (Lucanidae) in a standing hornbeam (photo J.M. Gutowski)

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Scarabaeidae

Aphodius foetidus (Herbst, 1783) (Fig. 192)

Fig. 192. ***Aphodius foetidus*** **(Herbst, 1783) (Scarabaeidae)** (photo G. Tarwacki)

Material examined

Data from the literature: Roubal (1910) reports this species from the Białystok area.

Distribution

The species is widely distributed in Europe, from Portugal to the European part of Russia, and from Greece to Norway. Also reported from Morocco, Algeria, and Tunisia. In Asia, reported from Turkey, Cyprus, Syria, Lebanon, Israel, and Russia (Western Siberia) (Dellacasa et al. 2016). Most data on the occurrence of this species in Poland date back to the 19th and first half of the 20th century. At that time, it was widely distributed, but rarely and sporadically found (Burakowski et al. 1983). In the last few decades, it has been reported from Zawoja (Burakowski et al. 1983), Kielce (Góra Grabina) (Bidas 1998), Kościelisko (Bunalski 1999), and Ustrzyki Górne (Byk 2000).

Biology and ecology

It is found in warm, exposed sites in the feces of cows and horses, less frequently in compost heaps and among decaying plant debris. After overwintering, the adults emerge in early spring, the larvae in May, and the new generation in late summer (Stebnicka 1976; Burakowski et al. 1983).

Euheptaulacus sus (Herbst, 1783) (Fig. 193)

Fig. 193. ***Euheptaulacus sus*** **(Herbst, 1783) (Scarabaeidae)** (photo G. Tarwacki)

Material examined

Data from the literature: Roubal (1910) records this species from the Białystok area.

Distribution

The species is widely distributed in Europe, from Spain to western Kazakhstan, and from Greece to Finland. Also reported from Armenia, Azerbaijan, and Georgia. In Asia, reported from Turkey, Syria, Iran, Turkmenistan, Kazakhstan, and Russia (Western Siberia) (Dellacasa et al. 2016). In Poland, it is known from a small number of scattered localities. Most data on its occurrence in our country date back to the 19th and first half of the 20th century. In the post-war period, it was found to occur in the early 1980s in Gródek near Hrubieszów and Łańcut (Burakowski et al. 1983). In recent years, reports are from Włodawa (Bunalski 1999), Żłobek Duży, and Obrocz (Bunalski 2006), Ostrów Mazowiecka, Lipowiec, and Uchańka (Byk et al. 2010).

Biology and ecology

In Poland, single specimens are found from May to the second decade of September. It prefers open and sandy areas with strong sunlight and covered with sparse grass vegetation. Found most often in the feces of horses, less often cows and sheep in pastures along large rivers. It flies to light (Byk et al. 2010).

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Limarus zenkeri **(Germar, 1813)** (Fig. 194)

Fig. 194. *Limarus zenkeri* (Germar, 1813) (Scarabaeidae) (photo Ł. Minkina)

Material examined (Fig. 195)

Original data: Knyszyn Forest District, Krzemianka Reserve (FE40), 7.07-31.08.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Byk; Krynki Forest District, Góra Pieszczana Reserve (FD79), 27.07.2016 – 2 exx., IBL-2 trap, leg. K. Komosiński, det. A. Byk.

Data from the literature: also reported from Kopna Góra ad Supraśl (FE60), 20.08.1985 – 5 exx., in deer droppings (Kubisz & Szwałko 1991).

Distribution

A European species, occurring from France to the southern part of the European territory of Russia, and from Italy to southern Sweden. However, it has not been reported thus far from many European countries (Dellacasa et al. 2016). In the 19th and first half of the 20th century in Poland, it was known from a small number of scattered localities (Burakowski et al. 1983). The beetles were usually found singly or in small numbers of individuals. In recent years, it has been definitely more frequently recorded in our country, found in the Kopna Góra (Kubisz & Szwałko 1991), Białowieża Forest (Szwałko 1995), Kielce (the Dymińskie Range, the Posłowickie Range) (Bidas 1998), Zimna Woda Reserve (Borowski & Kieszek 1999), Obrzycko (Bunalski 1999), Rogów (Byk 2000), Bielinek Reserve (Bunalski 2003), Hutki (Minkina 2010), the Człuchowskie Forests (Byk 2012), Kampinos National Park (Mroczyński & Marczak 2017), Radacin, Potok Forest Subdistrict, Poznań, and Biedrusek (Bunalski et al. 2018), Świnoujście, Kaleńsk, and Raduń (Bunalski et al. 2019).

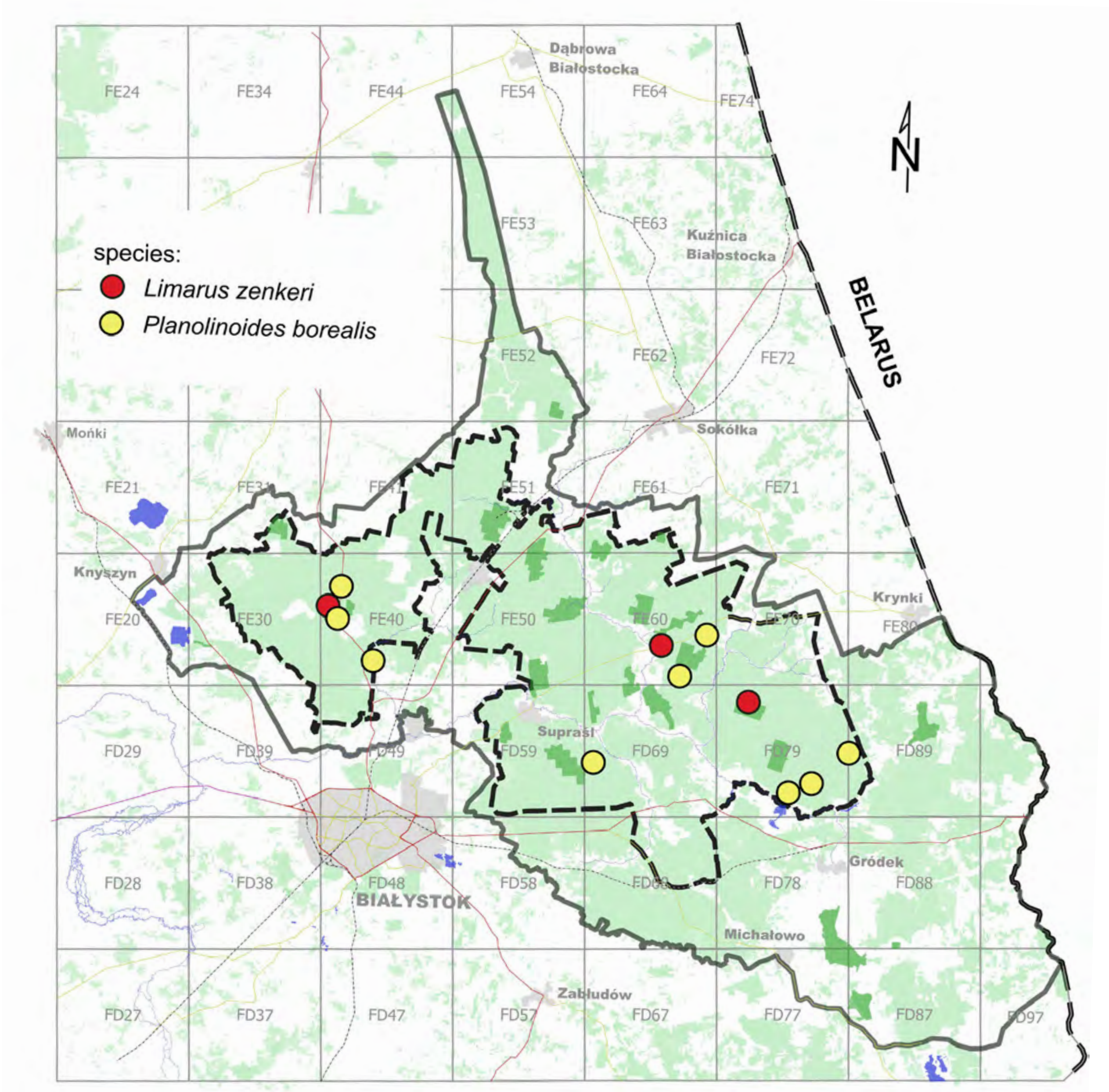


Fig. 195. Localities of *Limarus zenkeri* and *Planolinoides borealis* (Scarabaeidae) in Knyszyńska Forest

Biology and ecology

A species closely associated with forest environments, found in large, dense, and not degraded forest complexes, usually with a wilderness character. The beetles are generally found in summer and autumn in the feces of wild animals, especially from the deer family (Szwalko 1995). Eggs are laid in late August, and the larvae overwinter and pupate the following May (Burakowski et al. 1983). It flies to light (Bunalski et al. 2018).

***Plagiogonus arenarius* (Olivier, 1789)** (Fig. 196)

Material examined

Data from the literature: Roubal (1910) reports this species from the Białystok area.

Distribution

The species is widely distributed in Europe, from Spain to the European part of Russia, and from Greece to Finland. Also reported from Armenia and Georgia. In Asia, it occurs from Turkey, Cyprus, Iran, Turkmenistan, Kazakhstan, and Russia (the western and eastern areas of Siberia) (Dellacasa et al. 2016). In Poland, it is known from a small number of scattered localities, and although it probably occurs throughout the area except in the higher mountains, it has not yet been reported from many zoogeographical regions (Burakowski et al. 1983). In recent years, it has been reported from Stary Przylep Reserve, Poznań, Kazimierz Dolny, Szeroki Bór Forest District (Bunalski & Szwałko 1990), the vicinity of Szczebrzeszyn (Bunalski 2006), the Chęciny Range (Rzepka Mountain) (Bidas 2012), Radunia, Owczar, Laski, Lisówka, and Ślesin (Bunalski et al. 2018), and again from Kazimierz Dolny (Byk et al. 2020).

Fig. 196. ***Plagiogonus arenarius*** **(Olivier, 1789) (Scarabaeidae)** (photo L. Borowiec)

Biology and ecology

A saprophagous species with a propensity for coprophagy. Adult forms are found in feces, under rotting plant remains and in the antechambers of burrows of small mammals (Bunalski et al. 2018), usually gophers, hamsters, and rabbits (Burakowski et al. 1983). It prefers open and strongly warmed areas, and occurs in greater numbers on warm xerothermic slopes (Bunalski et al. 2018).

Planolinoides borealis **(Gyllenhal, 1827)** (Fig. 197)

Material examined (Fig. 195)

Original data: Dojlidy Forest District, Rybniki Forest Subdistrict, compartment 110 (FE40), 7.06-13.07.2008 – 1 ex.; Knyszyn Forest District, Karczmisko Reserve (FE40), 7.06-13.07.2008 – 1 ex.; Knyszyn

Forest District, Krzemianka Reserve (FE40), 7.06-13.07.2008 – 1 ex.; Supraśl Forest District, Borki Forest Subdistrict, compartment 288 (FE60), 22.04-9.06.2008 – 1 ex.; Supraśl Forest District, Klin Forest Subdistrict, compartment 193 (FE60), 22.04-9.06.2008 – 3 exx.; Waliły Forest District, Józefowo Forest Subdistrict, compartment 3 (FD89), 7.06-13.07.2008 – 1 ex.; Waliły Forest District, Królowe Stojło Forest Subdistrict, compartment 154 (FD79), 7.06-13.07.2008 – 1 ex.; Waliły Forest District, Królowe Stojło Forest Subdistrict, compartment 178 (FD79), 22.04-9.06.2008 – 1 ex.; Żednia Forest District, Cieliczanka Forest Subdistrict, compartment 78 (FD69), 22.04-9.06.2008 – 1 ex. All specimens were caught in the IBL-2 trap, leg. R. Plewa, det. A. Byk.

Fig. 197. *Planolinoides borealis* (Gyllenhal, 1827) (Scarabaeidae) (photo L. Borowiec)

Distribution

The species has been reported from most of Europe, Siberia, and the Russian Far East, as well as Central and East Asia; imported into the Nearctic Region (Byk et al. 2023). Quite rare in Poland, but found in large numbers in some sites. It inhabits the feces of wild animals in large forest complexes. It also does not disdain the feces of livestock, as long as they are in the forest. Reported from the Obrzyck area (Bunalski & Szwałko 1990), Białowieża Forest (Szwałko 1995), the Szamotuły area (Bunalski 1996), Borecka Forest (Maciejewski 1996), Biebrza National Park (Bunalski 1999, 2006; Gutowski et al. 2006), Grzędy, Sośnia, and Żłobek Duży Forest Districts (Bunalski 2006), Kampinos National Park (Mroczyński & Marczak 2017), Warszowek, Sycin Dolny, and Brączewo (Bunalski et al. 2018), and again from Białowieża Forest (Gutowski et al. 2020b).

Biology and ecology

Silvicolous, found almost exclusively in large forest complexes. It is found in the feces of wild animals (Bunalski et al. 2018), less frequently in the feces of livestock as long as they are near or in a forest.

***Psammodius asper* (Fabricius, 1775)** (Fig. 198)

Fig. 198. *Psammodius asper* (Fabricius, 1775) (Scarabaeidae) (photo G. Tarwacki)

Material examined (Fig. 199)

Data from the literature: Ogrodniczki (FD59) 21.04.2000 – 1 ex. (Bunalski 2006).

Distribution

Species widely distributed in Europe, from France to the European part of Kazakhstan, and from Norway to Italy; also recorded from the Caucasus. In Asia, reported from Iran, Kazakhstan, Mongolia, and Russia (Siberia) (Rakovič et al. 2016). In Poland, it is known from a small number of scattered localities, although it is not a rare beetle and occurs throughout the country except in the high mountains. In some sites, several dozen individuals can be found.

Biology and ecology

Occurs mainly in strongly sunlit, sandy areas, especially on coastal and riverine dunes, lake shores, gravel pits, and sand pits. It is often encountered under the dying roots of grasses growing on sand and in the decaying leaves of poplars and willows buried in sand, less often in sand martin nests, rabbit and ground squirrel burrows, decaying plant debris, in inflows, and even in dry cow feces. Increasingly common in large cities, it is found on sidewalks bordering mowed lawns.

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

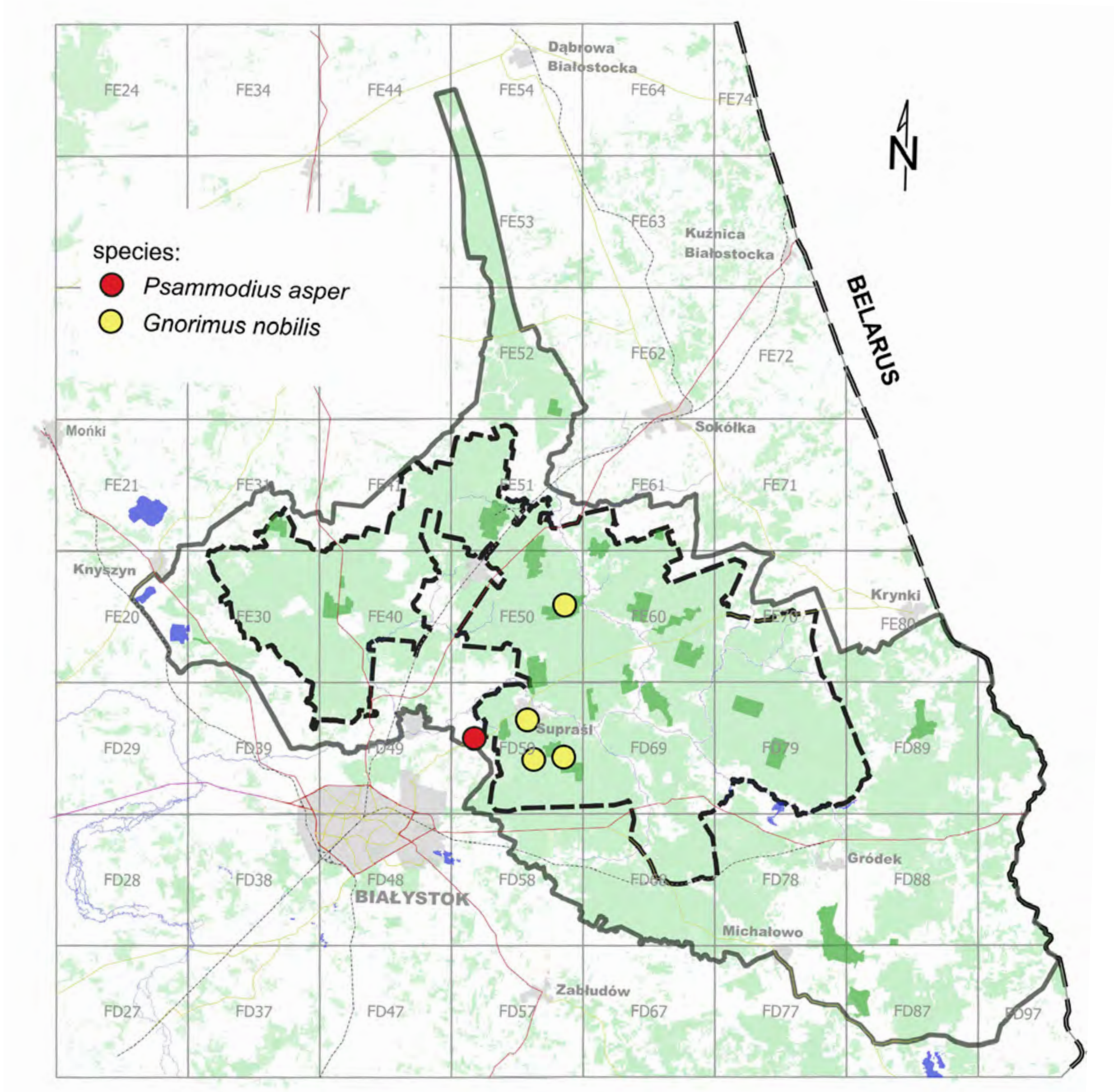


Fig. 199. Localities of *Psammodius asper* and *Gnorimus nobilis* (Scarabaeidae) in Knyszyńska Forest

Gnorimus nobilis (Linnaeus, 1758) (Fig. 200)

Material examined (Fig. 199)

Original data: Supraśl, 26.06.1988 – 2 exx., leg., det. & coll. A. Lasoń; Dojlidy Forest District, ad Krasny Las (FD59), 16.07.1991 – 1 ex., leg., det. & coll. A. Lasoń. Data from the literature: Budzisk Reserve (FE60), Las Cieliczański Reserve (FD59), Supraśl (FD59) (Bunalski 2006).

Distribution

Species widely distributed in Europe, from Portugal to the European part of Russia, and from Norway to Greece. In Asia, it has been recorded only from Turkey (Bezděk 2016). In Poland, it is abundant in the south and northeast, less frequent in the central part of the country (Burakowski et al. 1983; Kadej et al. 2023).

Biology and ecology

It inhabits old and extensive deciduous and mixed forests. Larvae feed in the moist and fungus-infected wood of deciduous trees. The beetles fly to the flowers of various plants, especially to the flowers of plants from the celery family, meadowsweet, elderberry, and roses. Hence, they are often found on these flowers at forest edges, along mid-forest roads, in clearcuts, and forest glades.

Fig. 200. ***Gnorimus nobilis*** **(Linnaeus, 1758) (Scarabaeidae)** (photo S. Zieliński)

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Osmoderma barnabita **Motschulsky, 1845** (Fig. 201)

Fig. 201. ***Osmoderma barnabita*** **Motschulsky, 1845 (Scarabaeidae)** (photo J.M. Gutowski)

Material examined (Fig. 202)

Original data: Czarna Białostocka Forest District, Sławno Forest Subdistrict, compartment 42, near Połomin village (FE53), 4.05. and 24.08.2022 – droppings, legs, coccoliths, and larva in a lying oak tree; compartment 42 (FE53), 4.05. 2022 – droppings, standing oak 280 cm in circumference; Czarna Białostocka Forest District, Lebiedzin Forest Subdistrict, compartment 239 (FE52), 23.04.2022 – droppings, oak 590 cm in circumference; Lebiedzin, manor park (FE52), 5.07.2020 – 1 ex. (live male), 15.07.2021 – 2 exx. (dead females); Czarna Białostocka Forest District, Wilcza Jama Forest Subdistrict, compartment 103 (FE51), 23.05.2022 – droppings, oak 580 cm in circumference; Supraśl, park and city trees (FD59), 30.08.2016, 4.09.2016, 18.09.2016 – droppings, larvae, and dead imago in small-leaved linden *Tilia cordata* Mill. (Bohdan & Winiecki 2022). Czarna Białostocka Forest District, Polanki Forest Subdistrict (FE51), 22-26.07.2017 – 1 ex., funnel trap with pheromone on oak, leg. I. Kirpsza, det. J.M. Gutowski; Supraśl (near the Monastery) (FD59), 20-24.07.2020 – 2 exx., 1-7.08.2020 – 1 ex., pheromone trap on linden, leg. & det. J.M. Gutowski.

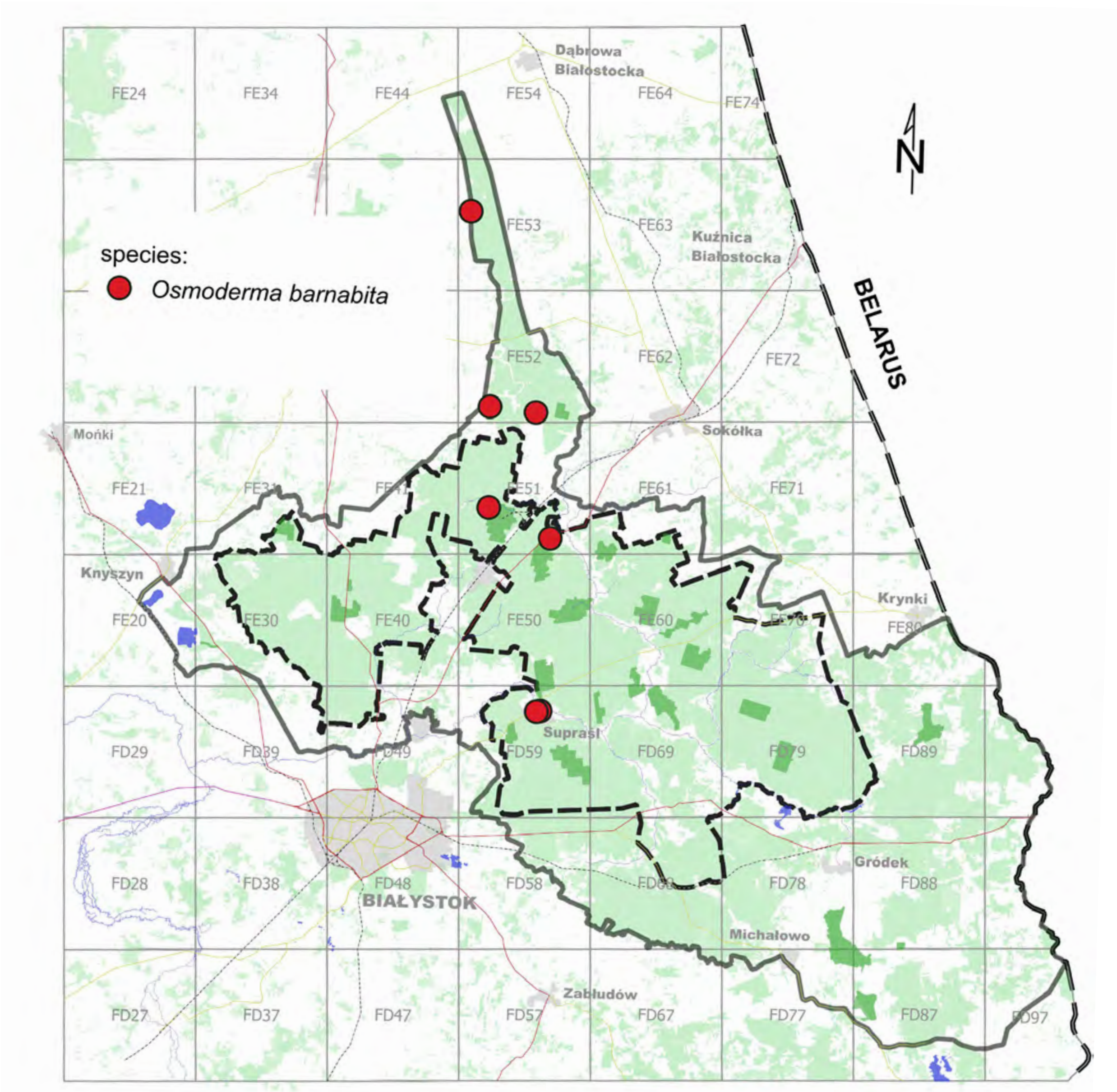


Fig. 202. Localities of *Osmoderma barnabita* (Scarabaeidae) in Knyszyńska Forest

Distribution

There are 5 species of the genus *Osmoderma* in Europe : *O. eremita* (Scopoli, 1763), *O. cristinae* Sparacio, 1994, *O. barnabita* Motschulsky, 1845, *O. lassallei* Baraud & Tauzin, 1991, and *O. richteri* Medvedev, 1953. Three of them *O. richteri*, *O. lassallei*, and *O. cristinae* have a relatively small range. The first inhabits eastern Georgia, the second northeastern Greece and the European part of Turkey, and the third inhabits northern Sicily. The other two species have a much larger areal distribution. *O. eremita* is a species that inhabits the western part of Europe, and *O. barnabita* inhabits the eastern part of the continent. The range limit of these species runs through Germany, Austria, and Slovenia (Audisio et al. 2007, 2009).

In Europe, *O. barnabita* is reported from Albania, Austria, Belarus, Bosnia and Herzegovina, Bulgaria, Montenegro, Croatia, Czech Republic, Estonia, Finland, Kosovo, Lithuania, Latvia, Germany, Poland, North Macedonia, Moldova, parts of European Russia, Romania, Serbia, Slovakia, Slovenia, Ukraine, and Hungary (Bezděk 2016). In Poland, the species has been and is recorded from numerous localities, with the exception of the Tatra Mountains, the Pieniny Mountains, and the Bieszczady Mountains. It has been found both in lowlands (Raczki Elbląskie) and in the mountains (Zakopane). In recent years, it has been most often reported from Warmia and Silesia, with relatively few reports from Pomerania, Podlasie, Lublin, and Małopolska (Byk & Doktór 2011).

Biology and ecology

In Poland, *O. barnabita* inhabits old trees along roadsides, riverbanks, and in parks, old trees growing in the open and in mid-field woodlots; it also inhabits thinned and well-sunlit areas of deciduous forests with old trees. In late June, July, and August, fertilized females lay eggs in hollows and the external rotten wood of the living trees of many deciduous species, both softwood and hardwood. It prefers well-sunlit hollows in lindens, oaks, willows, alders, and less often chooses hollows in apple, chestnut, beech, hornbeam, elm, or ash trees. *O. barnabita* inhabits rotten wood found at different heights of the trunk, from those lying below the root neck to those in hollows at a height of about 20 meters. Hollows in dead standing and lying trees, as well as stumps are not suitable environments for this beetle to develop. The larvae found in them (Fig. 203) usually come from eggs laid by females when the tree was alive, before it toppled, broke or was cut. Males secrete a sex pheromone that smells like ripe plums, peaches, or fruit jelly. It is so intense that humans can also smell it from a distance of several meters. One generation lasts three or four years (Byk & Doktór 2011).

Fig. 203. *Osmoderma barnabita* – larva (photo J.M. Gutowski)

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002), and as NT (near threatened) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). Included in the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2018) in group 2 (relict *sensu lato*).

O. barnabita is a "nature", "priority", and strictly protected species in Poland. Thus, it is protected under national, EU, and international law. Three steps must be taken for its conservation: (1) identification of current and potential refuges of the species, (2) consistent protection of inhabited trees and those providing potential habitat for the species, and (3) restoration of migration routes between existing sites by planting canopy trees (Oleksa 2010).

Trichius fasciatus (Linnaeus, 1758) (Fig. 204)

Fig. 204. ***Trichius fasciatus*** **(Linnaeus, 1758) (Scarabaeidae) – copulating pair** (photo J. Kupryjanowicz)

Material examined (Fig. 205)

Original data: Ogrodniczki (FD59), 17.06.1987 – 2 exx., leg & det. A. Lasoń; Dojlidy Forest District, ad Krasny Las (FD59), 28.06.1992 – 1 ex., leg & det. A. Lasoń; ad Supraśl (FD59), 1.08.1992 – 1 ex., leg & det. A. Lasoń; Budzisk Reserve (FE50), 20.06.2011 – 1 ex., leg. K. Sućko, det. J.M. Gutowski (Plan ochrony... Budzisk 2011); Supraśl Forest District, Kopna Góra Forest Subdistrict, compartment 263 (53.252250, 23.481700, FE60), 25.03.2021 – several larvae under the bark of a lying, heavily decomposed birch log, leg. & det. J.M. Gutowski; Chomontowszczyzna Reserve (53.173080, 23.618360, FD79), 23.06.2021 – 1 ex., mid-forest meadow, leg. & det. J.M. Gutowski; Waliły Forest District, ad Królowe Stojło (FD79), 8.07.2021 – 1 ex., on flowers, leg., det. & coll. R. Plewa.

Data from the literature: Kopna Góra ad Supraśl (FE60) (Kubisz & Szwałko 1991); Piłatowszczyzna (FD79) (Kubisz & Pawłowski 1995); Międzyrzecze Reserve (FE60), Ogrodniczki (FD59), Podsupraśl (FD59), Supraśl (FD59) (Bunalski 2006).

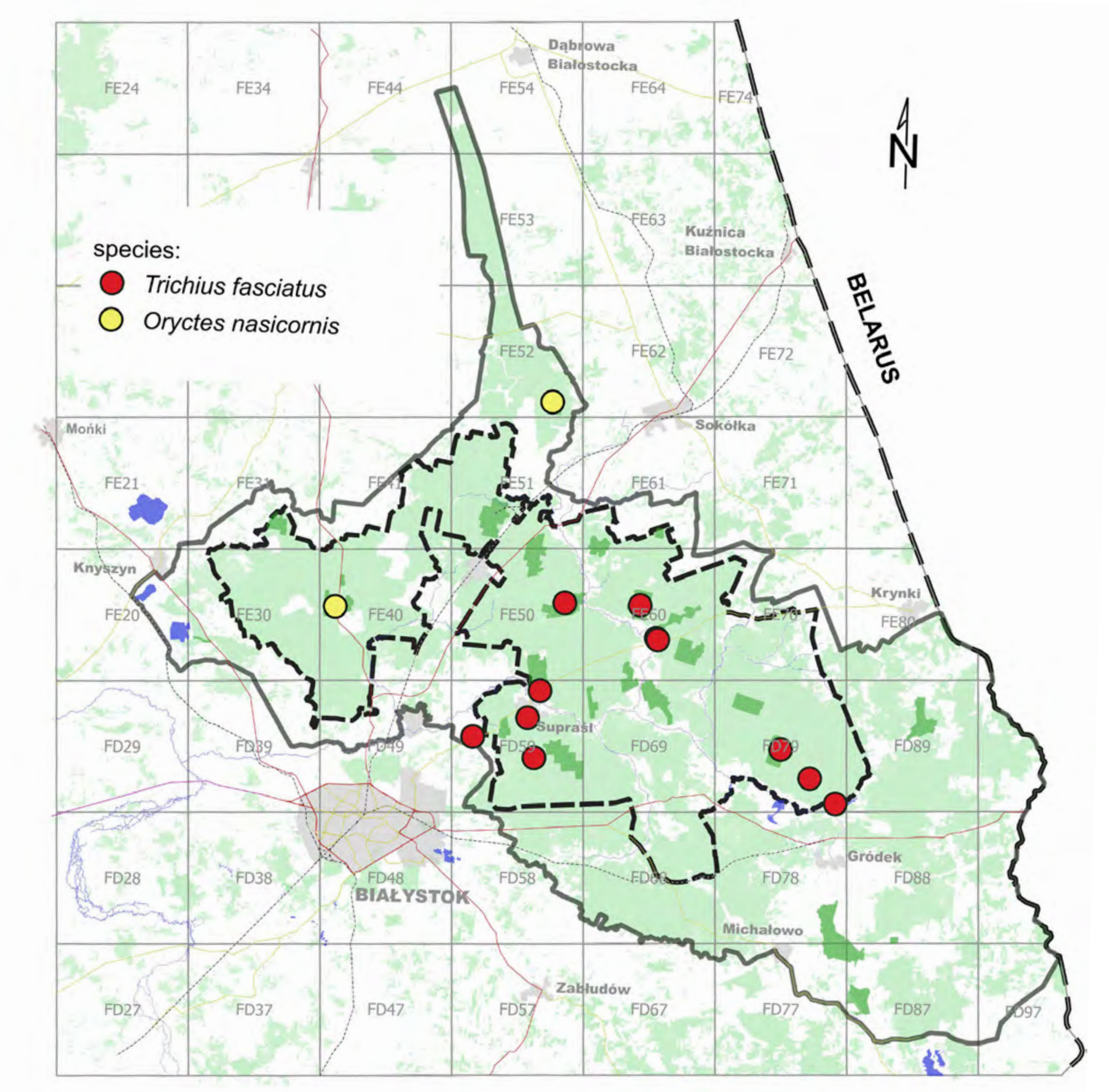


Fig. 205. Localities of *Trichius fasciatus* and *Oryctes nasicornis* (Scarabaeidae) in Knyszyńska Forest

Distribution

The species is widely distributed in Europe, from Portugal to the European part of Kazakhstan, and from Norway to Italy; also recorded from the Caucasus. In Asia, it has been reported from China, Japan, Kazakhstan, Kyrgyzstan, Mongolia, Russia (Far East, Siberia), and Uzbekistan (Bezděk 2016). In Poland, it is abundant in the southern and northeastern parts of the country. However, it has been recorded sporadically in the Wielkopolska Lowland, the Mazovian Lowland, and the Lublin Upland. It is uncommon in high mountain areas.

Biology and ecology

It inhabits old and extensive deciduous and mixed forests. Larvae feed in the fungus-infected wood of deciduous trees. The beetles fly to the flowers of various plants, especially to the flowers of plants of the celery family, *Cirsium oleraceum* and *Filipendula ulmaria*. Hence, they are often found on these flowers at forest edges, along mid-forest roads, in logging areas, and forest clearings.

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Valgus hemipterus (Linnaeus, 1758) (Fig. 206)

Fig. 206. Male of *Valgus hemipterus* (Linnaeus, 1758) (Scarabaeidae) (photo A. Jadwiszczak)

Material examined

Original data: common species in Knyszyńska Forest, known from many localities, including the Chomontowszczyzna (FD79), Jałówka (FD59), Jesionowe Góry (FE51), Las Cieliczański (FD59), Międzyrzecze (FE60), and Taboły (FE50) reserves.

Data from the literature: Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c).

Distribution

Species widely distributed in Europe, from Portugal to the European part of Kazakhstan, and from Norway to Greece; also recorded from the Caucasus. In Asia, reported from Cyprus, Iran, Israel, Lebanon, Syria, and Turkey (Bezděk 2016). Common in Poland, except for the high mountains.

Biology and ecology

Found in deciduous and mixed forests, parks, roadside and riverside woodlots. Larvae feed in the fungus-infected wood of trunks and stumps of deciduous trees and shrubs. The beetles fly to the flowers of various plants, especially keen on the flowers of plants from the families of celery, rowan, hawthorn, and apple.

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Oryctes nasicornis **(Linnaeus, 1758)** (Fig. 207)

Fig. 207. *Oryctes nasicornis* (Linnaeus, 1758) (Scarabaeidae): A – female (photo J.M. Gutowski)**, B – male** (photo T. Mokrzycki)

Material examined (Fig. 205)

Original data: vicinity of Starodrzew Szyndzielski Reserve (FE52), June 2011, leg. Ł. Radziwon, det. J.M. Gutowski (Radziwon 2012); Krzemianka Reserve (FE40), 14.05.2011 – 1 ex., leg. K. Terlecki, det. J.M. Gutowski (Terlecki 2012).

Distribution

Species widely distributed in Europe, from Portugal to the European part of Kazakhstan, and from Norway to Greece; also recorded from the Caucasus. In Asia, reported from Egypt (Sinai), China, Cyprus, India, Iran, Israel, Kazakhstan, Kyrgyzstan, Lebanon, Pakistan, Syria, Tajikistan, Turkey, Turkmenistan, and Uzbekistan. Also known from Algeria, Morocco, and Tunisia (Krell & Bezděk 2016). In Poland, it occurs throughout the country except in the high mountains.

Biology and ecology

In Poland, it inhabits compost heaps, sawdust dumps, bark, leaves, and weeds. Sometimes dozens of individuals are found in these synanthropic habitats. It is uncommon in the wild in Poland, while in southern Europe it develops in the rotten wood of deciduous trees.

Notes

Listed as NT (near threatened) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

***Copris lunaris* (Linnaeus, 1758)** (Fig. 208)

Fig. 208. *Copris lunaris* (Linnaeus, 1758) (Scarabaeidae): A – female, B – male (photo M.W. Kozłowski)

Material examined (Fig. 209)

Original data: Janowszczyzna ad Sokółka (53.351858, 23.434621, FE61), 18.06.2022 – 1 ex., leg., det. & coll. A. Byk.

Data from the literature: Kopna Góra (FE60), August 1986 (Kubisz & Pawłowski 1995).

Distribution

Species widely distributed in Europe, from Portugal to the European part of Kazakhstan, and from Norway to Greece; also recorded from the Caucasus. In Asia, reported from China, Iran, Kyrgyzstan, Kazakhstan, Tajikistan, Turkey, and Uzbekistan. Introduced into Australia (Král & Bezděk 2016). It is reported from numerous localities in Poland except for the high mountains, but more frequently from the eastern part of the country.

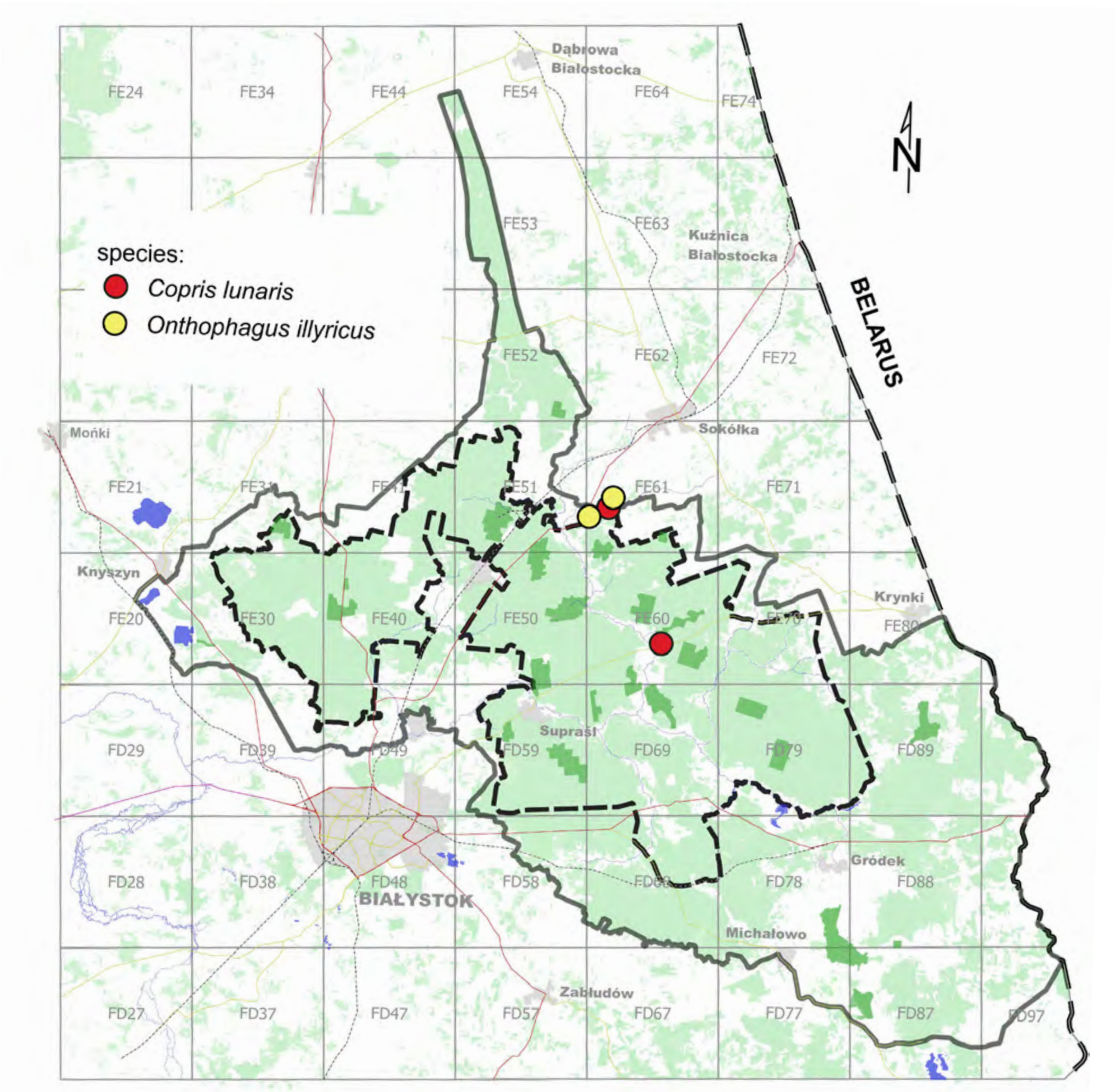


Fig. 209. Localities of *Copris lunaris* and *Onthophagus illyricus* (Scarabaeidae) in Knyszyńska Forest

Biology and ecology

Found in fresh cow and horse feces or under dried feces in tunnels excavated in the ground. Prefers heavily sunlit pastures near rivers.

Notes

Listed as NT (near threatened) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Onthophagus illyricus (Scopoli, 1763) (Fig. 210)

Fig. 210. *Onthophagus illyricus* (Scopoli, 1763), male (Scarabaeidae) (photo Ł. Minkina)

Material examined (Fig. 209)

Original data: Janowszczyzna ad Sokółka (53.351858, 23.434621, FE61), 18.06.2022 – 2 exx., in horse feces, leg. & det. A. Byk; Nowa Moczalnia ad Sokółka (53.339368, 23.406308, FE61), 19.06.2022 – 4 exx., in sheep feces, leg. & det. A. Byk.

Distribution

Species widely distributed in Europe, from Portugal to western Kazakhstan, and from Greece to Sweden. Also reported from Armenia, Azerbaijan, and Georgia. In Asia, noted from Turkey, Cyprus, Syria, Lebanon, Israel, Iraq, Iran, and Afghanistan (Ziani & Bezděk 2016). In Poland, it is known from a very small number of scattered localities located in the southeastern part of the country. Reported from the vicinity of Zamość (Tenenbaum 1918), Jarosław, and Sandomierz (Stebnicka 1976), Gródek, Hubale Reserve (Kalisiak 1996), Uchańki (Bunalski 1998), Sobibór (Bunalski 1999), Kozubów (Bidas 2004), Gródek Stary, Hrubieszów, again from Sobibór, Wołczyn (Bunalski 2006), the village of Kule (Minkina 2010), the Beskid Niski, the Rożnów Foothills (Górz 2019), and Kazimierz Dolny (Byk et al. 2020).

Biology and ecology

It is mostly found in the feces of cows and horses (Burakowski et al. 1983), usually in warm pastures in the valleys of large rivers (Bunalski 2006). Rare in Poland, most common in Bug River pastures and quite often in the company of the similar *Onthophagus taurus* (Schreber, 1759).

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Ptiliidae

Baeocrara variolosa (Mulsant et Rey, 1873) (Fig. 211)

Fig. 211. ***Baeocrara variolosa*** **(Mulsant et Rey, 1873) (Ptiliidae)** (photo L. Borowiec)

Material examined (Fig. 212)

Original data: Góra Pieszczana Reserve (FD79), 27.07.2016 – 1 ex., IBL-2 trap, leg. & det. K. Komosiński.

Distribution

A species inhabiting Central and Northern Europe, reaching to the Arctic Circle in Fennoscandia, reported also from France and northern Italy. Very rarely caught in Poland, recorded in old data from Lower Silesia and the Western Sudetes (Burakowski et al. 1978); recently reported from the planned Turnicki National Park (Buchholz & Melke 2018), Suwałki Landscape Park (Gutowski et al. 2020a), Kampinos Forest (Marczak 2020), and the Świętokrzyskie Mountains (Buchholz et al. 2021).

Biology and ecology

The beetle is found in forests and at their edges, in the rot of stumps, plant litter, under carrion, feces, and old branches (Burakowski et al. 1978).

Notes

A new species for Podlasie.

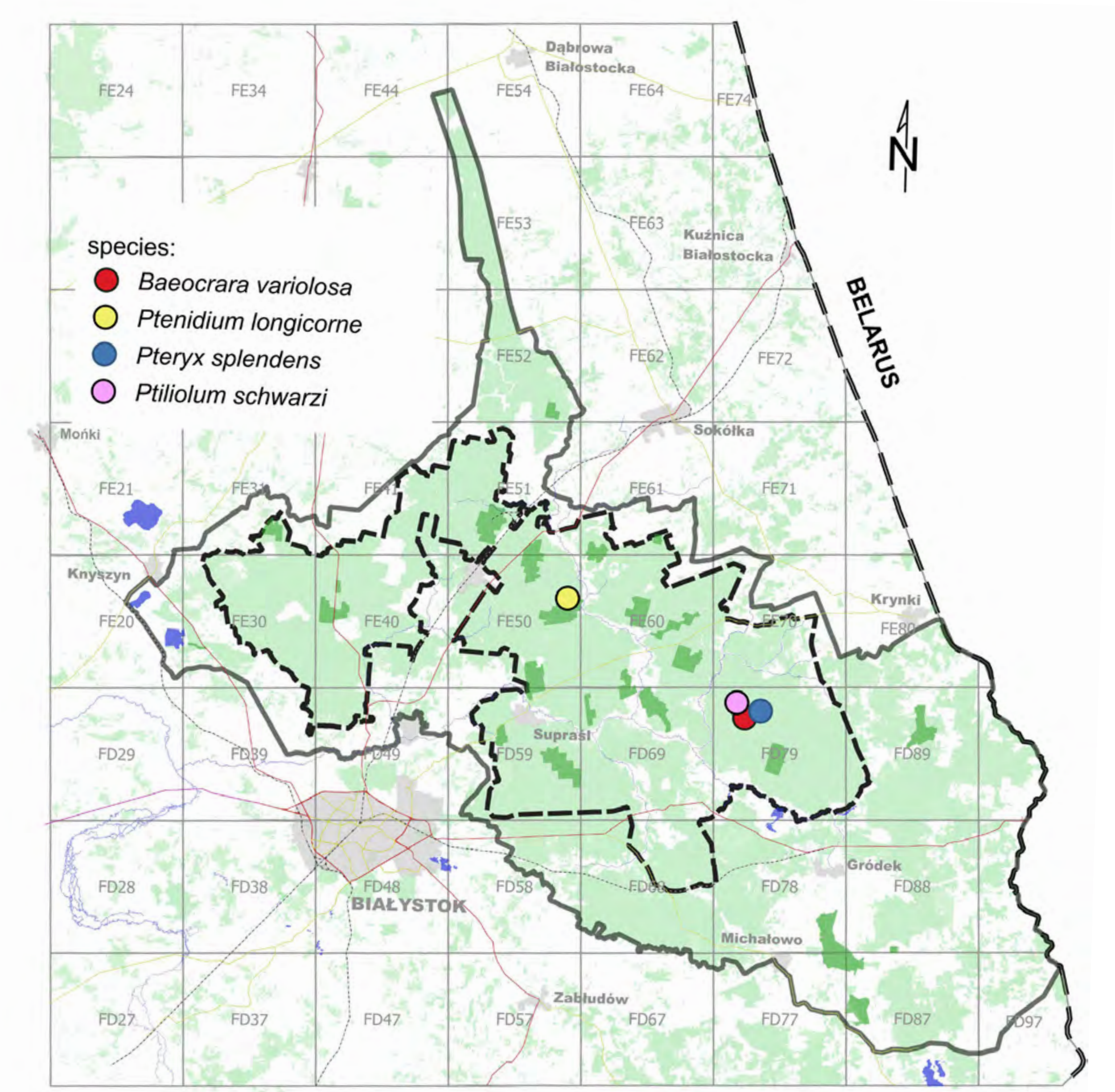


Fig. 212. Localities of *Baeocrara variolosa*, *Ptenidium longicorne*, *Pteryx splendens*, and *Ptiliolum schwarzi* (Ptiliidae) in Knyszyńska Forest

Ptenidium longicorne Fuss, 1868 (Fig. 213)

Material examined (Fig. 212)

Original data: Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 95 (FE50), 27.05.2016 – 1 ex., leg. I. Sztabkowska, det. T. Mokrzycki.

Distribution

A rare species in Central Europe, recorded from the Benelux countries, Austria, Bohemia, and Moravia. It was first reported in Poland in 1985 on the basis of three specimens caught on 20.08.1977, then in 1991–1994 in three other localities, reported from the Bieszczady Mountains, the Mazovian Lowland, the Wielkopolska-Kujawy Lowland, and Białowieża Forest (Burakowski et al. 2000).

Fig. 213. *Ptenidium* sp. (Ptiliidae) (photo L. Borowiec)

Biology and ecology

The beetle is found in moist places in fields, meadows, water edges, and forests, caught in plant litter and detritus, under rotting plant debris, decaying wood, in the hollows of old trees, and in the ant nests of *Formica polyctena* (Foerster) (Burakowski et al. 2000).

Notes

A new species for Podlasie.

Pteryx splendens Strand, 1960 (Fig. 214)

Material examined (Fig. 212)

Original data: Góra Pieszczana Reserve (FD79), 27.07.2016 – 3 exx., IBL-2 trap, leg. & det. K. Komosiński.

Distribution

Species described from Norway based on numerous individuals captured in flight. Also reported from southern Sweden, Finland, and Switzerland. Extremely rare in Poland, known so far from two localities: Jegiel Reserve in the Mazovian Lowland (Burakowski et al. 2000) and Świętokrzyski National Park (Buchholz et al. 2021).

Biology and ecology

Beetles caught in July in plant litter and the decayed wood of spruce and black alder (Burakowski et al. 2000).

Notes

A new species for Podlasie.

Fig. 214. ***Pteryx splendens*** **Strand, 1960 (Ptiliidae)** (photo R. Królik)

Ptiliolum schwarzi (Flach, 1887) (Fig. 215)

Fig. 215. ***Ptiliolum schwarzi*** **(Flach, 1887) (Ptiliidae)** (photo Danmarks BilleBank)

Material examined (Fig. 212)

Original data: Góra Pieszczana Reserve (FD79), 17.06.2016 – 1 ex., 27.07.2016 – 2 exx., IBL-2 trap, leg. & det. K. Komosiński.

Distribution

Species known from Central Europe, Scandinavia, and northern Italy. Recorded in Poland in old data from the Western Beskid, the Western Sudetes, and Lower Silesia (Burakowski et al. 1978).

Biology and ecology

Found in old, decaying hay, under carrion, in manure, and the feces of various animals (Burakowski et al. 1978).

Notes

A new species for Podlasie.

Hydraenidae

Hydraena pulchella Germar, 1824 (Fig. 216)

Fig. 216. ***Hydraena pulchella*** **Germar, 1824 (Hydraenidae)** (photo M. Ciepliński)

Material examined (Fig. 217)

Data from the literature: caught in Krynki in Knyszyńska Forest in a small watercourse flowing from a pond by Kościelna Street (Greń et al. 2022a).

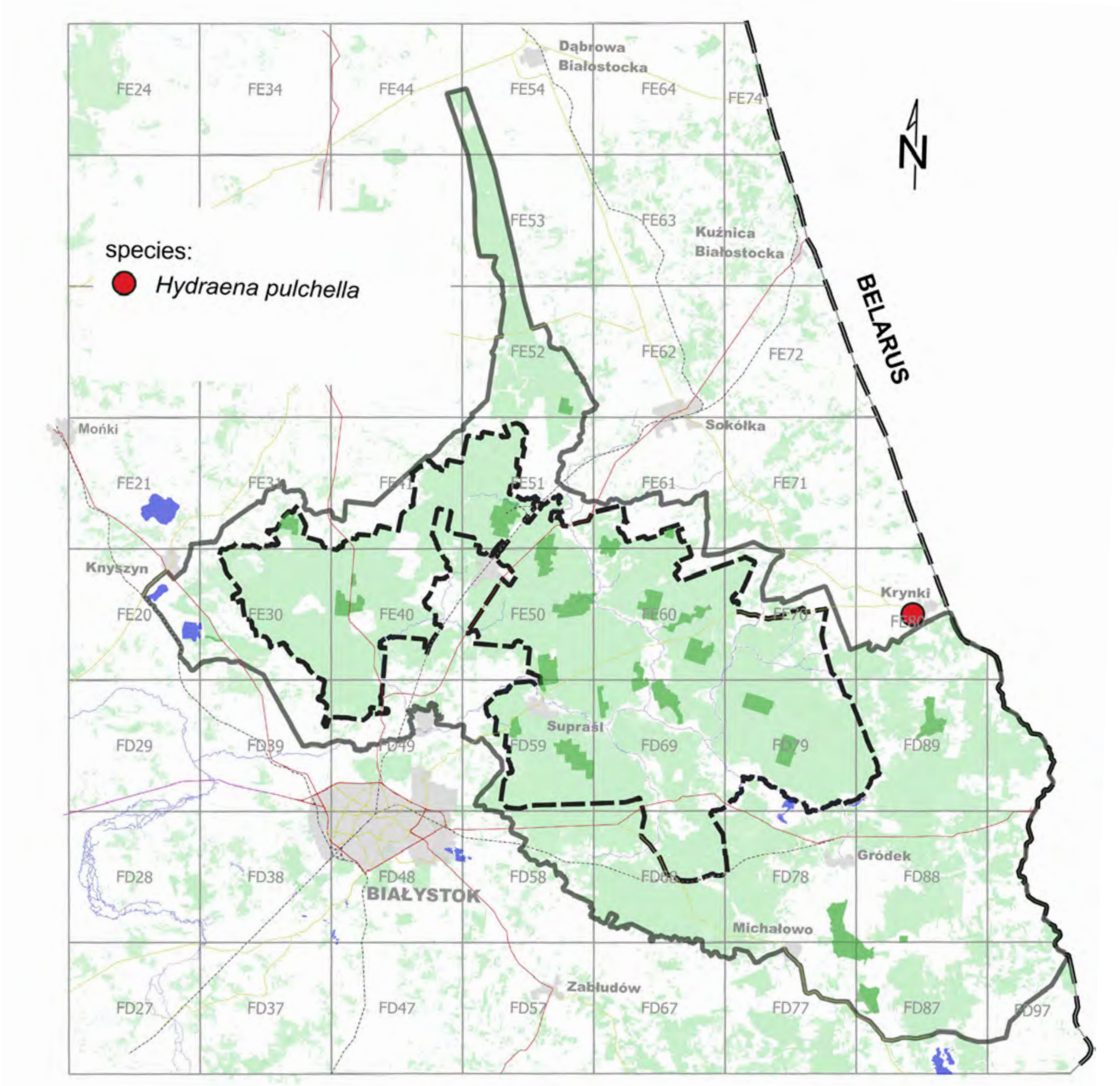


Fig. 217. Locality of *Hydraena pulchella* (Hydraenidae) in Knyszyńska Forest

Distribution

Species distributed in Europe from Britain to Russia and from Fennoscandia to the northern Balkans (Hansen 1998). Reported from throughout Central Europe (Jäch 2004). Once widely distributed in Ireland, it has now been declared extinct (Foster et al. 2009). In the Czech Republic, it has been red-listed as an endangered species (Farkač et al. 2005; Boukal et al. 2007), and in Germany as highly endangered (Spitzenberg et al. 2016). In Poland, it is known from single localities throughout its range.

Biology and ecology

It is considered a stenotope of flowing waters – a rheophile (Klausnitzer 1984; Koch 1989; Przewoźny 2004). It is usually found in moderately large, rather warm streams in lowland and hilly areas. Adult beetles live almost exclusively on the submerged roots of deciduous trees along watercourses (Boukal et al. 2007). In addition, Klausnitzer (1997) recognized *H. pulchella* as a briophile.

Colonidae

Colon angulare Erichson, 1837 (Fig. 218)

Fig. 218. *Colon angulare* Erichson, 1837 (Colonidae) (photo A. Lompe)

Material examined (Fig. 219)

Original data: Waliły Forest District, Królowe Stojło Forest Subdistrict, compartment 104 (FD79), 22.04-9.06.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys.

Distribution

A Western Palaearctic species, found mainly in Northern and Central Europe, from the British Isles to the European part of Russia (Perreau 2004). In Poland, it has been recorded from the Baltic Coast, the Masurian Lake District, Lower and Upper Silesia, the Kraków-Wieluń Upland, the Western and Eastern Sudetes, the Western Beskid (Burakowski et al. 1978), and more recently from the Wielkopolska-Kujawy Lowland (Konwerski & Sienkiewicz 2005).

Biology and ecology

A species developmentally associated with underground fungi. Adults are active in the evenings and at night, and can then be caught by sweeping the undergrowth. Quite often it is caught together with other representatives of the Colonidae family in various types of stationary traps placed near the undergrowth layer.

Notes

A new species for Podlasie.

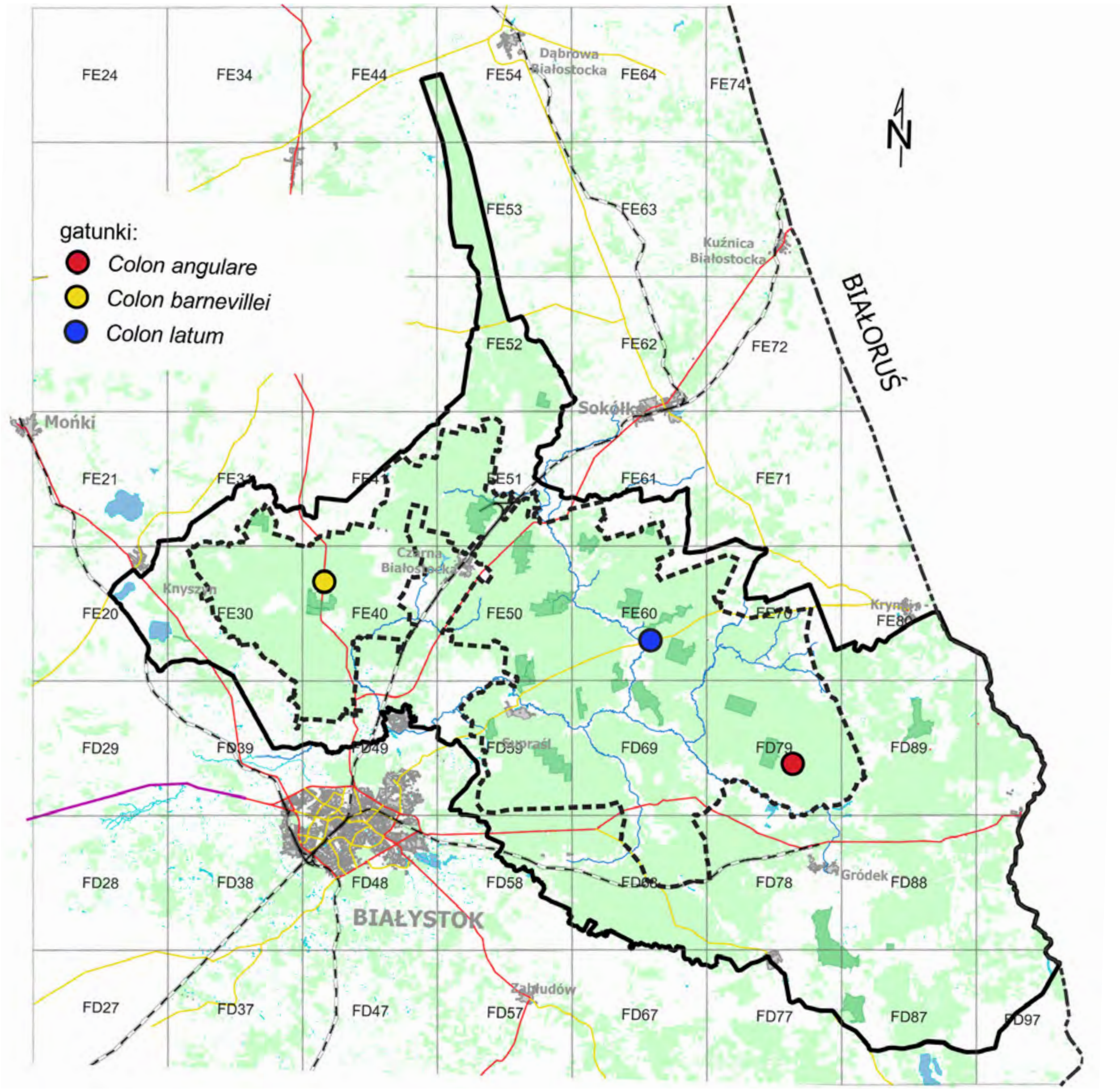


Fig. 219. Localities of *Colon angulare*, *C. barnevillei*, and *C. latum* (Colonidae) in Knyszyńska Forest

Colon barnevillei Kraatz, 1858 (Fig. 220)

Material examined (Fig. 219)

Original data: Knyszyn Forest District, Karczmisko Reserve (FE40), 22.04-9.06.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys.

Distribution

A Central European species (Perreau 2004). In Poland, noted from the south of the country: Lower Silesia, the Western Sudetes, and the Eastern Beskid (Burakowski et al. 1978).

Biology and ecology

Its biology and ecology is almost unknown. It is probably developmentally associated with underground fungi.

Notes

A new species for Podlasie.

Fig. 220. *Colon barnevillei* Kraatz, 1858 (Colonidae) – imago and male genitalia (photo Piezo)

Colon latum Kraatz, 1850 (Fig. 221)

Fig. 221. *Colon latum* Kraatz, 1850 (Colonidae) (photo L. Borowiec)

Material examined (Fig. 219)

Data from the literature: in Knyszyńska Forest, reported from Kopna Góra near Supraśl (FE60), based on one female caught on 17.08.1985 (Kubisz & Szwałko 1991).

Distribution

A species found mainly in Northern and Central Europe, and Siberia (Perreau 2004). In Poland, it probably occurs throughout the country (Burakowski et al. 1978).

Biology and ecology

The species was caught in the spring (April-May) in siftings of fungus-infected plant litter and soil (Burakowski et al. 1978). In Knyszyńska Forest, a specimen of the species in question was found in August, under the bark of a lying, decayed log of a deciduous tree (Kubisz & Szwałko 1991).

Leiodidae

Sciodrepoides alpestris **Jeannel, 1934** (Fig. 222)

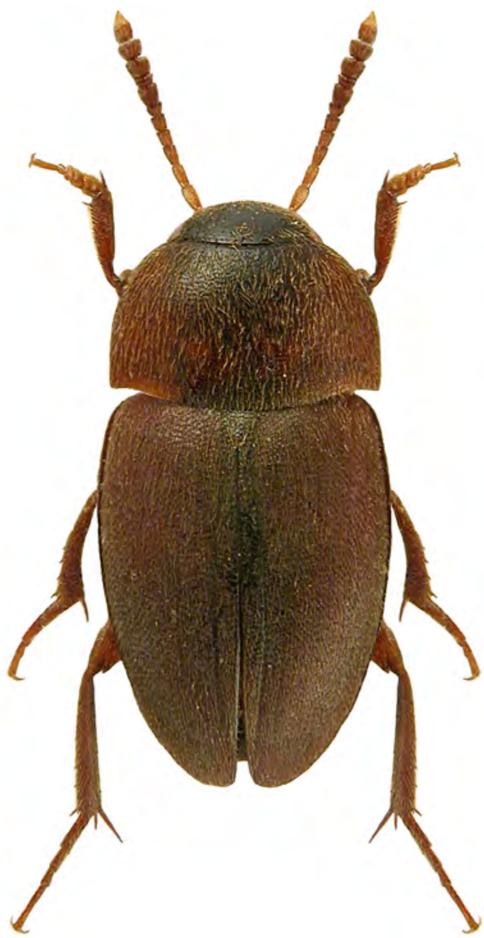


Fig. 222. *Sciodrepoides alpestris* Jeannel, 1934 (Leiodidae) (photo L. Borowiec)

Material examined (Fig. 223)

Original data: Żednia Forest District, Nowa Wola Forest Subdistrict, compartment 154 (FD77), 22.04-9.06.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys.

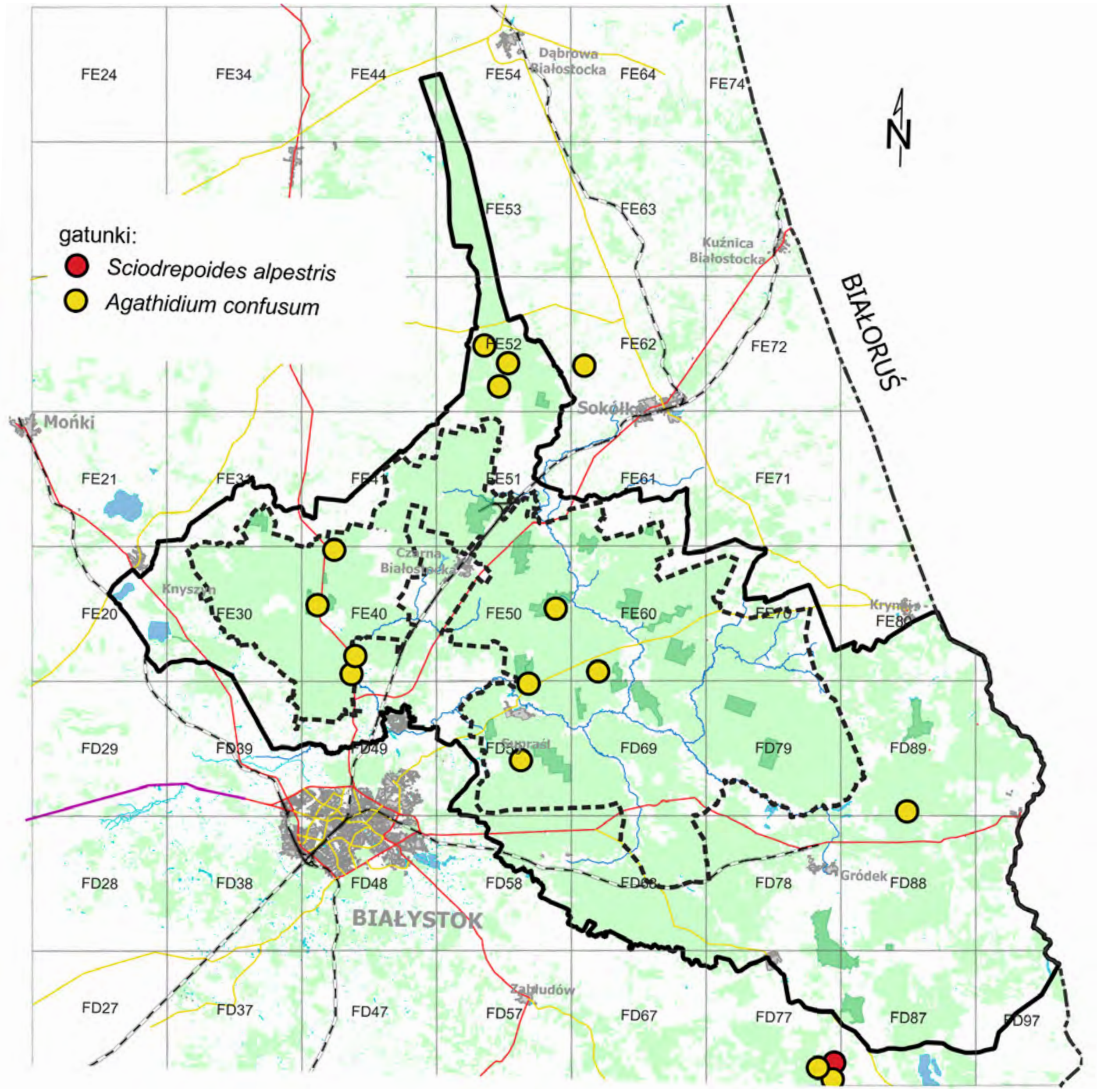


Fig. 223. Localities of *Sciodrepoides alpestris* and *Agathidium confusum* (Leiodidae) in Knyszyńska Forest

Distribution

An eastern European, boreal-mountain species, occurring from the Balkans to Finland, and Russia (Perreau 2004). In Poland, *S. alpestris* is rare, known from Lower Silesia, the Kraków-Wieluń Upland, the Eastern Beskid, the Tatra Mountains (Burakowski et al. 1978), and the Świętokrzyskie Mountains (Byk 2007).

Biology and ecology

A species with poorly understood bionomics, developmentally associated with carrion (Burakowski et al. 1978).

Notes

Listed as NT (near threatened) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

A new species for Podlasie.

Agathidium confusum Brisout de Barneville, 1863 (Fig. 224)

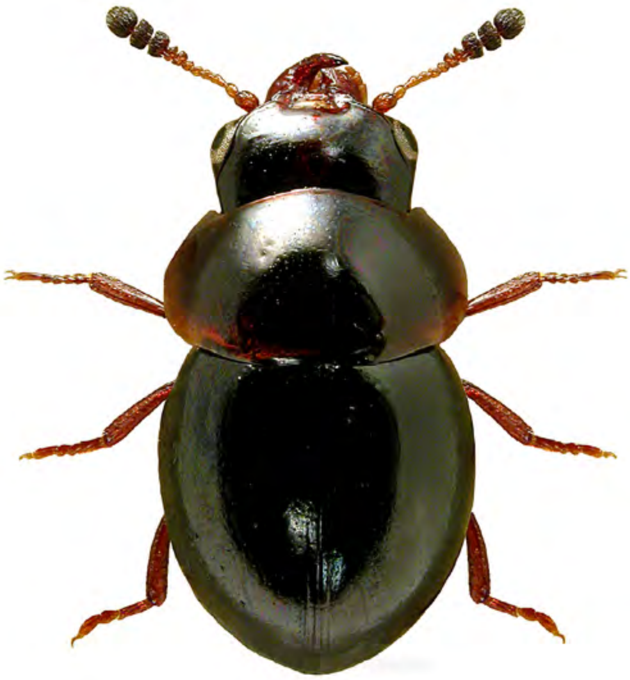


Fig. 224. ***Agathidium confusum*** **Brisout de Barneville, 1863 (Leiodidae)** (photo L. Borowiec)

Material examined (Fig. 223)

Original data: Czarna Białostocka Forest District, Lebiedzin Forest Subdistrict, compartment 165 (FE52), 22.04-9.06.2008 – 2 exx., leg. R. Plewa, det. H. Szołtys; Czarna Białostocka Forest District, Szyndziel Forest Subdistrict, compartment 144 (FE52), 22.04-9.06.2008 – 2 exx., 7.06-13.07.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys; Czarna Białostocka Forest District, Lebiedzin Forest Subdistrict, compartment 203 (FE52), 7.06-13.07.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys; Czarna Białostocka Forest District, Bogusze Forest Subdistrict, compartment 410 (FE62), 22.04-9.06.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys; Supraśl Forest District, Surażkowo Forest Subdistrict, compartment 134 (FE60), 22.04-9.06.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys; Dojlidy Forest District, Rybniki Forest Subdistrict, compartment 110 (FE40), 7.06-13.07.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys; Dojlidy Forest District, Katrynka Forest Subdistrict, compartment 137 (FE40), 22.04-9.06.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys; Dojlidy Forest District, Krasny Las Forest Subdistrict (FD59), 18.06.2020 – 1 ex., from dead branches, trunks, polypores, leg. & det. R. Królik; Knyszyn Forest District, Krzemianka Reserve (FE40), 20.06.2020 – 1 ex., from dead branches, trunks, polypores, leg. & det. R. Królik; Knyszyn Forest District, Przewalanka Forest Subdistrict, compartment 36 (FE40), 3.06-13.07.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys; Waliły Forest District, Smolarnia Forest Subdistrict, compartment 227 (FD89), 22.04-9.06.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys; Żednia Forest District, Nowa Wola Forest Subdistrict, compartment 154 (FD77), 7.06-13.07.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys; Żednia Forest District, Nowa Wola Forest Subdistrict, compartment 164 (FD77), 22.04-9.06.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys; Supraśl Forest District, Jałówka Reserve (FD59), 7.06-13.07.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys.

Data from the literature: reported from Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

A species found almost all over Europe (not recorded in the Iberian Peninsula), Siberia, Mongolia, to Japan and Taiwan (Perreau 2004). In Poland, it is reported from Lower Silesia, the Western and Eastern Sudetes, the Western and Eastern Beskids (Burakowski et al. 1978), Białowieża Forest (Kubisz & Szwałko 1991), Roztocze, Bieszczady (Borowiec & Kilian 1998), and recently reported from the Wielkopolska-Kujawy Lowland (Jałoszyński & Konwerski 2002), the Świętokrzyskie Mountains (Byk 2007), the Spalsko-Rogowskie Forests (Byk et al. 2013), the Mazovian Lowland, the Małopolska Upland (Miłkowski & Ruta 2016), and Kampinos Forest (Marczak 2020).

Biology and ecology

A forest species, typical of well-preserved, large-area forests, more often caught in mountainous areas than in lowlands. Like other species of the genus, it is associated with slime molds (the larvae) and the spore-bearing fruiting bodies of arboreal fungi (adults). The details of development, including the slime mold species on which the larvae develop, are still very poorly understood and require research. The adults were caught most often in various types of traps suspended from trees with polypores or slime mold fungi, and also with a moldy wood substrate.

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Leiodes oblonga **(Erichson, 1845)** (Fig. 225)

Fig. 225. ***Leiodes oblonga*** **(Erichson, 1845) (Leiodidae)** (photo L. Borowiec)

Material examined (Fig. 226)

Original data: Supraśl Forest District, Jałówka Reserve (FD59), 7.06-13.07.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys.

Distribution

Species distributed mainly in Central Europe and the European part of Russia (Perreau 2004). In Poland, it is known from the Masurian Lake District, Lower Silesia, Roztocze, the Western Sudetes (Burakowski et al. 1978), Białowieża Forest (Borowiec 2001), the Spalsko-Rogowskie Forests (Rutkiewicz et al. 2013), and recently reported from the Mazovian Lowland (Miłkowski & Ruta 2016) and the Western Beskid (Szafraniec et al. 2019).

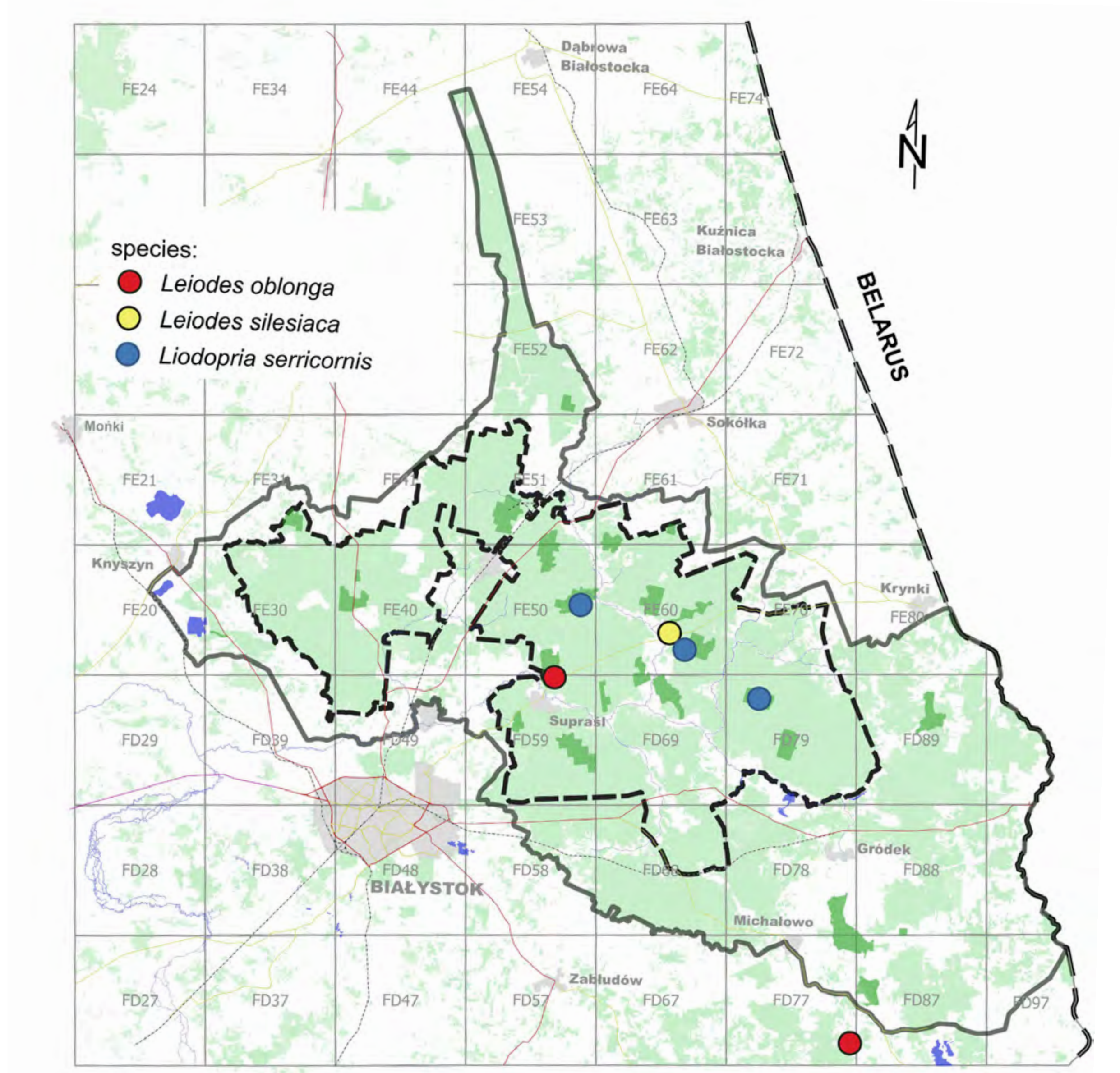


Fig. 226. Localities of *Leiodes oblonga*, *L. silesiaca*, and *Liodopria serricornis* (Leiodidae) in Knyszyńska Forest

Biology and ecology

The species, like most representatives of the genus *Leiodes* Latreille, has a very poorly recognized bionomy, the knowledge of which is actually limited to the characteristics of the dates and places where it was caught. It lives on the fruiting bodies of underground fungi, and is caught in summer or autumn. The adults are active in the evenings and at night.

Notes

A new species for Podlasie.

***Leiodes silesiaca* (Kraatz, 1852)** (Fig. 227)

Material examined (Fig. 226)

Data from the literature: Kopna Góra ad Supraśl, arboretum (FE60), 23.07.1990 – 1 ex., Barber pitfall trap (Kubisz & Szwałko 1991).

Fig. 227. ***Leiodes silesiaca*** **(Kraatz, 1852) (Leiodidae)** (photo M. Mutanen)

Distribution

A species found in Northern and Central Europe, and Siberia to the Far East (Perreau 2004). In Poland, it is reported from the Baltic Coast, the Wielkopolska-Kujawy Lowland, Lower Silesia, the Kraków-Wieluń Upland, the Western and Eastern Sudetes, and the Western Beskid (Burakowski et al. 1978). Reported by Kubisz & Szwałko (1991) in Knyszyńska Forest.

Biology and ecology

A forest species and, like other species of the genus, developmentally associated with the fruiting bodies of underground fungi. Details of development, including the species of fungi on which the larvae develop, are unknown. The adults are usually caught from July to October, in various types of traps placed in forest habitats.

Notes

A good method of obtaining Leiodini representatives is evening net sweeping through the undergrowth during the summer months. Adults appear synchronously with the more numerous appearance of cap mushrooms, which can be a signal to start trapping. The co-author of the present study (J. Borowski) observed representatives of the genus *Leiodes* climbing on grasses in the evenings, and their flights, which somewhat resemble the flights of another fungus-eating beetle – *Odonteus armiger* (Scop.). Using Malaise traps brings good results due to their flights just above the undergrowth. In this way, even several species of the genus *Leiodes* Latreille can be caught in one night.

Liodopria serricornis (Gyllenhal, 1813) (Fig. 228)

Material examined (Fig. 226)

Original data: Supraśl Forest District, Kopna Góra Forest Subdistrict, compartment 272 (FE60), 7.06-13.07.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys; Krynki Forest District, Góra Pieszczana Reserve (FD79), 27.07.2016 – 1 ex., leg. K. Komosiński, det. A. Lasoń.

Data from the literature: known from Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

A species found in Central and Eastern Europe (Perreau 2004). In Poland, it is reported from the Masurian Lake District, Roztocze, the Western and Eastern Beskids, the Pieniny Mountains (Burakowski et al. 1978), Białowieża Forest (Wanat 1991), the Świętokrzyskie Mountains (Mokrzycki 2007), the Spalsko-Rogowskie Forests (Mokrzycki et al. 2013), the Wielkopolska-Kujawy Lowland (Ruta et al. 2016), the Mazovian Lowland (Miłkowski & Ruta 2016), and Kampinos Forest (Marczak 2020).

Biology and ecology

Forest species with poorly recognized bionomics. The adults are secretive and most often caught in various types of traps placed in dead and dying trees, less frequently sieved from moldy material, such as plant litter. Like species in the genus *Agathidium* Panz., it is trophically associated with slime molds, such as *Tubifera ferruginosa* (Batsch) J.F. Gmel. (Chachuła et al. 2021). The adult forms feed on the spores of arboreal fungi.

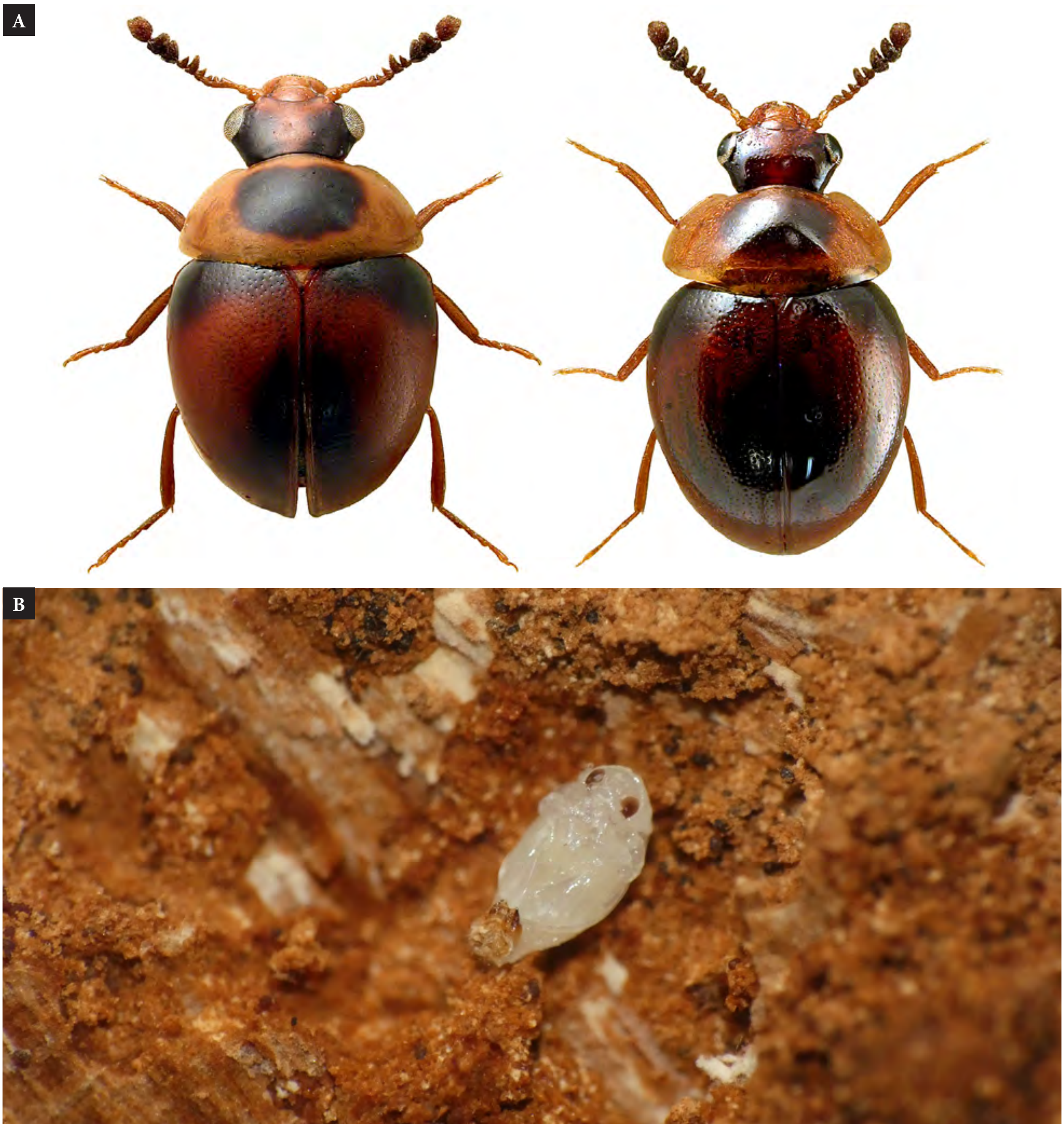


Fig. 228. ***Liodopria serricornis*** **(Gyllenhal, 1813) (Leiodidae): A – imagines** (photo L. Borowiec), **B – pupa** (photo J. Tatur-Dytkowski)

Notes

Listed as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Staphylinidae

***Necrodes littoralis* (Linnaeus, 1758)** (Fig. 229)

Fig. 229. ***Necrodes littoralis* (Linnaeus, 1758) (Staphylinidae)** (photo J. Kupryjanowicz)

Material examined (Fig. 230)

Original data: Czarna Białostocka Forest District, Dąbrowa Forest Subdistrict, compartment 470 (FE54), 28.08.2013 – 1 ex. (Szestowicka 2014).

Data from the literature: Kopna Góra ad Supraśl (FE60) (Kubisz & Szwałko 1991).

Distribution

A species with a wide Pacific-Atlantic distribution, in the Western Palaearctic known from almost all of Europe, Asia Minor, the Caucasus, and Iran (Růžička 2015). In Poland, it is generally found locally (Burakowski et al. 1978).

Biology and ecology

Occurs mainly on mammal carrion (Burakowski et al. 1978), it flies to light.

Notes

Listed as NT (near threatened) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Until recently, it was placed in the large carrion beetle family (Silphidae), which has been fully included in the Staphylinidae.

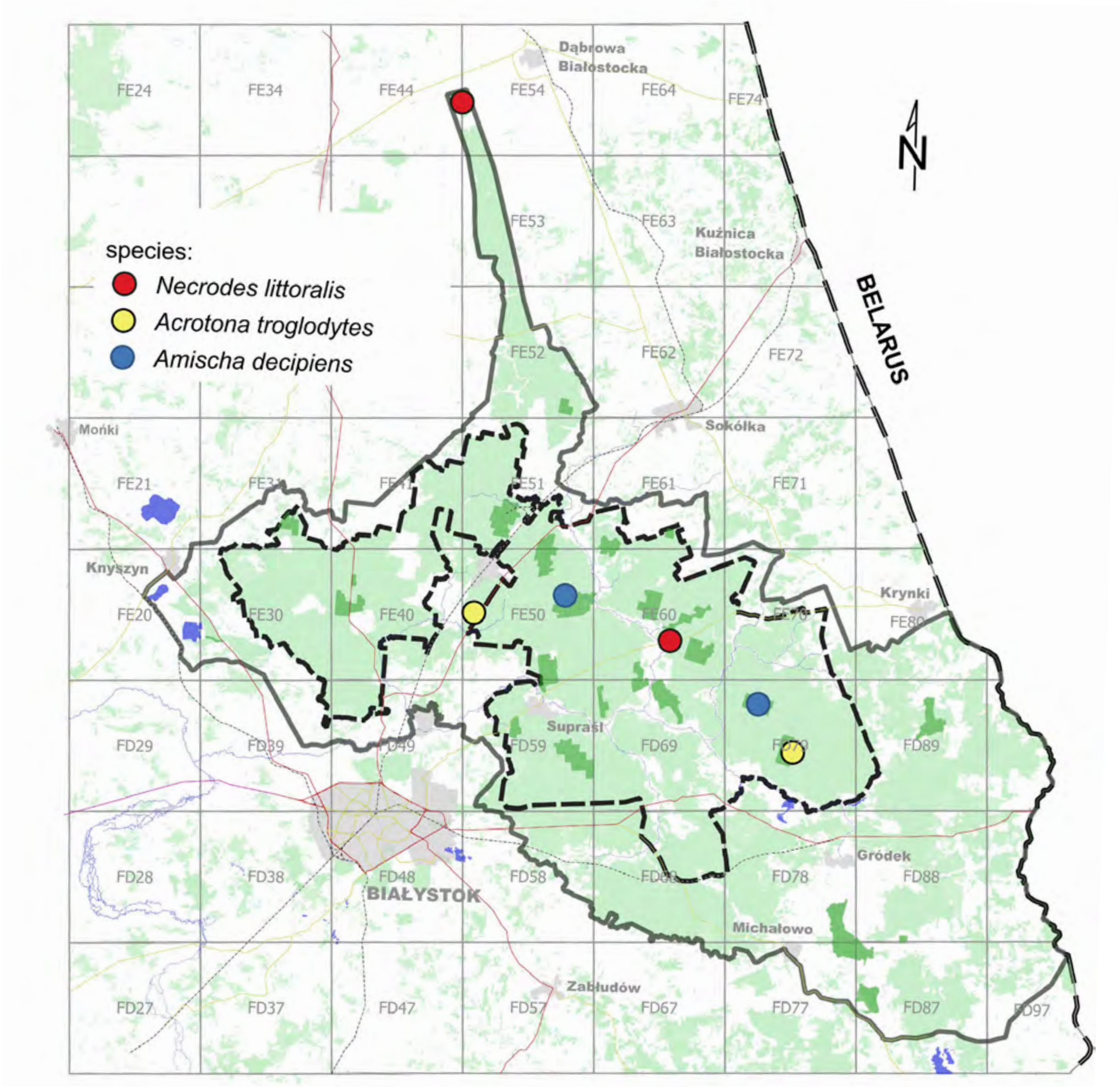


Fig. 230. Localities of *Necrodes littoralis*, *Acrotona troglodytes*, and *Amischa decipiens* (Staphylinidae) in Knyszyńska Forest

Acrotona troglodytes (Motschulsky, 1858) (Fig. 231)

Material examined (Fig. 230)

Original data: Czarna Białostocka Forest District, Horodnianka Forest Subdistrict, compartment 164 (FE50), 2008 – 2 exx., leg. R. Plewa, det. K. Komosiński; Chomontowszczyzna Reserve, compartment 85 (FD79), 16.04-6.05.2016 – 1 ex., leg. K. Sućko, det. K. Komosiński.

Distribution

A species found in central and eastern parts of Europe, noted otherwise from the British Isles, Denmark, and southern Scandinavia. Rare everywhere, also in Poland, known in Poland only from three zoogeographical regions – the Eastern and the Western Beskid, and the Bieszczady Mountains. In addition, a vague report is from Silesia (Burakowski et al. 1981). Recently found again in the Bieszczady Mountains (Szujecki 1996) and in Białowieża Forest (Derunkov & Melke 2001; Smoleński & Szujecki 2001).

Fig. 231. ***Acrotona troglodytes*** **(Motschulsky, 1858) (Staphylinidae)** (photo Danmarks BilleBank)

Biology and ecology

Caught in the plant litter of deciduous forests and compost heaps (Burakowski et al. 1981). Inhabits forests and forest edges, found among fallen leaves, in moss and decaying fungi (Koch 1989a).

Notes

A new species for Podlasie.

Amischa decipiens (Sharp, 1869) (Fig. 232)

Material examined (Fig. 230)

Original data: Góra Pieszczana Reserve (FD79), 17.06.2016 – 1 ex., 27.07.2016 – 1 ex., IBL-2 trap, leg. & det. K. Komosiński; Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 110 (FE50), 30.06-20.07.2019 – 1 ex., leg. J.M. Gutowski, det. K. Komosiński.

Distribution

A species inhabiting mainly Western and Central Europe, in addition, reported from a small number of localities in Denmark and southern Scandinavia. In Poland, its occurrence was based for a long time only on a single female specimen caught in 1893 in Warszawa (Burakowski et al. 1981), then reported from Bielinek Reserve in the Pomeranian Lake District (Borowiec 1990) and Białowieża Forest (Derunkov & Melke 2001). Also recently found in Świętokrzyski National Park (Buchholz et al. 2021).

Biology and ecology

A beetle found primarily in riparian forests, in addition to river valleys, ruderal areas, clay fields, and in gardens. Caught in moist moss, plant litter, fallen foliage, decaying wood, and rotten hay (Koch 1989a).

Notes

A new species for Podlasie.

Fig. 232. ***Amischa decipiens*** **(Sharp, 1869) (Staphylinidae)** (photo R. Królik)

Atheta fallaciosa (Sharp, 1869) (Fig. 233)

Fig. 233. ***Atheta fallaciosa*** **(Sharp, 1869) (Staphylinidae)** (photo Danmarks BilleBank)

Material examined (Fig. 234)

Original data: Knyszyn Forest District, Krzemianka Forest Subdistrict, ad Rybniki, compartment 194 (FE40), 2008 – 1 ex., leg. R. Plewa, det. K. Komosiński.

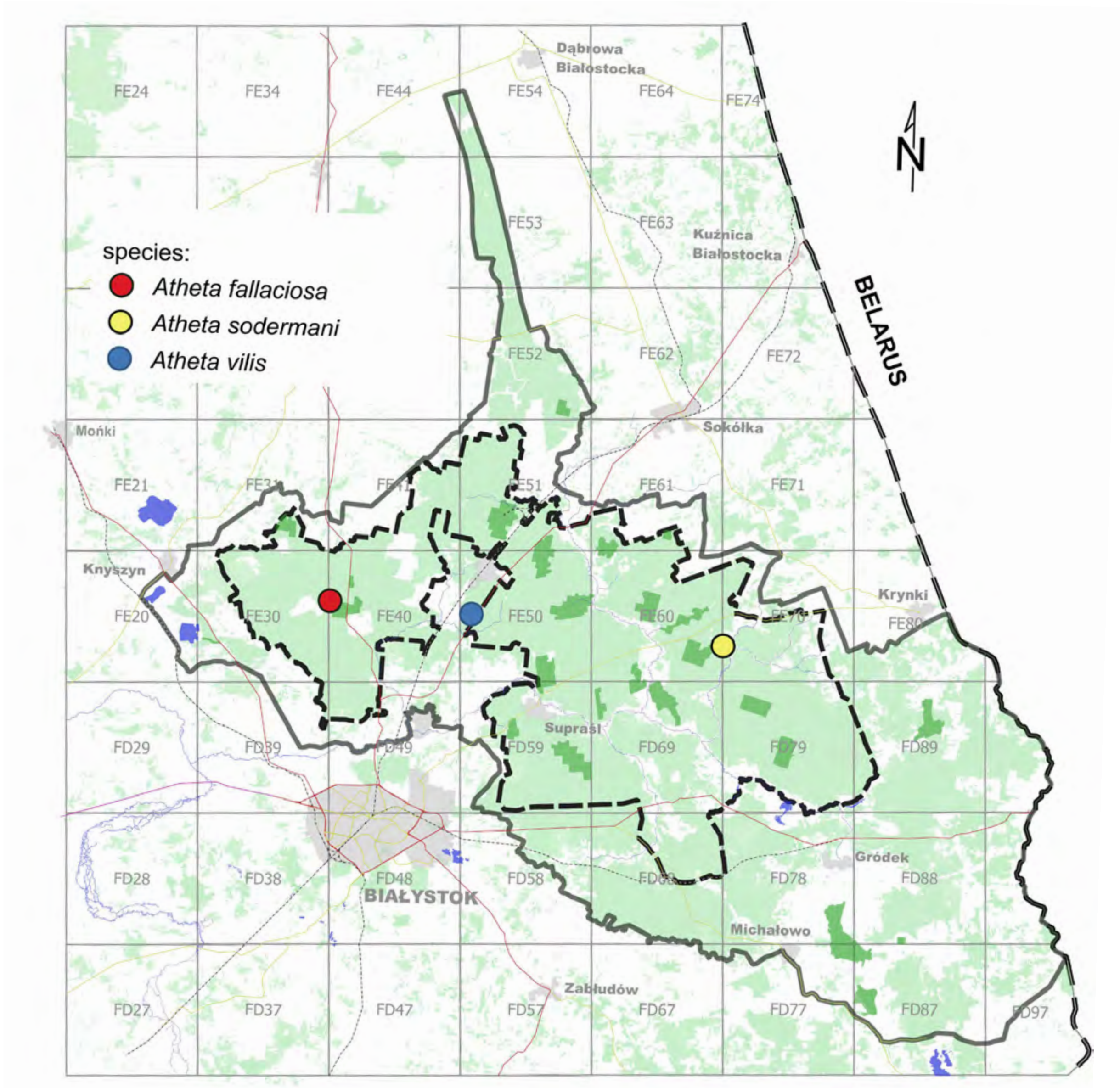


Fig. 234. Localites of *Atheta fallaciosa*, *A. sodermani*, and *A. vilis* (Staphylinidae) in Knyszyńska Forest

Distribution

Species distributed in Northern and Central Europe, but rarely found everywhere, including Poland. In Poland, it is reported from the Bieszczady Mountains, Lower Silesia (Burakowski, et al. 1981), the Western Sudetes (Mazur & Skoczek 2007; Mazur et al. 2008), the Mazovian Lowland (Mazur et al. 2010), Białowieża Forest (Derunkov & Melke 2001), and the Pomeranian Lake District (Sławska & Smoleński 2003; Gutowski & Ruta 2004).

Biology and ecology

The species is found in moist habitats, especially in peat bogs among peat moss of the genus *Sphagnum* Ehrhardt (Burakowski et al. 1981).

Notes

A new species for Podlasie.

Atheta sodermani Bernhauer, 1931 (Fig. 235)

Fig. 235. ***Atheta sodermani*** **Bernhauer, 1931 (Staphylinidae)** (photo Danmarks BilleBank)

Material examined (Fig. 234)

Original data: Supraśl Forest District, Kopna Góra Forest Subdistrict, compartment 231 (FE60), 2008 – 1 ex., leg. R. Plewa, det. K. Komosiński.

Distribution

A species probably with a boreal-mountain distribution, known from Northern Europe and mountainous areas (especially the Alps) in the rest of Europe. Löbl & Löbl (2015) report this species from Finland, Sweden, Norway, the European part of Russia, Denmark, Great Britain, Germany, Austria, France, and Italy.

Biology and ecology

The beetle is reported as coprophilic and necrophilic (scavenger), caught in bird feces, badger droppings, and on the carrion of small mammals (Koch 1989a).

Notes

A new species for the fauna of Poland!

Atheta vilis (Erichson, 1837) (Fig. 236)

Material examined (Fig. 234)

Złotoria ad Czarna Białostocka, Czarna Białostocka Forest District, Horodnianka Forest Subdistrict, compartment 164 (FE50), 2008 – 1 ex., leg. R. Plewa, det. K. Komosiński.

Distribution

A species inhabiting mainly the southern and central parts of Europe, also reported from a small number of localities in the British Isles, and the southern part of Fennoscandia. In Poland, the beetle is extremely rare, for a long period reported only from Lower Silesia (Burakowski et al. 1981). New data are from the Pomeranian Lake District (Szujecki 1995), Białowieża Forest (Smoleński 2006), the Wielkopolska-Kujawy

Lowland (Renner & Messutat 2007), Kampinos Forest (Marczak 2020), and the Świętokrzyskie Mountains (Buchholz et al. 2021).

Fig. 236. ***Atheta vilis*** **(Erichson, 1837) (Staphylinidae)** (photo M. Kofoed-Hansen)

Biology and ecology

Inhabits swampy forests and peated meadows in lowland areas. Caught under fallen foliage and among moist mosses (Burakowski et al. 1981).

Notes

A new species for Podlasie.

Cypha seminulum (Erichson, 1839) (Fig. 237)

Fig. 237. ***Cypha seminulum*** **(Erichson, 1839) (Staphylinidae)** (photo Danmarks BilleBank)

Material examined (Fig. 238)

Original data: Bahno w Borkach Reserve, compartment 332 (FD69), 18.05.2023 – 1♂, under the bark of a dead spruce tree, leg. C. Greń, det. K. Komosiński.

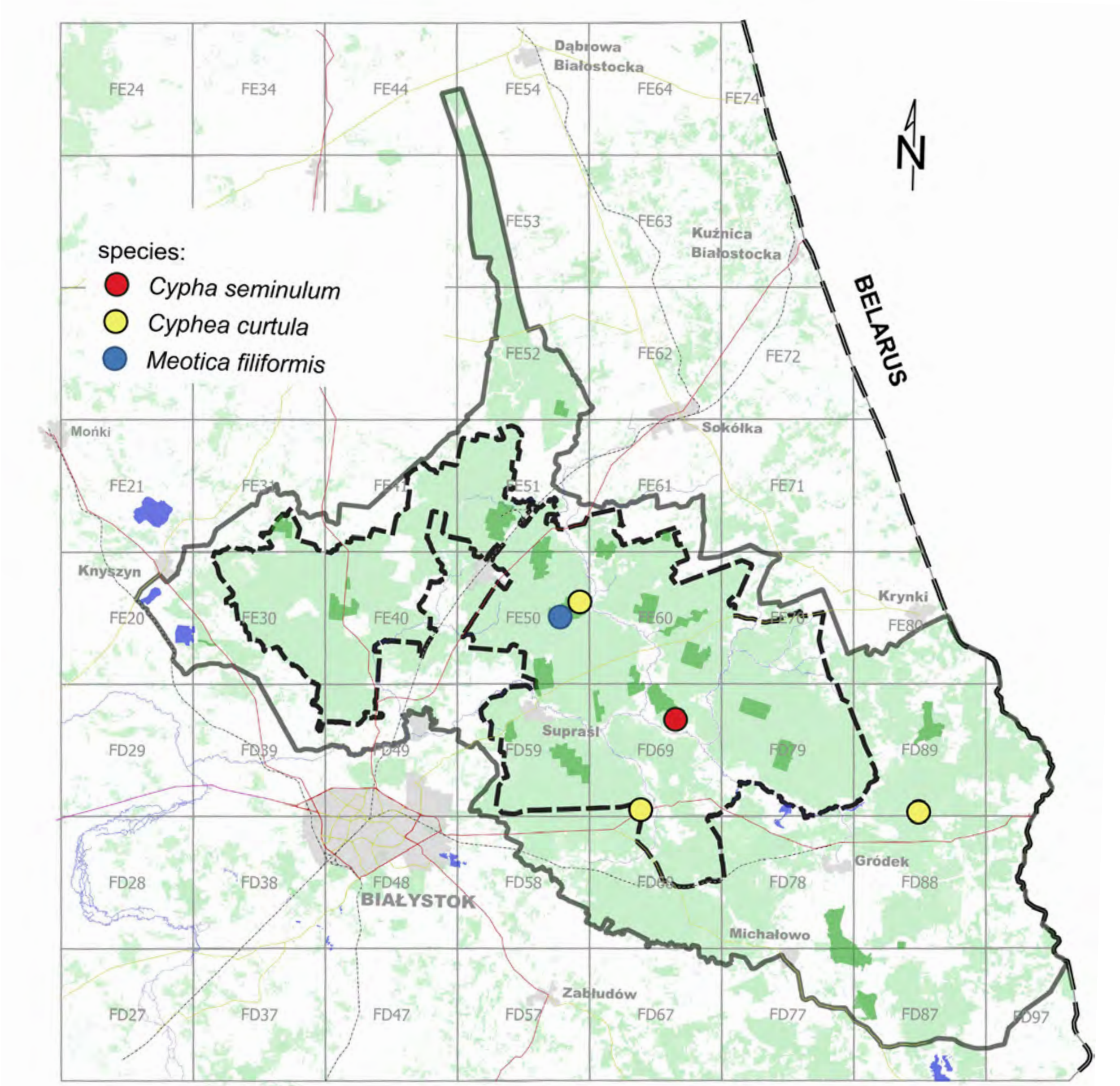


Fig. 238. Localities of *Cypha seminulum*, *Cyphea curtula*, and *Meotica filiformis* (Staphylinidae) in the Knyszyńska

Distribution

The species is reported from almost all of Europe and northern Africa (Löbl & Löbl 2015), but according to Horion (1967), several localities are in Denmark, Sweden, and Finland, while other European data refer to other more common species of this genus. In Poland, it has been recorded from a small number of scattered localities. Reported from the Eastern and Western Sudetes, Lower Silesia, the Kraków-Wieluń Upland, the Eastern and Western Beskid Mountains, the Wielkopolska-Kujawy Lowland, the Baltic Coast (Burakowski et al. 1981), the Pomeranian Lake District (Ruta & Melke 2002), and the Świętokrzyskie Mountains (Buchholz et al. 2021). In view of the uncertainty of the designations, existing evidence specimens should be carefully examined (Burakowski et al. 1981).

Biology and ecology

Its biology is poorly understood due to confusion with related species. According to Koch (1989a), it has been caught in gardens, swampy meadows, fallen foliage, and compost. Assing (2020) reports that this beetle was caught most often in flight (using the car-net method), additionally in sand dunes, saltmarshes, in fallen foliage by a stream, a barn, and under a chicken carcass.

Notes

All data originating in Poland to date should be verified due to the high probability of confusion with similar species in the genus, especially *Cypha pulicaria* (Erichson, 1839). The possibility of confusion is also compounded by ambiguities relating to synonymy – Dauphin (2003) synonymized *C. seminulum* and *C. hanseni* (Palm, 1949), but Assing (2020) recognized *C. hanseni* as synonymous with *C. pulicaria*. This species can be determined with certainty on the basis of the structure of the male copulatory organ. In addition, there are differences in the sculpturing of the elytra and the coloration of the legs, but in view of some individual variability, the species determination cannot be made confidently on this basis (Assing 2020). The structure of the copulatory organs and morphological features of both species are provided by Assing (2020).

A new species for Podlasie.

Cyphea curtula (Erichson, 1837) (Fig. 239)

Fig. 239. *Cyphea curtula* (Erichson, 1837) (Staphylinidae) (photo L. Borowiec)

Material examined (Fig. 238)

Original data: Waliły Forest District, Smolarnia Forest Subdistrict, ad Skroblaki, compartment 227 (FD89), 7.07-31.08.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. K. Komosiński; Żednia Forest District, Kołodno Forest Subdistrict, ad Królowy Most, compartment 167 (FD69), 2008 – 1 ex., leg. R. Plewa, det. K. Komosiński.

Data from the literature: reported from Budzisk Reserve (FE50) by Marczak et al. (2023a).

Distribution

A species with a compact range restricted to the central part of Europe. In addition, it is reported from a small number of localities in southern Fennoscandia, France, and Belgium. In Poland, the beetle is extremely rare, so far reported from the Eastern Beskid Mountains, Lower and Upper Silesia, the Świętokrzyskie Mountains (Burakowski et al. 1981), Białowieża Forest (Borowiec et al. 1992), the Masurian Lake District (Salmonowicz 2001), and the Kampinos Forest (Marczak 2020).

Biology and ecology

Found under rotten bark, mainly of deciduous trees. It is found in the fallen trunks of sycamore, hornbeam, oak, ash, and aspen, also caught in the larvae tunnels of the beetles *Cerambyx cerdo* (Linnaeus, 1758), *Xylotrechus rusticus* (Linnaeus, 1758), *Saperda perforata* (Linnaeus, 1758), *Trypophloeus* Fairm. sp., in the tunnels of *Cossus cossus* (L.), and under the bark of fir trees in the larval galleries of the bark beetle *Cryphalus asperatus* (Gyllenhal, 1813) (Burakowski et al. 1981).

Meotica filiformis **(Motschulsky, 1860)** (Fig. 240)

Fig. 240. ***Meotica filiformis*** **(Motschulsky, 1860) (Staphylinidae)** (photo U. Schmidt)

Material examined (Fig. 238)

Data from the literature: reported from Budzisk Reserve (FE50) by Marczak et al. (2023a).

Distribution

A species found primarily in Central and Northern Europe, so far reported from Norway, Sweden, Finland, Russia, Latvia, Denmark, Belgium, the Netherlands, Ireland, United Kingdom, France, Germany, Switzerland, Austria, Czech Republic, and Ukraine, as well as eastern Siberia (Löbl & Löbl 2015). In Poland, the species is little known, first reported from the Wielkopolska-Kujawy Lowland (Renner & Messutat 2007), later reported from the Kampinos Forest (Marczak 2020) and the Świętokrzyskie Mountains (Buchholz et al. 2021).

Biology and ecology

A beetle inhabiting wet areas, caught in swampy forest edges, and on the banks of rivers and lakes (Koch 1989a).

Oxypoda recondita Kraatz, 1856 (Fig. 241)

Fig. 241. *Oxypoda recondita* Kraatz, 1856 (Staphylinidae) (photo L. Borowiec)

Material examined (Fig. 242)

Original data: Góra Pieszczana Reserve (FD79), 17.06.2016 – 1 ex., IBL-2 trap, leg. & det. K. Komosiński.

Distribution

Species reported mainly from Western and Central Europe and southern Fennoscandia, additionally noted from Algeria and Tunis (Burakowski et al. 1981). In Poland, reported on the basis of old data from the Baltic Coast and the Mazovian Lowland (Burakowski et al. 1981), recently found in the Pomeranian Lake District (Szujecki 1995).

Biology and ecology

This rove beetle inhabits tree hollows, especially those inhabited by birds. It is also caught in the vicinity of hollows under the rotten bark of trunks, stumps, and branches, under rotting leaves, in fungi and polypores growing on old trunks and stumps (Burakowski et al. 1981).

Notes

A new species for Podlasie.

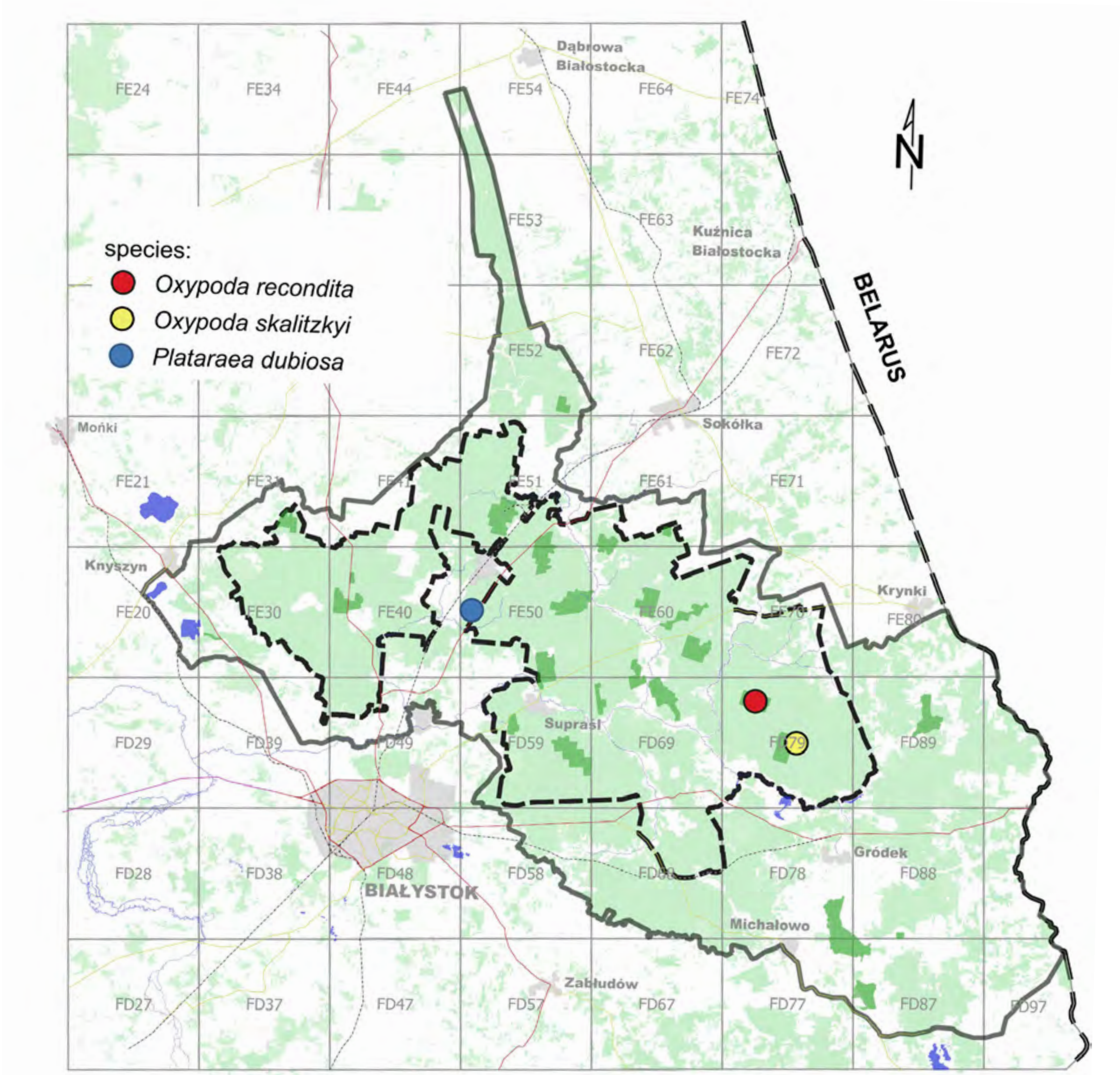


Fig. 242. Localities of *Oxypoda recondita*, *O. skalitzkyi*, and *Plataraea dubiosa* (Staphylinidae) in Knyszyńska Forest

Oxypoda skalitzkyi Bernhauer, 1902 (Fig. 243)

Material examined (Fig. 242)

Original data: Chomontowszczyzna Reserve, compartment 63 (FD79), 2008 – 2 exx., leg. R. Plewa, det. K. Komosiński.

Distribution

A boreal-mountain species, spreading from the northern provinces of Fennoscandia and the Kola Peninsula throughout Central Europe to France, northern Italy, Bosnia, and Transylvania (Burakowski et al. 1981). In Poland, it has been found on the basis of old data from the Eastern and Western Sudetes, the Western Beskid, and the Masurian Lake District (Burakowski et al. 1981); new localities include Białowieża Forest (Smoleński & Szujecki 2001), the Tatra Mountains (Tykarski 2006), and the Świętokrzyskie Mountains (Buchholz et al. 2021).

Biology and ecology

Inhabits primarily forested areas, most often caught under the loosened bark of fallen spruce trees, in coniferous litter, under piles of spruce brushwood, and in mountain valleys under rotting hay (Burakowski et al. 1981).

Notes

A new species for Podlasie.

Fig. 243. ***Oxypoda skalitzkyi*** **Bernhauer, 1902 (Staphylinidae)** (photo R. Królik)

Plataraea dubiosa **Benick, 1934** (Fig. 244)

Fig. 244. ***Plataraea dubiosa*** **Benick, 1934 (Staphylinidae)** (photo U. Roosileht)

Material examined (Fig. 242)

Original data: Czarna Białostocka Forest District, Horodnianka Forest Subdistrict, ad Złotoria, compartment 164 (FE50), 2008 – 1 ex., leg. R. Plewa, det. K. Komosiński.

Distribution

Species reported from Central Europe and several southern provinces of Finland (Burakowski et al. 1981). In Poland, reported only from the Bieszczady Mountains (Szujecki 1996) and the Świętokrzyskie Mountains (Mokrzycki 2007; Buchholz et al. 2021).

Biology and ecology

A species with a poorly understood biology, found in forests, especially deciduous forests, found in a fox burrow in Austria (Koch 1989a).

Notes

A new species for Podlasie.

Schistoglossa viduata (Erichson, 1837) (Fig. 245)

Fig. 245. ***Schistoglossa viduata*** **(Erichson, 1837) (Staphylinidae)** (photo U. Schmidt)

Material examined (Fig. 246)

Data from the literature: reported from Budzisk Reserve (FE50) by Marczak et al. (2023a).

Distribution

Species distributed throughout Northern and Central Europe (Burakowski et al. 1981). In Poland, it is known mainly on the basis of old data from the Eastern Beskid, Lower Silesia, the Kraków-Wieluń Upland, the Masurian Lake District (Burakowski et al. 1981). New localities have been found in the Lublin Upland (Staniec 1991), the Pomeranian Lake District (Sławska & Smoleński 2003), Borecka Forest (Melke & Maciejewski 1999), Kampinos Forest (Marczak 2020), and the Świętokrzyskie Mountains (Buchholz et al. 2021).

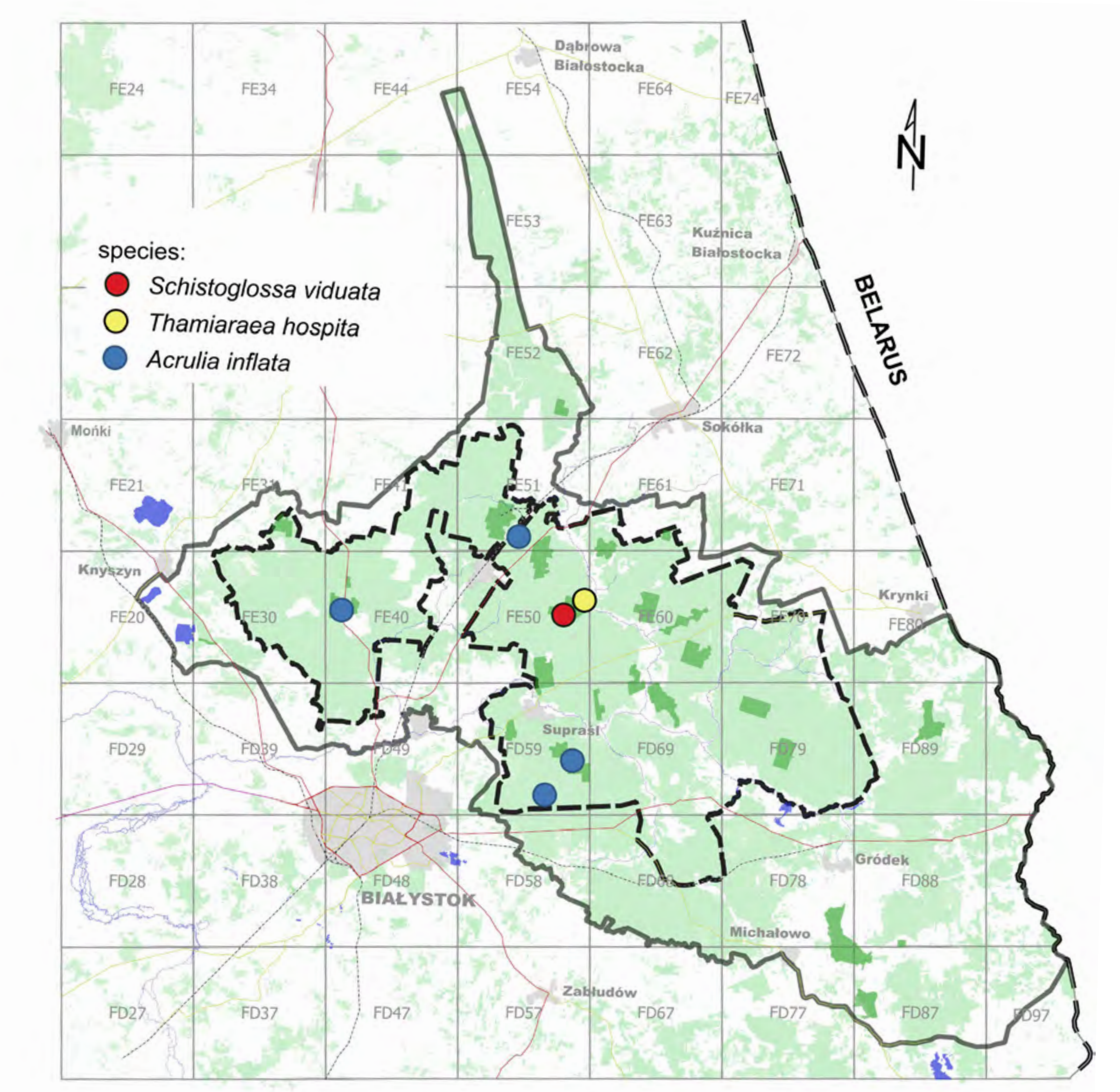


Fig. 246. Localities of *Schistoglossa viduata*, *Thamiaraea hospita* and *Acrulia inflata* (Staphylinidae) in Knyszyńska Forest

Biology and ecology

Found mainly in lowlands, caught in moist meadows and at the edges of water bodies, under rotting leaves and inflows (Burakowski et al. 1981).

Thamiaraea hospita (Märkel, 1844) (Fig. 247)

Material examined (Fig. 246)

Data from the literature: reported from Budzisk Reserve (FE50) by Marczak et al. (2023a).

Distribution

A species found mainly in Western and Central Europe, additionally reported from Italy and southern Sweden. In Poland, reported on the basis of old data from the Western Sudetes, the Eastern Beskid, Lower and Upper Silesia, and the Mazovian Lowland (Burakowski et al. 1981). Recently found in the Kampinos Forest (Marczak 2020), and the Świętokrzyskie Mountains (Buchholz et al. 2021).

Fig. 247. *Thamiaraea hospita* (Märkel, 1844) (Staphylinidae) (photo A. Lompe)

Biology and ecology

Found by the sap oozing from poplars and oaks, sometimes in the larval tunnels of the goat moth *Cossus cossus* (L.) (Burakowski et al. 1981).

Acrulia inflata (Gyllenhal, 1813) (Fig. 248)

Fig. 248. *Acrulia inflata* (Gyllenhal, 1813) (Staphylinidae) (photo L. Borowiec)

Material examined (Fig. 246)

Original data: Las Cieliczański Reserve (FD59), 30.07.2022 – 1 ex., mixed coniferous forest, beating sheet branches and fungi, leg. & det. A. Lasoń; Knyszyn Forest District, Krzemianka Reserve (FE40), 25.09.2021 – 1 ex., caught under the bark, in the rotten wood of various trees, leg. R. Królik, det. K. Komosiński; Dojlidy Forest District, Krasny Las Forest Subdistrict, compartment 61 (FD59), 20.08.1995 – 2 exx., under the bark of black alder, leg. A. Lasoń, det. A. Melke, 8.05.2020 – 3 exx., mixed coniferous forest, lying spruce trunk infected with

Trichaptum abietinum (Pers. ex J.F. Gmel.) Ryvarden, leg. & det. A. Lasoń; Czarna Białostocka Forest District, ad Machnacz, compartment 29 (FE51), 7.07-31.08.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. T. Gazurek.

Distribution

A species with a range from the British Isles and northern Fennoscandia through all of Central Europe to the Pyrenees, central Italy, Bulgaria, and the countries of former Yugoslavia, also reported from Siberia (Burakowski et al. 1979). In Poland, it is relatively rare, but reported from most (16) zoogeographical regions (Burakowski et al. 1979; Tykarski 2006; Mazur et al. 2010).

Biology and ecology

Occurs under bark and in rotting wood, under carrion and fallen foliage, in fungi, and near oozing tree sap (Burakowski et al. 1979).

Notes

Considered a relict of primeval forests (Szujecki 1996; Pawłowski 2008).
A new species for Podlasie.

Phloeonomus minimus **(Erichson, 1839)** (Fig. 249)

Fig. 249. *Phloeonomus minimus* (Erichson, 1839) (Staphylinidae) (photo L. Borowiec)

Material examined (Fig. 250)

Data from the literature: reported from Budzisk Reserve (FE50) by Marczak et al. (2023a).

Distribution

A species found mainly in Central Europe, extending west to France and south to northern Italy and Romania. Very rare in Poland, reported from the Bieszczady Mountains, the Eastern Beskid Mountains, the Lublin Upland, Białowieża Forest, the Wielkopolska-Kujawy Lowland, and the Baltic Coast (Burakowski et al. 1979), in addition, it is vaguely mentioned from the Masurian Lake District (Smoleński 2002).

Biology and ecology

A beetle found under the sap-dripping, detached bark of deciduous trees, especially beech, poplar, birch, and alder, sometimes also under moss and in polypores on trees (Burakowski et al. 1979).

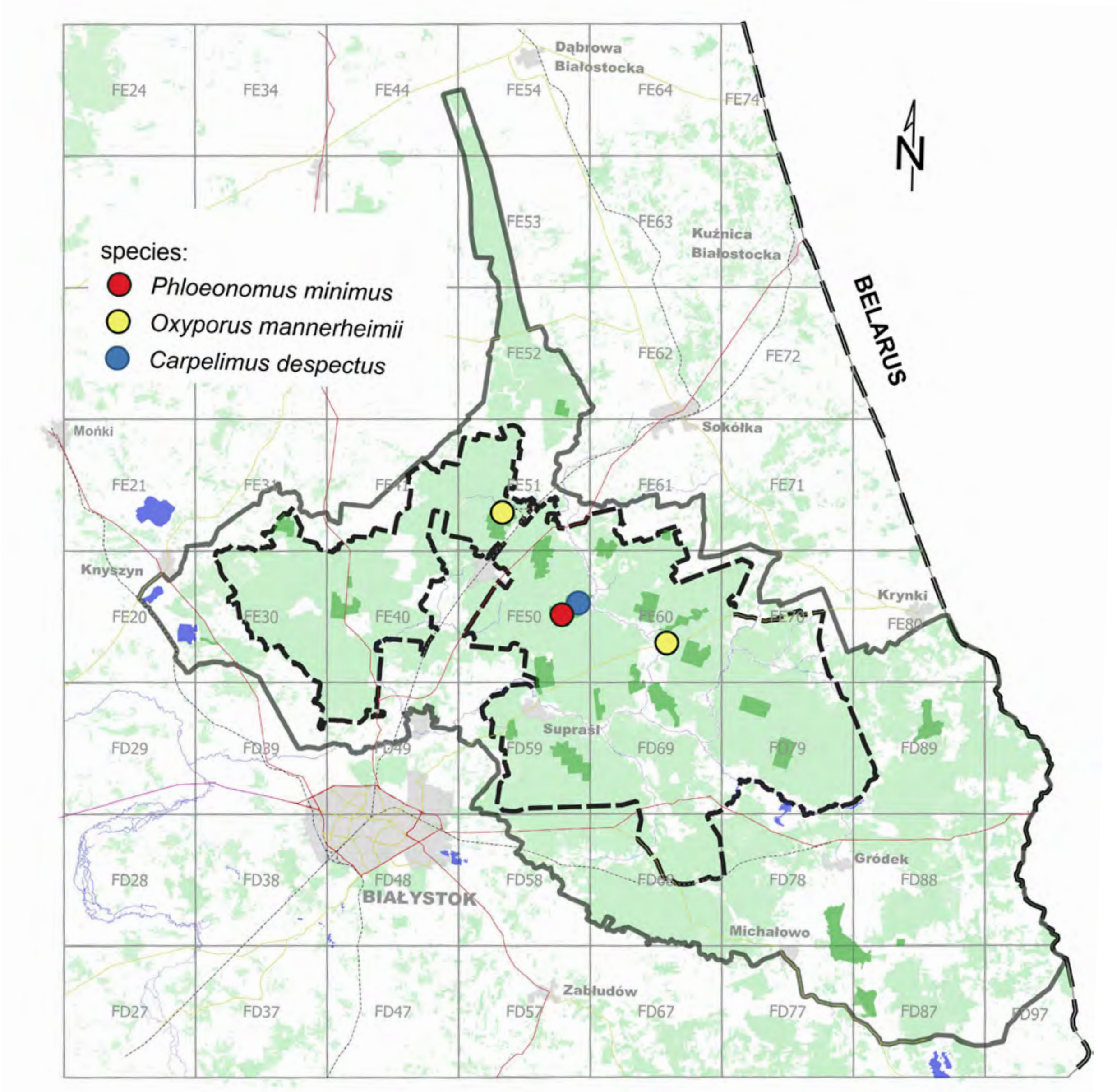


Fig. 250. Localities of *Phloeonomus minimus*, *Oxyporus mannerheimii*, and *Carpelimus despectus* (Staphylinidae) in Knyszyńska Forest

Oxyporus mannerheimii **Gyllenhal, 1827** (Fig. 251)

Material examined (Fig. 250)

Data from the literature: Supraśl Forest District, ad Kopna Góra (FE60), 19.08.1985 – 1 ex.; 24.07.1990 – 2 exx., in the fruiting bodies of *Leccinum scabrum* (Bull.) Gray); 22-25.07.1990 – 2 exx. in the fruiting bodies of *L. scabrum* and *Boletus edulis* Bull. (Kubisz & Szwałko 1991); Jesionowe Góry Reserve (FE51), 27 IX.2020 – 3 exx. in the fruiting bodies of *Pleurotus* (Fr.) P. Kumm. sp. (Marczak et al. 2021).

Distribution

A species with a range restricted to northeastern Europe, noted otherwise from Siberia (Burakowski et al. 1979). The western limit of the species' range runs through Poland. The KF is the second currently known locality in the country (Szujecki 1963; Rossa 2015).

Fig. 251. *Oxyporus mannerheimii* Gyllenhal, 1827 (Staphylinidae) (photo L. Borowiec)

Biology and ecology

Little is known about the ecological requirements of this species, but it is assumed that *Oxyporus mannerheimii* is a boreal forest species. It inhabits cool, shady places in deciduous and mixed forests. Probably all of its development takes place in cap fungi. The species has been reported to feed on various species of *Leccinum* Gray and *Boleticeae*, *Pleurotus pulmonarius* (Fr.) Quel., *Kuehneromyces mutabilis* (Schaeff.) Singer & A.H. Sm., and *Hypholoma fasciculare* (Huds.) P. Kumm. (Rossa 2015).

Notes

A strictly protected species, also included in Appendix II of the Habitats Directive. Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Carpelimus despectus (Baudi di Selve, 1870) (Fig. 252)

Material examined (Fig. 250)

Data from the literature: reported from Budzisk Reserve (FE50) by Marczak et al. (2023a).

Distribution

A species distributed almost throughout Europe except in some of its extreme northern and southern parts, also recorded from the Caucasus. It is very rare in Poland, reported from the Western Beskid Mountains, the Kraków-Wielun Upland, the Mazovian Lowland, and the Masurian Lake District (Burakowski et al. 1979). It has also been reported from a number of localities in the Podlasie and the Lublin Upland (Staniec 2000) as well as from the Bielinek Reserve in the Pomeranian Lake District (Kubisz & Melke 1995).

Biology and ecology

It lives in the tunnels it makes in clay and sandy soil, usually on steep riverbanks and the vertical walls of clay pits near brickyards (Burakowski et al. 1979). Staniec (2000) reports a capture under the muck along a riverbank and in the soil of gullies and loess escarpments.

Fig. 252. ***Carpelimus despectus*** **(Baudi di Selve, 1870) (Staphylinidae)** (photo R. Królik)

Tetartopeus rufonitidus (Reitter, 1909) (Fig. 253)

Fig. 253. ***Tetartopeus rufonitidus*** **(Reitter, 1909) (Staphylinidae)** (photo L. Borowiec)

Material examined (Fig. 254)

Data from the literature: Kopna Góra ad Supraśl (FE60), 17.08.1985 – 1 ex. (Kubisz & Szwałko 1991).

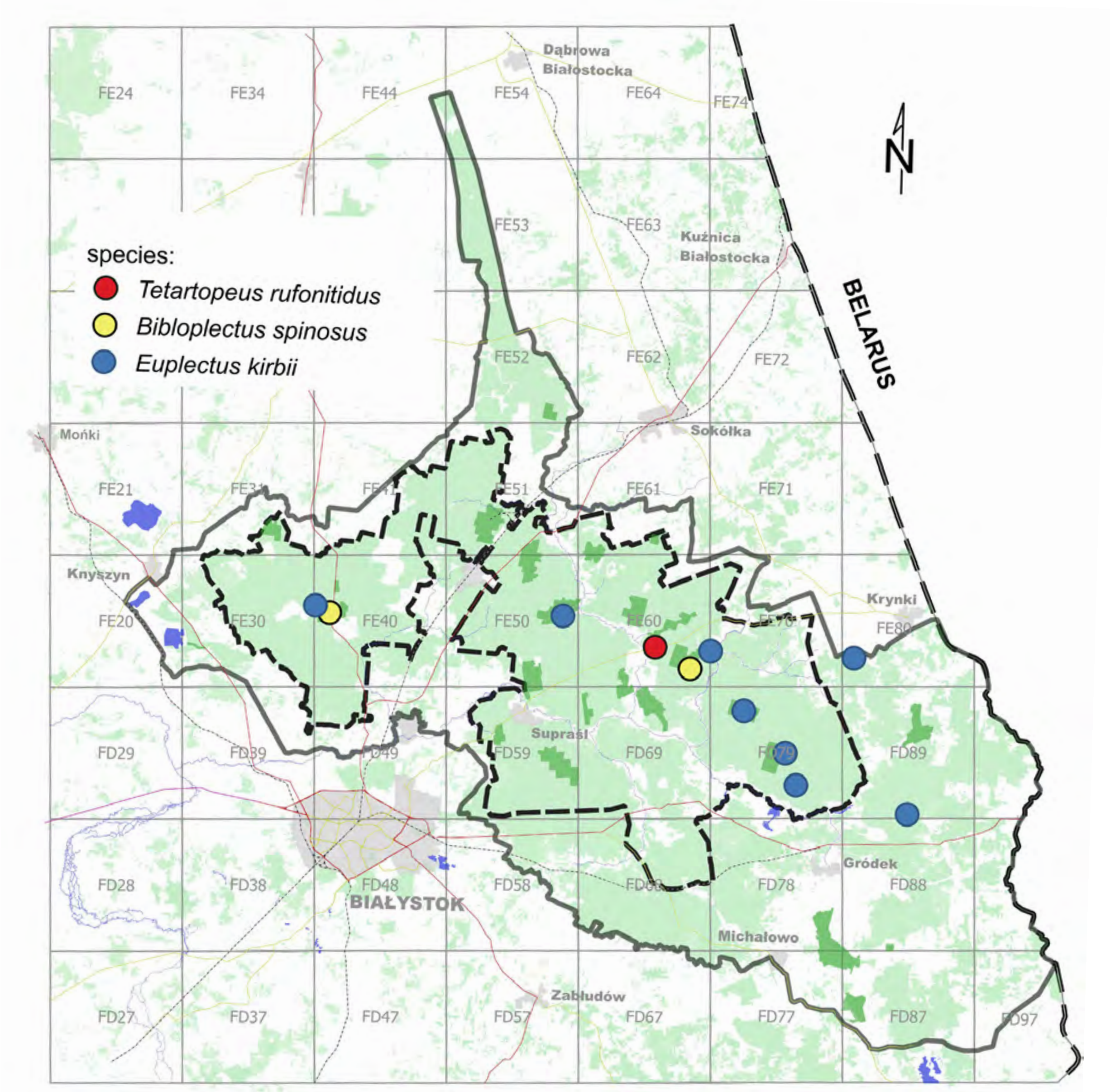


Fig. 254. Localities of *Tetartopeus rufonitidus*, *Bibloplectus spinosus*, and *Euplectus kirbii* (Staphylinidae) in Knyszyńska Forest

Distribution

Species so far reported from the southern parts of Sweden and Finland, northern parts of Central Europe and Romania. Very rare in Poland, reported from the Mazovian Lowland (Burakowski et al. 1979), two localities in Lower Silesia, Roztocze (Borowiec 1991b), and the Wielkopolska-Kujawy Lowland (Renner & Messutat 2007).

Biology and ecology

A beetle found among mosses, under rotting vegetation in wetlands, and on muddy lake shores near the waterline (Burakowski et al. 1979).

Bibloplectus spinosus Raffray, 1914 (Fig. 255)

Fig. 255. *Bibloplectus spinosus* Raffray, 1914 (Staphylinidae) (photo R. Królik)

Material examined (Fig. 254)

Original data: Knyszyn Forest District, Krzemianka Reserve (FE40), 22.08.2020 – 1 ex., mixed forest, by sifting, leg. A. Lasoń, det. A. Mazur; Supraśl Forest District, Stare Biele Reserve (FE60), 1.06.2021 – 1 ex., mixed coniferous forest, beating sheet, leg. A. Lasoń, det. A. Mazur.

Distribution

The species is reported from a number of European countries: Norway, Finland, Sweden, Denmark, Estonia, Latvia, Belarus, Slovakia, Romania, Austria, Switzerland, Germany, France, Ireland, Great Britain, Spain, Slovenia, Croatia, Bosnia and Herzegovina, Greece, and from the European and Asian part of Turkey (Löbl & Löbl 2015). Extremely rare in Poland, so far known from only one locality in the Masurian Lake District (Gawroński & Oleksa 2005).

Biology and ecology

Like other species of the genus *Bibloplectus* Reitter, it is caught in swampy areas and near rivers (Besuchet 1974). In Poland, it was caught in flight at dusk (Gawroński & Oleksa 2005).

Notes

A new species for Podlasie.

Euplectus kirbii Denny, 1825 (Fig. 256)

Fig. 256. *Euplectus kirbii* Denny, 1825 (Staphylinidae) (photo L. Borowiec)

Material examined (Fig. 254)

Original data: Krynki Forest District, Góra Pieszczana Reserve (FD79), 17.06.2016 – 2 exx., 27.07.2016 – 1 ex., IBL-2 trap, leg. & det. K. Komosiński; Krynki Forest District, Radunin Forest Subdistrict, compartment 61 (FD79), 2008 – 1 ex., mixed moist coniferous forest, leg. R. Plewa, det. K. Komosiński; Waliły Forest District, ad Skroblaki, compartment 227 (FD89), 7.07-31.08.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. T. Gazurek; Waliły Forest District, Królowe Stojło Forest Subdistrict, compartment 148 (FD79), 2008 – 2 exx., moist forest, leg. R. Plewa, det. K. Komosiński; Krynki Forest District, ad Ozierskie, compartment 155 (FE80), 3.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. T. Gazurek; Knyszyn Forest District, ad Rybniki, compartment 194 (FE40), 2008 – 1 ex., mixed moist forest, leg. R. Plewa, det. K. Komosiński; Supraśl Forest District, Kopna Góra Forest Subdistrict, compartment 231 (FE60), 2008 – 1 ex., mixed moist coniferous forest, leg. R. Plewa, det. K. Komosiński.

Data from the literature: reported from Budzisk Reserve (Marczak et al. 2023a).

Distribution

The species used to be quite rare, recently found increasingly more often, in recent years reported from the planned Turnicki National Park (Buchholz & Melke 2018), Białowieża Forest (Gutowski et al. 2020b), Kampinos Forest (Marczak 2020), the Świętokrzyskie Mountains (Buchholz et al. 2021), Borecka Forest (Komosiński et al. 2021), and the Pisz Forest (Gutowski et al. 2022a).

Biology and ecology

Its biology is poorly understood, the beetle is found most often in the rotten wood of deciduous trees, as well as in the anthills of *Formica rufa* L. (Staniec 2003).

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

A new species for Podlasie.

Plectophloeus nitidus (Fairmaire, 1858) (Fig. 257)

Fig. 257. *Plectophloeus nitidus* (Fairmaire, 1858) (Staphylinidae) (photo L. Borowiec)

Material examined (Fig. 258)

Original data: Góra Pieszczana Reserve (FD79), 27.07.2016 – 10 exx., IBL-2 trap, leg. & det. K. Komosiński; Dojlidy Forest District, ad Katrynka, compartment 137 (FE40), 7.07-31.08.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. T. Gazurek.

Distribution

A widespread species in the western, central, and southeastern parts of Europe, also recorded from the British Isles, Denmark, and one southern province of Sweden (Burakowski et al. 1978). The beetle is rare in Poland, reported from Upper Silesia (Burakowski et al. 1978), Roztocze (Borowiec 1991a), Białowieża Forest (Borowiec et al. 1992), the Świętokrzyskie Mountains (Rutkiewicz 1996; Buchholz et al. 2021), the Masurian Lake District (Gutowski et al. 2010b), and the Mazovian Lowland (Marczak 2020).

Biology and ecology

Caught in the rotting wood of beech trees, in the reddish-brown rotten wood of decaying oaks, especially those colonized by the ant *Lasius brunneus* L. (Burakowski et al. 1978).

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

A new species for Podlasie.

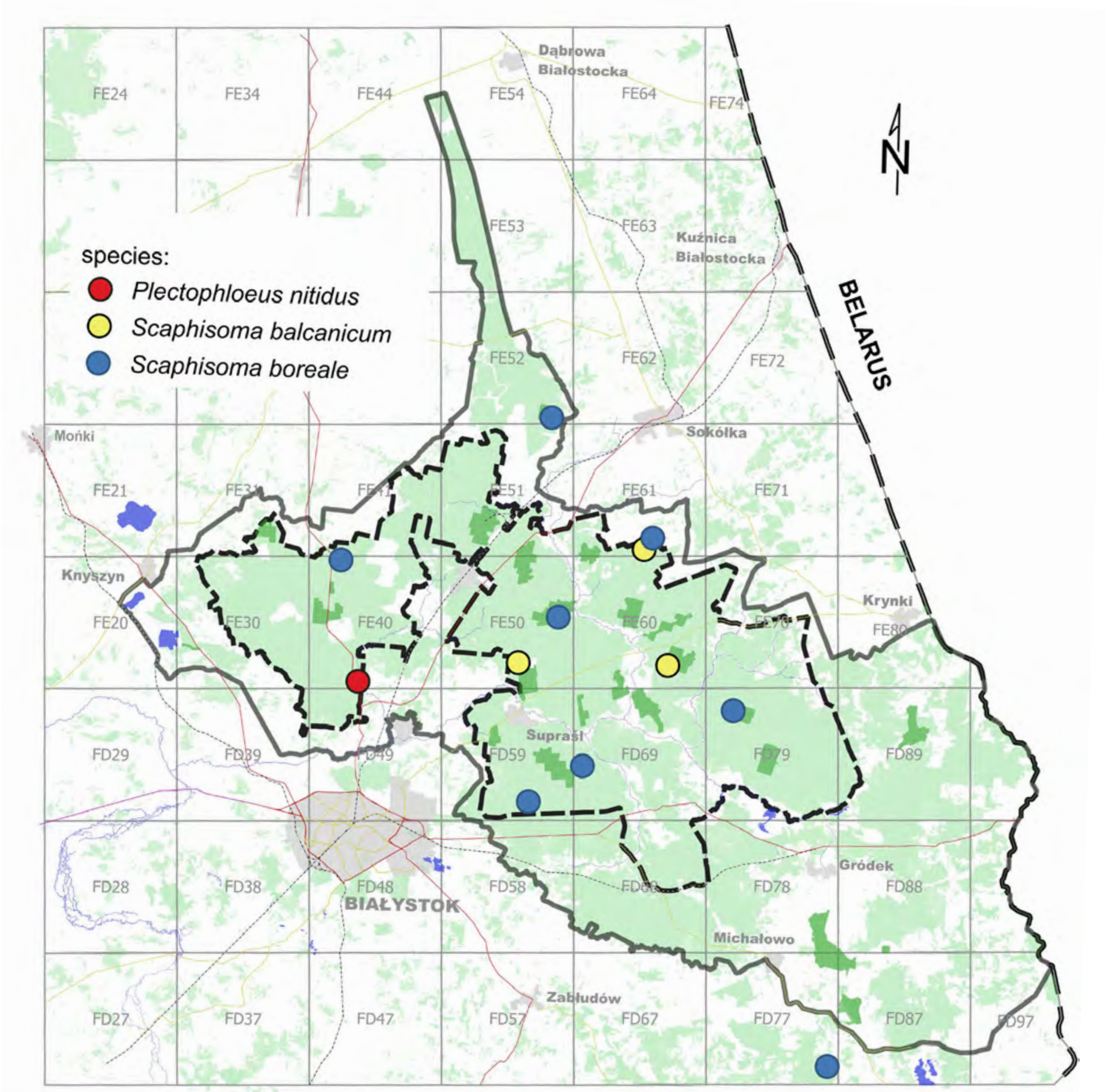


Fig. 258. Localities of *Plectophloeus nitidus*, *Scaphisoma balcanicum*, and *S. boreale* (Staphylinidae) in Knyszyńska Forest

Scaphisoma balcanicum (Tamanini, 1954) (Fig. 259)

Fig. 259. ***Scaphisoma balcanicum*** **(Tamanini, 1954) (Staphylinidae)** (photo L. Borowiec)

Material examined (Fig. 258)

Original data: Supraśl Forest District, Stara Dębina Reserve (FE61), 15.05.2020 – 1 ex., oak-hornbeam forest, under bark, leg. & det. A. Lasoń; Stare Biele Reserve (FE60), 1.08.2022 – 1 ex., mixed coniferous forest, by sifting plant litter, leg. & det. A. Lasoń; ad Jałówka (FE50), 20.05.2023 – 1 ex., on a lying log, leg. & det. A. Lasoń.

Distribution

A species distributed mainly in Central Europe, reaching south to Italy, the Balkan Peninsula, and Turkey, also recorded from Sweden (Burakowski et al. 1978). Very rare in Poland, reported from the Eastern Beskid, Lower and Upper Silesia, the Kraków-Wieluń Upland (Burakowski et al. 1978), the Świętokrzyskie Mountains (Borowski 2007a, Mokrzycki 2007), Białowieża Forest (Borowski 2001; Byk 2001a; Byk et al. 2006), the Masurian Lake District (Komosiński et al. 2009), and the Kampinos Forest (Marczak 2020).

Biology and ecology

A mycetobiontic species, caught under fungus-infected bark (e.g., beech, birch), in rotten oak wood (Koch 1989a).

Notes

A new species for Podlasie.

***Scaphisoma boreale* (Lundblad, 1952)** (Fig. 260)

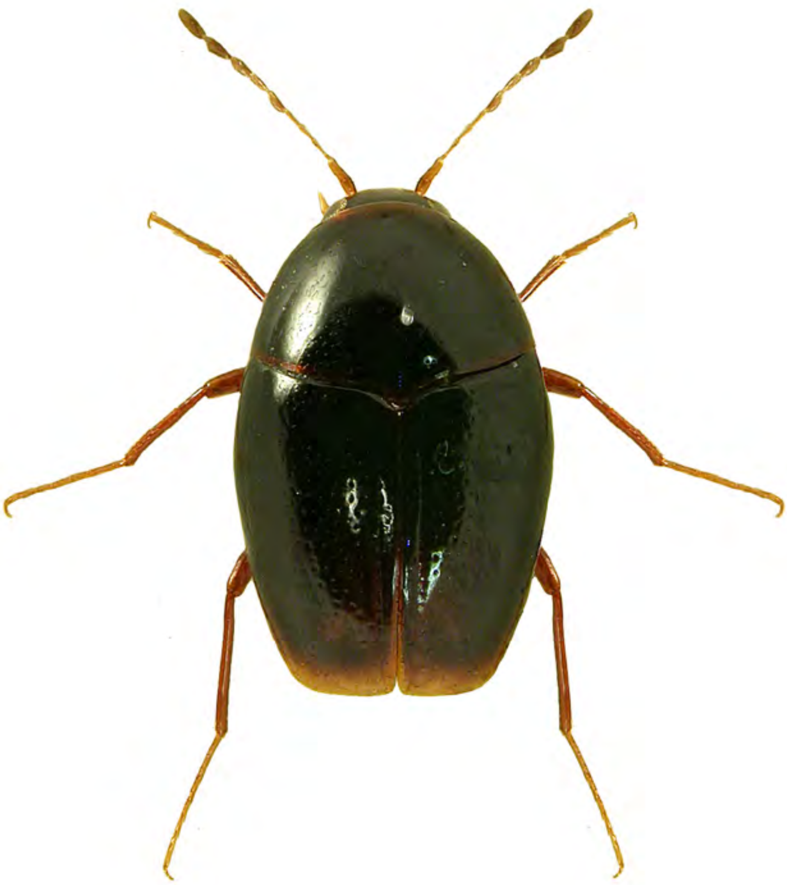


Fig. 260. *Scaphisoma boreale* (Lundblad, 1952) (Staphylinidae) (photo L. Borowiec)

Material examined (Fig. 258)

Original data: Krynki Forest District, Góra Pieszczana Reserve (FD79), 17.06.2016 – 1 ex., 27.07.2016 – 1 ex., IBL-2 trap, leg. & det. K. Komosiński; Supraśl Forest District, Stara Dębina Reserve, compartment 19 (FE61), 15.05.2016 – 2 exx., oak-hornbeam forest, polypores on *Carpinus betulus* L., leg. & det. A. Lasoń; Czarna Białostocka Forest District, Starodrzew Szyndzielski Reserve, compartment 207 (FE52), 7.07-31.08.2008 – 2 exx., IBL-2 trap, leg. R. Plewa, det. T. Gazurek; Krzemienne Góry Reserve, compartment 207 (FD69), 16.V.2020 – 1 ex., IBL-2 trap, leg. M.A. Mazur, det. K. Komosiński; Dojlidy Forest District, Krasny Las Forest Subdistrict, compartment 61 (FD59), 8.05.2020 – 11 exx., mixed coniferous forest, polypores on *Quercus* sp., leg. & det. A. Lasoń; Knyszyn Forest District, ad Przewalanka, compartment 155 (FE40), 3.06-13.07.2008 – 2 exx., IBL-2 trap, leg. R. Plewa, det. T. Gazurek; Żednia Forest District, ad Cieliczanka, compartment 78 (FD69), 7.07-31.08.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. T. Gazurek; Żednia Forest District, ad Krugły Lasek, compartment 164 (FD77), 7.07-31.08.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. T. Gazurek.

Distribution

Outside of Poland, the species has been reported so far from 20 countries in Europe, as well as Iran and Siberia (Löbl & Löbl 2015). Quite rare, but widely distributed in Poland, recently reported from Suwałki Landscape Park (Gutowski et al. 2020a), the Świętokrzyskie Mountains (Buchholz et al. 2021), and the Pisz Forest (Gutowski et al. 2022a).

Biology and ecology

Caught on arboreal fungi (Burakowski et al. 1978).

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). A new species for Podlasie.

Scaphisoma inopinatum (Löbl, 1967) (Fig. 261)

Fig. 261. *Scaphisoma inopinatum* (Löbl, 1967) (Staphylinidae) (photo L. Borowiec)

Material examined (Fig. 262)

Original data: Krynki Forest District, ad Ozierskie, compartment 156 (FE80), 22.04-6.06.2008 – 1 ex., moist forest, IBL-2 trap, leg. R. Plewa, det. A. Lasoń; Supraśl Forest District, Kopna Góra Forest Subdistrict, compartment 231 (FE60), 22.04- 6.06.2008 – 4 exx., mixed moist coniferous forest, IBL-2 trap, leg. R. Plewa, det. A. Lasoń.

Distribution

A species known from most of Europe, additionally reported from Siberia and Mongolia. In Poland, it is recorded from six zoogeographical regions: Lower Silesia, the Wielkopolska-Kujawy Lowland (Burakowski et al. 1978), Białowieża Forest (Borowski 2001; Byk et al. 2006), the Pomeranian Lake District (Borowski et al. 2005), the Świętokrzyskie Mountains (Borowski 2007a; Buchholz et al. 2021), and Kampinos Forest (Marczak 2020).

Biology and ecology

A mycetophilic species, caught in deciduous forests (Koch 1989a).

Notes

The species is very similar to the common *Scaphisoma agaricinum* (L.), only males can be determined reliably based on the aedeagus structure.

A new species for Podlasie.

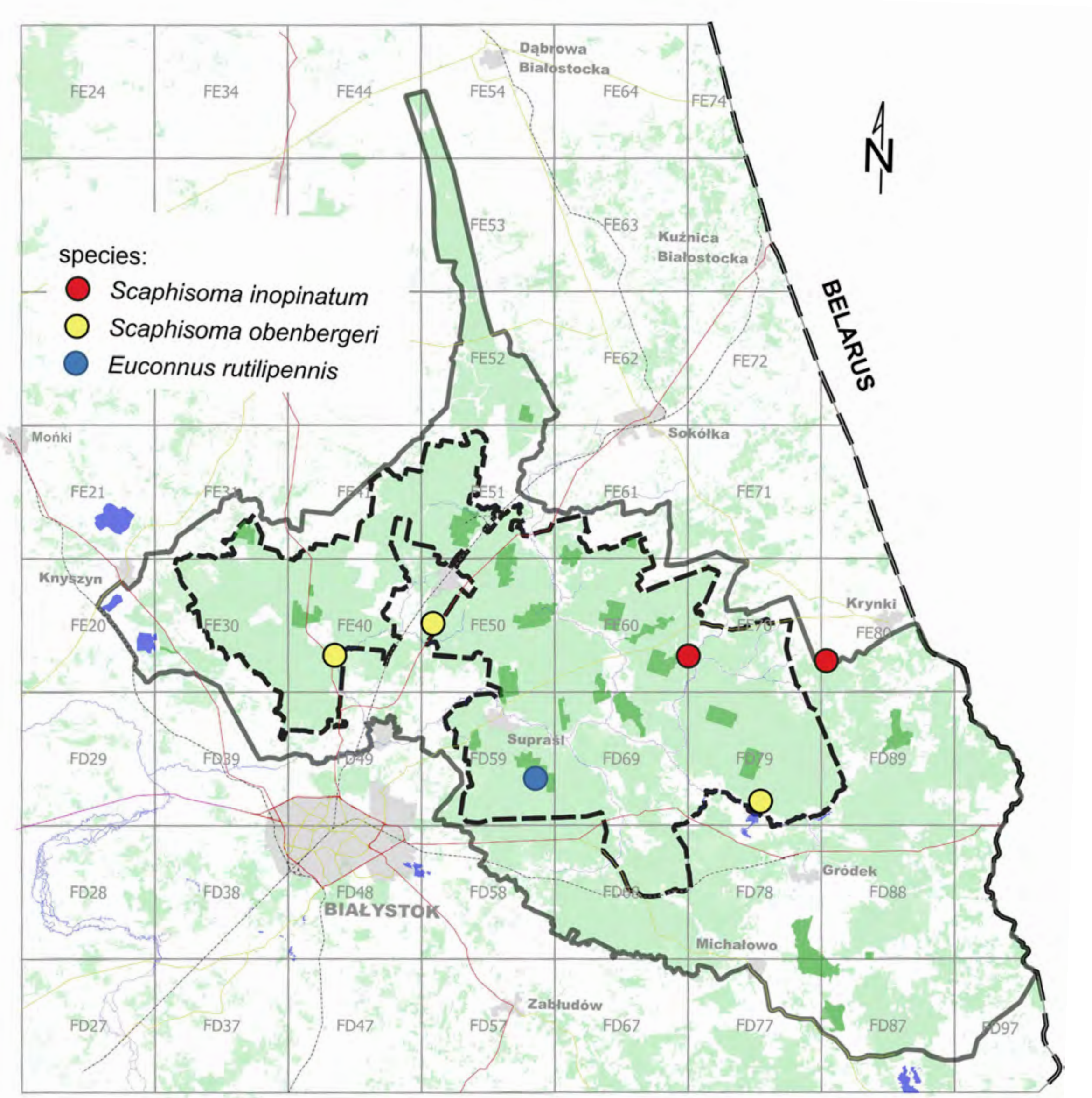


Fig. 262. Localities of *Scaphisoma inopinatum*, *S. obenbergeri*, and *Euconnus rutilipennis* (Staphylinidae) in Knyszyńska Forest

Scaphisoma obenbergeri Löbl, 1963 (Fig. 263)

Material examined (Fig. 262)

Original data: Waliły Forest District, ad Królowe Stojło, compartment 178 (FD79), 7.06-13.07.2008 – 4 exx., IBL-2 trap, leg. R. Plewa, det. T. Gazurek; Czarna Białostocka Forest District, ad Złotoria, compartment 164 (FE50), 3.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. T. Gazurek; Dojlidy Forest District, ad Mostek, compartment 75 (FE40), 8.07-31.08.2008 – 2 exx., IBL-2 trap, leg. R. Plewa, det. T. Gazurek.

Distribution

A very rare and sporadically found species, confirmed in a small number of localities in the central and southeastern parts of Europe and the Caucasus (Burakowski et al. 1978). In Poland, it has only been reported from isolated localities in the Western and Eastern Beskids (Burakowski et al. 1978), Białowieża Forest (Borowski 2001; Byk 2001b; Byk et al. 2006), and Świętokrzyskie Mountains (Borowski 2007a).

Fig. 263. ***Scaphisoma obenbergeri*** **Löbl, 1963 (Staphylinidae)** (photo SNSB, Zoologische Staatssammlung München)

Biology and ecology

Forest species, mycetophile, caught in rotten stumps (Koch 1989a).

Notes

A new species for Podlasie.

Euconnus rutilipennis **(Müller et Kunze, 1822)** (Fig. 264)

Fig. 264. ***Euconnus rutilipennis*** **(Müller et Kunze, 1822) (Staphylinidae)** (photo A. Lasoń)

Material examined (Fig. 262)

Original data: Las Cieliczański Reserve, compartment 99 (FD59), 21.05.2020 – 1 ex., in a peated depression, leg. & det. C. Greń.

Distribution

A species known mainly from Central Europe, also recorded from a small number of localities in southern Sweden and Finland, France, Italy, Transylvania, and the Balkan Peninsula (Burakowski et al. 1978). Rarely found in Poland, with most data based on records from more than a century ago; reported from the Eastern and the Western Beskid, Lower and Upper Silesia, the Trzebnickie Hills, the Kraków-Wieluń Upland, the Mazovian Lowland, the Wielkopolska-Kujawy Lowland, and the Masurian Lake District (Burakowski et al. 1978).

Biology and ecology

It occurs in peat bogs, swampy and moist places, on the edges of ponds and puddles, in humus and under moist mosses, especially species of the genus *Sphagnum* Ehrhardt (Burakowski et al. 1978).

Notes

Listed as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

A new species for Podlasie.

***Neuraphes plicicollis* (Reitter, 1880)** (Fig. 265)

Fig. 265. *Neuraphes plicicollis* (Reitter, 1880) (Staphylinidae) (photo L. Borowiec)

Material examined (Fig. 266)

Original data: Knyszyn Forest District, ad Królowe Stojło, compartment 73 (FE40), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. T. Gazurek; Supraśl Forest District, Stare Biele Reserve (FE60), 1.07.2022 – 1 ex., leg. A. Lasoń, det. A. Mazur; Międzyrzecze Reserve (FE60), 30.07.2022 – 1 ex., leg. A. Lasoń, det. A. Mazur.

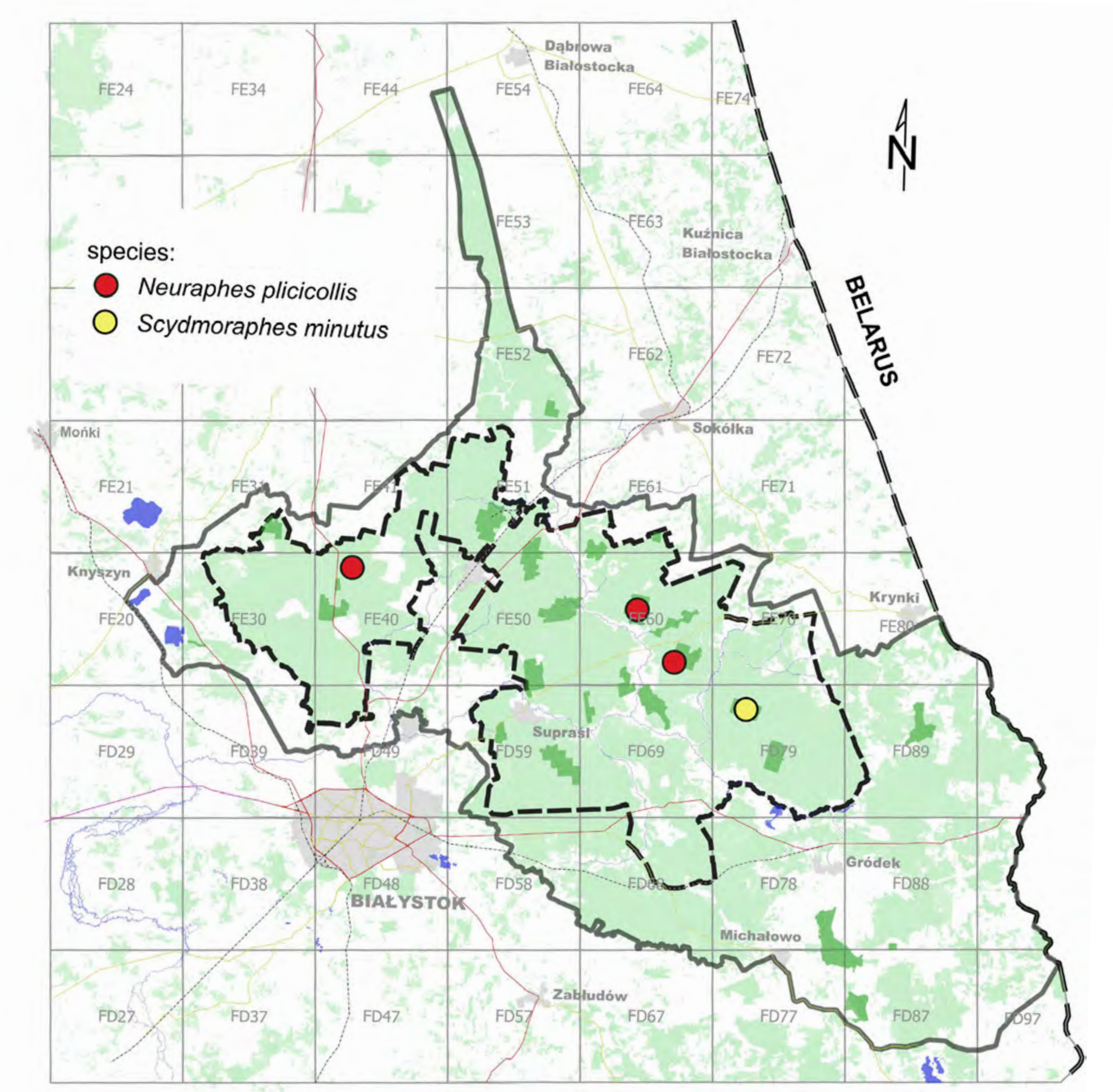


Fig. 266. Localities of *Neuraphes plicicollis* and *Scydmoraphes minutus* (Staphylinidae) in Knyszyńska Forest

Distribution

The species has been reported from southern Fennoscandia, Denmark, Germany, Austria, Czech Republic, Moravia, and the Balkan Peninsula (Burakowski et al. 2000). In Poland, it has been found relatively recently, so far known from the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest (Burakowski et al. 2000), the Masurian Lake District (Gawroński & Oleksa 2009), the Eastern Beskid Mountains, the Świętokrzyskie Mountains, and the Kraków-Wieluń Upland (Jałoszyński et al. 2015).

Biology and ecology

It is found in coniferous and deciduous forests in moist habitats under decaying leaves, in forest litter and fungus-infected wood (Burakowski et al. 2000).

Notes

A new species for Podlasie.

Scydmoraphes minutus (Chaudoir, 1845) (Fig. 267)

Fig. 267. ***Scydmoraphes minutus*** **(Chaudoir, 1845) (Staphylinidae)** (photo L. Borowiec)

Material examined (Fig. 266)

Original data: Góra Pieszczana Reserve (FD79), 27.07.2016 – 2 exx., IBL-2 trap, leg. & det. K. Komosiński.

Distribution

A species found in Northern and Central Europe, reaching west to France and south to northeastern Italy, it has also been recorded from the European part of Russia. It is very rare in Poland, reported from the Eastern Beskid, Lower and Upper Silesia, the Kraków-Wieluń Upland, Roztocze (Burakowski et al. 1978), Białowieża Forest (Borowiec et al. 1992), the Wielkopolska-Kujawy Lowland (Jałoszyński 2003), and the Masurian Lake District (Gawroński & Oleksa 2009).

Biology and ecology

A beetle caught in the rotten wood of old beech and oak trees, under rotting leaves, among mosses of the genus *Sphagnum* Ehrhardt, and in the nests of the ant *Formica rufa* L. (Burakowski et al. 1978).

Notes

A new species for Podlasie.

Quedius invreae **Gridelli, 1924** (Fig. 268)

Fig. 268. ***Quedius invreae*** **Gridelli, 1924 (Staphylinidae)** (photo U. Schmidt)

Material examined (Fig. 269)

Data from the literature: reported from Budzisk Reserve (FE50) by Marczak et al. (2023a).

Distribution

A species inhabiting mainly Central Europe, reaching as far south as Italy, as far north as England and the southern part of Scandinavia (Burakowski et al. 1980). In Poland, it has been reported from a small number of localities in the Western Beskid (Burakowski et al. 1980), the Western Sudetes, the Wielkopolska-Kujawy Lowland (Nowosad 1990), the Kraków-Wieluń Upland (Słabikowski 2006), Białowieża Forest (Smoleński 2006), and the Świętokrzyskie Mountains (Mokrzycki 2007).

Biology and ecology

Quedius invreae is caught mostly in underground nests, especially of wasps and bumblebees, less often of mice and moles. It is also found in tree hollows inhabited by nesting birds, as well as in polypores and rotting wood, rarely in the nests of ants under stones (Burakowski et al. 1980).

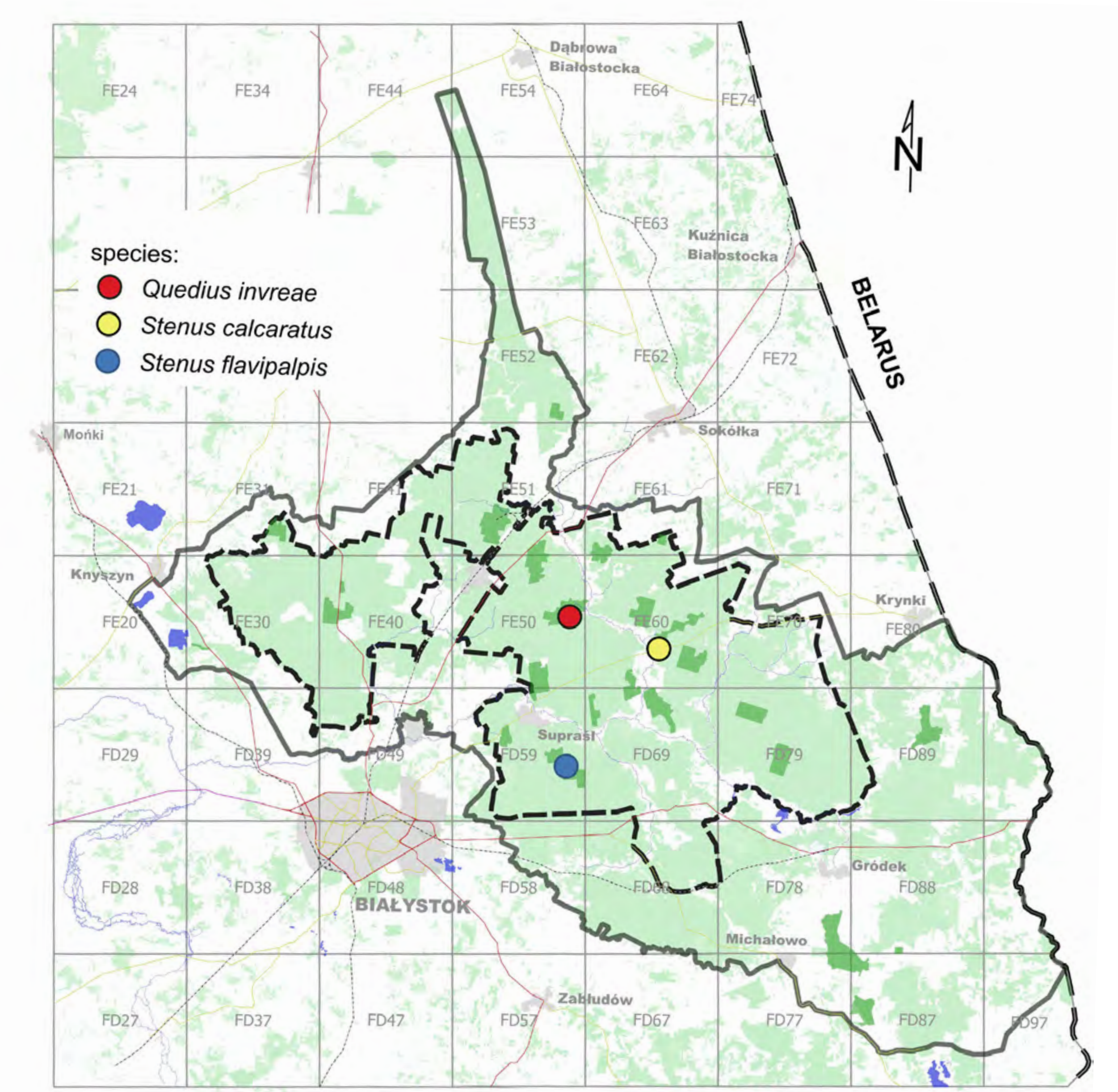


Fig. 269. Localities of *Quedius invreae*, *Stenus calcaratus*, and *S. flavipalpis* (Staphylinidae) in Knyszyńska Forest

Stenus calcaratus Scriba, 1864 (Fig. 270)

Material examined (Fig. 269)

Data from the literature: Kopna Góra (FE60), August 1985 (Kubisz & Pawłowski 1995).

Distribution

A species known from the northern part of Central Europe, northeastern Europe, Siberia, and Mongolia (Burakowski et al. 1979). It is very rare in Poland, reported mainly from the northern part of the country: the Mazovian Lowland, the Wielkopolska-Kujawy Lowland, the Baltic Coast (Burakowski et al. 1979), the Lublin Upland (Staniec 1992), and the Pomeranian Lake District (Ruta & Melke 2002; Ruta 2009).

Biology and ecology

The beetle is found along the moist banks of water bodies among mosses, under fallen foliage and inflows (Burakowski et al. 1979).

Fig. 270. *Stenus calcaratus* Scriba, 1864 (Staphylinidae) (photo L. Borowiec)

Stenus flavipalpis Thomson, 1860 (Fig. 271)

Fig. 271. *Stenus flavipalpis* Thomson, 1860 (Staphylinidae) (photo L. Borowiec)

Material examined (Fig. 269)

Original data: Las Cieliczański Reserve (FD59), 7.08.2021 – 4 exx., entomological sieve, leg. & det. T. Gazurek.

Distribution

A species found in Central and Northern Europe (so far not reported from Britain), in Fennoscandia reaching the extreme northern provinces, also reported from the Caucasus and the area around the Caspian Sea (Burakowski et al. 1979). In Poland, it is known from a small number of scattered localities, reported from the Western Beskid, Lower Silesia, the Kraków-Wieluń Upland, Roztocze, Białowieża Forest, the Masurian Lake District, and the Baltic Coast (Burakowski et al. 1979), more recently found in the Bieszczady Mountains (Szujecki 1996), the Pomeranian Lake District (Gutowski & Ruta 2004), Upper Silesia (Gutowski et al. 2006), the Tatra Mountains (Tykarski 2006), the Mazovian Lowland (Mazur et al. 2010), the Małopolska Upland (Jaskuła et al. 2010), and the Masurian Lake District (Gutowski et al. 2020a).

Biology and ecology

It is found in wetlands, peat bogs, swampy forests, and along the banks of water bodies. Caught under inflows, fallen foliage, and among mosses (Burakowski et al. 1979).

Notes

Listed as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

A new species for Podlasie.

Dermestidae

***Ctesias serra* (Fabricius, 1792)** (Fig. 272)

Fig. 272. *Ctesias serra* (Fabricius, 1792) (Dermestidae) (photo A. Lasoń)

Material examined (Fig. 273)

Original data: Czarna Białostocka Forest District, compartment 198 (53.33298, 23.20813, FE41), 22.04-9.06.2008 – 1 ex., to IBL-2 trap, mixed moist forest, leg. R. Plewa, det. A. Lasoń; Czarna Białostocka Forest District, compartment 85 (FE50), 16.07.2016 – 2 exx., leg. I. Sztabkowska, det. T. Mokrzycki; Czarna Białostocka Forest District, compartment 110 (FE50), 16.07.2016 – 2 exx., leg. I. Sztabkowska, det. T. Mokrzycki.

Data from the literature: Dojlidy Forest District, ad Krasny Las (FD59), 6.06.1996 – 1 ex. (Ruta et al. 2006); also reported by Marczak et al. (2023c) from the Budzisk (FE50) and Jesionowe Góry (FE51) reserves.

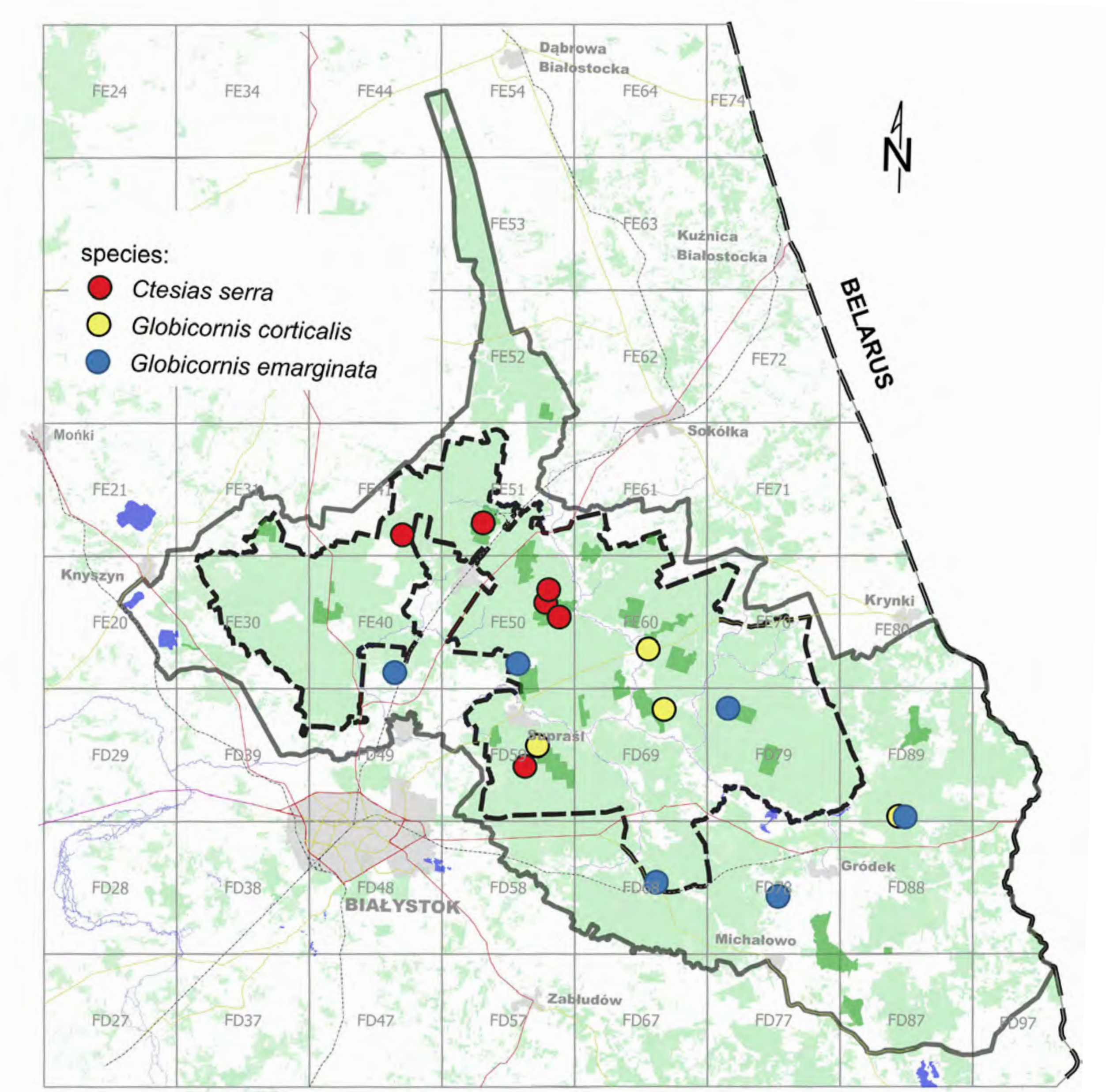


Fig. 273. Localities of *Ctesias serra*, *Globicornis corticalis*, and *G. emarginata* (Dermestidae) in Knyszyńska Forest

Distribution

A species distributed in Europe from the Mediterranean countries to England and the southern provinces of Fennoscandia. To the east it is reported from the European part of Russia and the Caucasus. In Poland, although not yet known from all zoogeographical regions, it probably occurs throughout the area except in the higher mountainous parts. Older reports dating back to the last century were compiled by Mroczkowski (1955, 1975) and Burakowski et al. (1986a), while after 2000 it was reported from the Pomeranian Lake District (Ruta et al. 2011), the Masurian Lake District (Borowski et al. 2004), Podlasie (Ruta et al. 2006), Białowieża Forest (Byk et al. 2006), the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, and Lower Silesia (Ruta et al. 2011), the Małopolska Upland (Miłkowski & Ruta 2008), and the Świętokrzyskie Mountains (Byk 2007). The most recent report is from the planned Turnicki National Park (Buchholz & Melke 2018).

Biology and ecology

Found mostly on or near spider webs, mainly in the hollows of old deciduous trees, under detached bark and in the nests of Aculeata, in the dry nooks of attics in houses, in outbuildings. Larvae feed on the insect remains left after being consumed by spiders, on the insects Aculeata have collected in their nests, and the exuviae of their larvae. Adults are caught most often from May to mid-July (Burakowski et al. 1986a).

Globicornis corticalis (Eichhoff, 1863) (Fig. 274)

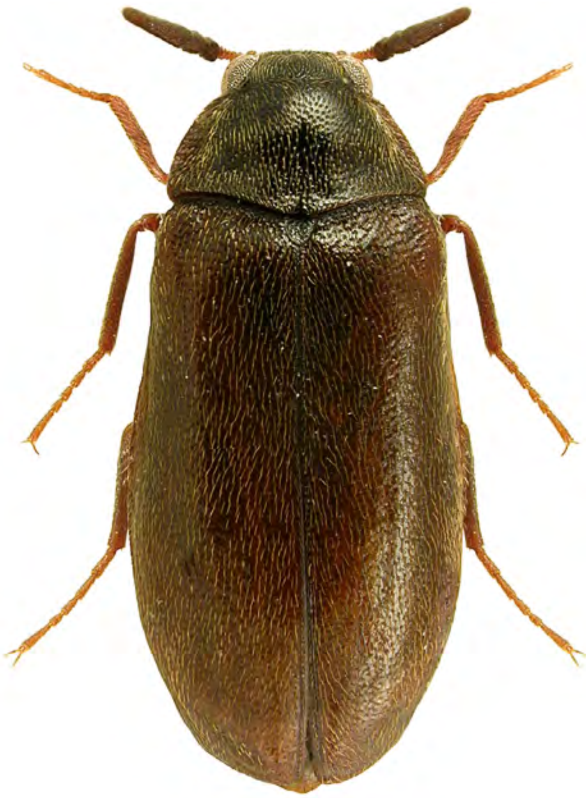


Fig. 274. *Globicornis corticalis* (Eichhoff, 1863) (Dermestidae) (photo L. Borowiec)

Material examined (Fig. 273)

Original data: Waliły Forest District, ad Skroblaki, compartment 227 (53.13008, 23.76402, FD89), 22.04-09.06.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys; Żednia Forest District, Las Cieliczański Reserve (FD59), 13.06.2022 – 1 ex., leg. & det. A. Lasoń; Supraśl Forest District, ad Borki, compartment 311, (53.2090, 23.4970, FD69), 20.05.2023 – 1 ex., leg. & det. C. Greń.

Distribution

A widely distributed species in Europe, reported from Spain to Turkey in the south, to Scandinavian countries in the north. In Asia, it is recorded only from Kazakhstan. In Poland, the beetle is rarely and sporadically found, reported from scattered localities in different parts of the country. Most data on the occurrence of this species in Poland date back to the last century. These data were compiled by Mroczkowski (1955, 1975) and Burakowski et al. (1986a). New information is relatively scarce and comes from the Pomeranian Lake District (Borowski et al. 2005; Ruta et al. 2006), the Wielkopolska-Kujawy Lowland (Ruta et al. 2006), and more recently from the Pisz Forest (Gutowski et al. 2022a).

Biology and ecology

Adults are found in the rotten wood of old trees, under detached bark, and on the flowers of a variety of plants, where they feed on nectar and pollen, and sometimes copulate. Larvae feed on dead insects. Pupation takes place in late summer or early autumn, and the hatched imago overwinters without leaving the final larval exuvia (Burakowski et al. 1986a).

Globicornis emarginata **(Gyllenhal, 1808)** (Fig. 275)

Fig. 275. ***Globicornis emarginata*** **(Gyllenhal, 1808) (Dermestidae)** (photo A. Lasoń)

Material examined (Fig. 273)

Original data: Krynki Forest District, Góra Pieszczana Reserve, compartment 455 (53.208216, 23.569243, FD79), 22.04-09.06.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys; Waliły Forest District, ad Skroblaki, compartment 227 (53.130080, 23.76402, FD89), 22.04-09.06.2008 – 2 exx., leg. R. Plewa, det. H. Szołtys; ad Jałówka (FE50), 20.05.2023 – 1 ex., in a rotten log, leg. & det. M. Miłkowski.

Data from the literature: it was also reported from the villages of Czarny Blok (FE40) and Żednia (FD68) (Burakowski et al. 1986a), and from the vicinity of Michałowo-Gródek (FD78) (Mroczkowski 1975).

Distribution

A species spread almost throughout Europe, crossing the Arctic Circle in Fennoscandia, also reported from the Caucasus and Western Siberia. Found everywhere rarely and sporadically. In Poland, it probably occurs throughout the country in the lowlands and lower mountain locations, but it has not yet been reported from some zoogeographical regions. Most of the data on the occurrence of this species in Poland refers to the last century. These data were collected by Burakowski et al. (1986a). New occurrence data refer, among others, to the Pomeranian Lake District, the Wielkopolska-Kujawy Lowland (Ruta et al. 2011), Podlasie, Upper Silesia (Ruta et al. 2006), the Mazovian Lowland (Miłkowski & Ruta 2008), the Świętokrzyskie Mountains, and the Małopolska Upland (Byk 2007).

Biology and ecology

Adults are usually found from April to June in the rotten wood of old trees, under detached bark, near sap oozing from tree trunks. They have also been found in winter under tree bark. Larvae are found mainly under the bark, where they feed on insect and spider remains and larval exuviae. Both the adult forms and larvae overwinter. Pupation occurs in late summer. Its full developmental cycle probably takes one year (Burakowski et al. 1986a).

Bostrichidae

***Bostrichus capucinus* (Linnaeus, 1758)** (Fig. 276)

Fig. 276. *Bostrichus capucinus* (Linnaeus, 1758) (Bostrichidae) (photo M. Sowiński)

Material examined (Fig. 277)

Original data: Dojlidy Forest District, Krasny Las Forest Subdistrict, compartment 61 (FD59), 18.06.2020 – 1 ex., in flight, leg. & det. A. Lasoń; Krzyżawola (FD59), 13.05.2020 – 1 ex., bark beetle trap, leg. & det. M.A. Mazur; Chomontowszczyzna Reserve (FD79), 16.04-6.05.2021 – 1 ex., leg. & det. K. Sućko; Królowy Most (FD69), 4.06.2022 – 14 exx., leg. & det. J.M. Gutowski; Supraśl Forest District, ad Borki, compartment 311 (FD69), 20.05.2023 – 1 ex., leg. & det. C. Greń.

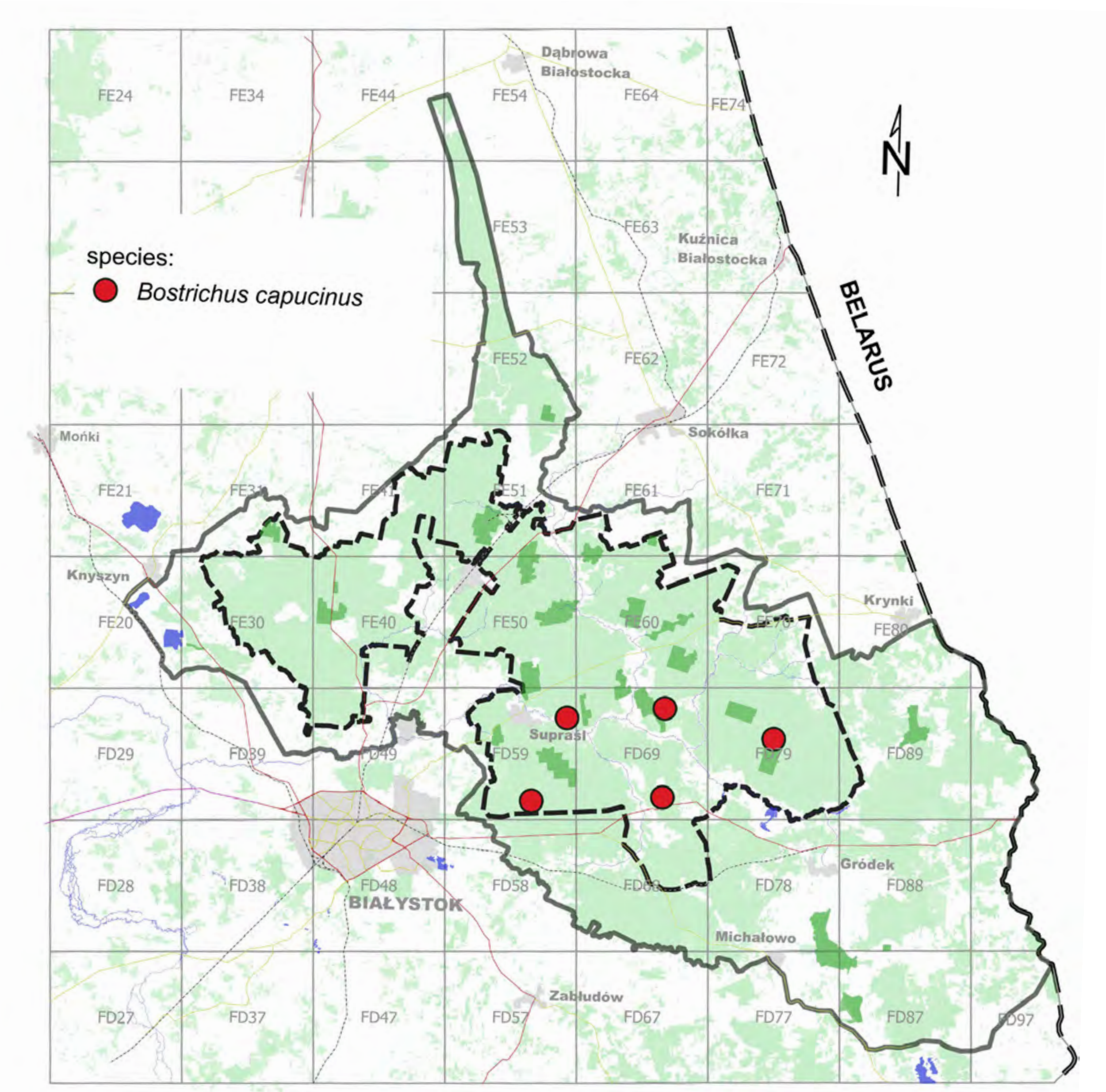


Fig. 277. Localities of *Bostrichus capucinus* (Bostrichidae) in Knyszyńska Forest

Distribution

A Western Palaearctic species, found mainly throughout Europe, Asia Minor, eastward reaching as far as Kazakhstan and Pakistan. In Poland, it is found throughout the country, but is sometimes quite rarely caught (Burakowski et al. 1986a). The most recent data is reported from Lower Silesia by Kania (2023).

Biology and ecology

A polyphagous species, associated with the hardwood of various deciduous species. A pyrophile, it quickly colonizes tree stumps and trunks damaged by spring fires. The peak of swarming is in May. Adults are active both during the day and at night. Development is biennial, and exceptionally annual (Kania 2023; Borowski original information).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Ptinidae

***Hemicoelus fulvicornis* (Sturm, 1837)** (Fig. 278)

Fig. 278. ***Hemicoelus fulvicornis* (Sturm, 1837) (Ptinidae)** (photo L. Borowiec)

Material examined (Fig. 279)

Original data: Żednia Forest District, Las Cieliczański Reserve (FD59), 18.06.2020 – 1 ex., from a dead branch, leg. & det. R. Królik.

Distribution

It is found throughout Europe, extending eastward through Turkey to Iran (Zahradník 2007). In Poland, it is known from a small number of localities, although it probably occurs throughout the country (Burakowski et al. 1986a).

Biology and ecology

A species that develops in the hard and dry wood of the branches of deciduous trees. Adult forms spend most of their lives in the crowns of trees, so they are quite rarely caught.

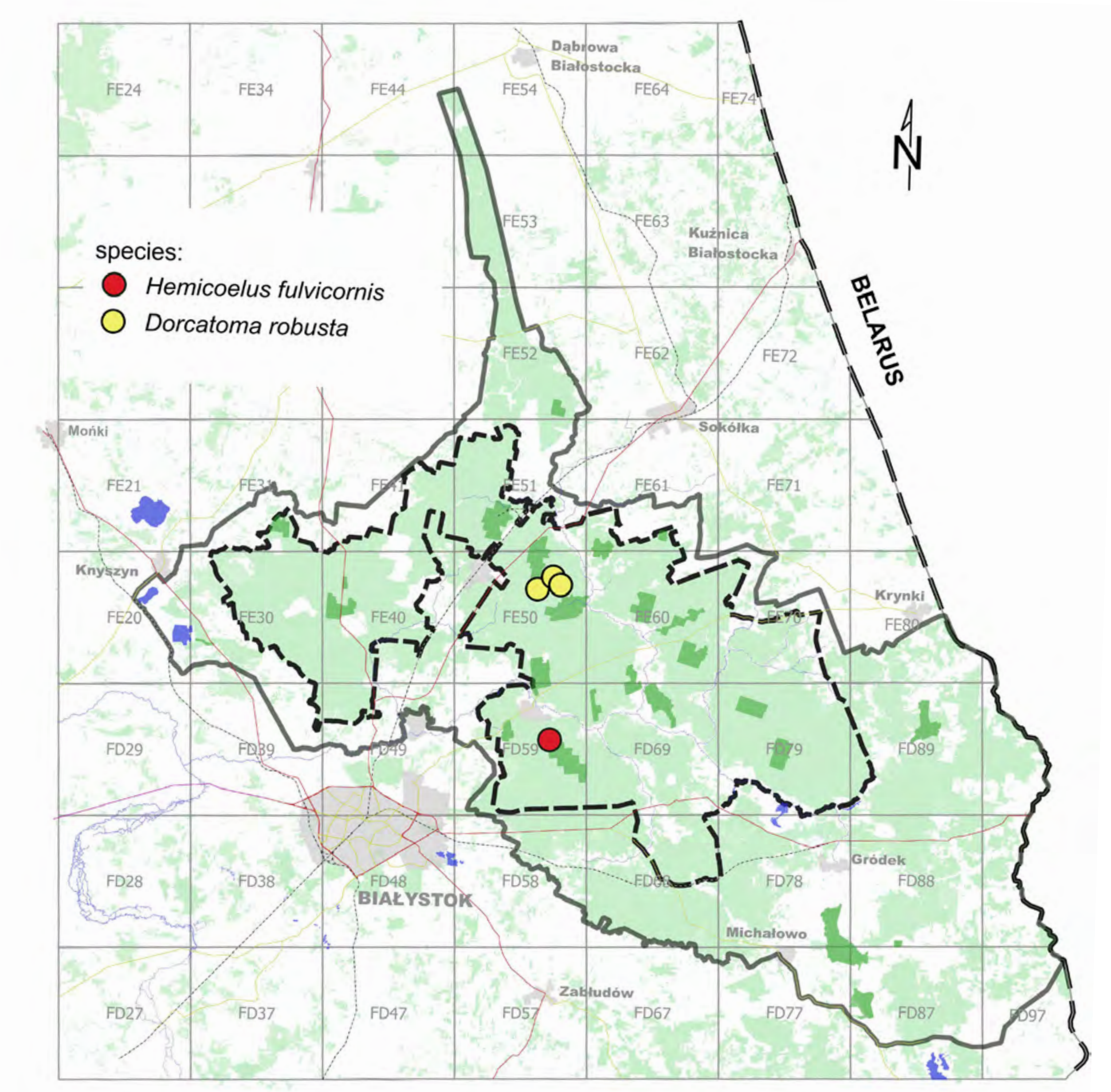


Fig. 279. Localities of *Hemicoelus fulvicornis* and *Dorcatoma substriata* (Ptinidae) in Knyszyńska Forest

Dorcatoma substriata Hummel, 1829 (Fig. 280)

Material examined (Fig. 279)

Original data: Budzisk Forest Subdistrict, compartment 100 (FE50), 27.08.2017 – 14 exx., leg. I. Sztabkowska, det. T. Mokrzycki; Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 72 (FE50), 27.08.2016 – 2 exx., compartment 85, 16.07.2016 – 1 ex., leg. I. Sztabkowska, det. T. Mokrzycki.

Fig. 280. ***Dorcatoma substriata*** **Hummel, 1829 (Ptinidae)** (photo A. Lasoń)

Distribution

A European species (Zahradník 2007). In Poland, it is recorded from a small number of localities, mainly in the southern part of the country: the Wielkopolska-Kujawy Lowland, Lower Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, and the Eastern Beskid (Burakowski et al. 1986a).

Biology and ecology

A species that develops exclusively in the fruiting bodies of *Inonotus* spp. arboreal fungi. It can be found in a variety of habitats: forests, roadside canopies, parks, and even on single trees growing in urban environments. Its development cycle takes one year. Until it completely decomposes, the inhabited dying fruiting body of the fungus provides a place for the development of subsequent generations. Often co-occurs with another beetle – *Abdera affinis* (Payk.) (Melandryidae).

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Episernus tatarinovae Toskina et Nikitsky, 2003 (Fig. 281)

Material examined (Fig. 282)

Data from the literature: Czarna Białostocka Forest District, Budzisk Reserve, compartment 109 (FE50), 1-30.06.2019 – 1 ex., IBL-5 trap (Borowski et al. 2020).

Fig. 281. *Episernus tatarinovae* Toskina et Nikitsky, 2003 (Ptinidae) (photo G. Tarwacki)

Distribution

The species was described in 2003 from the European part of northern Russia (Toskina & Nikitski 2003). In 2020, it was reported from Białowieża Forest (Plewa et al. 2020) and Knyszyńska Forest (Borowski et al. 2020).

Biology and ecology

Probably associated with spruce *Picea* A. Dietr. spp.

Notes

The trap into which *E. tatarinovae* was caught in Knyszyńska Forest was suspended from a thick, dead spruce tree at a height of about 2 meters from the ground. This spruce had been infested by the Norway spruce bark beetle (*Ips typographus* (L.)) the year before and had partially adhering bark. The tree on which the trap was placed grew in moist forest habitat, where, in addition to spruce, there were birches, aspens, isolated pines, alders, and oaks.

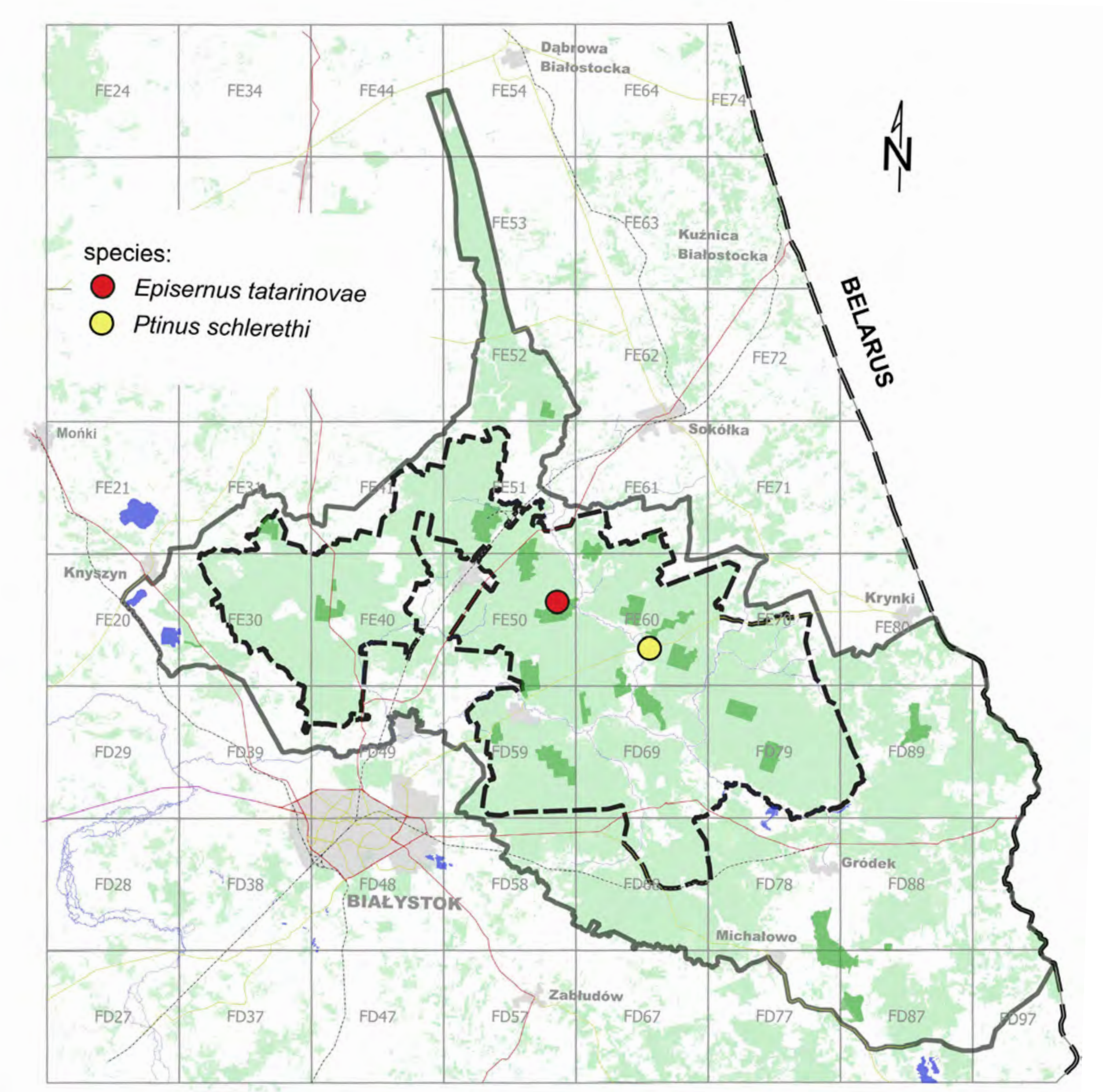


Fig. 282. Localities of *Episernus tatarinovae* and *Ptinus schlerethi* (Ptinidae) in Knyszyńska Forest

Ptinus schlerethi (Reitter, 1884) (Fig. 283)

Material examined (Fig. 282)

Data from the literature: Kopna Góra ad Supraśl (FE60), 2.05.1986 – 1 ex., attracted to artificial light (Kubisz & Szwałko 1991; Kubisz & Pawłowski 1995).

Distribution

A species distributed in southeastern Europe and Turkey. Historically, it was reported in Poland from Upper Silesia and the Eastern Beskid (Burakowski et al. 1986a). More recent data include locations from the Świętokrzyskie Mountains (Byk 2007; Mokrzycki 2007) and Wielkopolska (Mokrzycki et al. 2008).

Fig. 283. ***Ptinus schlerethi*** **(Reitter, 1884) (Ptinidae)** (photo T. Németh)

Biology and ecology

The typical microhabitat of this beetle is hollow oak trees, usually with extensive, well-sunlit rotten wood. Larvae probably feed on dead animal remains, such as the exuviae or pupal casings of other insects, debris in the nests of Hymenoptera, and perhaps on the dry feces of, for example, bats dwelling in tree hollows.

Notes

Kubisz & Szwałko (1991) reported it from Knyszyńska Forest as *P. raptor* Sturm. This data was verified and corrected in the work of Kubisz & Pawłowski (1995).

Peltidae

Peltis ferruginea (Linnaeus, 1758) (Fig. 284)

Material examined

Original data: species often found in Knyszyńska Forest; caught and observed many times throughout the Forest, in different years, including in the Budzisk (FE50), Chomontowszczyzna (FD79), Góra Pieszczana (FD79), Jałówka (FD59), Krasne (FD59), Krzemianka (FE40), Krzemienne Góry (FD69), Międzyrzecze (FE60), Rabinówka (FD78), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), and Taboły (FE50) nature reserves.

Data from the literature: information about this species in Knyszyńska Forest, collected, among others, by the authors of this monograph, can also be found in the studies of Miłkowski et al. (2019) and Marczak et al. (2023c).

Fig. 284. *Peltis ferruginea* (Linnaeus, 1758) (Peltidae) (photo M. Sowiński)

Distribution

A Holarctic species, also widely distributed in Europe. It is reported from all over Poland, although most of the reports are from the south and east of the country. A summary of data on the occurrence of this species in Poland is presented in the work of Miłkowski et al. (2019), and the most recent data is provided by Kadej et al. (2023).

Biology and ecology

Adults and larvae *of P. ferruginea* are fungivorous. Larval development takes place in the soft, rotting wood of mainly coniferous trees (spruce, fir) (Miłkowski et al. 2019), but also deciduous trees (willow, poplar, oak, beech, alder, hornbeam) (Burakowski et al. 1986a). Adults and larvae overwinter. The culmination of beetle activity is from late April to late July. Imagines live in rotten wood, under the bark of host trees, in its cracks, in hollows or on the fruiting bodies of arboreal fungi.

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Peltis grossa (Linnaeus, 1758) (Fig. 285)

Fig. 285. *Peltis grossa* (Linnaeus, 1758) (Peltidae) (photo T. Mokrzycki)

Material examined

Original data: caught and observed many times (imagines, larvae), in different years, throughout Knyszyńska Forest, in well-preserved, moist forests with a high proportion of deadwood, most often in the Bahno w Borkach (FD69), Budzisk (FE50), Góra Pieszczana (FD79), Jesionowe Góry (FE51), Kozłowy Ług (FE61), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), and Surażkowo (FE60) reserves.

Data from the literature: information about this species in Knyszyńska Forest, collected, among others, by the authors of this monograph, can also be found in the following studies: Miłkowski et al. (2019), Kwiatkowski (2020b), Mokrzycki et al. (2022), Marczak et al. (2023c).

Distribution

A European species. In Poland, it is most often observed in the eastern part of the country, i.e., Białowieża Forest and the Świętokrzyskie Mountains. It is believed to have become less numerous in other regions of the country due to the lack of suitable habitats. A summary of all data on the occurrence of this species in Poland is presented in the work of Miłkowski et al. (2019).

Biology and ecology

Development of *P. grossa* takes place in soft, decayed, and fungus-infected wood of deciduous (birch, linden) and coniferous (fir, spruce) trees (Miłkowski et al. 2019). During the day, adults stay hidden, such as in cracks in the bark or in soft wood. They become active at dusk and at night, at which time the beetles swarm. This takes place in late May and June, when individuals of this species come out on the trunks of dead standing or fallen trees.

Notes

Peltis grossa is classified as a relict of primeval forests *sensu stricto* (Eckelt et al. 2018). It is listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002); and as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Lophocateridae

***Grynocharis oblonga* (Linnaeus, 1758)** (Fig. 286)

Fig. 286. *Grynocharis oblonga* (Linnaeus, 1758) (Lophocateridae) (photo J. Tatur-Dytkowski)

Material examined (Fig. 287)

Original data: Krzemienne Góry Reserve, 11-17.04.2011 – 1 ex., under the bark of dead willow *Salix caprea* L., leg. A. Kisiel, det. J.M. Gutowski (Kisiel 2012); Stara Dębina Reserve, 1.04.2020 – 1 ex., under the bark of a lying oak, leg. & det. J.M. Gutowski.

Data from the literature: Las Cieliczański Reserve (FD59), under the bark of Norway maple *Acer platanoides* L., 14.04.2010 – 3 exx. (Miłkowski et al. 2019); Czarna Białostocka Forest District, Budzisk (FE50), and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c).

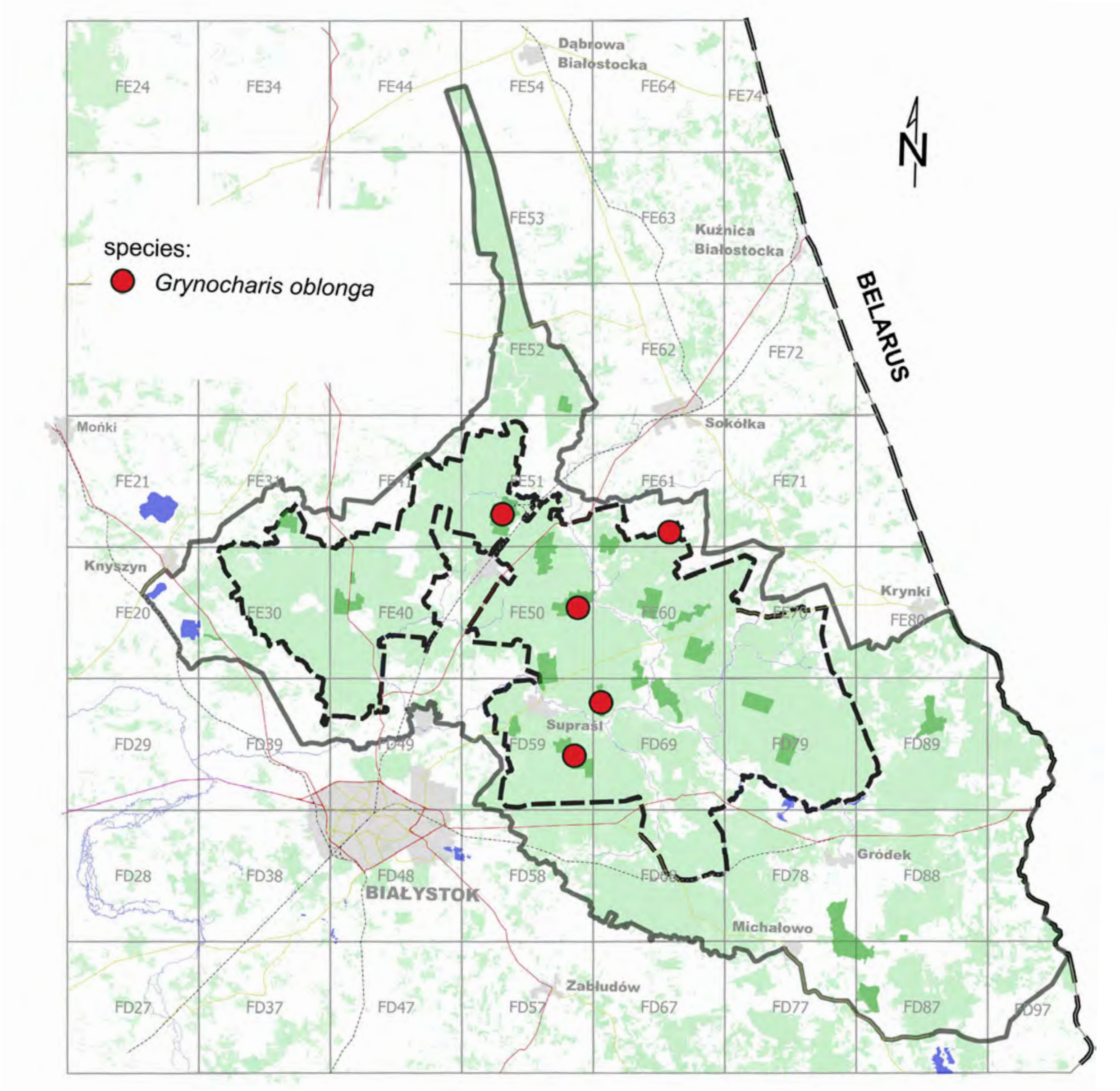


Fig. 287. Localities of *Grynocharis oblonga* (Lophocateridae) in Knyszyńska Forest

Distribution

A European species, common, in Poland, occurring throughout the country (Miłkowski et al. 2019). Reported several times from Knyszyńska Forest.

Biology and ecology

Adults and larvae *of G. oblonga* are fungivorous. Larvae develop in the rotting wood of deciduous tree species, i.e., oak, willow, poplar, beech, alder, hornbeam, less frequently coniferous (fir) trees (Miłkowski et al. 2019). Individuals of this species were most often observed on the trunks of host trees, under the bark or on the fruiting bodies of the arboreal fungi found on these trees. The activity of adults begins in mid-April and ends in mid-July.

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Trogossitidae

Nemozoma caucasicum **Ménétriés, 1832** (Fig. 288)

Fig. 288. ***Nemozoma caucasicum*** **Ménétriés, 1832 (Trogossitidae)** (photo J. Tatur-Dytkowski)

Material examined (Fig. 289)

Data from the literature: caught in Knyszyńska Forest in Jesionowe Góry Reserve (FE51) located in Czarna Białostocka Forest District (Marczak et al. 2023c).

Distribution

A species described from the Caucasus. In Poland, it was first discovered in Mazovia (Hilszczański 2006). As a result of the intensification of faunistic research, it was found in more localities in the country in subsequent years. A summary of all data on the occurrence of this species is presented in the work of Miłkowski et al. (2019).

Biology and ecology

Adults and larvae of *N. caucasicum* prey on the juvenile forms and imagines of bark beetles. They penetrate both under the bark of trees with thick bark as well as their surfaces, where they can hide. According to previous observations, *N. caucasicum* is associated with deciduous tree species, i.e., elm, ash, and pear (Miłkowski et al. 2019). The greatest activity of this species' imagines was observed after nightfall (Tatur-Dytkowski 2017).

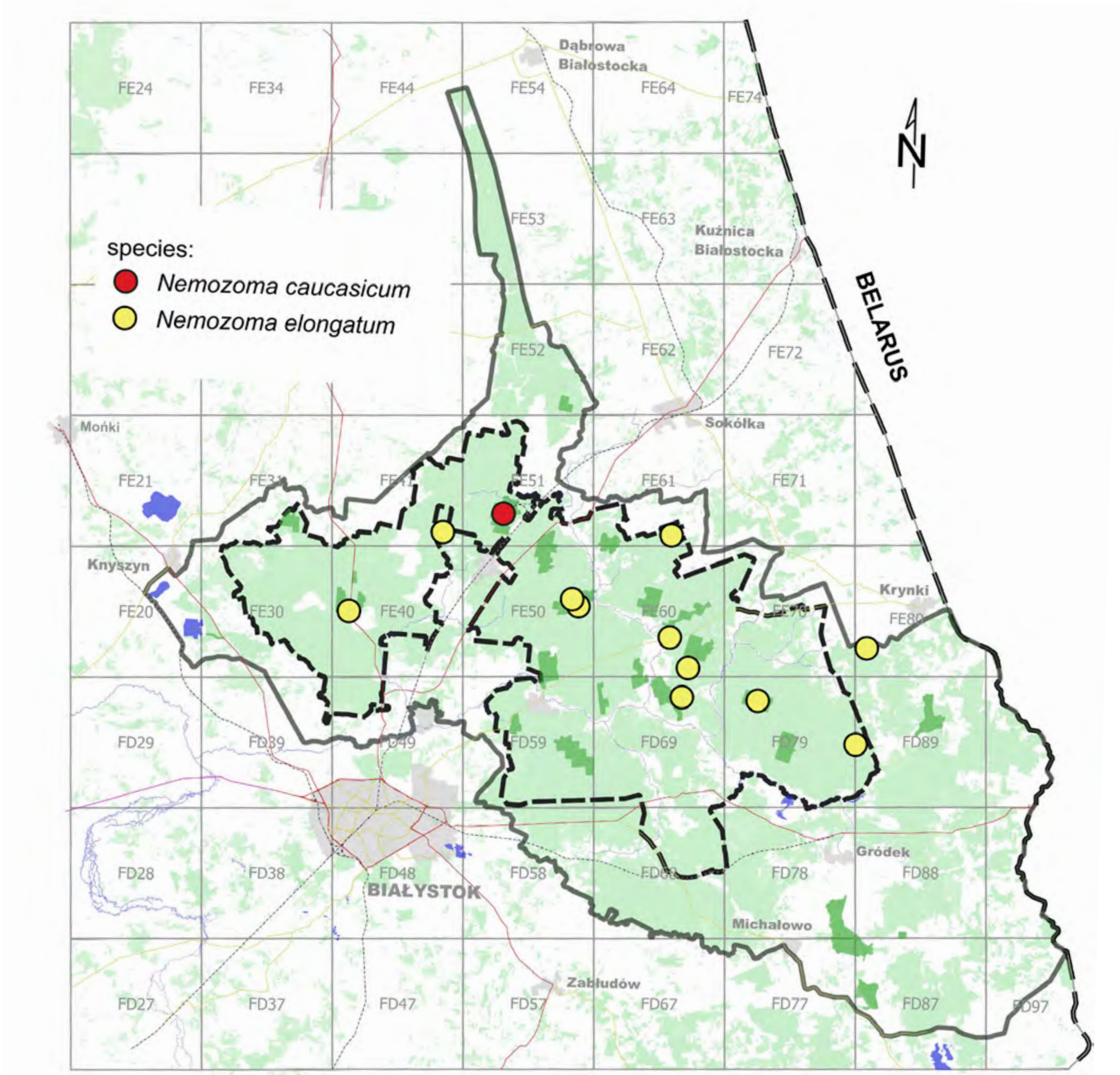


Fig. 289. Localities of *Nemozoma caucasicum* and *N. elongatum* (Trogossitidae) in Knyszyńska Forest

Notes

Listed as DD (data deficient) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Nemozoma elongatum (Linnaeus, 1761) (Fig. 290)

Material examined (Fig. 289)

Original data: Krynki Forest District, ad Ozierskie, compartment 155 (FE80), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski; Knyszyn Forest District, Krzemianka Reserve, compartment 243 (FE40), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski; Supraśl Forest District, ad Lipowy Most, compartment 155 (FE60), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski; Waliły Forest District, ad Szaciły, compartment 3 (FD89), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski; Czarna Białostocka Forest District, Czarna Wieś Forest Subdistrict, compartment 195 (FE41), 5-7.07.2015 – 5 exx., IBL-2 trap, leg. & det. R. Plewa (Borowski et al. 2016); Krynki Forest District, Góra Pieszczana Reserve (FD79), 27.07.2016 – 2 exx., leg. K. Komosiński, det. A. Lasoń; Supraśl Forest District, Stara Dębina Reserve, compartment 18 (FE61), 6.05-1.06.2021 – 1 ex., violet Lindgren funnel trap, leg. & det. K. Sućko; Supraśl Forest District, ad Jałówka (FE50), 8-9.05.2022 – 1 ex., leg. J. Borowski, det. A. Byk; Czarna Białostocka Forest District, Budzisk Reserve (FE50), 8.05.2022 – 1 ex., leg. T. Mokrzycki, det. A. Byk; Supraśl Forest District, ad Borki, compartment 311 (FE69), 20.05.2023 – 1 ex., leg. & det. C. Greń.

Data from the literature: Supraśl Forest District, Kopna Góra Forest Subdistrict (FE60) (Kubisz & Szwałko 1991); Czarna Białostocka Forest District, Budzisk Reserve (FE50) (Marczak et al. 2023c).

Fig. 290. ***Nemozoma elongatum*** **(Linnaeus, 1761) (Trogossitidae)** (photo L. Borowiec)

Distribution

The species is distributed in most of Europe, northern Africa, and the Middle East. In Poland, it is found almost all over the country, but not very often. A summary of all occurrence data for this species is presented in the work of Miłkowski et al. (2019), and the most recent data is provided by Kadej et al. (2023). It has already been reported in the Podlasie from Olmonty, located south of Białystok (Miłkowski et al. 2019), and from Knyszyńska Forest (Kubisz & Szwałko 1991; Marczak et al. 2023c).

Biology and ecology

Adults and larvae *of N. elongatum* prey on the eggs and young larvae primarily of bark beetles, as well as other cambio- and xylophagous beetles, such as longhorn beetles. They efficiently penetrate the underbark habitats of trees, as well as their surfaces, for food. According to previous studies on this species, it was found that *N. elongatum* was most often found on spruce and small-leaved linden (Miłkowski et al. 2019).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (CÁLIX et al. 2018).

Melyridae

Anthocomus fasciatus (LINNAEUS, 1758) (Fig. 291)

Fig. 291. ***Anthocomus fasciatus*** **(LINNAEUS, 1758) (Melyridae)** (photo L. Borowiec)

Material examined (Fig. 292)

Original data: Józefowo ad Waliły-Stacja (FD78), 20.06-15.07.2021 – 1 ex., black Lindgren funnel trap, leg. & det. R. Plewa.

Data from the literature: Piłatowszczyzna (FD79), June 1992 (KUBISZ & PAWŁOWSKI 1995).

Distribution

The species is known from the British Isles, through Scandinavia to southern Europe and Palestine, eastward reaching the Caucasus. Caught sporadically in Poland, many reports are decades old. Data from the Masurian Lake District and Białowieża Forest are also old (BURAKOWSKI et al. 1986c).

Biology and ecology

Biology not fully recognized. The species is most often caught in meadows with varying degrees of moisture, on flowers. Imagines have also been observed on wood. Larvae are probably predatory or saprophagous, like other members of this family (MAZUR original information).

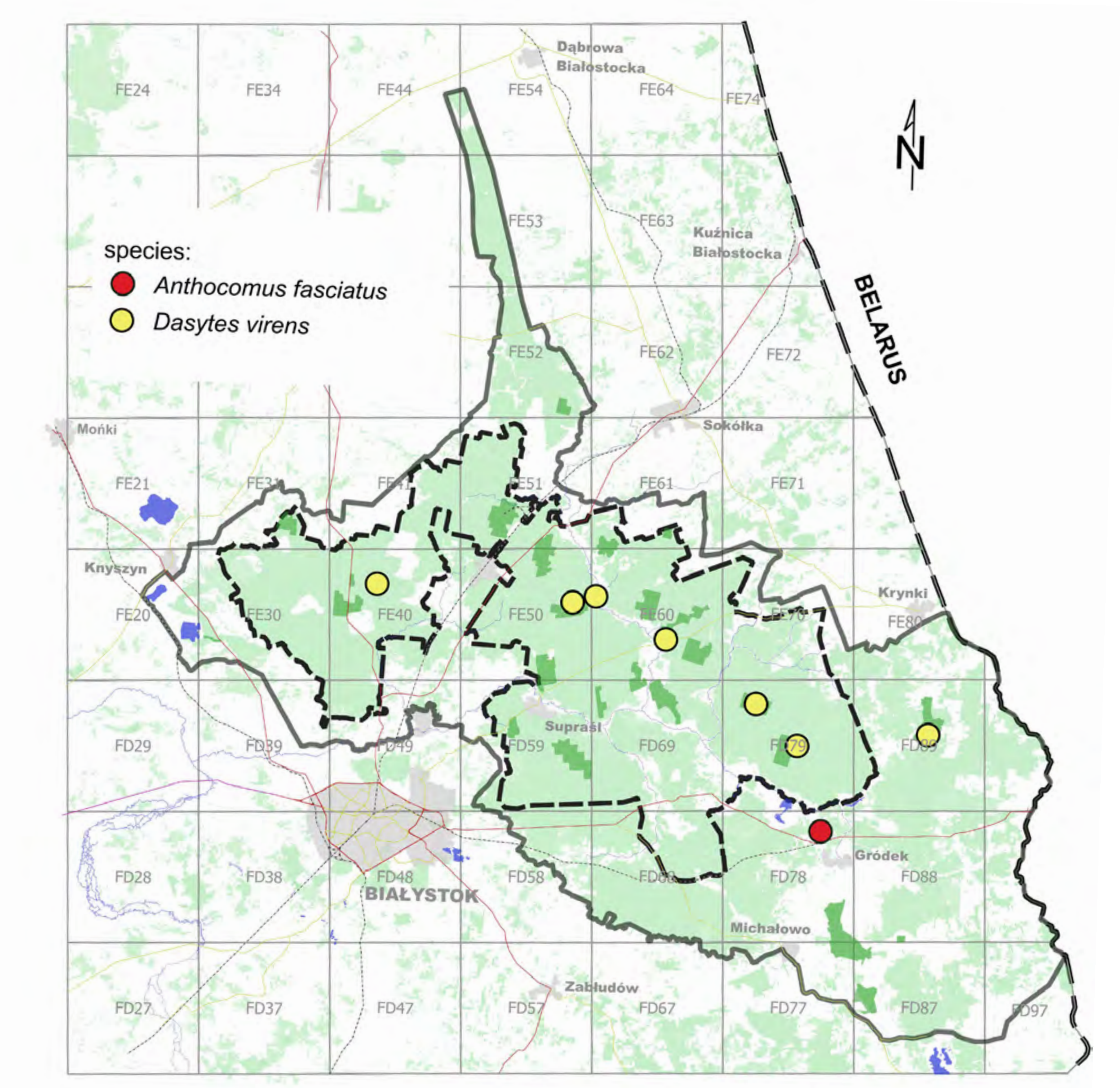


Fig. 292. Localities of *Anthocomus fasciatus* and *Dasytes virens* (Melyridae) in Knyszyńska Forest

Axinotarsus marginalis (Castelnau, 1840) (Fig. 293)

Material examined

Data from the literature: reported from the vicinity of Białystok by Roubal (1910).

Distribution

A species found in Central and Southern Europe, extending to the Caucasus. In Poland, most records are from the south of the country, much rarer in the northern part. In Podlasie, it was reported over 100 years ago by Roubal (1910) and since then found once by A. Lasoń near Jeńki (FD27) (baza.biomap).

Biology and ecology

Its biology is partially known. Adults were caught most often on grasses in meadow and steppe habitats. Larvae are predatory, feeding in insect tunnels in wood (Burakowski et al. 1986c).

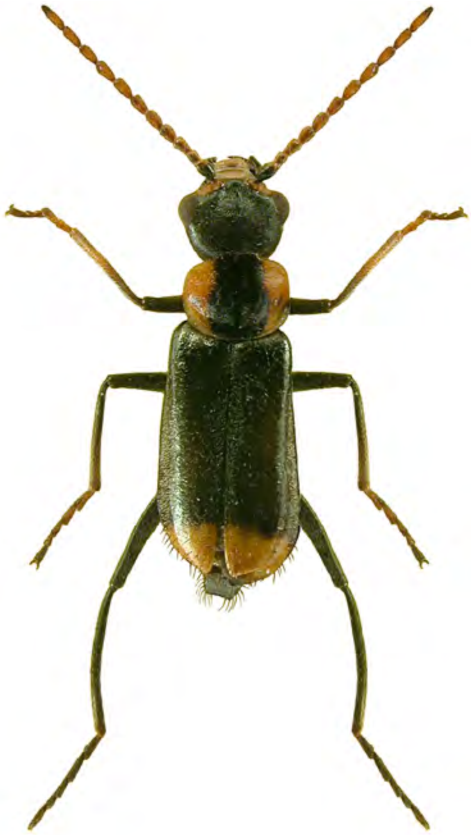


Fig. 293. ***Axinotarsus marginalis*** **(Castelnau, 1840) (Melyridae)** (photo L. Borowiec)

Dasytes virens (Marsham, 1802) (Fig. 294)

Fig. 294. ***Dasytes virens*** **(Marsham, 1802) (Melyridae)** (photo L. Borowiec)

Material examined (Fig. 292)

Original data: Waliły Forest District, Radunin Forest Subdistrict, compartment 61 (FD79), 7.06-13.07.2008 – 11 exx., IBL-2 trap, leg. R. Plewa, det. M.A. Mazur; Czarna Białostocka Forest District, Budzisk Reserve (FE50), 7.06-13.07.2008 – 1 ex., leg. J.M. Gutowski, det. M.A. Mazur; Knyszyn Forest District, compartment 141 (FE40), 1.06-1.07.2021 – 1 ex., green Lindgren funnel trap, leg. K. Sućko, det. M.A. Mazur; Dworzysk (FE60), 11.06.2020 – 2 exx., mid-forest meadow, leg. J.M. Gutowski, det. M.A. Mazur; Krynki Forest District, Góra Pieszczana Reserve (FE60), 17.06.2016 – 4 exx., 27.07.2016 – 4 exx., IBL-2 trap, leg. K. Komosiński, det. M.A. Mazur; Nietupa Reserve (FD89), 23.06.2021 – 2 exx., mid-forest meadow, leg. J.M. Gutowski, det. M.A. Mazur.

Distribution

A species found in Central and Northern Europe, as well as in the Balkans and further through Siberia to Mongolia. In Poland, it has been reported from a very small number of localities, in only a few zoogeographical regions (Burakowski et al. 1986c).

Biology and ecology

It resides on the flowers of herbaceous plants, trees, and shrubs, where it feeds on pollen. Larvae are predatory, residing in wood, where they prey on the larvae and pupae of various insects. It usually inhabits warm forest edges and mid-forest meadows. In the Czech Republic and Slovakia, it is caught at the edge of warm oak forests (Kolibáč et al. 2005).

Notes

The *Catalogue of the Fauna of Poland* (Burakowski et al. 1986c), describes it under the synonymous name *D. flavipes* (Olivier, 1790). Current published faunal data indicate that this species is very rare in Poland, which somewhat contrasts with the field experience of the authors of this paper. Data from Central Europe (Austria, Germany, France) indicate that it is not a rare species (*Dasytes virens* – gbif.org). The rarity of its occurrence may be due to the lack of Polish studies on this group of beetles and, at first glance, the great similarity of this species to *D. plumbeus* (Müller, 1776), common throughout the country. It is worth noting that most of the specimens known from Knyszyńska Forest were caught in traps.

A new species for Podlasie.

Cleridae

***Dermestoides sanguinicollis* (Fabricius, 1787)** (Fig. 295)

Fig. 295. *Dermestoides sanguinicollis* (Fabricius, 1787) (Cleridae) (photo J. Tatur-Dytkowski)

Material examined (Fig. 296)

Data from the literature: a small number of specimens were found on 22.04.2022 in the Czarna Białostocka Forest District, Sławno Forest Subdistrict, compartment 42 (FE53) in an old-growth oak forest (Marczak & Kwiatkowski 2023).

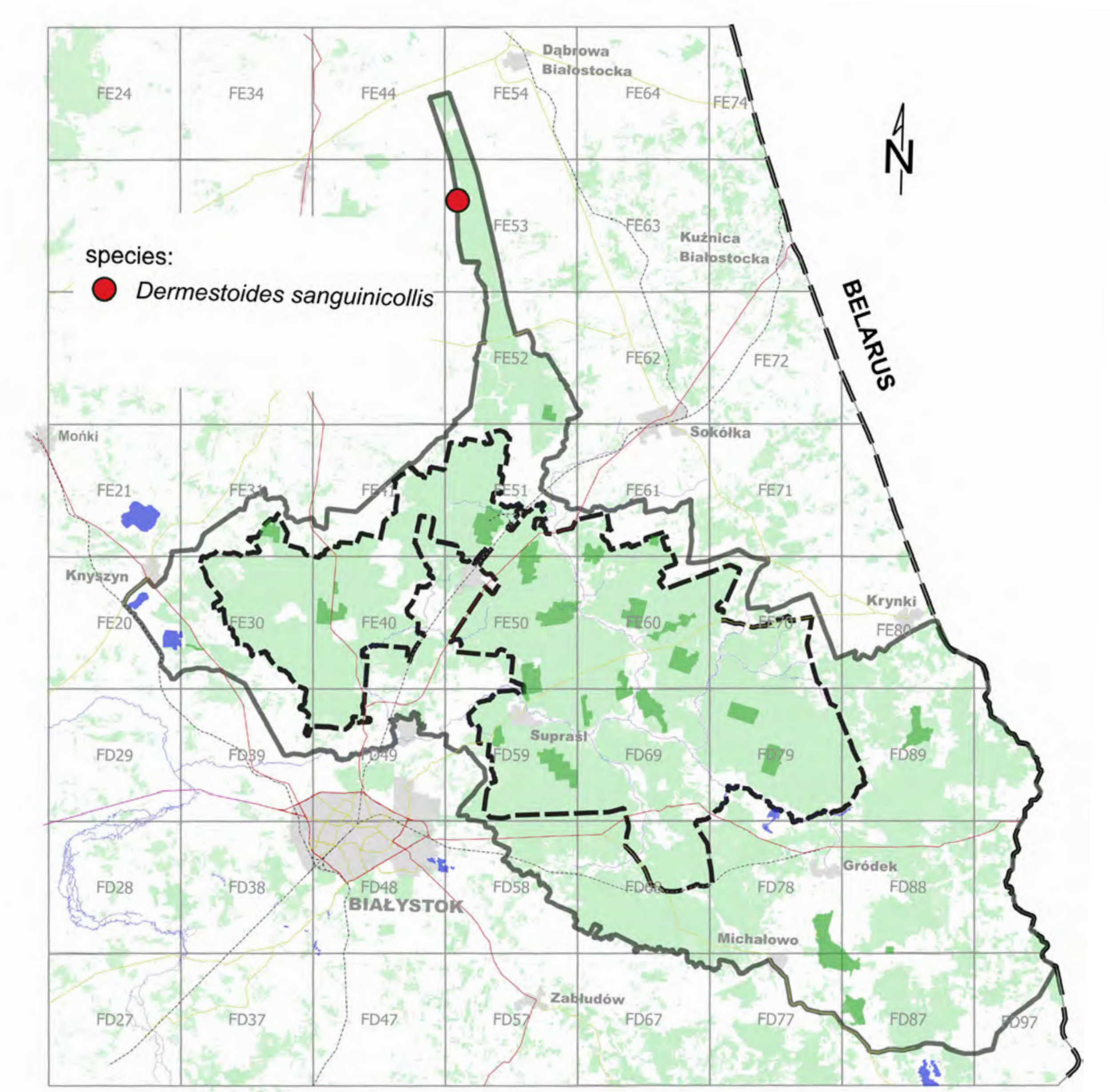


Fig. 296. Locality of *Dermestoides sanguinicollis* (Cleridae) in Knyszyńska Forest

Distribution

The species is found in Europe from France, Italy to Greece, northward reaching Denmark and Sweden. Towards the east it is reported from the European part of Russia and the Caucasus. In Poland, it is a very rare beetle, recorded in a small number of localities in five zoogeographical regions: Białowieża Forest (Borowski 2001; Plewa et al. 2011a), the Wielkopolska-Kujawy Lowland (Jałoszyński et al. 2005), the Mazovian Lowland, as well as Lower and Upper Silesia (Burakowski et al. 1986a).

Biology and ecology

A forest species found mainly on old, weakened or dying oak trees in natural forests. It is predatory, with both larvae and adult specimens preying on cambioxyphagous insects. It develops in old oak trees, especially those occupied by the great capricorn beetle *Cerambyx cerdo* L. Adult forms appear in April and remain on oak trunks until July. The beetles are active at sunset, when they take flight (Burakowski et al. 1986a).

Notes

Listed as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002) as well as in the *Red List of Beetles (Coleoptera) of the Silesian Province* (Greń et al. 2012).

Lymexylidae

***Elateroides flabellicornis* (Schneider, 1791)** (Fig. 297)

Fig. 297. *Elateroides flabellicornis* (Schneider, 1791), male and female (Lymexylidae) (photo L. Borowiec)

Material examined (Fig. 298)

Original data: Czarna Białostocka Forest District, Bogusze Forest Subdistrict, compartment 410 (FE62), 22.04-9.6.2008 – 2 exx., leg. R. Plewa, det. J.M. Gutowski; Waliły Forest District, Smolarnia Forest Subdistrict, compartment 227 (FD89), 22.04-9.06.2008 – 2 exx., leg. R. Plewa, det. J.M. Gutowski; Waliły Forest District, Radunin Forest Subdistrict, compartment 61 (FD79), 22.04-6.06.2008 – 1 ex., leg. R. Plewa, det. A. Lasoń; Dojlidy Forest District, Majówka Forest Subdistrict, compartment 93 (FD59), 22.04-9.06.2008 – 17 exx., leg. R. Plewa, det. J.M. Gutowski; Supraśl Forest District, Zacisze Forest Subdistrict (FE50), 8-9.05.2022 – 1 ex., leg. & det. A. Byk; Krzyżawola (FD59), 13.05.2020 – 1 ex., leg. & det. M.A. Mazur.

Data from the literature: recorded in KF by Kubisz & Szwałko (1991) from Kopna Góra near Supraśl (FE60).

Distribution

A species found in the northeastern part of Europe, from Germany through the Scandinavian countries, across Siberia to Japan and Taiwan (Cuccodoro 2007). In Poland, it is found in the natural range of spruce, although it is more often caught in the northeastern part of the country than in the mountains. It is reported in the *Catalogue of the Fauna of Poland* (Burakowski et al. 1996a) from the Baltic Coast, the Masurian Lake District, and Białowieża Forest. Kubisz & Szwałko (1991) report it from KF.

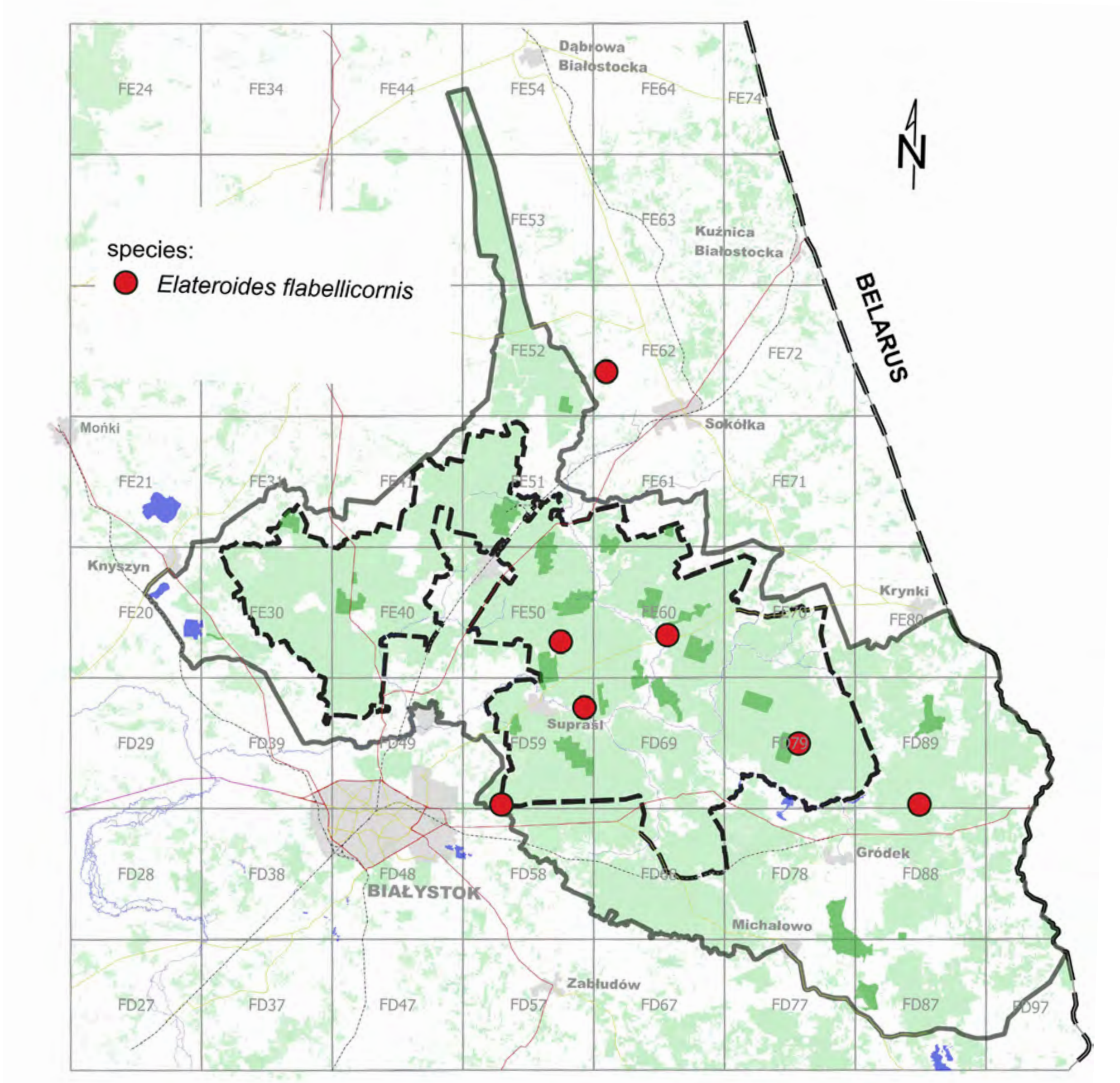


Fig. 298. Localities of *Elateroides flabellicornis* (Lymexylidae) in Knyszyńska Forest

Biology and ecology

A boreal-mountain species, trophically associated with spruces *Picea* A. Dietr. spp. All data on other host plants should be verified. Its habitat requirements are identical to its common relative *Elateroides dermestoides* (L.), with which it often co-occurs, but usually where both occur, *E. flabellicornis* is an accessory species.

Ripiphoridae

Pelecotoma fennica (Paykull, 1799) (Fig. 299)

Fig. 299. ***Pelecotoma fennica*** **(Paykull, 1799) (Ripiphoridae)** (photo R. Królik)

Material examined (Fig. 300)

Data from the literature: Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

The species is mainly distributed in Central and Eastern Europe. To the north it reaches Finland and the northern regions of Russia, and to the south to Bosnia and Herzegovina (Barcley 2020). Everywhere rare and sporadically found, with small numbers of specimens being caught. In Poland, it is known from a small number of localities, mainly in lowland parts of the country (Burakowski et al. 1987; Kubisz et al. 2014).

Biology and ecology

The species is found on sunny, barkless trunks, mainly of poplars and willows, in places with numerous exit holes of woodboring beetles. Larvae are parasitic, they develop in the tunnels of woodboring larvae, mainly *Ptilinus fuscus* Geoffroy and *P. pectinicornis* (L.), probably feeding on woodboring beetle larvae or on hymenoptera larvae inhabiting old woodboring beetle galleries. Imagines appear from June to August, and have been caught mainly on sunny dead logs, sometimes also on the walls of old bee hives (Burakowski et al. 1987).

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

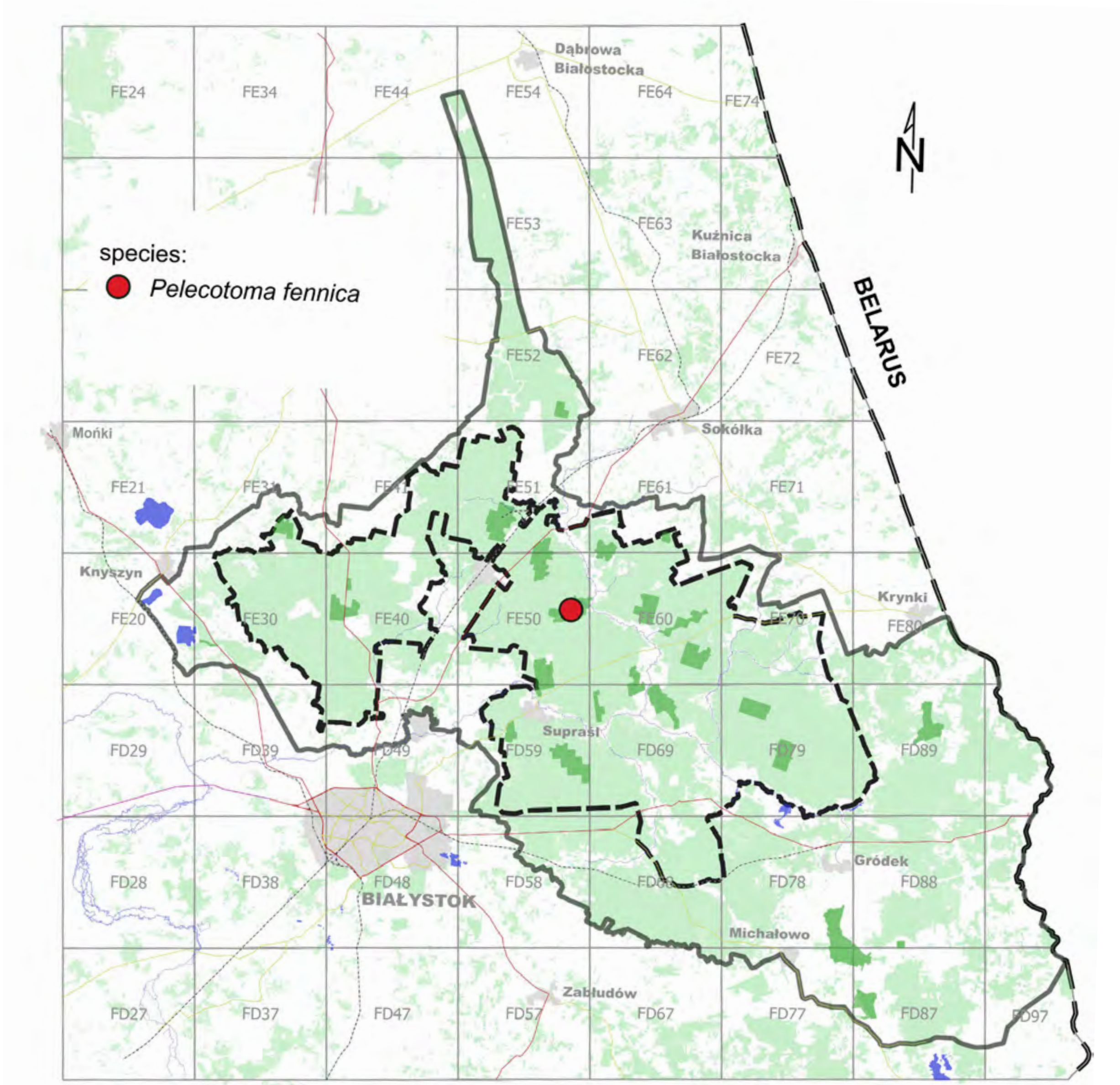


Fig. 300. Locality of *Pelecotoma fennica* (Ripiphoridae) in Knyszyńska Forest

Mordellidae

Curtimorda maculosa (Naezén, 1794) (Fig. 301)

Material examined (Fig. 302)

Original data: Krynki Forest District, Góra Pieszczana Reserve (FD79), 17.06.2016 – 1 ex., leg. K. Komosiński, det. D. Kubisz; Supraśl Forest District, Jałówka Reserve (FE50), 7.06.2023 – 1 ex. cultivated from a polypore collected on 20.05.2023, leg., cult. & det. R. Ruta.

Data from the literature: also reported from the Czarna Białostocka Forest District, Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c).

Distribution

The species is distributed from Japan and China to Northern and Central Europe. It reaches France and the Netherlands in the west, northern Italy in the south (Borowiec 1996; Iwan & Löbl 2020). Rare in Poland, recorded mainly from the south of the country; single localities are also in northeastern Poland (Kubisz et al. 2015).

Fig. 301. ***Curtimorda maculosa*** **(Naezén, 1794) (Mordellidae)** (photo R. Ruta)

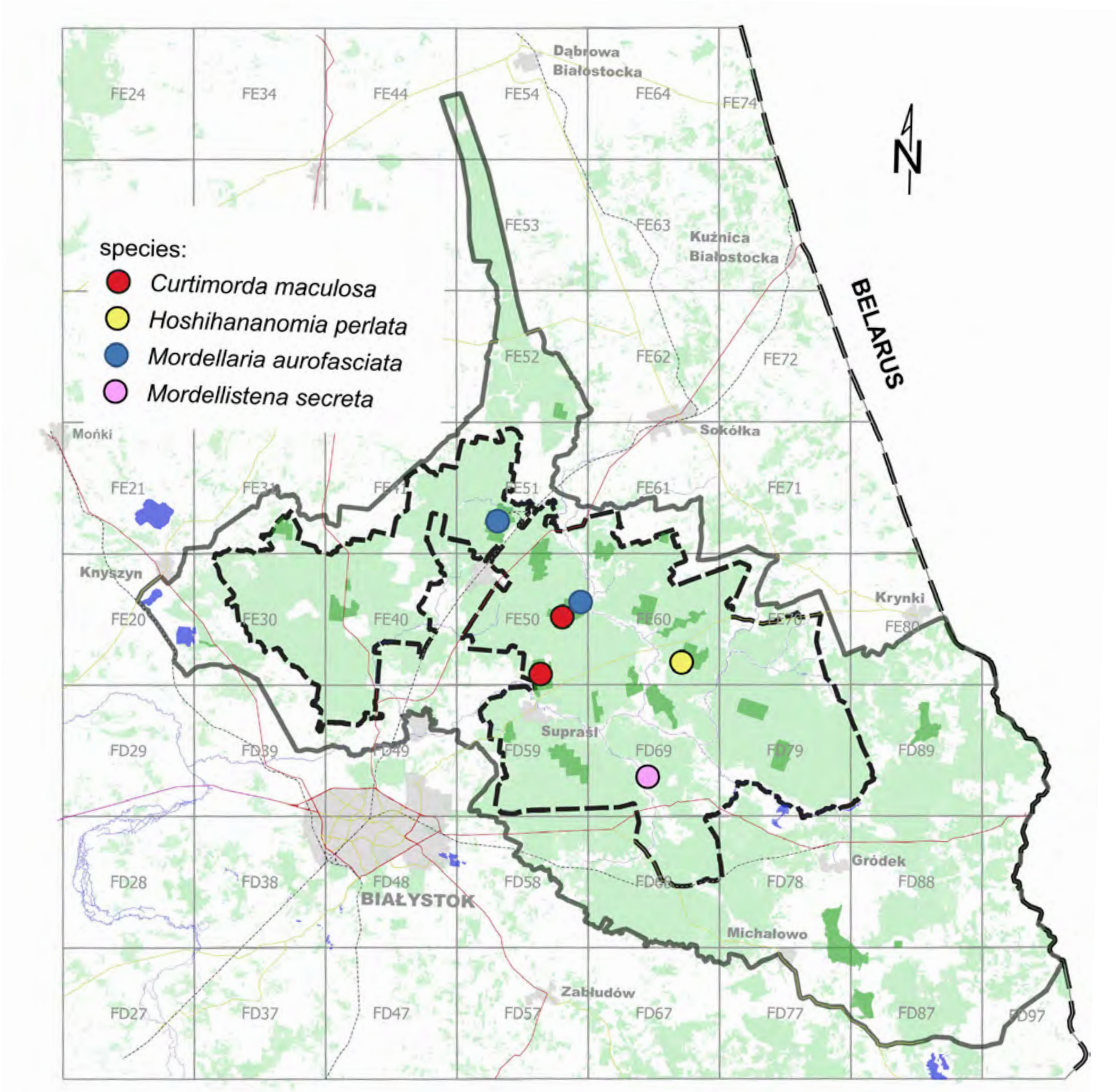


Fig. 302. Localities of *Curtimorda maculosa*, *Hoshihananomia perlata*, *Mordellaria aurofasciata*, and *Mordellistena secreta* (Mordellidae) in Knyszyńska Forest

Biology and ecology

Larvae develop in polypore fruiting bodies of the genus *Gloeophyllum* P. Karst. and in fungus-infected wood under the fruiting bodies of this fungus, especially on spruce and pine trees, but also on processed wood (fences, posts, wooden structures). Imagines are rather secretive and usually found on breeding material, rarely on flowers (Borowiec 1996).

Hoshihananomia perlata (Sulzer, 1776) (Fig. 303)

Fig. 303. ***Hoshihananomia perlata*** **(Sulzer, 1776) (Mordellidae)** (photo G. Tarwacki)

Material examined (Fig. 302)

Original data: Supraśl Forest District, Stare Biele Reserve (FE60), 18.06.2020 – 2 exx., leg. & det. R. Królik.

Distribution

Palaearctic species, widely distributed but everywhere rare, found from Japan and China to the Atlantic coast. Not previously reported from the Iberian Peninsula and Scandinavia. In Poland, it has been reported most often from the south of the country (mountains and foothills). In northeastern Poland, it has so far been reported from the Masurian Lake District and Białowieża Forest (Kubisz et al. 2015).

Biology and ecology

Larvae of this species develop in the decaying, fungus-infected wood of deciduous trees; oak, beech and birch, among others, are listed as host plants. Imagines are found from May to July on breeding material and the flowers of various plants (Borowiec 1996).

Notes

Listed as LC (least concern) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Considered a relict of natural forests.

A new species for Podlasie.

Mordellaria aurofasciata (Comolli, 1837) (Fig. 304)

Fig. 304. ***Mordellaria aurofasciata*** **(Comolli, 1837) (Mordellidae)** (photo G. Tarwacki)

Material examined (Fig. 302)

Data from the literature: reported from the Budzisk (FE50) and Jesionowe Góry (FE51) reserves by Marczak et al. (2023c).

Distribution

Mainly found in Europe, this rare species has also been reported from northern Africa (Algeria) and Iran (Iwan & Löbl 2020). In Poland, it is thus far known from a small number of localities in the eastern part of the country, including Białowieża Forest (Borowski 2001).

Biology and ecology

A thermophilic species with very poorly understood bionomics. According to Borowiec (1996), it occurs in dry sites of ruderal vegetation. The same author reports that larvae can develop in the dead branches of hawthorn, hazel, and apple trees. Imagines were caught on the flowers of celery family plants (Apiaceae).

Notes

Listed as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Mordellistena secreta **Horák, 1983** (Fig. 305)

Fig. 305. ***Mordellistena secreta*** **Horák, 1983 (Mordellidae)** (photo T. Mokrzycki)

Material examined (Fig. 302)

Original data: Kołodno (FD69), 4.06.2022 – 4 exx., leg. J.M. Gutowski, det. A. Lasoń.

Distribution

A rare European species, also reported from Turkey and Israel (Iwan & Löbl 2020). It probably occurs in most areas of our continent, although the exact distribution is difficult to determine due to its previous lack of differentiation from the related *Mordellistena pentas* Muls. (Kubisz et al. 2015). Rarely recorded in Poland, it is known from a small number of localities in various parts of the country, including Podlasie (Kubisz et al. 2010a).

Biology and ecology

Its biology is unknown. Imagines were caught at forest edges and in xerothermic areas, on the flowers of various herbaceous plants (Borowiec 1996).

Aderidae

***Euglenes oculatus* (Paykull, 1798)** (Fig. 306)

Fig. 306. ***Euglenes oculatus* (Paykull, 1798) (Aderidae)** (photo A. Lasoń)

Material examined (Fig. 307)

Data from the literature: Supraśl Forest District, Kopna Góra (FE60), 25.08.1985 – 1 ex. (Kubisz & Szwałko 1991; Kubisz et al. 2014); Czarna Białostocka Forest District, Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c).

Distribution

It is found in Europe, but its range is not well understood, due to systematic ambiguities (Burakowski et al. 1987). In Poland, it is known from a small number of localities scattered only in parts of Poland's geographic regions. It has been reported from the Baltic Coast, the Pomeranian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Podlasie, Białowieża Forest, the Trzebnickie Hills, Lower and Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, and the Świętokrzyskie Mountains (Jałoszyński et al. 2013; Kubisz et al. 2014).

Biology and ecology

Euglenes oculatus is usually collected in small numbers by net sweeping and being beating sheet shrubs and trees. Its distribution and biology are poorly understood due to identification problems (Jałoszyński et al. 2013). The beetles fly during warm evenings near trees. Larvae develop in the wood of deciduous tree branches, especially oaks with brown rot (Burakowski et al. 1987).

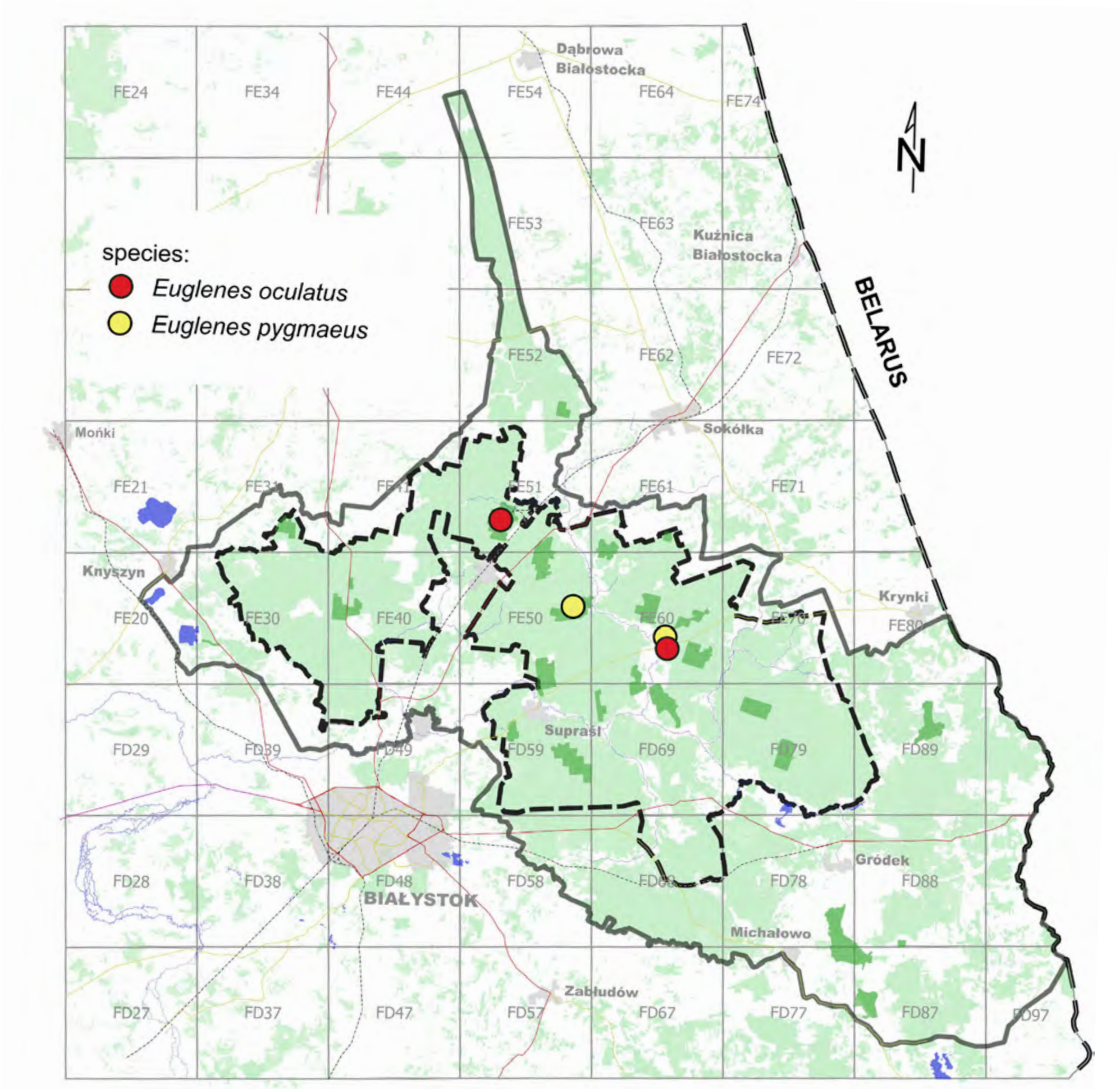


Fig. 307. Localities of *Euglenes oculatus* and *E. pygmaeus* (Aderidae) in Knyszyńska Forest

Euglenes pygmaeus (De Geer, 1775) (Fig. 308)

Material examined (Fig. 307)

Original data: Czarna Białostocka Forest District, Budzisk Reserve, compartment 109 (53.282596, 23.376335, FE50), 28.06-26.07.2017 – 1 ex., black Lindgren funnel trap with bait, leg. J.M. Gutowski, det. A. Lasoń.

Data from the literature: Supraśl Forest District, Kopna Góra (FE60), 25.08.1985 – 1 ex. (Kubisz & Szwałko 1991; Jałoszyński et al. 2013; Kubisz et al. 2014).

Fig. 308. ***Euglenes pygmaeus*** **(De Geer, 1775) (Aderidae)** (photo A. Lasoń)

Distribution

Distributed throughout Europe, except in the northern part of Fennoscandia (Burakowski et al. 1987). In Poland, it has been reported from the Baltic Coast, the Pomeranian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Podlasie, Białowieża Forest, the Trzebnickie Hills, Lower and Upper Silesia, the Małopolska Upland, the Świętokrzyskie Mountains, Roztocze, the Western Sudetes, the Western Beskid, the Nowy Targ Basin, and the Pieniny Mountains (Jałoszyński et al. 2013; Kubisz et al. 2014).

Biology and ecology

Euglenes pygmaeus develops on oak trees. The beetles were observed from mid-April to mid-August (Jałoszyński et al. 2013). They are found on trunks and branches, under detached bark, in decayed wood, in humus, and under fallen foliage at the base of trees. They are active during warm evenings. Larvae develop in wood with brown rot (Burakowski et al. 1987). Kubisz et al. (2014) write that the biology of this species is largely unknown, and it is likely that this beetle develops in fungus-infected wood.

Phytobaenus amabilis **Sahlberg, 1834** (Fig. 309)

Material examined (Fig. 310)

Original data: Supraśl Forest District, Jałówka Reserve (FE50), 20.05.2023 – 1 ex., leg. & det. R. Królik.

Data from the literature: Czarna Białostocka Forest District, Budzisk Reserve (FE50) (Kwiatkowski & Marczak 2020b; Marczak et al. 2023c).

Fig. 309. ***Phytobaenus amabilis*** **Sahlberg, 1834 (Aderidae)** (photo A. Lasoń)

Distribution

Reported from Japan, Siberia, and parts of Europe (Burakowski et al. 1987). In Poland, it is reported from the Masurian Lake District, the Mazovian Lowland, Białowieża Forest, the Kraków-Wieluń and Małopolska Uplands, the Eastern Beskids, and the Bieszczady Mountains (Jałoszyński et al. 2013; Kubisz et al. 2014).

Biology and ecology

Phytobaenus amabilis is usually collected in small numbers by net sweeping and being beating sheet shrubs and trees. The beetles were collected mainly in the summer months, but also in autumn (from late June to late October). The development of larvae is not known (Jałoszyński et al. 2013).

Pseudanidorus pentatomus **(Thomson, 1864)** (Fig. 311)

Material examined (Fig. 310)

Original data: Las Cieliczański Reserve (FD59), 13.06.2022 – 1 ex., mixed forest, beating sheet dead branches and polypores, leg. & det. A. Lasoń.

Distribution

Observed primarily in the central part of Europe (Iwan & Löbl 2020). In Poland, it is known from the Mazovian Lowland, Białowieża Forest, and the Świętokrzyskie Mountains (Jałoszyński et al. 2013; Kubisz et al. 2014).

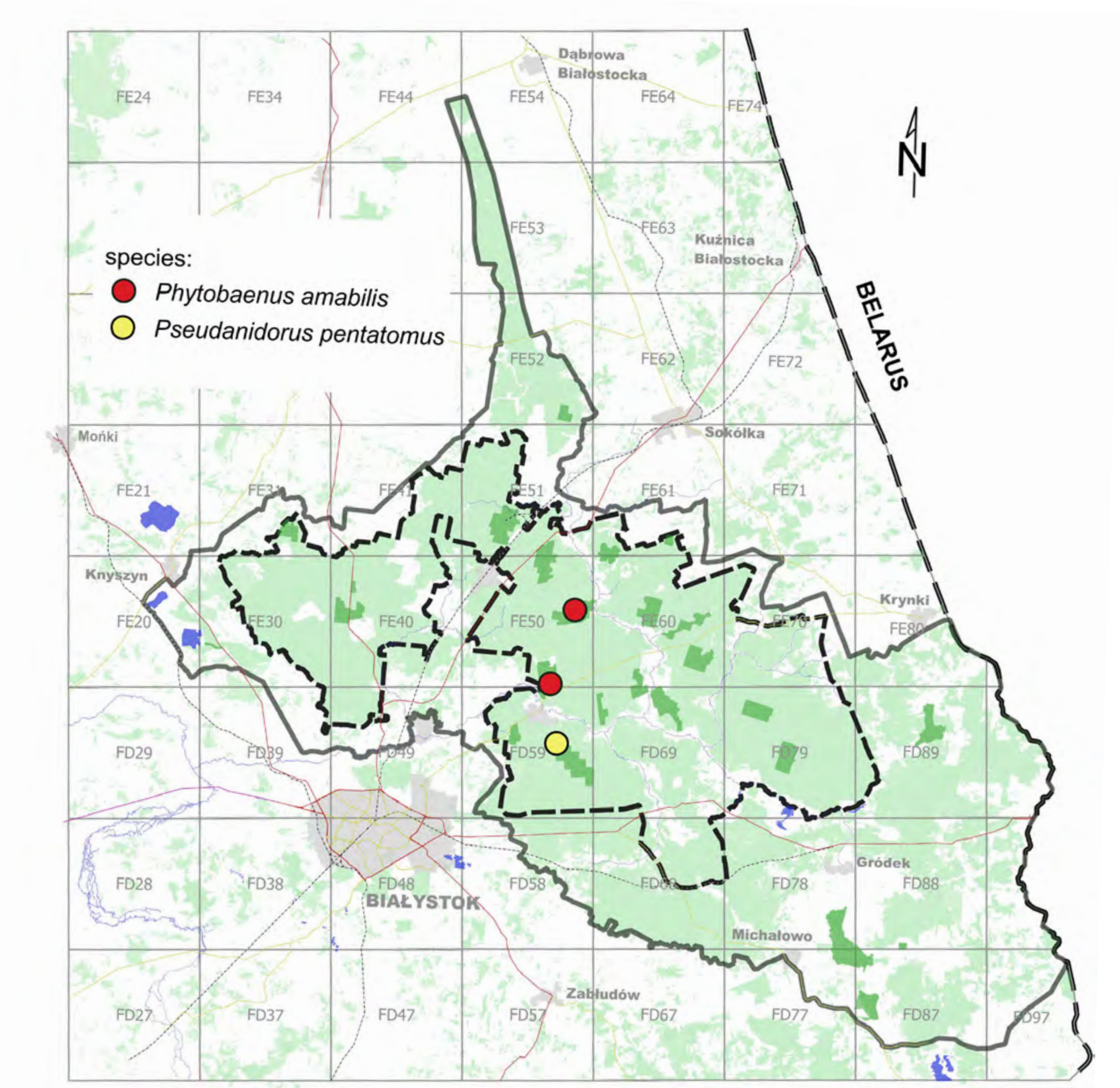


Fig. 310. Localities of *Phytobaenus amabilis* and *Pseudanidorus pentatomus* (Aderidae) in Knyszyńska Forest

Biology and ecology

Its biology is largely unknown. In Poland, it was observed from June to the end of August in forests (net sweeping and using a light trap at night) (Jałoszyński et al. 2013).

Notes

A new species for Podlasie.

Fig. 311. ***Pseudanidorus pentatomus*** **(Thomson, 1864) (Aderidae)** (photo A. Lasoń)

Scraptiidae

Cyrtanaspis phalerata **(Germar, 1847)** (Fig. 312)

Fig. 312. ***Cyrtanaspis phalerata*** **(Germar, 1847) (Scraptiidae)** (photo G. Tarwacki)

Material examined (Fig. 313)

Original data: Las Cieliczański Reserve (FD59), 18.06.2020 – 1 ex., leg. & det. A. Lasoń.

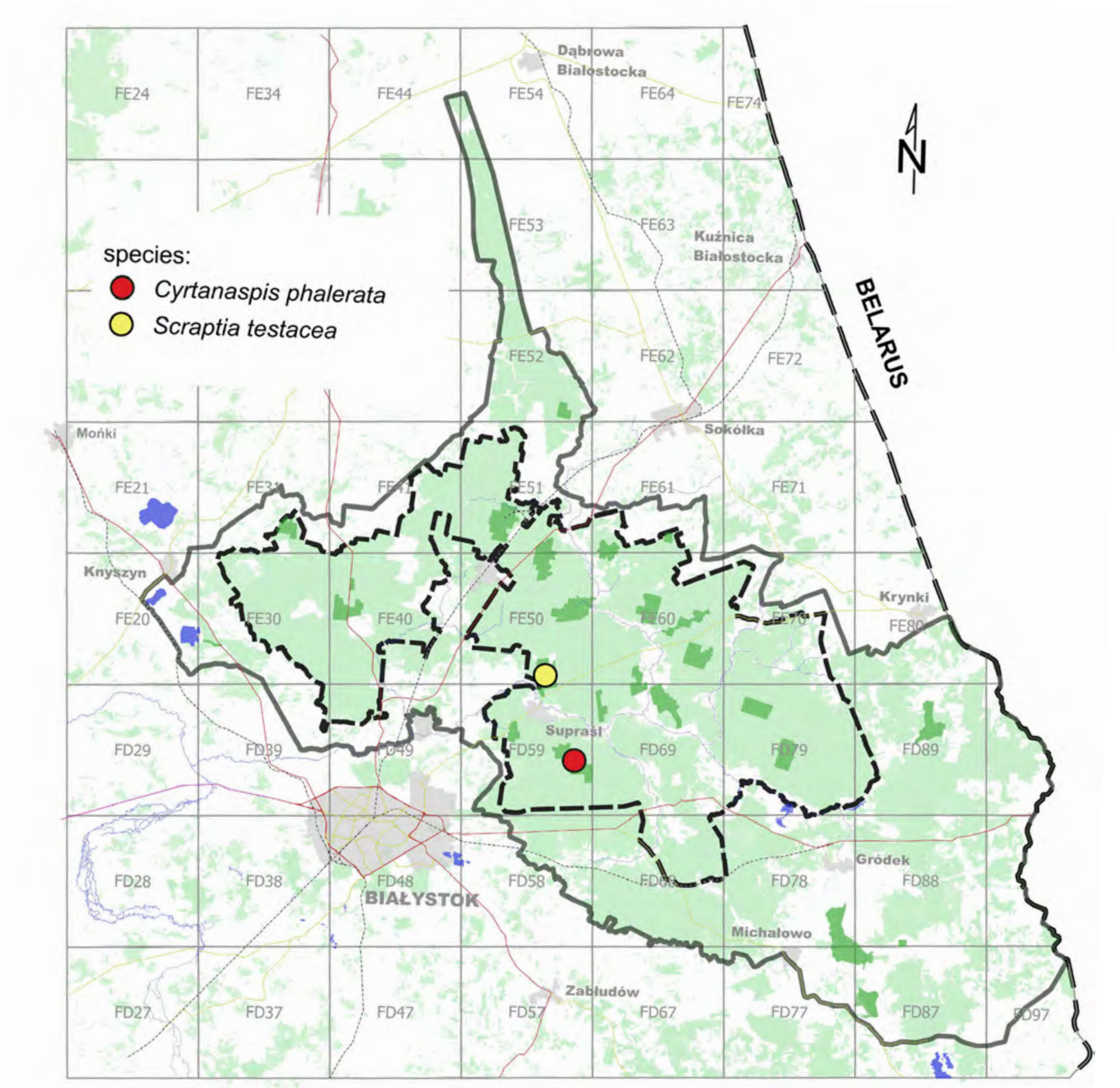


Fig. 313. Localities of *Cyrtanaspis phalerata* and *Scraptia testacea* (Scraptiidae) in Knyszyńska Forest

Distribution

A European species, found from the Mediterranean Sea to northern Scandinavia (Finland, Karelia). In the east, it has been recorded furthest to central Russia (Moscow District). Rare in Poland, but probably occurs throughout the country (Kubisz 2006; Kubisz et al. 2014).

Biology and ecology

A species with a rather fragmentary understanding of its biology. Development probably takes place in decaying, fungus-infected branches of deciduous trees and shrubs, although it has also been caught on coniferous trees. Imagines appear from May to August on breeding material as well as on flowering shrubs and herbaceous vegetation (Kubisz 2006).

Notes

A previously unrecorded species in Podlasie.

***Scraptia testacea* Allen, 1940** (Fig. 314)

Fig. 314. *Scraptia testacea* Allen, 1940 (Scraptiidae); in the circle – differential characteristics from *S. fuscula* Müll. (photo A. Larysz)

Material examined (Fig. 313)

Original data: Supraśl Forest District, Jałówka Reserve (FE50), 8.06.2021 – 2 exx., leg. & det. A. Lasoń.

Distribution

A species with an incompletely known range, as it has not been previously distinguished from related species. Reported from several countries in Central, Northern and Southern Europe, as well as northern Africa (Algeria) (Iwan & Löbl 2020). In Poland, it was recently found for the first time in several localities located in Upper Silesia (Grzywocz 2022). Its discovery in Knyszyńska Forest may indicate a wider distribution in our country, especially since it was previously not distinguished from the more widely distributed species in Poland – *Scraptia fuscula* Müll., which is also found in the study area. The co-occurrence of these two species is also noted in the literature (Grzywocz 2022).

Biology and ecology

Its biology is largely unknown. It is presumed that larval development is associated with decaying deciduous trees, as is the related species – *S. fuscula*. Imagines are secretive, probably active at twilight, as they are attracted to artificial light (Grzywocz 2022).

Notes

A new species for Podlasie.

Oedemeridae

Anogcodes melanurus (Fabricius, 1787) (Fig. 315)

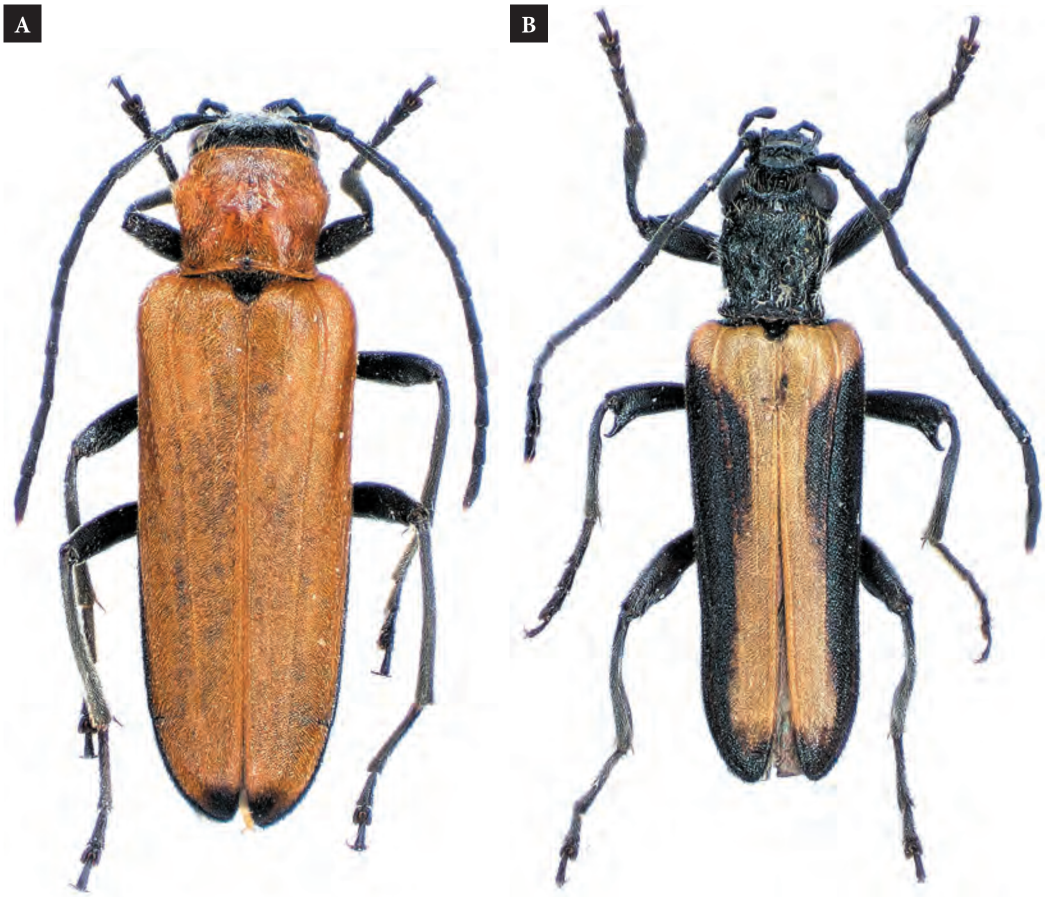


Fig. 315. ***Anogcodes melanurus*** **(Fabricius, 1787) (Oedemeridae): A – female, B – male** (photo G. Tarwacki)

Material examined (Fig. 316)

Data from the literature: found in Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

A species ranging from China (Xinjiang) to the Atlantic coast (France, the Netherlands) and the Mediterranean (including Turkish Anatolia). It reaches the Baltic coast in the north (Baltic States, Poland, Germany); not yet reported from the Scandinavian Peninsula and Denmark (Iwan & Löbl 2020). Rare in Poland, more numerous in the lowlands. It probably occurs throughout Poland, although it has not yet been reported from some regions.

Biology and ecology

Larvae develop in heavily moist, slightly decayed wood, sometimes also in old wooden buildings. Adult forms are found from June to August, usually in drier and warmer places, but also at water edges, on the flowers of shrubs (including *Cornus* L., *Syringa* L., *Spiraea* L.) and herbaceous plants (Apiaceae, *Cirsium* Mill., *Chrysanthemum* L.) (Kubisz 2006).

Notes

Reported in earlier literature as *Anogcodes ustulatus* (Scopoli, 1763). Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018)

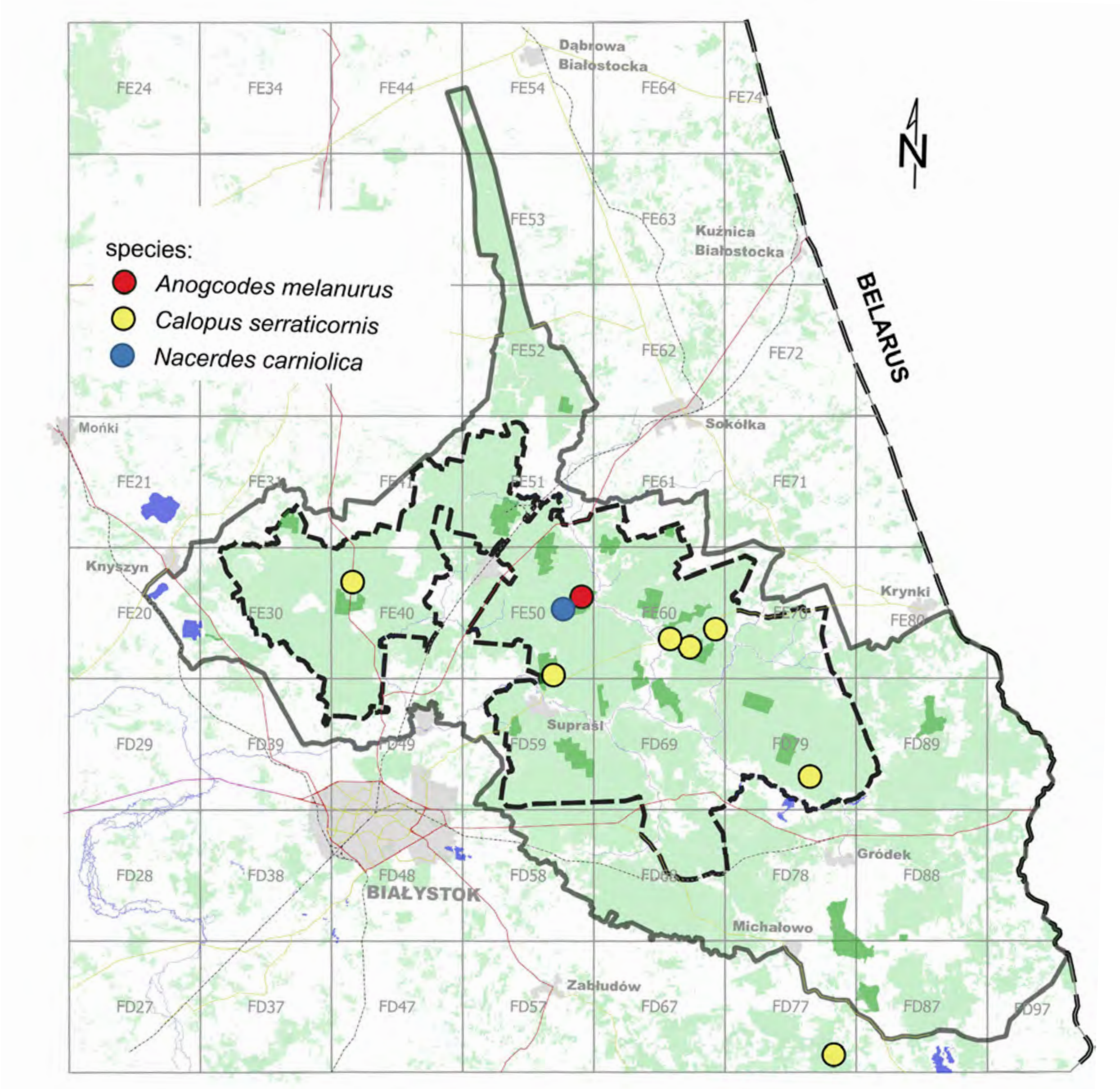


Fig. 316. Localities of *Anogcodes melanurus*, *Calopus serraticornis*, and *Nacerdes carniolica* (Oedemeridae) in Knyszyńska Forest

Anogcodes rufiventris (Scopoli, 1763) (Fig. 317)

Material examined

Data from the literature: reported from the vicinity of Białystok, 14-31.07.1909 (Roubal 1910); this information is repeated by Burakowski et al. (1987) and Kubisz (2006).

Distribution

It is found in Europe from its eastern reaches to France and Spain. In the south it reaches the Balkans, the Apennines, and Turkey. In the north it reaches Karelia and the southern shores of the Baltic Sea, also occurring on its islands (Gotland, Gotska Sandön, Farön). It is rare in Poland, known from scattered localities in different parts of the country. More numerous established localities are in mountainous and foothill areas (Kubisz 2006).

Fig. 317. ***Anogcodes rufiventris*** **(Scopoli, 1763) (Oedemeridae)** (photo L. Borowiec)

Biology and ecology

Larvae develop in the heavily moist, decayed wood of coniferous trees (*Picea* Dietr., *Abies* Mill., *Pinus* L.); they excavate tunnels in the outer layers of fungus-infected wood. Adult insects fly from April to August, and were caught on the flowers of various plants, including those in the Apiaceae family.

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Calopus serraticornis (Linnaeus, 1758) (Fig. 318)

Material examined (Fig. 316)

Original data: Żednia Forest District, ad Planta, compartment 145 (FD77), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski; Supraśl Forest District, ad Grodzisko, compartment 193 (FE60), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski; Knyszyn Forest District, Karczmisko Reserve, compartment 144 (FE40), 22.04-9.06.2008 – 2 exx., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski; Supraśl Forest District, Jałówka Reserve, compartment 144 (FE50), 22.04-9.06.2008 – 2 exx., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski; Waliły Forest District, ad Królowe Stojło, compartment 148 (FD79), 6.06-10.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń; Supraśl Forest District, Stare Biele Reserve, compartment 247 (FE60), 6.05-1.06.2021 – 1 ex., violet Lindgren funnel trap, leg. & det. K. Sućko.

Data from the literature: Kopna Góra (FE60), May 1986 and April 1989 (Kubisz & Pawłowski 1995; Kubisz 2006; Kubisz et al. 2014).

Distribution

The species is distributed from eastern Siberia to Western Europe. In Southern Europe, it is found only in mountainous areas; in the north it inhabits Scandinavia. In Poland, the species is not very rare, although difficult to observe due to its secretive habits and the adults emergence at night. It is found throughout the country (Kubisz 2006).

Fig. 318. ***Calopus serraticornis*** **(Linnaeus, 1758) (Oedemeridae)** (photo G. Tarwacki)

Biology and ecology

Larvae inhabit lying and standing dead, slightly decaying coniferous, and sometimes deciduous trees with high moisture content. Sometimes they also inhabit processed wood (fences, posts, roof beams). Adult insects are usually found from March to July, sitting on nesting material; they also fly to artificial light (Kubisz 2006).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Chrysanthia geniculata (Schmidt, 1846) (Fig. 319)

Material examined

Original data: the species is common in Knyszyńska Forest, known from many localities, including the Budzisk (FE50), Surażkowo (FE60), and Woronicza (FE60) reserves.

Data from the literature: Kopna Góra (FE60), Poczopek (FE70), Knyszewicze (FE71) (Kubisz & Szwałko 1991, Kubisz 2006, Kubisz et al. 2014); Budzisk Reserve (Marczak et al. 2023c).

Distribution

The total range of this species extends from Japan, Korea, and northern China to the Atlantic. In Europe, it is distributed from Lapland to Greece and the Iberian Peninsula (Iwan & Löbl 2020). In Poland, it is common throughout the country, being one of the three most common species from this family (Kubisz 2006).

Fig. 319. ***Chrysanthia geniculata*** **(Schmidt, 1846) (Oedemeridae)** (photo J.M. Gutowski)

Biology and ecology

Larvae develop in the deadwood of pine, less often spruce, in decaying branches lying on the ground or in stumps. Adults are found from May to September, including on the flowers of celery family plants (Kubisz 2006).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Nacerdes carniolica (Gistel, 1834) (Fig. 320)

Material examined (Fig. 316)

Data from the literature: found in Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

The species is found in Europe (including the Caucasus) and Turkey, where, however, another subspecies has been found (Iwan & Löbl 2020). In Poland, it was first found relatively recently in Białowieża Forest (Gutowski et al. 2012a).

Biology and ecology

The biology of this species is fairly well understood. Larvae develop in the decaying wood of coniferous trees, mainly pine and fir. Imagines stay hidden during the day and emerge at twilight. At night they feed on the flowers of various plants. Details of the biology of this species are summarized in the work of Gutowski et al. (2012a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Second confirmed locality in Poland. A new species for Podlasie.

Fig. 320. ***Nacerdes carniolica*** **(Gistel, 1834) (Oedemeridae)** (photo K. Sućko)

Boridae

Boros schneideri **(Panzer, 1796)** (Fig. 321)

Material examined (Fig. 323)

Original data: due to the sensitivity of locational data, the site of *Boros schneideri* is presented only on the map (Fig. 322).

Data from the literature: information about this species in Knyszyńska Forest was published by Kwiatkowski & Marczak (2020a, 2020b).

Fig. 321. *Boros schneideri* (Panzer, 1796) (Boridae): A – imago, B – larva (photo J.M. Gutowski)

Distribution

Found in the northern Palaearctic from Japan to eastern Europe (Russia, Ukraine) and northeastern Europe (Lapland, Finland, Sweden, Latvia, Lithuania, Belarus) (Kubisz 2004b). In Poland, the species is currently reported from Romincka Forest (Bohdan et al. 2021), Augustów Forest (Gutowski & Sućko 2015), Białowieża Forest (Gutowski et al. 2014; Jaworski et al. 2019), the Parczew area (Sućko original information), Hrubieszów (Plewa et al. 2014), Przemyśl (Buchholz et al. 2012), Bieszczady National Park (Olbrycht et al. 2019), and the Suchedniów Plateau (Buchholz et al. 2012).

Biology and ecology

Development takes place under the bark of dead, old, standing pines (Fig. 323), less frequently other coniferous and deciduous trees (Gutowski et al. 2014; Jaworski et al. 2019).

Fig. 322. *Boros schneideri* larval gallery on an old, dead pine tree (photo J.M. Gutowski)

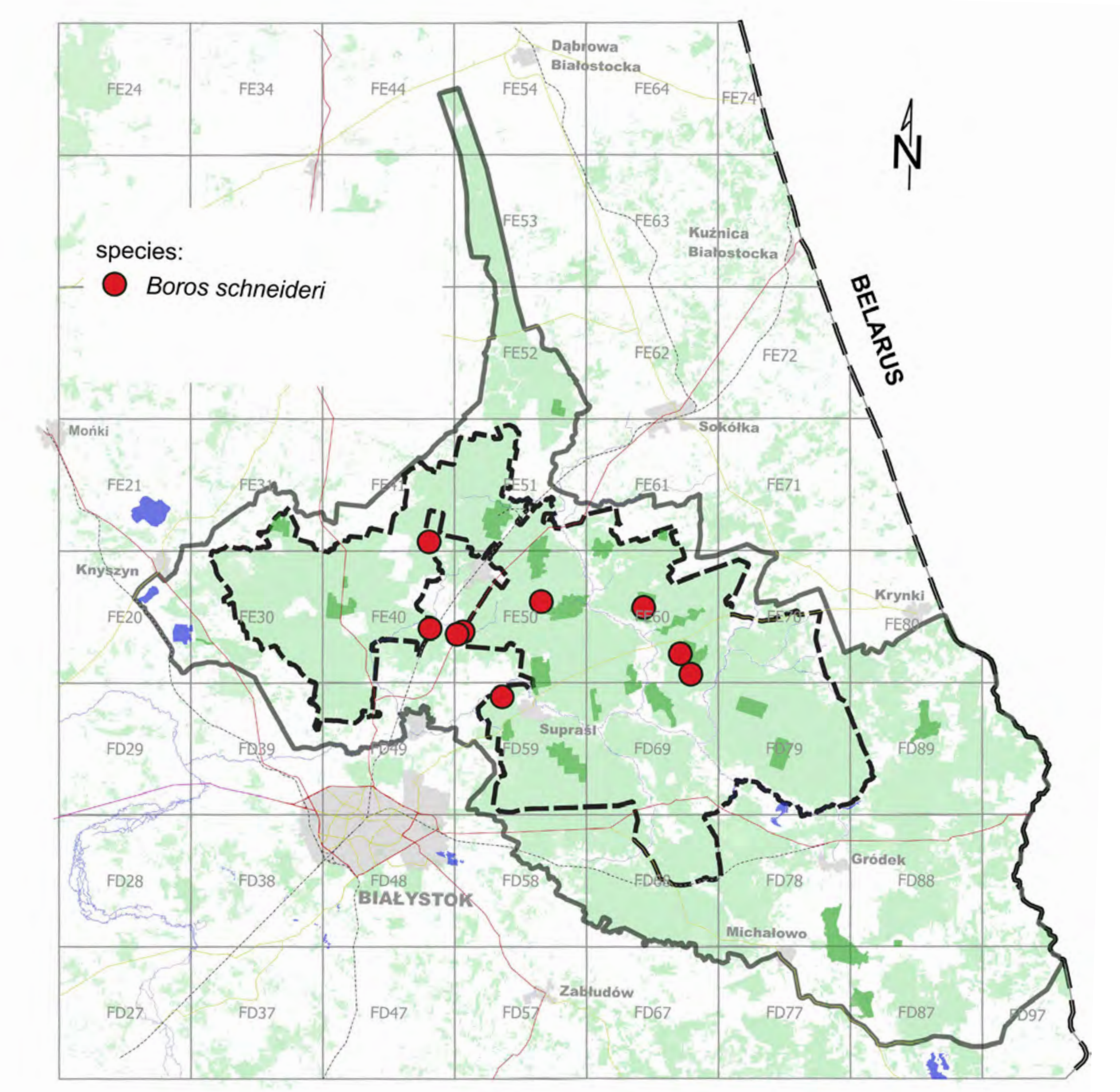


Fig. 323. Localities of *Boros schneideri* (Boridae) in Knyszyńska Forest

Larvae feed in the layer of decaying phloem and in the outer layers of wood, often using the tunnels of various other cambio- and xylophagous insects. They feed on decaying wood, various organic debris, and xylophagous fungi. Its full developmental cycle takes two years. Pupation occurs in late summer, and the emerging beetles overwinter in bark crevices or in plant litter at the base of the trunk. The adult insects are secretive (Kubisz 2004b).

Notes

A strictly protected species since 2004, it is also listed in Annexes II and IV of the Habitats Directive. Listed as VU (vulnerable) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018), and as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). In recent years, it has been increasingly observed in the eastern part of the country, but this is probably due to the intensification of research in this region.

Pythidae

***Pytho depressus* (Linnaeus, 1767)** (Fig. 324)

Fig. 324. *Pytho depressus* (Linnaeus, 1767) (Pythidae): A – imago (photo J.M. Gutowski)**, B – larva** (photo J. Kupryjanowicz)

Material examined

Original data: common species in Knyszyńska Forest, occurs, among others, in the Bahno w Borkach (FD69), Budzisk (FE50), Chomontowszczyzna (FD79), Góra Pieszczana (FD79), Jałówka (FD59), Jesionowe Góry (FE51), Kozłowy Ług (FE61), Krasne (FD59), Krzemienne Góry (FD69), Las Cieliczański (FD59), and Taboły (FE50) reserves.

Data from the literature: Kopna Góra ad Supraśl (FE60) (Kubisz & Pawłowski 1995; Kubisz et al. 2014); Krasne Forest Subdistrict, compartment 226 (FD59) and Józefowo Forest Subdistrict, compartment 375 (FD88) (Plewa et al. 2014); Budzisk (FE50) and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c).

Distribution

A species distributed in almost all of Europe except its extreme southern parts, southward reaching northern Italy and Bosnia and Herzegovina; also reported from the Caucasus, as well as from Siberia and the Far East (Pollock & Iwan 2020). It probably occurs throughout Poland, although it is not yet reported from some regions (Burakowski et al. 1987; Kubisz et al. 2014).

Biology and ecology

It inhabits lowland and mountainous areas, colonizing both standing and recently fallen dead coniferous trees, especially pines. Its development cycle lasts at least two years. Larvae live under loosened bark, usually feeding in the tunnels of beetle larvae boring under the bark, especially bark beetles. Pupation usually takes place in August or September. Adults overwinter in pupal cells, where they are most often found, sometimes in larger numbers (Burakowski et al. 1987).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Salpingidae

***Rabocerus foveolatus* (Ljungh, 1823)** (Fig. 325)

Fig. 325. ***Rabocerus foveolatus* (Ljungh, 1823) (Salpingidae)** (photo G. Tarwacki)

Material examined (Fig. 326)

Original data: Czarna Białostocka Forest District, Czarna Wieś Forest Subdistrict, compartment 208/209 (FE41), 5-28.06.2016 – 1 ex., leg. & det. R. Plewa (Borowski et al. 2016); Knyszyn Forest District, Krzemianka Reserve (FE40), 14.07.2021 – 1 ex., mixed forest, beating sheet, leg. & det. A. Lasoń.

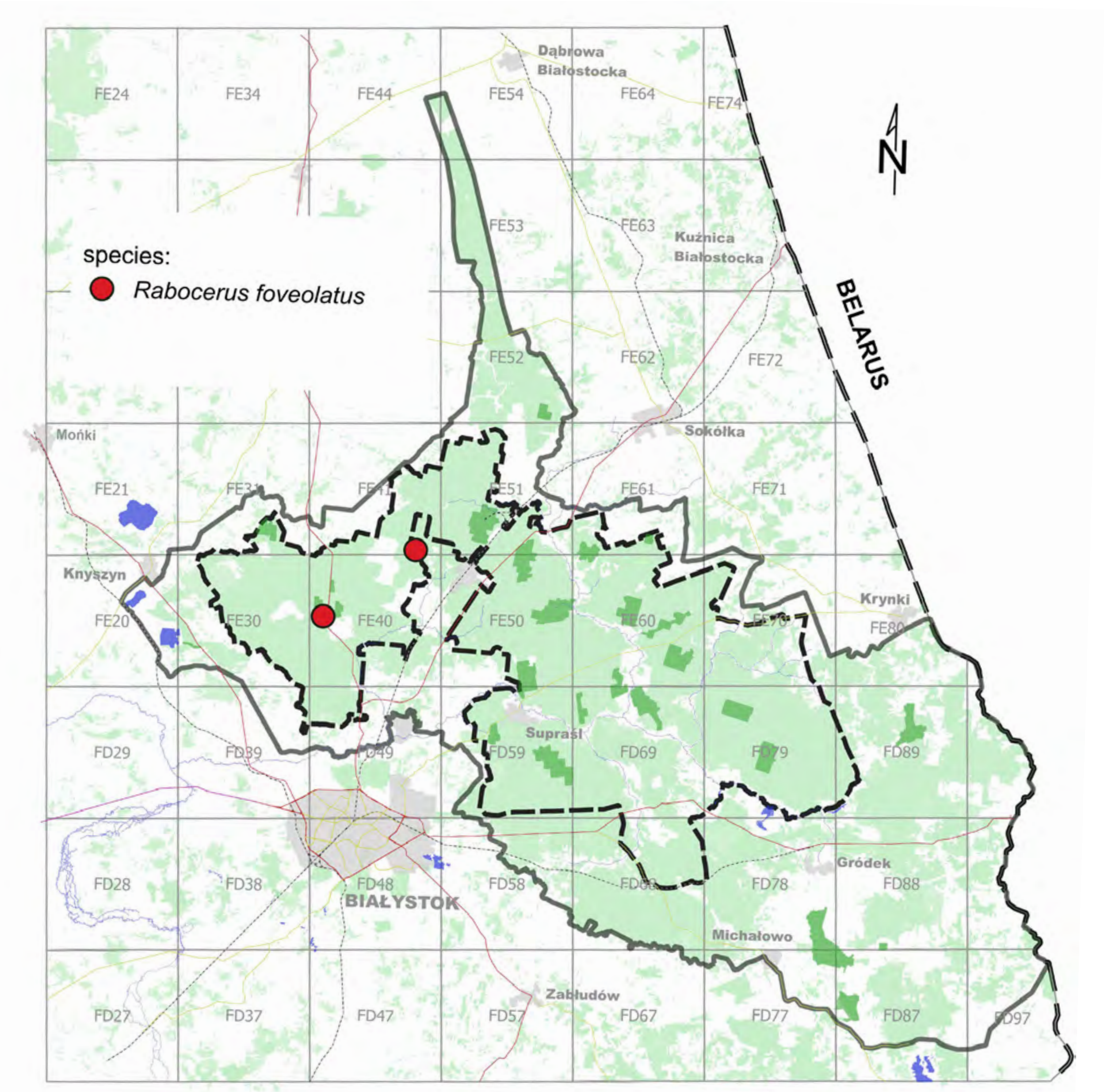


Fig. 326. Localities of *Rabocerus foveolatus* (Salpingidae) in Knyszyńska Forest

Distribution

A widely distributed European species, from England, the extreme northern provinces of Fennoscandia and the Kola Peninsula, across Central Europe to the Pyrenees, northern Italy, and Transylvania. In Poland, it is reported from a small number of localities, scattered in ten zoogeographical regions in different parts of the country. As rightly noted by Jałoszyński et al. (2012), it has been rarely and sporadically caught in recent years, with most data dating back several decades. In recent years, it has been reported only from the Kraków-Wielun Upland (Jałoszyński et al. 2012).

Biology and ecology

It is a stenotopic species, classified as a forest species in Central Europe (Koch 1989b; Nikitsky 2016). It occurs mainly under the bark and in the rotten, fungus-infected wood of deciduous trees. Larvae feed in the tunnels of bark beetles, especially *Dryocoetes alni* (Georg) and *Scolytus ratzeburgii* Jans.

Melandryidae

Hypulus quercinus (Quensel, 1790) (Fig. 327)

Fig. 327. ***Hypulus quercinus*** **(Quensel, 1790) (Melandryidae)** (photo A. Lasoń)

Material examined (Fig. 328)

Data from the literature: Czarna Białostocka Forest District, Dąbrowa Forest Subdistrict, compartment 42 (FE53), 17.05.2014 – 1 ex.; Budzisk Forest Subdistrict, compartment 100 (FE50), 27.05.2016 – 1 ex.; Polanka Forest Subdistrict, compartment 43 (FE50), 27.05.2016 – 1 ex., all in Netocia-type traps on oak (Mokrzycki et al. 2022).

Distribution

The species is widely distributed in Europe, found from the Mediterranean basin to the southern reaches of Scandinavia, encountered with increasing frequency within the species' range as it moves west and south (Burakowski et al. 1987; Nikitsky & Pollock 2008). In Poland, it occurs in a small number of localities scattered throughout the country (Kubisz et al. 2014).

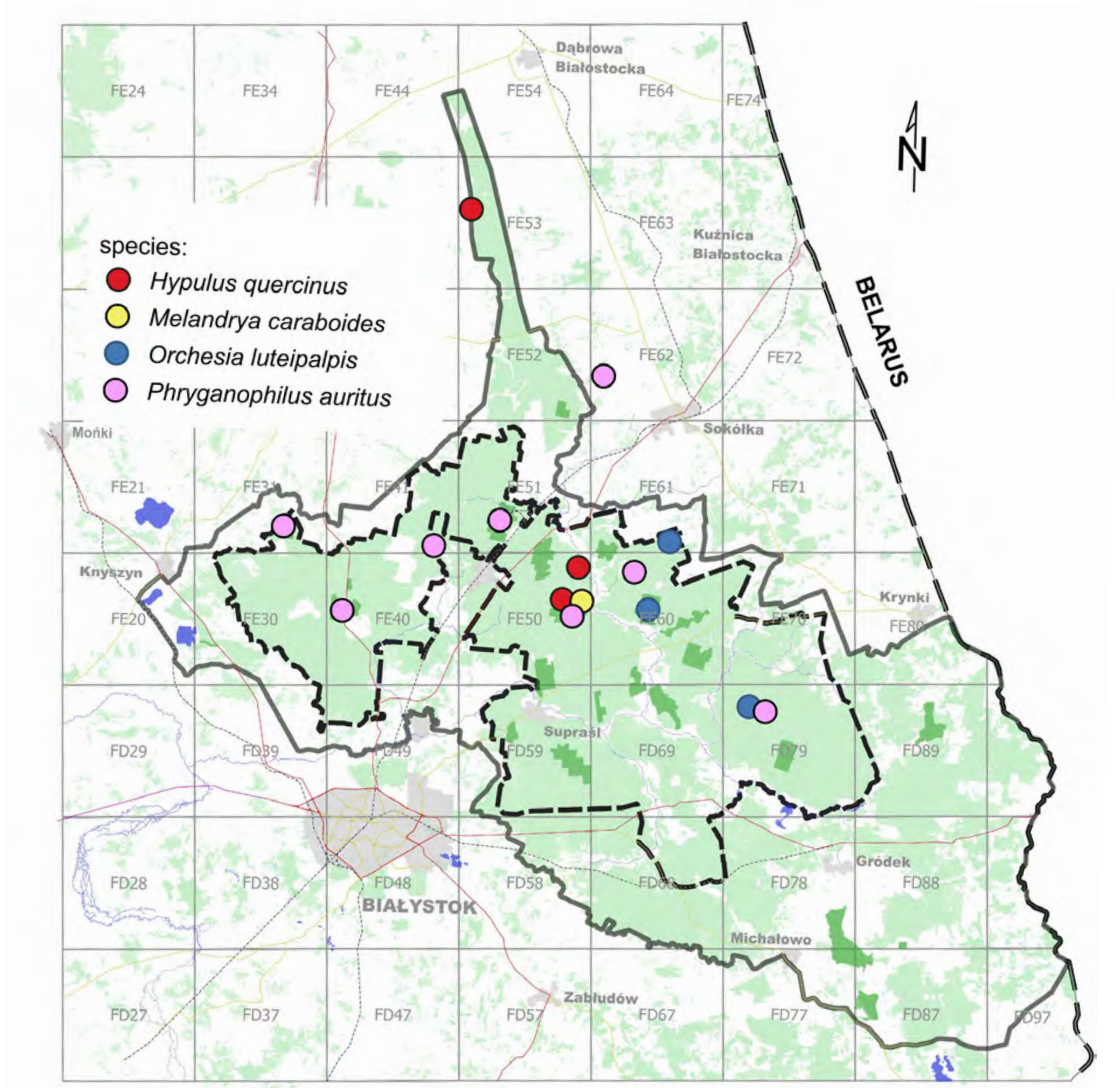


Fig. 328. Localities of *Hypulus quercinus*, *Melandrya caraboides*, *Orchesia luteipalpis*, and *Phryganophilus auritus* (Melandryidae) in Knyszyńska Forest

Biology and ecology

The typical habitat of this species is old forests with a high number of large oak trees in various stages of decay. Larvae feed mostly in the outer wood layers of trunks and lying logs. Adults overwinter in pupal cells (Burakowski et al. 1987; Sućko original information).

Melandrya caraboides (Linnaeus, 1760) (Fig. 329)

Material examined (Fig. 328)

Data from the literature: species found only in Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

The species is widely distributed in Europe, also reaching Siberia. It inhabits lowland areas and lower mountainous locations (Burakowski et al. 1987; Nikitsky & Pollock 2008). In Poland, it is known from a small number of localities (Kubisz et al. 2014).

Fig. 329. ***Melandrya caraboides*** **(Linnaeus, 1760) (Melandryidae)** (photo L. Borowiec)

Biology and ecology

Larvae feed in the decaying wood, still of considerable hardness, of the trunks and stumps of many deciduous trees. The beetles emerge in May and are found until July in the afternoon and evening (Burakowski et al. 1987).

Orchesia luteipalpis Mulsant et Guillebeau, 1857 (Fig. 330)

Material examined (Fig. 328)

Original data: Krynki Forest District, Góra Pieszczana Reserve (FD79), 27.07.2016 – 1 ex., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń; Międzyrzecze Reserve (FE60), 30.07.2022 – 1 ex., mixed coniferous forest, beating sheet, leg. & det. A. Lasoń; Stara Dębina Reserve (FE61), 19.06.2020 – 1 ex., oak-hornbeam forest, beating sheet, leg. & det. A. Lasoń.

Distribution

A widely distributed European species (Burakowski et al. 1987; Nikitsky & Pollock 2008), also reported from Turkey (Konvička 2012). Rare and sporadic everywhere. In Poland, it occurs in scattered locations throughout the country (Kubisz et al. 2014).

Biology and ecology

Little is known about the biology of this species. Adults were caught from April to July in polypores on deciduous trees. In Białowieża Forest, the species develops in the fruiting bodies of the fungus *Inonotus radiatus* (Sowerby) P. Karst. (Sućko original information).

Fig. 330. ***Orchesia luteipalpis*** **Mulsant et Guillebeau, 1857 (Melandryidae)** (photo A. Lasoń)

Phryganophilus auritus Motschulsky, 1845 (Fig. 331)

Fig. 331. ***Phryganophilus auritus*** **Motschulsky, 1845 (Melandryidae)** (photo J. Tatur-Dytkowski)

Material examined (Fig. 328)

Original data: Supraśl Forest District, Lipina Forest Subdistrict (FE60), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski; Czarna Białostocka Forest District, Bogusze Forest Subdistrict, compartment 410 (FE62), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. K. Sućko; Czarna Białostocka Forest District, Czarna Wieś Forest Subdistrict (FE41), 5-28.06.2016 – 1 ex., IBL-2 trap, leg. & det. R. Plewa (Borowski et al. 2016); Góra Pieszczana Reserve (FD79), 17.06.2016 – 1 ex., IBL-2 trap, leg. & det. K. Komosiński; Knyszyn Forest District, Krzemianka Reserve (FE40), 20.06.2020 – 1 ex., mixed forest, beating sheet, leg. & det. A. Lason; Wielki Las Reserve (FE31), 10.06.2021 – 1 ex., leg. & det. K. Sućko.

Data from the literature: Budzisk Reserve (FE50) on dead aspen *Populus tremula* L. (Kwiatkowski & Marczak 2020b); Marczak et al. (2023c) reported it from the Budzisk (FE50) and Jesionowe Góry (FE51) reserves.

Distribution

The species is mainly recorded from Central and Eastern Europe, also reaching Siberia (Burakowski et al. 1987; Nikitsky & Pollock 2008). In Poland, it occurs rarely, in scattered localities (Kubisz et al. 2014).

Biology and ecology

Larvae feed in the fungus-infected wood of branches lying in shady or damp places (Burakowski et al. 1987).

Notes

Included in the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2018) in group 1 (relict *sensu stricto*), and listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Ciidae

Cis quadridens **Mellié, 1849** (Fig. 332)

Fig. 332. ***Cis quadridens*** **Mellié, 1849 (Ciidae)** (photo R. Królik)

Material examined (Fig. 333)

Original data: Knyszyn Forest District, Krzemianka Reserve (FE40), 25.09.2021 – 1 ex., leg. & det. R. Królik; Krzemienne Góry Reserve (FD69), 28.05.2020 – 15 exx., mixed forest, polypores on *Corylus avellana* L., leg. A. Lasoń, det. R. Królik.

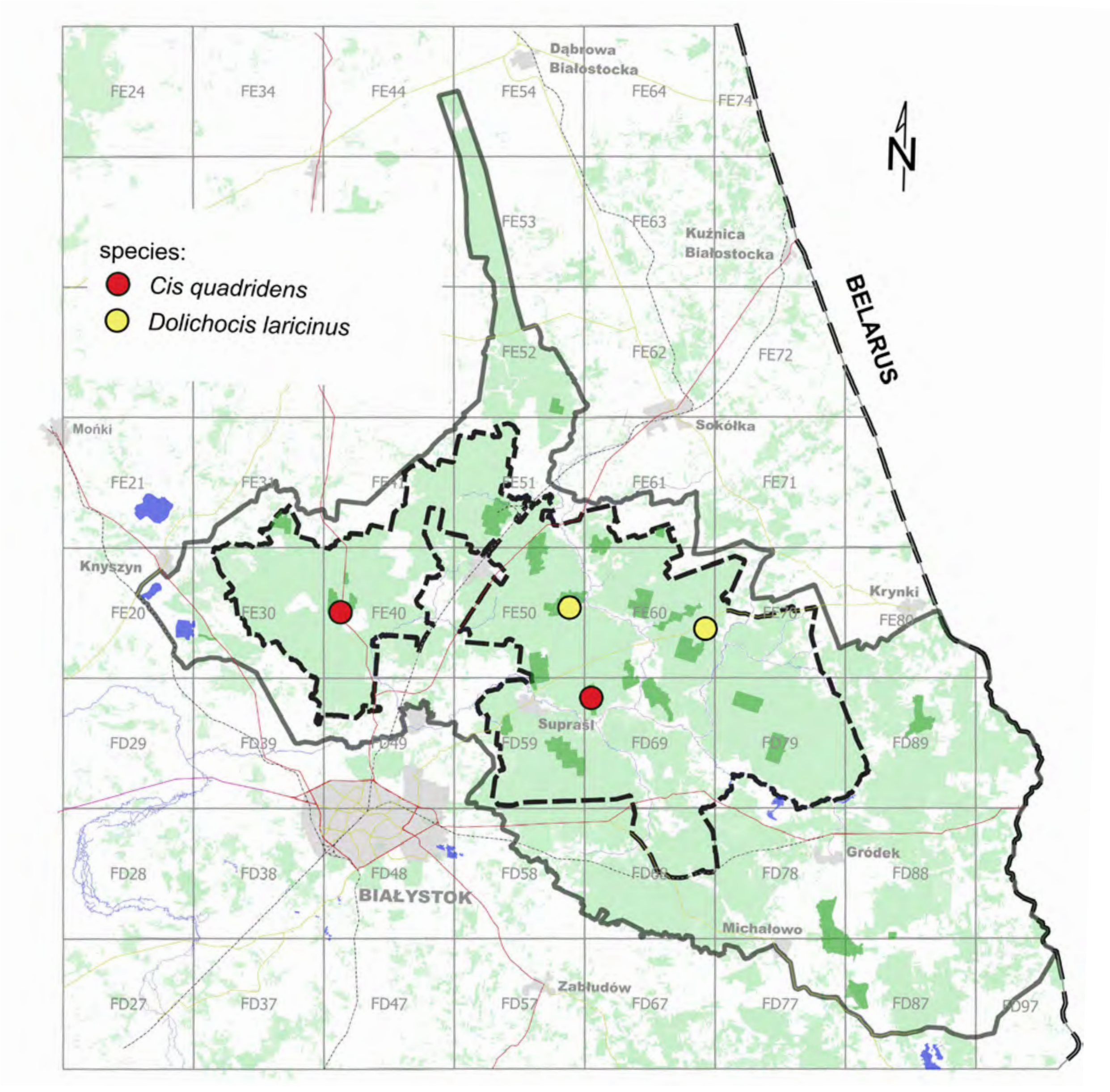


Fig. 333. Localities of *Cis quadridens* and *Dolichocis laricinus* (Ciidae) in Knyszyńska Forest

Distribution

The species is mainly distributed in Central Europe, reaching west to France, north to the Scandinavian Peninsula, south to the Balkans and Italy, reported east to the European part of Russia (Królik 2020). Everywhere found quite rarely and in small numbers. In Poland, known from a small number of scattered localities (Burakowski et al. 1987; Kubisz et al. 2014).

Biology and ecology

Development takes place mainly in hard fomitoid-type polypore fruiting bodies, usually growing on coniferous trees.

Dolichocis laricinus (Mellié, 1849) (Fig. 334)

Fig. 334. ***Dolichocis laricinus*** **(Mellié, 1849) (Ciidae)** (photo R. Królik)

Material examined (Fig. 333)

Original data: Supraśl Forest District, Klin Forest Subdistrict, compartment 193 (FE60), 22.04-6.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. R. Królik.

Data from the literature: Budzisk Reserve (FE50), 1-31.05.2019 – 1 ex. (Marczak et al. 2023c).

Distribution

A relict species with Holarctic distribution. Its range includes northern and eastern areas of Europe, Siberia, and the Far East (Królik 2020). In addition, it is known from North America (Lopes-Andrade et al. 2016). It is very rarely found in Poland, currently known from northeastern Poland – Białowieża Forest (Królik 1999; Borowski 2001, 2006) and Knyszyńska Forest, as well as the Świętokrzyskie Mountains (Borowski 2007a).

Biology and ecology

Development takes place in polypore fruiting bodies on coniferous trees. It prefers the fruiting bodies of *Rhodofomes roseus* (Alb. & Schwein.) Kotl. & Pouzar growing on dead spruce trees. This species is in the *Red List of Plants and Fungi of Poland* as E – extinct – critically endangered (Zarzycki & Mirek 2006).

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Together with its main host fungus, it deserves special protection, as both are associated with well-preserved, near-natural forests.

Hadreule elongatula (Gyllenhal, 1827) (Fig. 335)

Fig. 335. *Hadreule elongatula* (Gyllenhal, 1827) (Ciidae) (photo R. Królik)

Material examined (Fig. 336)

Original data: Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 110 (FE41), 6-29.06.2019 – 1 ex., violet Lindgren funnel trap, leg. J.M. Gutowski, det. R. Królik; Knyszyn Forest District, Krzemianka Forest Subdistrict, compartment 243 (FE40), 7.06-7.07.2008 – 2 exx., IBL-2 trap, leg. R. Plewa, det. R. Królik; Góra Pieszczana Reserve (FD79), 27.07.2016, IBL-2 trap – 19 exx., leg. K. Komosiński, det. R. Królik.

Data from the literature: Budzisk Reserve (FE50), 1-30.06.2019 – 2 exx. (Marczak et al. 2023c).

Distribution

A species known from Europe, Siberia, and northern Africa (Królik 2020). Also imported to Canada, where it is believed to have acclimatized (Lopes-Andrade et al. 2016). Very rare in Poland, currently found in well-preserved stands in the northeastern part of the country (Borowski 2001; Kubisz 2001; Gutowski et al. 2006, 2022; Piętka 2013), the Świętokrzyskie Mountains (Byk 2007), the Sudety Mountains (Borowiec 1993; Mazur et al. 2016), and the Carpathian Forest (Królik et al. 2017).

Biology and ecology

Little is known about the biology of this species. Most of the specimens currently caught were captured in barrier-type traps. Specimens *of H. elongatula* have been found in Scandinavia on the fruiting bodies of *Fomitopsis betulina* (Bull.) B.K. Cui, M.L. Han & Y.C. Dai, on birch trees, as well as in the larval tunnels of *Dorcatoma* sp. (Ptinidae), and in decaying wood (Lawrence 1971, 1973). Palm (1952) reported on the biology of this species from Sweden. Individuals of *H. elongatula* were raised from a decayed, sun- and fire-dried birch trunk broken off 3 m above the ground; in addition, specimens of *H. elongatula* were cultivated from a heavily decayed, moist, birch trunk lying on the ground.

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

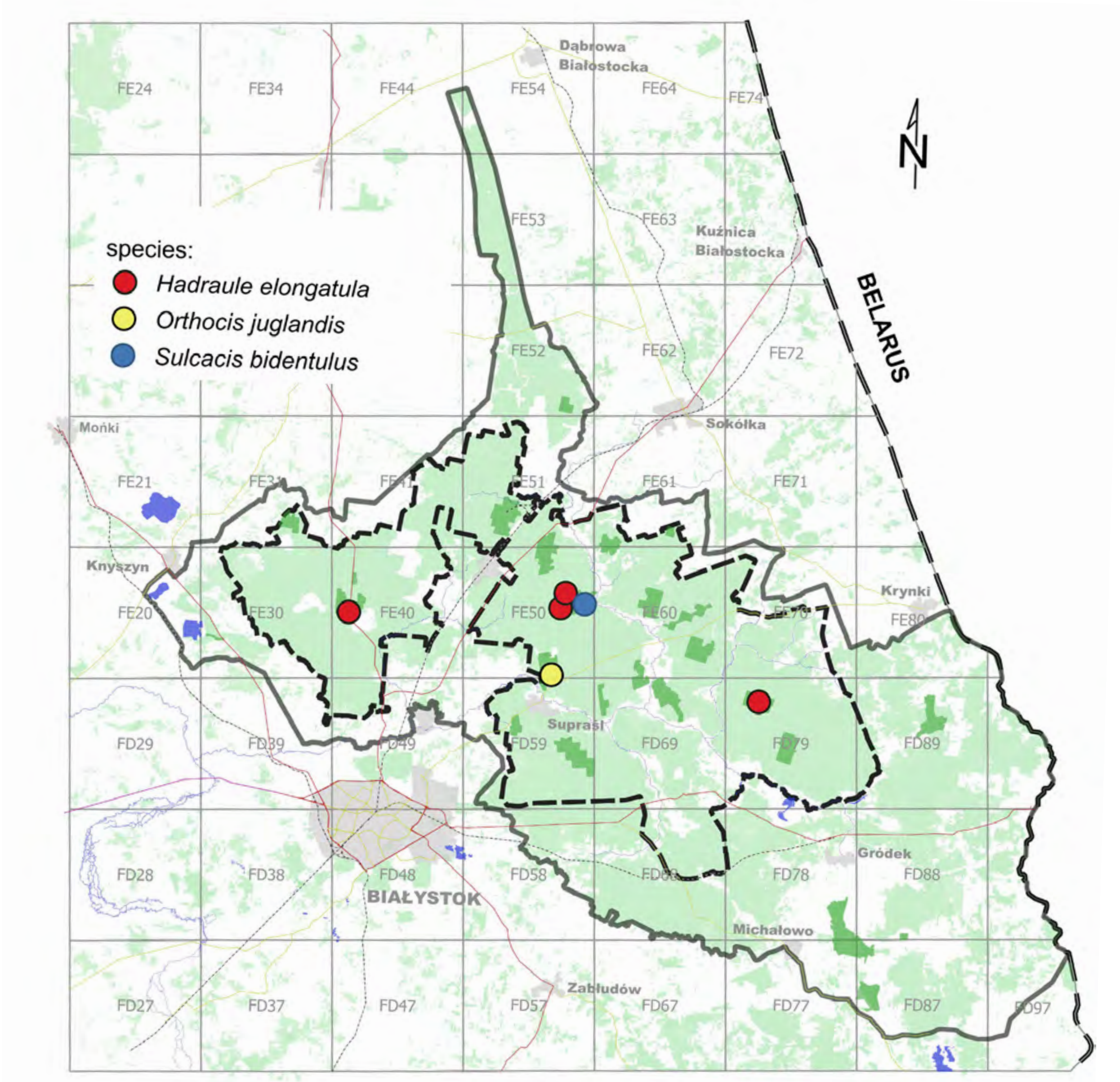


Fig. 336. Localities of *Hadraule elongatula*, *Orthocis juglandis*, and *Sulcacis bidentulus* (Ciidae) in Knyszyńska Forest

Orthocis juglandis (Reitter, 1885) (Fig. 337)

Material examined (Fig. 336)

Data from the literature: Jałówka Reserve and vicinity (FE50), 20.05.2023 – 1 ex. (Królik et al. 2023).

Distribution

The species is so far known from Austria, Switzerland, Bosnia and Herzegovina, Germany, Hungary, Serbia, and Montenegro (Królik 2020). Usually single specimens captured. In Poland, recently found in three localities located in the eastern part of the country (Królik et al. 2024).

Biology and ecology

No data are found in the literature on the biology of this species. Its biology is probably similar to that of the common *O. alni* (Gyll.), which develops in fungi of the order Auriculariales J. Schröt. growing on dead deciduous wood. The specimen from Jałówka Reserve was captured by being beating sheet dead branches in an alder habitat.

Fig. 337. ***Orthocis juglandis*** **(Reitter, 1885) (Ciidae)** (photo R. Królik)

Sulcacis bidentulus **(Rosenhauer, 1847)** (Fig. 338)

Fig. 338. ***Sulcacis bidentulus*** **(Rosenhauer, 1847) (Ciidae)** (photo R. Królik)

Material examined (Fig. 336)

Data from the literature: Budzisk Reserve (FE50), 1-30.06.2019 – 2 exx. (Marczak et al. 2023c).

Distribution

A species distributed mainly in Central and Southern Europe, also reported from eastern Siberia and Kazakhstan (Królik 2020). Not very common everywhere, including Poland, reported from a small number of localities, but certainly more widely distributed – to be found in suitable habitats. The most recent data is provided by Kadej et al. (2023).

Biology and ecology

It is mainly found in trametoid-type polypores of the genus *Coriolopsis* Murrill (Burakowski et al. 1987; Królik et al. 2005).

Notes

Data on its distribution in Poland, biology and a key to recognizing domestic species of the genus *Sulcacis* Dury are included in the work of Królik et al. (2005).

Mycetophagidae

***Litargus connexus* (Geoffroy, 1785)** (Fig. 339)

Fig. 339. *Litargus connexus* (Geoffroy, 1785) (Mycetophagidae) (photo L. Borowiec)

Material examined

Original data: common species in Knyszyńska Forest, known from many localities, including the Budzisk (FE50), Góra Pieszczana (FD79), Jesionowe Góry (FE51), Karczmisko (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), Międzyrzecze (FE60), Stara Dębina (FE61), and Taboły (FE50) reserves.

Data from the literature: Supraśl Forest District, Kopna Góra (FE60) (Kubisz & Szwałko 1991; Kubisz et al. 2015); Budzisk (FE50) and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c).

Distribution

An Eurosiberian species, widely distributed in almost all of Europe except northern parts of Scandinavia (Burakowski et al. 1986b). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Podlasie, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, the Lublin Upland, Roztocze, the Sandomierz Lowland, the Western Sudetes, as well as the Western and Eastern Beskids (Kubisz et al. 2015).

Biology and ecology

It is found under fungus-infected, detached bark in mold- and slime mold-covered rotten wood, mainly of deciduous trees, especially birches, willows, poplars, and alders. Larvae feed on fungal fruiting bodies and pupate under the bark in tree crevices or rotten wood (Burakowski et al. 1986b).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Mycetophagus ater **(Reitter, 1879)** (Fig. 340)

Fig. 340. ***Mycetophagus ater*** **(Reitter, 1879) (Mycetophagidae)** (photo A. Lasoń)

Material examined

Original data: caught and observed repeatedly at various localities in Knyszyńska Forest. Found in the Czarna Białostocka, Knyszyn, Supraśl, Waliły, and Żednia Forest Districts. Noted, among others, in the Budzisk (FE50), Jesionowe Góry (FE51), Karczmisko (FE40), Krzemianka (FE40), Stara Dębina (FE61), and Taboły (FE50) reserves. The report by Borowski et al. (2016) also includes information on the localities of this species in the study area.

Data from the literature: Czarna Białostocka Forest District, Lebiedzin Forest Subdistrict, compartment 136 (FE52), 2014 – many exx.; Czarna Białostocka Forest District, Dąbrowa Forest Subdistrict, compartment 42 (FE52), 17.05.2014 – 2 exx.; Budzisk Forest Subdistrict, compartment 100 (FE50), 27.05.2016 – 8 exx.; Żednia Forest District, compartment 78 (FD78), 22.04-6.06.2008 – 1 ex. (Mokrzycki et al. 2022); reported from the Budzisk (FE50) and Jesionowe Góry (FE51) reserves by Marczak et al. (2023c).

Distribution

The distribution of this species ranges from eastern Siberia to Europe (Croatia, France) (Burakowski et al. 1986b). In Poland, it is known from the Mazovian Lowland, Podlasie, Białowieża Forest, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, Roztocze, and the Sandomierz Lowland (Ruta et al. 2012; Kubisz et al. 2015).

Biology and ecology

Habitat requirements are not fully known, it is probably associated with fungi growing on deadwood (Burakowski et al. 1986b). Plewa et al. (2014) caught this species in traps placed near the fruiting bodies of *Fomes fomentarius* (L.) Fr., *Fomitopsis pinicola* (Sw.) P. Karst., *Laetiporus sulphureus* (Bull: Fr.) Murill, and *Ganoderma applanatum* (Pers.) Pat.

Notes

Listed as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Listed as DD (data deficient) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). Included in the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2018) in group 2 (relict *sensu lato*).

It has been observed more frequently in Poland in recent years (Mokrzycki et al. 2022).

Mycetophagus atomarius (Fabricius, 1787) (Fig. 341)

Fig. 341. ***Mycetophagus atomarius* (Fabricius, 1787) (Mycetophagidae)** (photo A. Lasoń)

Material examined (Fig. 342)

Original data: Supraśl Forest District, Stara Dębina Reserve (FE61), 19.06.2020 – 1 ex., oak-hornbeam forest, beating sheet, leg. & det. A. Lasoń; Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 100 (FE50), 27.05.2016 – 1 ex., Netocia trap, leg. I. Sztabkowska, det. T. Mokrzycki.

Data from the literature: Stara Dębina Reserve (FE61) (Mokrzycki et al. 2022); Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c).

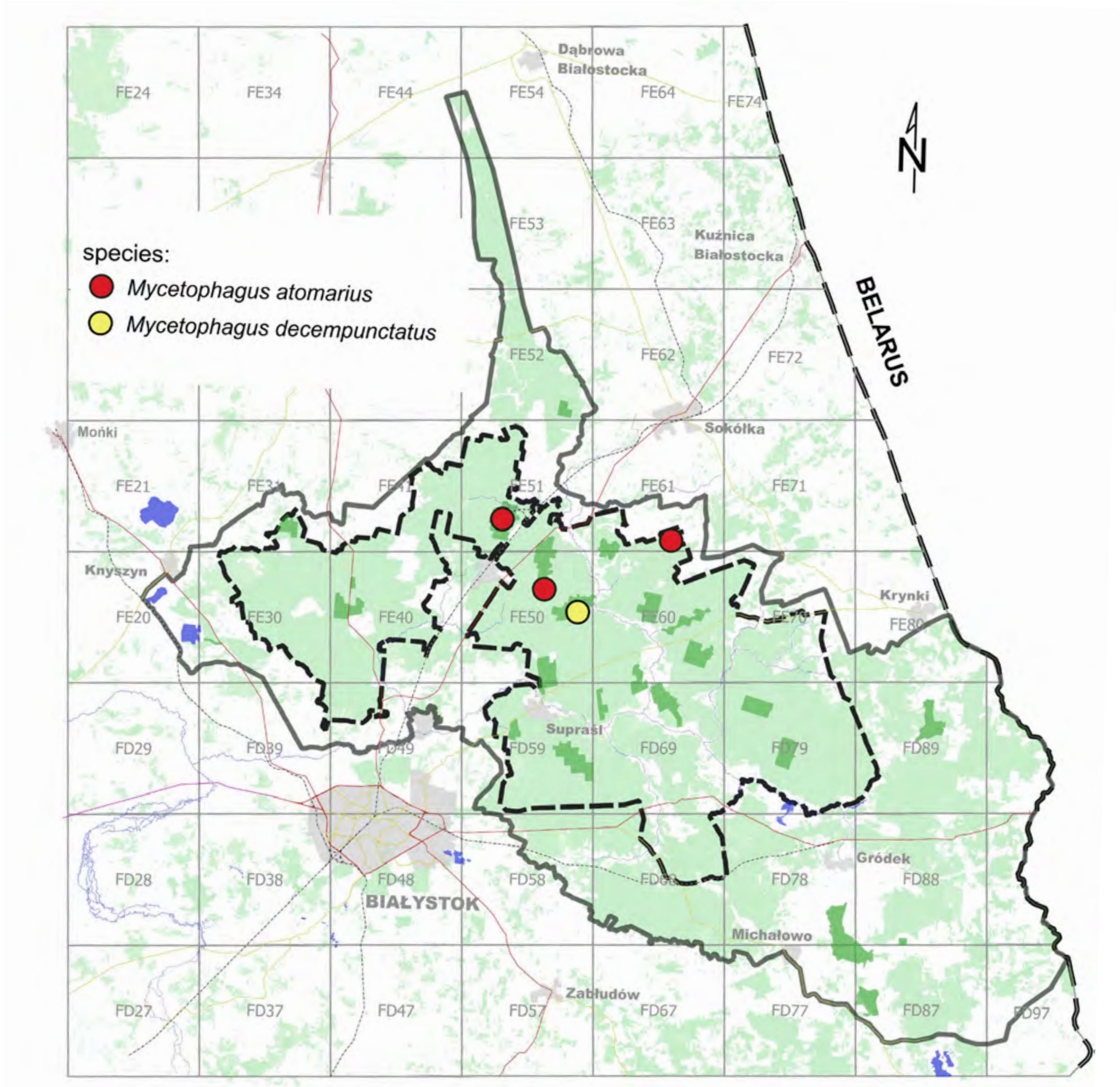


Fig. 342. Localities of *Mycetophagus atomarius* and *M. decempunctatus* (Mycetophagidae) in Knyszyńska Forest

Distribution

The species is widespread in almost all of Europe, occurring mainly in the mountains in the southern part of the continent (Burakowski et al. 1986b). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, Roztocze, the Sandomierz Lowland, the Western Sudetes, the Eastern Sudetes, the Western and Eastern Beskids, the Bieszczady Mountains, and the Pieniny Mountains (Kubisz et al. 2015).

Biology and ecology

It occurs on the fruiting bodies of arboreal fungi, less often on ground fungi (Burakowski et al. 1986b).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Mycetophagus decempunctatus Fabricius, 1801 (Fig. 343)

Fig. 343. ***Mycetophagus decempunctatus*** **Fabricius, 1801 (Mycetophagidae)** (photo A. Lasoń)

Material examined (Fig. 342)

Data from the literature: Czarna Białostocka Forest District, Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

Found in Europe from France to Russia and Scandinavia (Burakowski et al. 1986b). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Podlasie, Białowieża Forest, Lower and Upper Silesia, the Kraków-Wieluń Upland, the Świętokrzyskie Mountains, the Sandomierz Lowland, the Eastern Sudetes, as well as the Western and Eastern Beskids (Ruta et al. 2012; Kubisz et al. 2015).

Biology and ecology

Observed on the fruiting bodies of *Inonotus radiatus* (Sowerby: Fr.) P. Karst., *Phellinus laevigatus* (P. Karst.) Bourdot & Galzin, and *Hypoxylon fuscum* (Pers.) Fr. (Burakowski et al. 1986b).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Mycetophagus fulvicollis Fabricius, 1792 (Fig. 344)

Fig. 344. *Mycetophagus fulvicollis* Fabricius, 1792 (Mycetophagidae) (photo A. Lasoń)

Material examined (Fig. 345)

Original data: Chomontowszczyzna Reserve, compartment 63 (FD79), 16.04-6.05.2021 – 1 ex., violet Lindgren funnel trap, leg. & det. K. Sućko; Góra Pieszczana Reserve, compartment 454 (FD79), 22.04-6.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń, compartment 455, 22.04-6.06.2008 – 1 ex., moist forest, IBL-2 trap, leg. R. Plewa, det. A. Lasoń; Góra Pieszczana Reserve, compartment 453 (FD79), 31.03 – 15.04.2021 – 1 ex., fresh mixed coniferous forest, violet Lindgren funnel trap, leg. & det. K. Sućko; Góra Pieszczana Reserve (FD79), 27.07.2016, 4 exx., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń; Krzemienne Góry Reserve (FD69), 27.05.2022 – 1 ex., leg. & det. A. Lasoń; Międzyrzecze Reserve, compartment 185 (FE60), 6.05-1.06.2021 – 1 ex., alder forest, violet Lindgren funnel trap, leg. & det. K. Sućko; Stare Biele Reserve (FE60), 1 ex., violet Lindgren funnel trap, leg. & det. K. Sućko; Waliły Forest District, Smolarnia Forest Subdistrict, compartment 227 (FD89), 22.04-6.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń.

Data from the literature: Budzisk (FE50) and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c).

Distribution

The species is known mainly from the eastern part of Europe, distributed from Scandinavia through all of Central Europe to Italy and Greece, also noted in a small number of localities from northern Scotland and

France (Burakowski et al. 1986b). In Poland, it is known from the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, the Western Sudetes, the Eastern Sudetes, as well as the Western and Eastern Beskids (Kubisz et al. 2015).

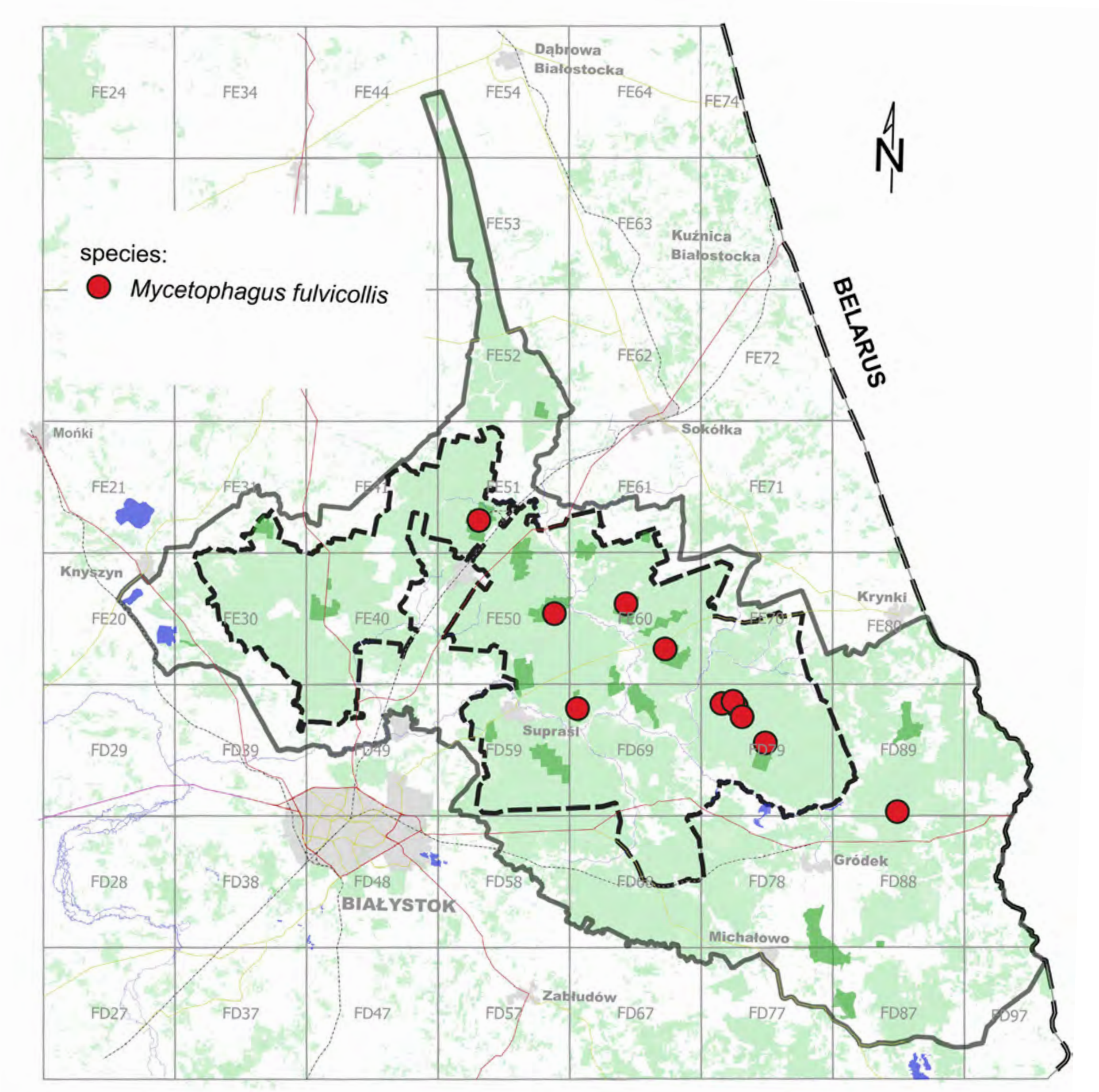


Fig. 345. Localities of *Mycetophagus fulvicollis* (Mycetophagidae) in Knyszyńska Forest

Biology and ecology

It occurs in old, abandoned longhorn and bark beetle galleries, in rotten wood and under the fungus-infected bark of various deciduous trees, especially beech, linden, birch, and aspen, and less frequently under the bark of fallen spruce trees (Burakowski et al. 1986b).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Mycetophagus multipunctatus Fabricius, 1792 (Fig. 346)

Fig. 346. ***Mycetophagus multipunctatus*** **Fabricius, 1792 (Mycetophagidae)** (photo G. Tarwacki)

Material examined (Fig. 347)

Original data: Dojlidy Forest District, Krasny Las Forest Subdistrict (FD59), 18.06.2020 – 1 ex., leg. & det. R. Królik; Żednia Forest District, Cieliczanka Forest Subdistrict, compartment 78 (FD69), 22.04-6.06.2008 – 1 ex., IBL-2 trap, leg. & det. A. Lasoń.

Data from the literature: Supraśl Forest District, Kopna Góra (FE60) (Kubisz & Szwałko 1991; Kubisz et al. 2015); Budzisk (FE50) and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c).

Distribution

The species is widely distributed in the northern part of the Palaearctic and is known from almost all countries in Europe (Burakowski et al. 1986b). In Poland, it has been reported from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Podlasie, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, Roztocze, the Sandomierz Lowland, the Western Sudetes, the Western Beskid, the Eastern Beskid, and the Bieszczady Mountains (Kubisz et al. 2015).

Biology and ecology

It occurs on various deciduous trees, especially beech and oak in rotten wood, under fungus-infected bark, and in the fruiting bodies, mostly of *Polyporus squamosus* (Huds.) Fr., *Laetiporus sulphureus* (Bull. ex Fr.) Murr. and *Inonotus radiatus* (Sow. ex Fr.) P. Karst. (Burakowski et al. 1986b).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

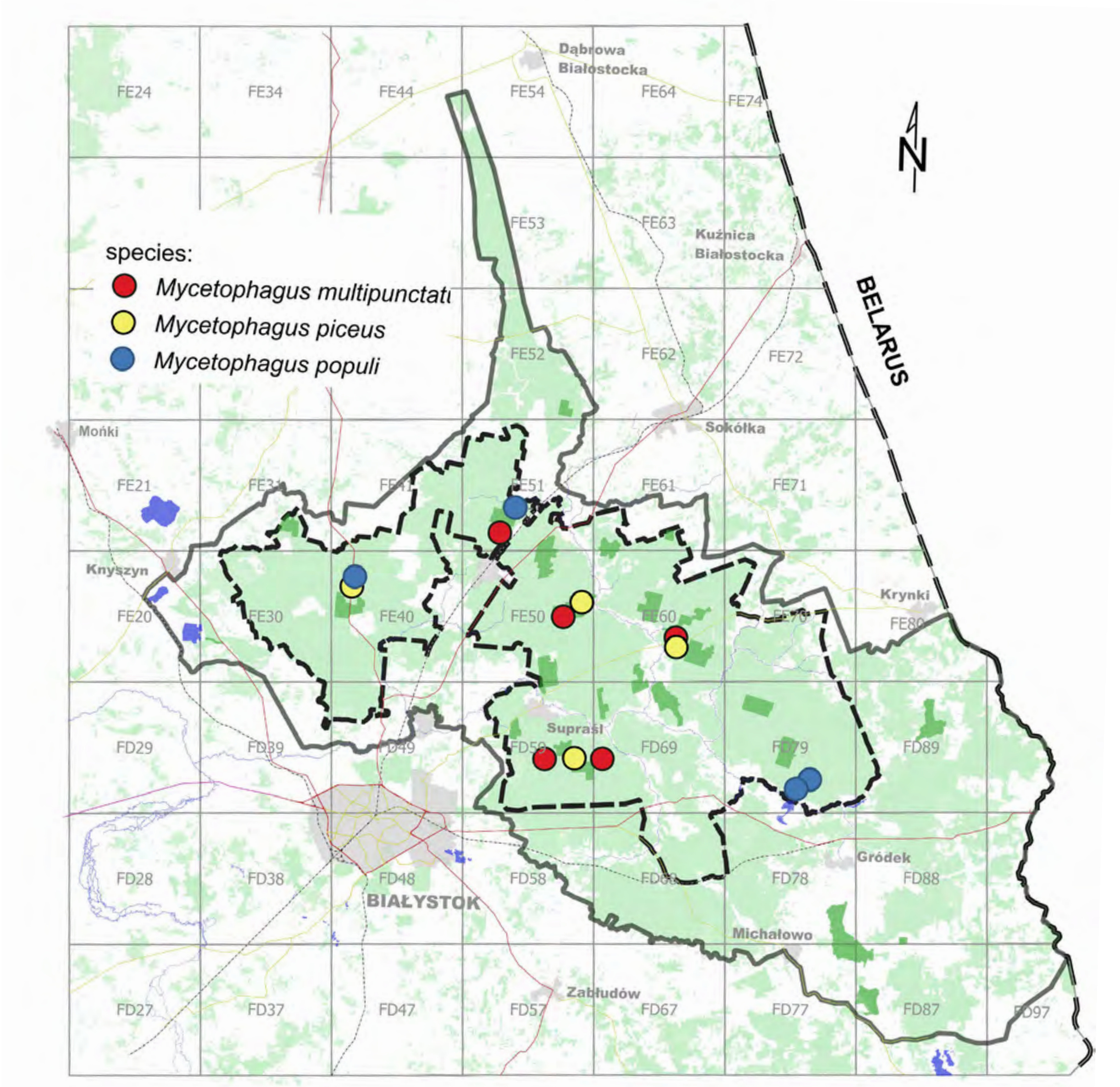


Fig. 347. Localities of *Mycetophagus multipunctatus*, *M. piceus*, and *M. populi* (Mycetophagidae) in Knyszyńska Forest

Mycetophagus piceus Fabricius, 1792 (Fig. 348)

Material examined (Fig. 347)

Original data: Knyszyn Forest District, Karczmisko Reserve, compartment 144 (FE40), 7.06-10.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń.

Data from the literature: Supraśl Forest District, Kopna Góra (FE60) (Kubisz & Szwałko 1991; Kubisz et al. 2015); Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

Palaearctic species, distributed in almost all of Europe, occurring locally in the mountains of the continent's southern part (Burakowski et al. 1986b). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Podlasie, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, the Lublin Upland, Roztocze, the Sandomierz Lowland, the Western Sudetes, as well as the Western and Eastern Beskids (Kubisz et al. 2015).

Biology and ecology

Found most often in clusters in the fruiting bodies of *Fistulina hepatica* (Schaeff.) ex Fr., *Laetiporus sulphureus* (Bull. ex. Fr.) Murr., and *Polyporus squamosus* (Huds.) Fr. on rotten hardwoods and under loosened fungus-infected bark. (Burakowski et al. 1986b).

Fig. 348. ***Mycetophagus piceus*** **(Fabricius, 1792) (Mycetophagidae)** (photo A. Lasoń)

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Mycetophagus populi Fabricius, 1798 (Fig. 349)

Material examined (Fig. 347)

Original data: Knyszyn Forest District, Karczmisko Reserve, compartment 144 (FE40), 22.04-6.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń; Waliły Forest District, Królowe Stojło Forest Subdistrict, compartment 178 (FD79), 22.04-6.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń, compartment 148, 6.06-10.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń.

Data from the literature: Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c).

Distribution

A European species, distributed from England and Scandinavia to the Pyrenees, Italy, Croatia, and the European part of Russia (Burakowski et al. 1986b). In Poland, it is known from the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Podlasie, Białowieża Forest, Lower and Upper Silesia, the Kraków-Wielun Upland, the Małopolska Upland, the Świętokrzyskie Mountains, Roztocze, the Western and Eastern Sudetes, the Western and Eastern Beskids, and the Tatra Mountains (Kubisz et al. 2015).

Biology and ecology

It occurs on the fungus-infected moist wood of various deciduous trees and in the fruiting bodies of *Polyporus squamosus* (Huds.) Fr. (Burakowski et al. 1986b).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Fig. 349. ***Mycetophagus populi*** **Fabricius, 1798 (Mycetophagidae)** (photo L. Borowiec)

Mycetophagus quadriguttatus **Müller, 1821** (Fig. 350)

Fig. 350. ***Mycetophagus quadriguttatus*** **Müller, 1821 (Mycetophagidae)** (photo A. Lasoń)

Material examined (Fig. 351)

Original data: Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 100 (FE50), 27.05.2016 – 1 ex., Netocia trap, leg. I. Sztabkowska, det. T. Mokrzycki.

Data from the literature: Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c).

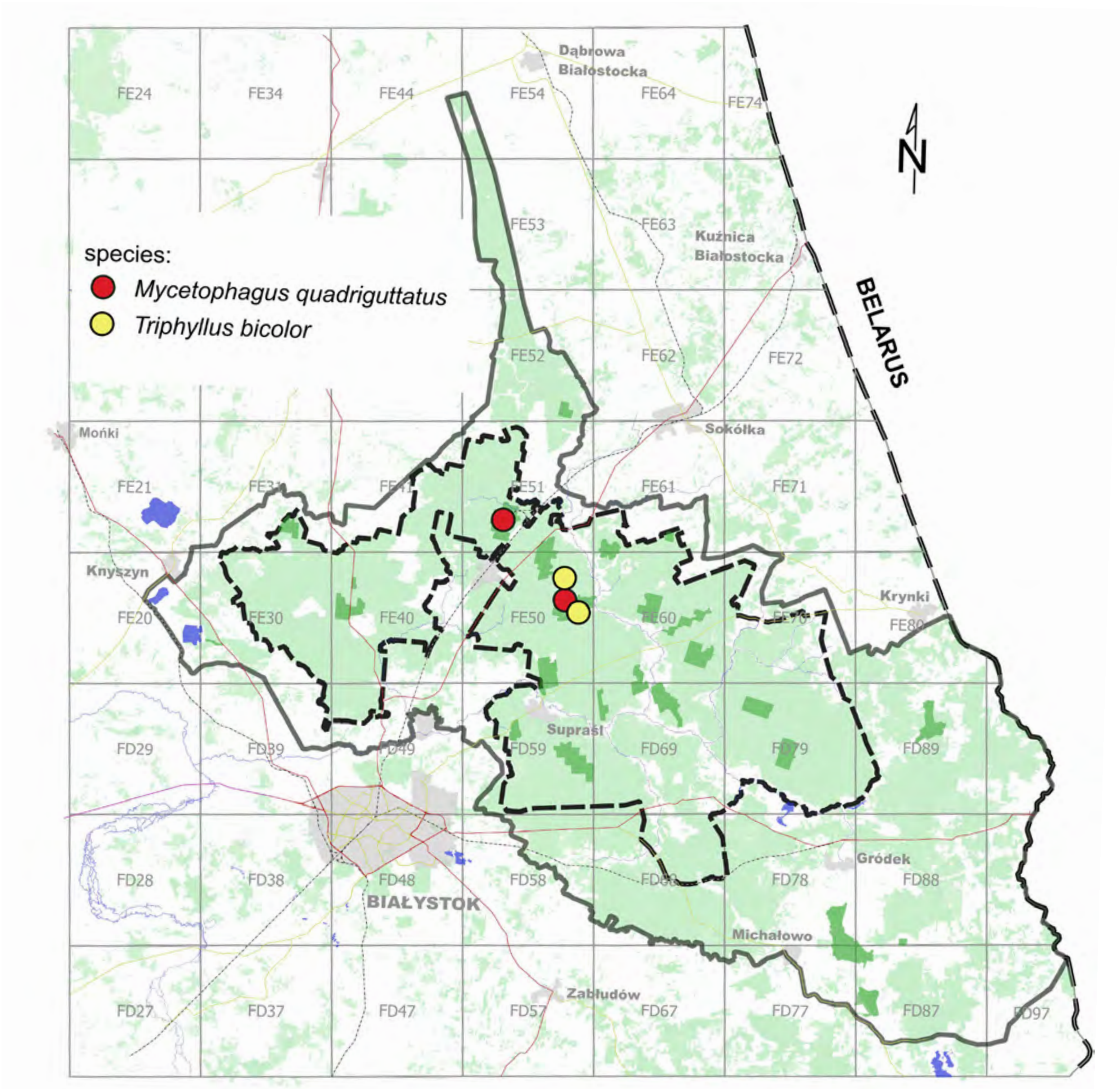


Fig. 351. Localities of *Mycetophagus quadriguttatus* and *Triphyllus bicolor* (Mycetophagidae) in Knyszyńska Forest

Distribution

A species inhabiting southern, central and eastern parts of Europe, the British Isles, Scandinavia (Burakowski et al. 1986b). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Podlasie, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Małopolska Upland, the Świętokrzyskie Mountains, the Lublin Upland, Roztocze, the Sandomierz Lowland, the Western and Eastern Sudetes, and the Eastern Beskid (Kubisz et al. 2015).

Biology and ecology

It is found in nature in the fungus-infected wood of hardwood trees, in hollows, and in fruiting bodies, especially of *Laetiporus sulphureus* (Bull. ex Fr.) Murr. It is also found as a synanthrope in barns, sheds, animal enclosures as well as in residential buildings, granaries, mills, and bakeries on fungus-infected plant material (Burakowski et al. 1986b).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Triphyllus bicolor* (Fabricius, 1777)** (Fig. 352)

Fig. 352. *Triphyllus bicolor* (Fabricius, 1777) (Mycetophagidae) (photo A. Lasoń)

Material examined (Fig. 351)

Data from the literature: Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 72 (FE50), 23.09.2016 – 1 ex. (Mokrzycki et al. 2022); reported by Marczak et al. (2023c) from Budzisk Reserve (FE50).

Distribution

Reported from Southern and Central Europe, reaching north to the British Isles, Denmark, and southern Sweden (Burakowski et al. 1986b). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest, the Trzebnickie Hills, Lower and Upper Silesia, the Kraków-Wieluń Upland, the Świętokrzyskie Mountains, Roztocze, the Western Sudetes, the Western and Eastern Beskids, and the Bieszczady Mountains (Ruta et al. 2012; Kubisz et al. 2015). Recently found in Podlasie in Knyszyńska Forest (Mokrzycki et al. 2022).

Biology and ecology

According to Burakowski et al. (1986b), *T. bicolor* develops in the fruiting bodies of *Fistulina hepatica* (Schaeff.): Fr. and *Laetiporus sulphureus* (Bull: Fr.) Murill. The beetles were also found on *Hypsizygus* *ulmarius* (Bull.) Redhead, *Pleurotus ostreatus* (Jacq.) P. Kumm., and *Phallus impudicus* L. Borowski (2007b) claims that this species develops exclusively on *F. hepatica*. The beetles appear from July to September (Mokrzycki et al. 2022).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Tenebrionidae

Lagria atripes Mulsant et Guillebeau, 1855 (Fig. 353)

Fig. 353. *Lagria atripes* Mulsant et Guillebeau, 1855, male and female (Tenebrionidae) (photo T. Mokrzycki)

Material examined (Fig. 354)

Original data: Knyszyn Forest District, Wielki Las Reserve, compartment 8 (53.339815, 23.053766, FE31), 10.06.2021 – 1 ex., leg. & det. K. Sućko; Supraśl Forest District, Stara Dębina Reserve (FE61), 19.06.2020 – 1 ex., leg. & det. A. Lasoń.

Distribution

Found in Southern and Central Europe (Burakowski et al. 1987). Rarely observed in Poland, known from the Baltic Coast, the Pomeranian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest, Lower Silesia, the Małopolska Upland, the Lublin Upland, and the Eastern Beskid (Iwan et al. 2012).

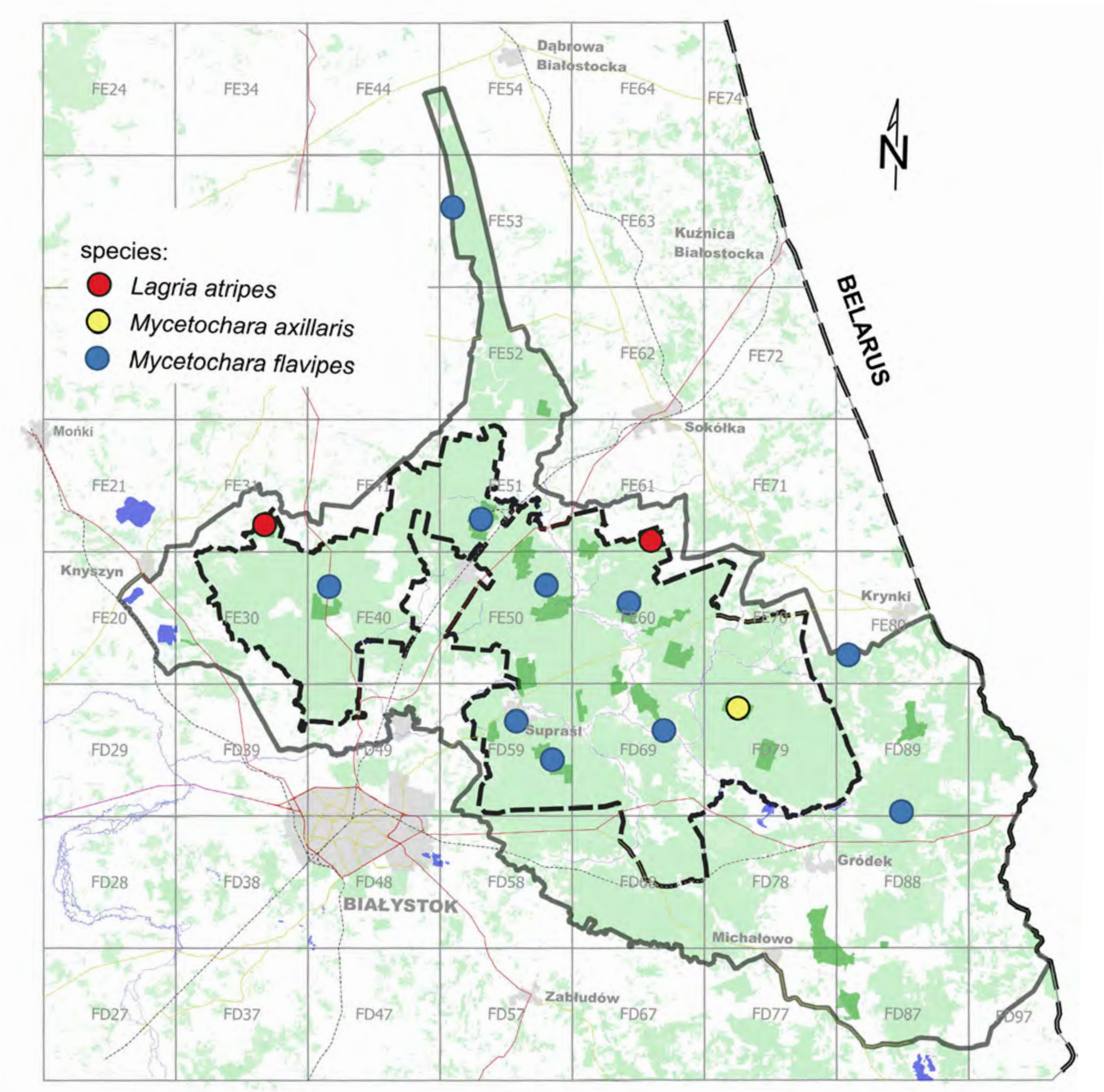


Fig. 354. Localities of *Lagria atripes*, *Mycetochara axillaris*, and *M. flavipes* (Tenebrionidae) in Knyszyńska Forest

Biology and ecology

Observed in xerothermic habitats, most often on the southern edges of oak stands. The beetles are active from May to July, found mostly on low-growing plants under trees (Burakowski et al. 1987).

Notes

A new species for Podlasie.

***Mycetochara axillaris* (Paykull, 1799)** (Fig. 355)

Material examined (Fig. 354)

Original data: Góra Pieszczana Reserve (FD79), 17.06.2016 – 1 ex., IBL-2 trap, leg. & det. K. Komosiński.

Distribution

A species recorded in the central and southeastern parts of Europe, reaching Scandinavia to the north; also recorded in Western Siberia (Burakowski et al. 1987). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, the Lublin Upland, Roztocze, the Western Sudetes, the Western and Eastern Beskids, and the Bieszczady Mountains (Iwan et al. 2012).

Fig. 355. *Mycetochara axillaris* (Paykull, 1799) (Tenebrionidae) (photo L. Borowiec)

Biology and ecology

Inhabits rotten and fungus-infected wood, mainly in the hollows of deciduous trees. It has a two-year development cycle. Only the larva overwinters. Pupation occurs in spring. Adults appear from May to July, generally infrequently and in small numbers (Burakowski et al. 1987).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

A new species for Podlasie.

Mycetochara flavipes (Fabricius, 1792) (Fig. 356)

Material examined (Fig. 354)

Original data: Karczmisko Reserve, compartment 144 (FE40), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. K. Sućko; Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 85 (FE50), 16.07.2016 – 1 ex., Netocia trap, leg. I. Sztabkowska, det. T. Mokrzycki; Dąbrowa Forest Subdistrict, compartment 42 (FE53), 20-21.06.2014 – 1 ex., Netocia trap, leg. B. Kowal, det. T. Mokrzycki; Krynki Forest District, Grzybowszczyzna Forest Subdistrict, compartment 155 (FE80), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. T. Mokrzycki; Supraśl Forest District, Borki (FD69), 8.06.2020 – 1 ex., leg. & det. M.A. Mazur; Supraśl Forest District, Dworzysk Forest Subdistrict, compartment 185 (FE60), 1.06-1.07.2021 – 1 ex., alder forest, violet Lindgren funnel trap, leg. & det. K. Sućko; Waliły Forest District, Smolarnia Forest Subdistrict, compartment 227 (FD89), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. T. Mokrzycki.

Data from the literature: Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c).

Fig. 356. *Mycetochara flavipes* (Fabricius, 1792) (Tenebrionidae) (photo G. Tarwacki)

Distribution

The species is mainly distributed in the northern and central parts of Europe, reaching Italy and Romania to the south, and has also been reported from the Caucasus (Burakowski et al. 1987). In Poland, it is known from the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Małopolska Upland, the Świętokrzyskie Mountains, the Lublin Upland, Roztocze, the Sandomierz Lowland, the Western and Eastern Sudetes, the Western and Eastern Beskids, and the Bieszczady Mountains (Iwan et al. 2012).

Biology and ecology

Larvae live in rotten and fungus-infected wood mostly of standing trees, less often in dead branches, stumps, scrap wood, and dry arboreal polypores, as well as in the tunnels of other beetles. Adults usually appear in the second half of May and are found until July (Burakowski et al. 1987).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Mycetochara humeralis (Fabricius, 1787) (Fig. 357)

Fig. 357. ***Mycetochara humeralis*** **(Fabricius, 1787) (Tenebrionidae)** (photo U. Schmidt)

Material examined (Fig. 358)

Original data: Góra Pieszczana Reserve (FD79), 17.06.2016 – 1 ex., 27.07.2016 – 1 ex., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń.

Data from the literature: Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

The species ranges from England and Scandinavia throughout Central Europe to France, Italy, Bosnia, Romania, and Ukraine (Burakowski et al. 1987). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Kraków-Wieluń Upland, the Lublin Upland, the Sandomierz Lowland, the Western and Eastern Beskids, and the Bieszczady Mountains (Iwan et al. 2012).

Biology and ecology

Larvae feed in the rotten wood of trunks and branches and under the fungus-infected bark of deciduous trees, especially oak, beech, birch, maple, and poplar. The appearance of adults begins in June and lasts until August (Burakowski et al. 1987).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

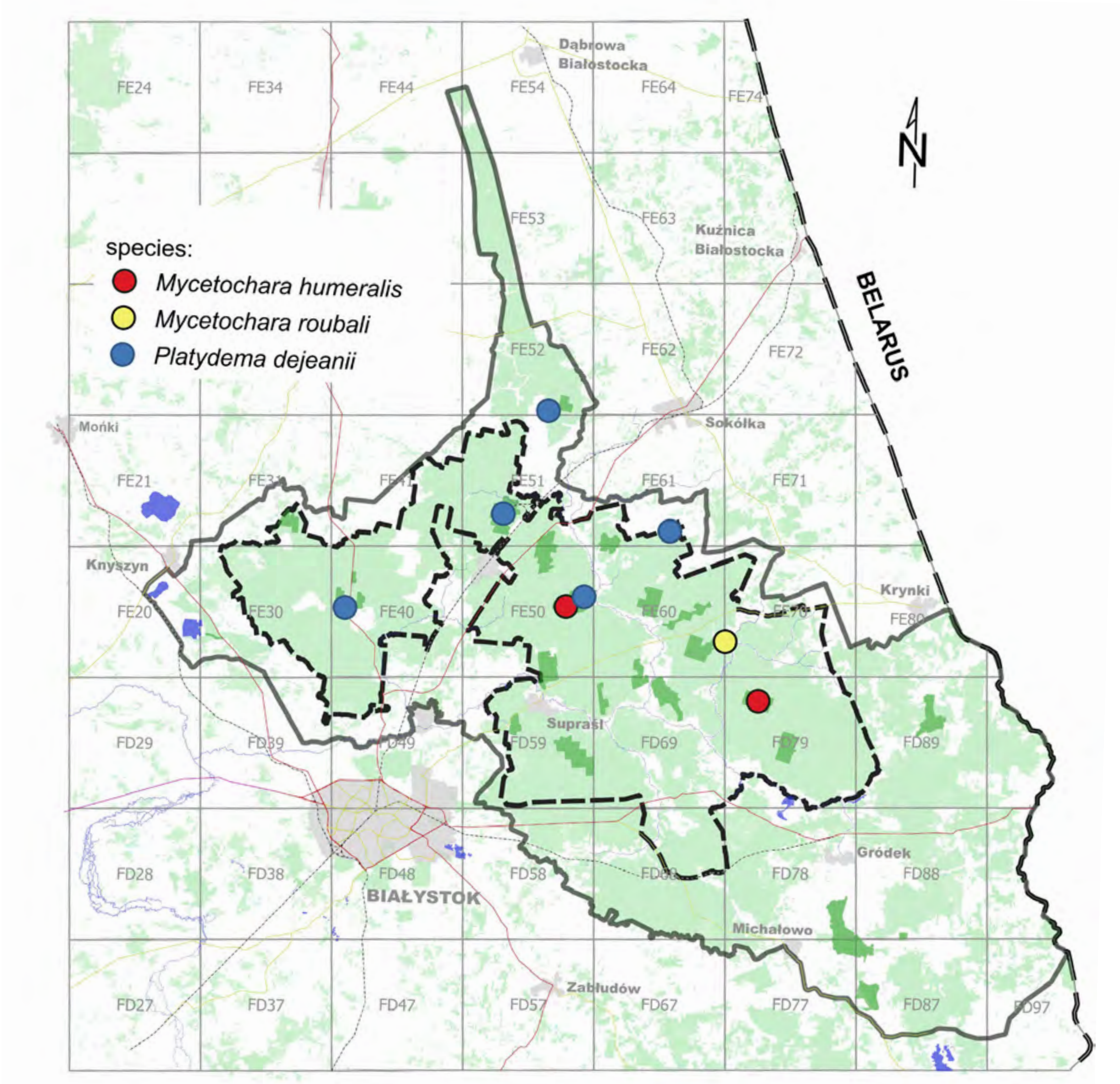


Fig. 358. Localities of *Mycetochara humeralis, M. roubali*, and *Platydema dejeanii* (Tenebrionidae) in Knyszyńska Forest

Mycetochara roubali Mařan, 1935 (Fig. 359)

Material examined (Fig. 358)

Original data: Supraśl Forest District, Kopna Góra Forest, compartment 231 (53.246323, 23.548476, FE60), 22.04-6.06.2008 – 1 ex., mixed moist coniferous forest, IBL-2 trap, leg. R. Plewa, det. A. Lasoń.

Distribution

A European species, known from Romania, Czech Republic, Slovakia, Hungary, and Ukraine (Iwan & Löbl 2020). In Poland, it has so far been observed only in Białowieża Forest and the Bieszczady Mountains, but without a precise location (Iwan et al. 2012).

Biology and ecology

Larvae develop in the rotten and fungus-infected wood of deciduous tree trunks, stumps, and branches, such as alder *Alnus* spp., hazel *Corylus avellana* L., beech *Fagus sylvatica* L., and linden *Tilia* spp. The beetles are active in May and June (Burakowski et al. 1987).

Fig. 359. ***Mycetochara roubali*** **Mařan, 1935 (Tenebrionidae)** (photo L. Borowiec)

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002), and as VU (vulnerable) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

A new species for Podlasie.

Platydema dejeanii **Laporte et Brullé, 1831** (Fig. 360)

Material examined (Fig. 358)

Original data: Knyszyn Forest District, Krzemianka Reserve (53.275861, 23.119030, FE40), 20.06.2020 – 1 ex., 25.09.2021 – 1 ex., dead branches, rotten wood, polypores, leg. & det. R. Królik; Supraśl Forest District, Stara Dębina Reserve (53.32319, 23.48981, FE61), 19.06.2020 – 1 ex., dead branches, leg. & det. R. Królik.

Data from the literature: Budzisk Reserve (FE50) (Kwiatkowski & Marczak 2020b); Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c); Mokrzycki et al. (2022) lists it in the Czarna Białostocka Forest District, Bogusze Forest Subdistrict, compartment 215 (FE52).

Distribution

It is found from eastern Siberia to Central Europe (Iwan & Löbl 2020). In Poland, it is known from the Mazovian Lowland, Białowieża Forest, the Lublin Upland, Roztocze, as well as the Western and Eastern Beskids (Iwan et al. 2012). Recently reported from Podlasie in Knyszyńska Forest (Kwiatkowski & Marczak 2020b).

Biology and ecology

The beetles were observed in the decaying wood of deciduous tree trunks and branches and in fungal fruiting bodies. Preimaginal stages are not known (Burakowski et al. 1987).

Fig. 360. ***Platydema dejeanii*** **Laporte et Brullé, 1831 (Tenebrionidae)** (photo R. Królik)

Notes

Listed as VU (vulnerable) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Platydema violaceum **(Fabricius, 1790)** (Fig. 361)

Fig. 361. ***Platydema violaceum*** **(Fabricius, 1790) (Tenebrionidae)** (photo M. Miłkowski)

Material examined (Fig. 362)

Original data: Jesionowe Góry Reserve (FE51) (Plan ochrony... Jesionowe Góry 2011); Jałówka Reserve (FD59), 25.03.2021 – 1 ex., leg. & det. K. Sućko.

Data from the literature: Budzisk Reserve (FE50) (Marczak et al. 2023c).

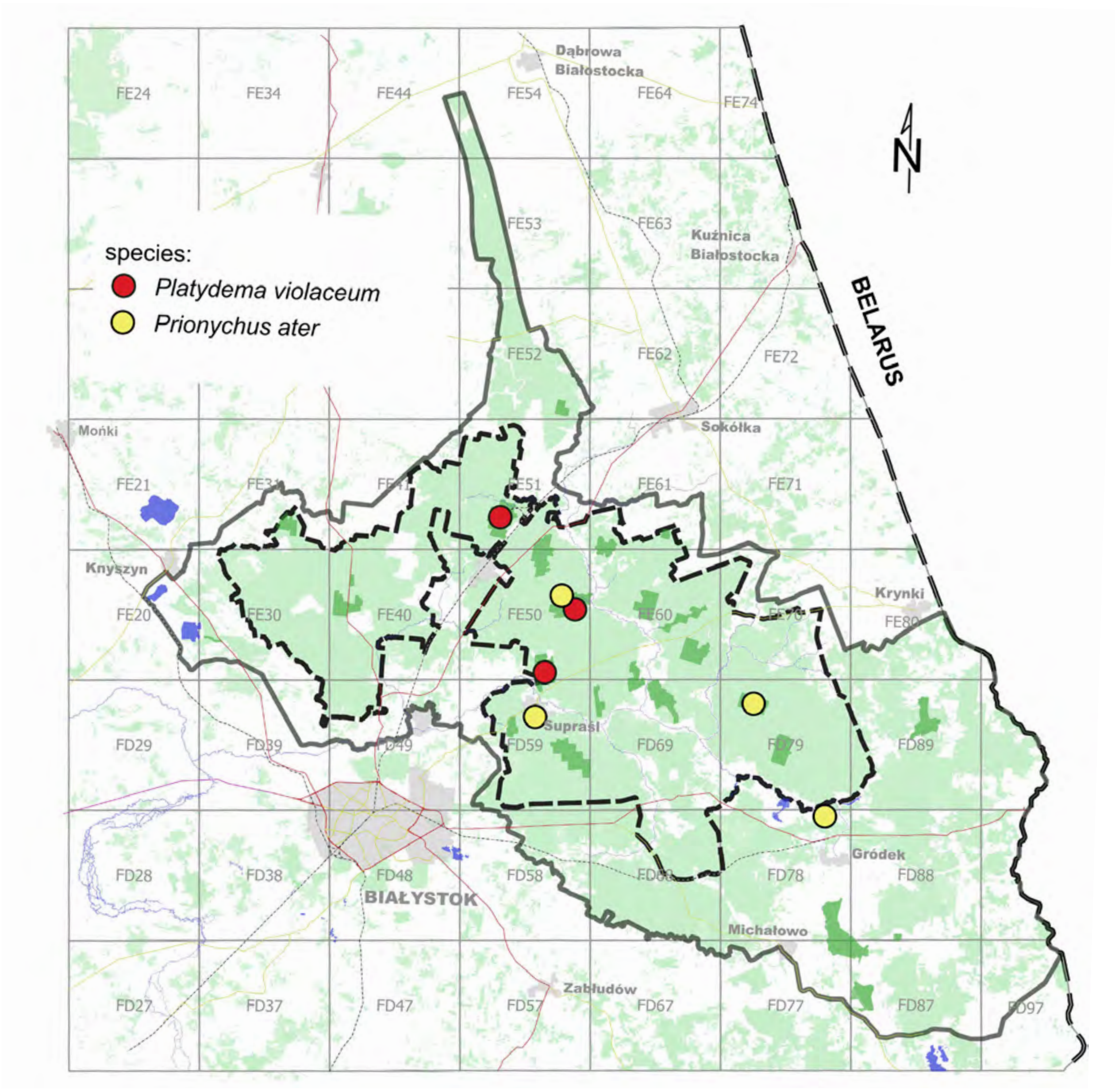


Fig. 362. Localities of *Platydema violaceum* and *Prionychus ater* (Tenebrionidae) in Knyszyńska Forest

Distribution

A species with a range mainly in the eastern part of Europe, westward reaching Italy, France, Belgium, and the Netherlands, and northward to the British Isles and Scandinavia, noted from the Caucasus (Burakowski et al. 1987). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, Roztocze, the Sandomierz Lowland, as well as the Western and Eastern Beskids (Iwan et al. 2012).

Biology and ecology

It inhabits deciduous trees and shrubs in forests, parks, and gardens. It is mostly found under rotten bark, in the fungus-infected wood of trunks and stumps, in hollows, and in arboreal fungi. It has a one-year development cycle. Both adults and larvae feed in the fruiting bodies of *Auricularia aricula* (Hook.) Underw. and *A. mesenterica* (Dicks.) Fr., among others (Burakowski et al. 1987).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Prionychus ater* (Fabricius, 1775)** (Fig. 363)

Fig. 363. *Prionychus ater* (Fabricius, 1775) (Tenebrionidae) (photo L. Borowiec)

Material examined (Fig. 362)

Original data: Krynki Forest District, Góra Pieszczana Reserve (FD79), 27.07.2016 – 1 ex., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń; Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 110 (FE50), 27.08.2016 – 1 ex., Netocia trap, leg. I. Sztabkowska, det. T. Mokrzycki; Supraśl (FD59), 1-7.08.2020 – 1 ex., violet Lindgren funnel trap on linden, tree canopy in a town, leg. J.M. Gutowski, det. T. Mokrzycki; Waliły Forest District, Józefowo Forest Subdistrict (FD78), 29.06-15.08.2021 – 1 ex., black Lindgren funnel trap, leg. & det. R. Plewa.

Distribution

A European species, widely distributed almost throughout the continent (Burakowski et al. 1987). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Lublin Upland, Roztocze, the Sandomierz Lowland, the Western Sudetes, as well as the Western and Eastern Beskids (Iwan et al. 2012).

Biology and ecology

The development cycle takes at least two years. Larvae feed in rotten and fungus-infected wood, especially in old deciduous trees of numerous species, less frequently in coniferous trees. The beetles are found from June to August; they are secretive, hiding in tree hollows and crevices at the base of the trunk. They appear at dusk and at night (Burakowski et al. 1987).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Pseudocistela ceramboides (Linnaeus, 1758) (Fig. 364)

Fig. 364. ***Pseudocistela ceramboides*** **(Linnaeus, 1758) (Tenebrionidae)** (photo G. Tarwacki)

Material examined (Fig. 365)

Original data: Góra Pieszczana Reserve (FD79), 27.07.2016 – 3 exx., IBL-4 trap, leg. K. Komosiński, det. A. Lasoń; Czarna Białostocka Forest District, Budzisk Forest Subdistrict (FE50), Netocia trap, 16.07.2016: compartment 43 – 1 ex., compartment 85 – 1 ex., compartment 110 – 2 exx., compartment 110 – 2 exx., leg. I. Sztabkowska, det. T. Mokrzycki; Czarna Białostocka Forest District, Czarna Wieś Forest Subdistrict (FE41), 05-28.06.2016: compartment 195 – 1 ex., compartment 208/209 – 1 ex., leg. & det. R. Plewa (Borowski et al. 2016); Waliły Forest District, Józefowo Forest Subdistrict, compartment 224 (FD89), 3.11.2020-6.05.2021 – 1 ex., cutlivated from Norway spruce *Picea abies* (L.) Karst., leg., cult. & det. R. Plewa.

Data from the literature: Budzisk (FE50) and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c); Międzyrzecze Reserve (FE60) (Iwan et al. 2010, 2012).

Distribution

A European species, distributed throughout almost the entire continent (Burakowski et al. 1987). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the

Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Podlasie, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, the Lublin Upland, Roztocze, the Sandomierz Lowland, the Western Sudetes, the Eastern Sudetes, the Western and Eastern Beskids, the Bieszczady Mountains, the Pieniny Mountains, and the Tatra Mountains (Iwan et al. 2012).

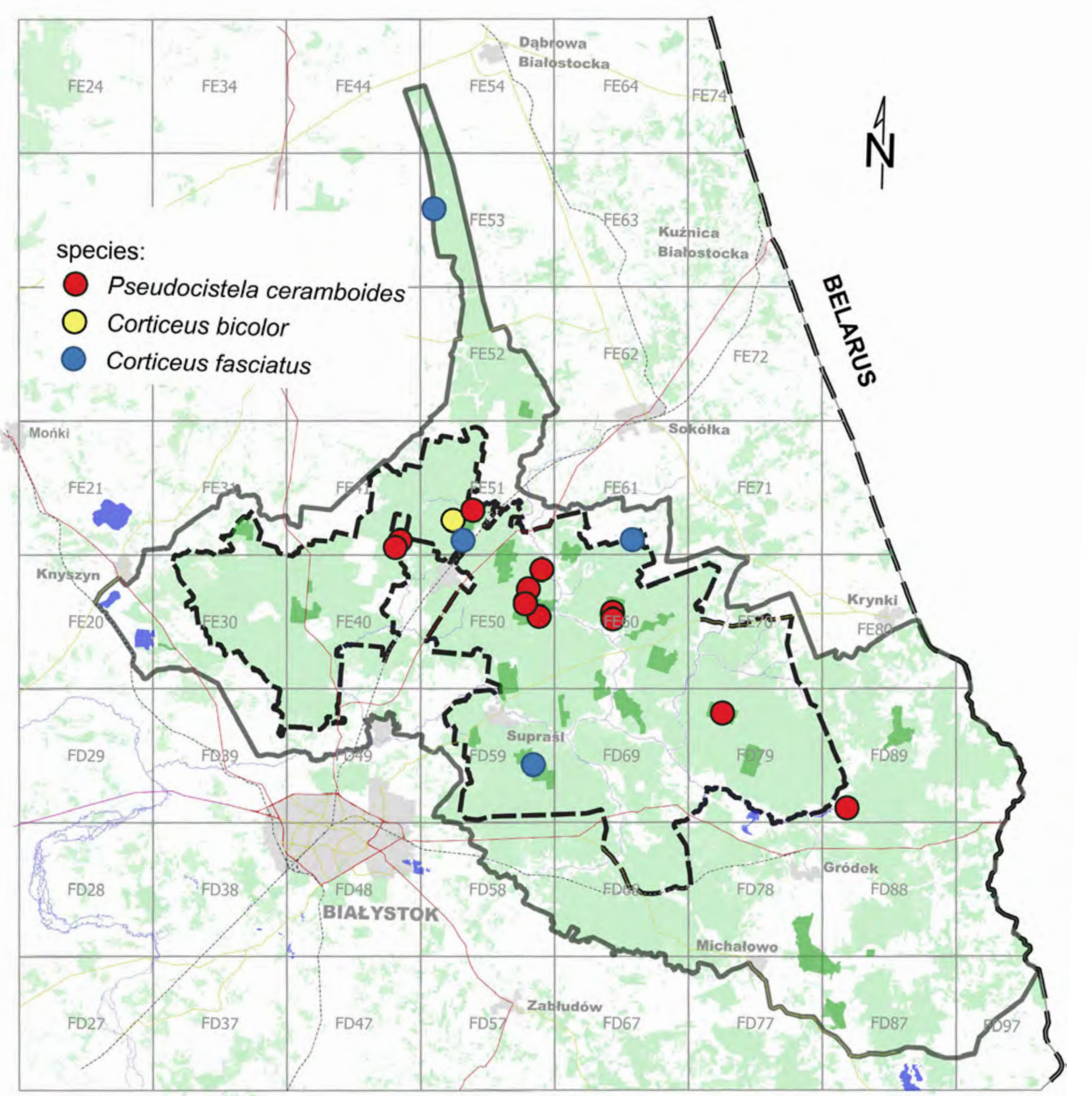


Fig. 365. Localities of *Pseudocistela ceramboides*, *Corticeus bicolor*, and *C. fasciatus* (Tenebrionidae) in Knyszyńska Forest

Biology and ecology

The beetles appear from May to July. They occur mainly in the hollows of thick deciduous trees, so they are very rarely found. It has a development cycle of at least two years. Larvae develop mainly in hollows, in rotten, fungus-infected wood, and among the feces and sawdust produced by the feeding larvae of other beetles (Burakowski et al. 1987).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Corticeus bicolor **(Olivier, 1790)** (Fig. 366)

Fig. 366. ***Corticeus bicolor*** **(Olivier, 1790) (Tenebrionidae)** (photo A. Lasoń)

Material examined (Fig. 365)

Data from the literature: Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c).

Distribution

A widespread species in almost all of Europe, also recorded from Siberia (Burakowski et al. 1987). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Podlasie, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, Roztocze, the Sandomierz Lowland, the Western and Eastern Sudetes, the Western and Eastern Beskids, and the Bieszczady Mountains (Iwan et al. 2012).

Biology and ecology

It inhabits deciduous trees, especially elm trees infected by *Ceratocystis ulmi* (Schw.) Buisman. The predatory larvae feed in the tunnels of *Scolytus multistriatus* Marsh. and *S. scolytus* (Fabr.), less frequently in the larval galleries of *S. ratzeburgi* Jans. and *Xyleborus monographus* (Fabr.) (Burakowski et al. 1987).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Corticeus fasciatus **(Fabricius, 1790)** (Fig. 367)

Fig. 367. ***Corticeus fasciatus*** **(Fabricius, 1790) (Tenebrionidae)** (photo A. Lasoń)

Material examined (Fig. 365)

Original data: Supraśl Forest District, Stara Dębina Reserve (53.32319, 23.48981, FE61), 19.06.2020 – 1 ex., from dead branches, leg. & det. R. Królik; Żednia Forest District, Las Cieliczański Reserve (FD59), 13.06.2022 – 1 ex., mixed forest, leg. & det. A. Lasoń.

Data from the literature: also reported from the Czarna Białostocka Forest District, Budzisk (FE50), and Jesionowe Góry (FE51) reserves by Marczak et al. (2023d), and from Sławno Forest Subdistrict, compartment 42 (FE53) by Mokrzycki et al. (2022).

Distribution

Recorded in the southern and central parts of Europe, as well as in Denmark, southern Sweden, and the western part of North Africa (Burakowski et al. 1987). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest, the Trzebnickie Hills, Lower and Upper Silesia, the Kraków-Wieluń Upland, the Świętokrzyskie Mountains, Roztocze, the Sandomierz Lowland, the Western Sudetes, as well as the Western and Eastern Beskids (Iwan et al. 2012). Recently reported in Podlasie from Knyszyńska Forest (Mokrzycki et al. 2022; Marczak et al. 2023c).

Biology and ecology

It develops in old deciduous tree trunks, mainly oaks. It probably has a two-year development cycle. Larvae live under slightly detached bark and in the larval tunnels of bark beetles (Burakowski et al. 1987).

Notes

Listed as NT (near threatened) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). Considered a relict of primeval forests (*sensu lato*) (Eckelt et al. 2018).

***Corticeus fraxini* (Kugelann, 1794)** (Fig. 368)

Fig. 368. *Corticeus fraxini* (Kugelann, 1794) (Tenebrionidae) (photo A. Lasoń)

Material examined (Fig. 369)

Original data: Międzyrzecze Reserve (FE60), 11.06.2020 – 1 ex., leg. M.A. Mazur, det. D. Kubisz; Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 110 (FE50), 7-29.06.2019 – 2 exx., green Lindgren funnel trap, leg. J.M. Gutowski, det. A. Lasoń; Supraśl Forest District, compartment 25 (FE50), 8.05.2022 – 3 exx., under the bark of an oak, leg. & det. T. Mokrzycki.

Data from the literature: Supraśl Supraśl Forest District, Kopna Góra (FE60) (Kubisz & Szwałko 1991; Iwan et al. 2010).

Distribution

The species is distributed almost all over Europe with the exception of the Iberian Peninsula, reaching eastern Siberia to the east, also recorded in Asia Minor (Burakowski et al. 1987). In Poland, it is known from the Masurian Lake District, the Mazovian Lowland, Podlasie, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Małopolska Upland, the Świętokrzyskie Mountains, the Western Sudetes, the Western and Eastern Beskids, and the Bieszczady Mountains (Iwan et al. 2012).

Biology and ecology

It inhabits coniferous and deciduous trees, where it has been observed in rotten wood and in the galleries of various bark beetle species (Burakowski et al. 1987).

Notes

Listed as VU (vulnerable) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

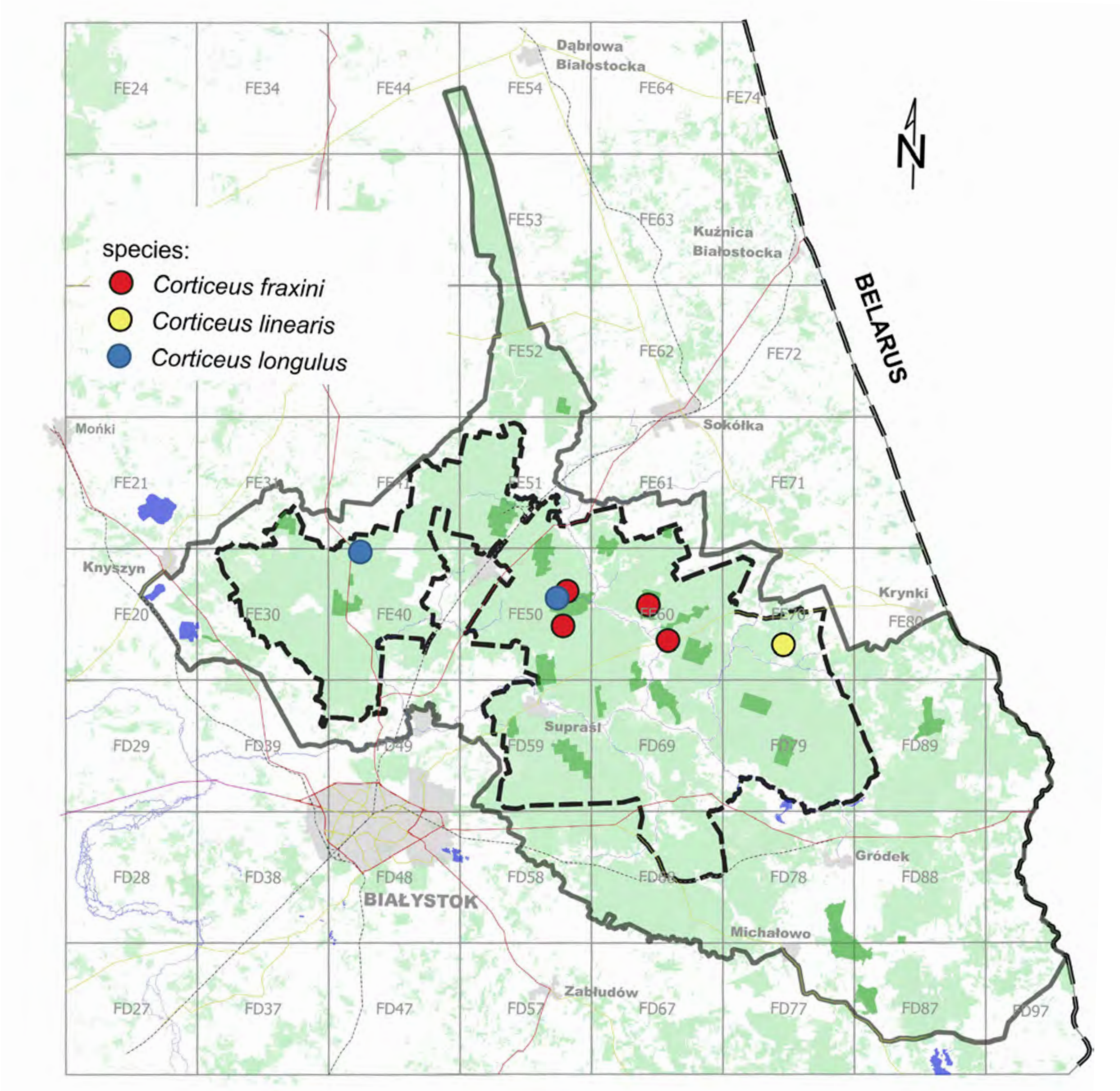


Fig. 369. Localities of *Corticeus fraxini*, *C. linearis*, and *C. longulus* (Tenebrionidae) in Knyszyńska Forest

Corticeus linearis (Fabricius, 1790) (Fig. 370)

Material examined (Fig. 369)

Original data: Krynki Forest District, compartment 234 (FE70), 15-16.06.2001 – 13 exx., in bark beetle larval galleries in spruce, leg. A. Byk, T. Mokrzycki & A. Rutkiewicz, det. T. Mokrzycki.

Distribution

Eurosiberian species (Burakowski et al. 1987). In Poland, it is known from the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Świętokrzyskie Mountains, Roztocze, the Sandomierz Lowland, the Western Sudetes, the Western Beskid Mountains, the Pieniny Mountains, and the Tatra Mountains (Iwan et al. 2012).

Biology and ecology

It inhabits bark beetle galleries in the upper part of the trunk and in the thin branch tips of coniferous trees, especially pines (Burakowski et al. 1987).

Fig. 370. *Corticeus linearis* (Fabricius, 1790) (Tenebrionidae) (photo A. Lasoń)

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

A new species for Podlasie and Knyszyńska Forest.

Corticeus longulus (Gyllenhal, 1827) (Fig. 371)

Material examined (Fig. 369)

Original data: Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 110 (53.28388, 23.36765, FE50), 30.06-20.07.2019 – 2 exx., green Lindgren funnel trap, leg. J.M. Gutowski, det. A. Lasoń; Knyszyn Forest District, Przewalanka Forest Subdistrict, compartment 36 (53.317583, 23.138103, FE40), 7.07-31.08.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń.

Distribution

Recorded in Central Europe, Scandinavia, the Caucasus, and Transbaikal. It is less common in the southern part of its range (Burakowski et al. 1987). In Poland, it is known from single localities in the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, the Sandomierz Lowland, and the Eastern Beskid (Iwan et al. 2012).

Biology and ecology

It develops on coniferous trees, mainly pine and spruce. It occurs under the slightly detached bark of trunks, stumps, overturned trees, and in the larval galleries of bark beetles, most often of the genus *Ips* De Geer (Burakowski et al. 1987).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

A new species for Podlasie and Knyszyńska Forest.

Return to contents

Fig. 371. ***Corticeus longulus*** **(Gyllenhal, 1827) (Tenebrionidae)** (photo G. Tarwacki)

Corticeus pini (Panzer, 1799) (Fig. 372)

Fig. 372. ***Corticeus pini*** **(Panzer, 1799) (Tenebrionidae)** (photo L. Borowiec)

Material examined (Fig. 373)

Original data: Waliły Forest District, Józefowo Forest Subdistrict (53.12520, 23.66048, FD78), 20.06-15.07.2021 – 2 exx., black Lindgren funnel trap, leg. & det. R. Plewa.

Data from the literature: Czarna Białostocka Forest District, Budzisk Reserve (FE50) (Marczak et al. 2023c).

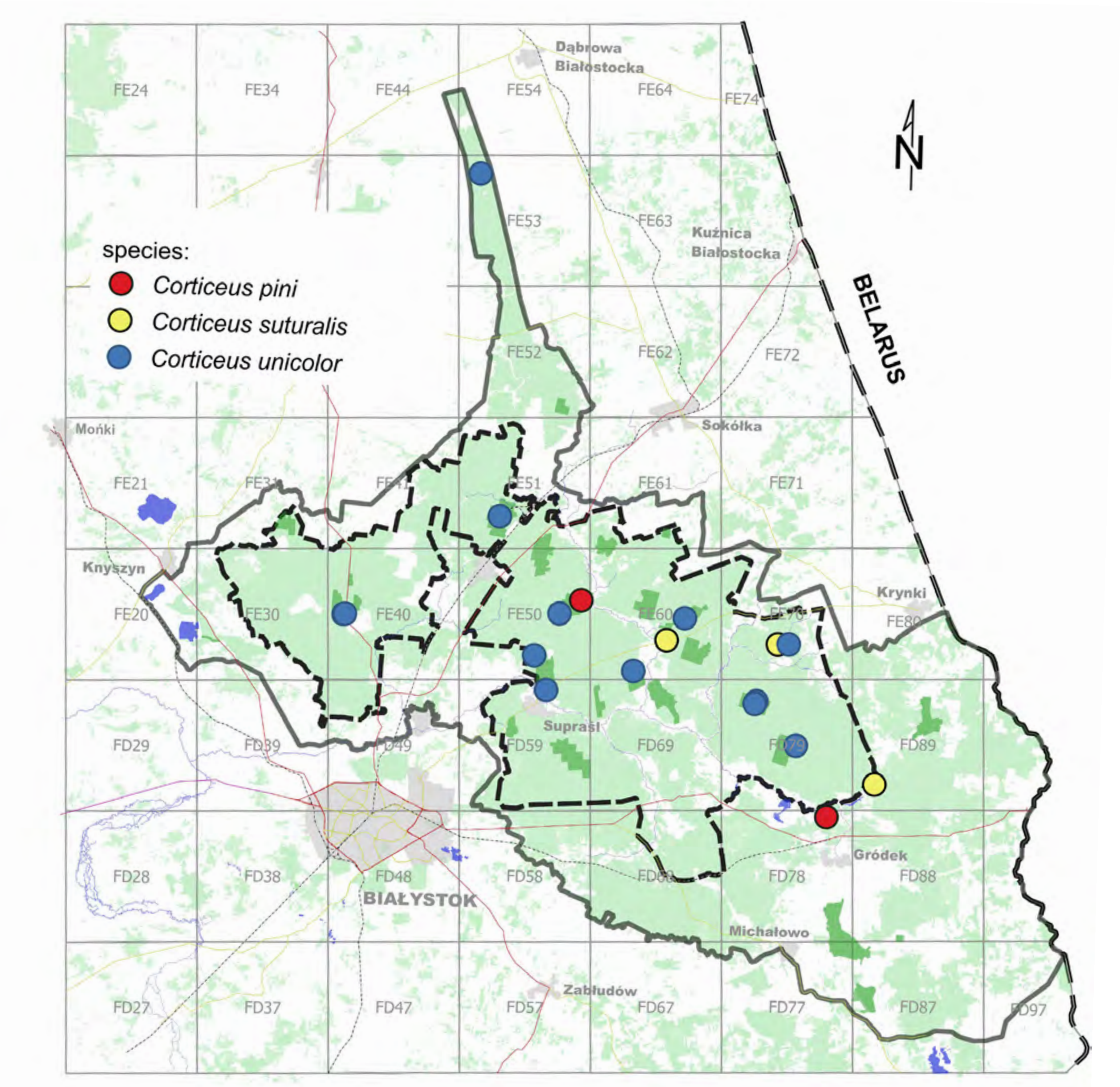


Fig. 373. Localities of *Corticeus pini*, *C. suturalis*, and *C. unicolor* (Tenebrionidae) in Knyszyńska Forest

Distribution

The area of occurrence includes the Mediterranean countries and the southern part of Central Europe, also reported from the Canary Islands, the Caucasus, Syria, and Transbaikal. In Poland, it is known from the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest, the Trzebnickie Hills, Lower and Upper Silesia, the Kraków-Wieluń Upland, the Świętokrzyskie Mountains, Roztocze, the Sandomierz Lowland, and the Eastern Beskid (Iwan et al. 2012).

Biology and ecology

It occurs mostly in the galleries of various species of bark beetles that feed under the bark of coniferous trees, especially pines (Burakowski et al. 1987).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Corticeus suturalis (Paykull, 1800) (Fig. 374)

Fig. 374. *Corticeus suturalis* (Paykull, 1800) (Tenebrionidae) (photo L. Borowiec)

Material examined (Fig. 373)

Original data: Krynki Forest District, compartment 234 (FE70) 15-16.06.2001 – 17 exx., in the larval galleries of *Ips duplicatus* (Sahlb.), leg. A. Byk, T. Mokrzycki & A. Rutkiewicz, det. T. Mokrzycki; Waliły Forest District, Józefowo Forest Subdistrict, compartment 224 (53.138055, 23.718649, FD89), 3.11.2020-6.07.2021 – 5 exx., cultivated from Norway spruce, leg. & det. R. Plewa.

Data from the literature: also reported from Kopna Góra (FE60) (Kubisz & Szwałko 1991, Iwan et al. 2010).

Distribution

It is found in Fennoscandia, Karelia, and northeastern Europe, as well as in the mountainous areas of the Bohemian Forest and the Carpathian Mountains. In Poland, it has been reported from the Masurian Lake District, Podlasie, Białowieża Forest, and Upper Silesia (Iwan et al. 2012).

Biology and ecology

It develops exclusively on the trunks of dead, still standing spruce trees, less frequently on pine trees. Found under slightly detached bark and in the larval galleries of *Ips typographus* (L.) (Burakowski et al. 1987).

Notes

Listed as NT (near threatened) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). Considered as a relict of primeval forests (*sensu stricto*) (Eckelt et al. 2018).

Corticeus unicolor Piller et Mitterpacher, 1783 (Fig. 375)

Fig. 375. *Corticeus unicolor* Piller et Mitterpacher, 1783 (Tenebrionidae) (photo L. Borowiec)

Material examined (Fig. 373)

Original data: Czarna Białostocka Forest District, Dabrowa Forest Subdistrict, compartment 11 (FE54) (Szestowicka 2014); Góra Pieszczana Reserve (FD79), 27.07.2016 – 1 ex., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń, compartment 453, 2.07-26.08.2021 – 1 ex., fresh mixed coniferous forest, violet Lindgren funnel trap, leg. & det. K. Sućko; Krzemianka Reserve (FE40), 20.06.2020 – 1 ex., leg. & det. R. Królik, 10.05.2022 – 1 ex., leg. & det. A. Byk; Woronicza Reserve (FE60), 30.07.2022 – 1 ex., mixed coniferous forest, leg. & det. A. Lasoń; Krynki Forest District, compartment 234 (FE70), 15-16.06.2001 – 7 exx., in bark beetle larval galleries on spruce, leg. A. Byk, T. Mokrzycki & A. Rutkiewicz, det. T. Mokrzycki; Supraśl Forest District, Podsupraśl Forest Subdistrict (FD59), 11.07.1993 – 1 ex., mixed forest, leg. & det. A. Lasoń; Waliły Forest District, Radunin Forest Subdistrict, compartment 61 (FD79), 22.04-6.06.2008 – 1 ex., mixed moist coniferous forest, IBL-2 trap, leg. R. Plewa, det. A. Lasoń.

Data from the literature: Budzisk (FE50) and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c).

Distribution

A European species, ranging from the Mediterranean countries to the British Isles, Scandinavia, and the Baltic countries (Burakowski et al. 1987). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, Roztocze, the Sandomierz Lowland, the Western Sudetes, the Eastern Sudetes, the Western and Eastern Beskids, the Bieszczady Mountains, the Pieniny Mountains, and the Tatra Mountains (Iwan et al. 2012).

Biology and ecology

Found in bark beetle feeding areas and under the slightly detached bark of the thick trunks and stumps of mainly deciduous trees, occasionally spruce. Adults and larvae feed in the bark beetle galleries of the genera *Xyleborus* Eichh. and *Trypodendron* Steph. (Burakowski et al. 1987).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Diaperis boleti **(Linnaeus, 1758)** (Fig. 376)

Fig. 376. ***Diaperis boleti*** **(Linnaeus, 1758) (Tenebrionidae)** (photo J. Kupryjanowicz)

Material examined

Original data: common species in Knyszyńska Forest, known from many localities, including the Bahno w Borkach (FD69), Budzisk (FE50), Jałówka (FD59), Jesionowe Góry (FE51), Krzemianka (FE40), Krzemienne Góry (FD69), Kulikówka (FE30), Las Cieliczański (FD59), Stare Biele (FE60), and Wielki Las (FE31) reserves.

Data from the literature: Kopna Góra (FE60), August 1986 (Kubisz & Pawłowski 1995; Iwan et al. 2010, 2012); the Budzisk (FE50) and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c).

Distribution

The species is widely distributed in almost all of Europe, as well as Algeria and Syria (Burakowski et al. 1987). In Poland, it is known from the Baltic Coast, the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Podlasie, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, the Lublin Upland, Roztocze, the Sandomierz Lowland, the Western and Eastern Sudetes, the Western and Eastern Beskids, the Bieszczady Mountains, the Pieniny Mountains, and the Tatra Mountains (Iwan et al. 2012).

Biology and ecology

It inhabits the fruiting bodies of fungi growing mainly on deciduous trees, less often on coniferous trees. *Piptoporus betulinus* (Bull. ex Fr.) P., *Laetiporus sulphureus* (Bull. ex Fr.) Murr., *Fomes fomentarius* (L. ex Fr.) Kickx, and *Fomitopsis pinicola* (Sw. ex Fr.) P. Karst. are listed as host fungi (Burakowski et al. 1987).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Neomida haemorrhoidalis (Fabricius, 1787) (Fig. 377)

Fig. 377. ***Neomida haemorrhoidalis*** **(Fabricius, 1787) (Tenebrionidae)** (photo R. Królik)

Material examined (Fig. 378)

Original data: Czarna Białostocka Forest District, Budzisk Reserve (FE50), 11.06.1995 – 1 ex., mixed coniferous forest, leg. & det. A. Lasoń; Czarna Białostocka Forest District, Budzisk Reserve (FE50), 7.07.2021 – 1 ex., leg. J.M. Gutowski, det. T. Mokrzycki; Knyszyn Forest District, Krzemianka Reserve (FE40), 20.06.2020 – 4 exx., mixed forest, leg. & det. A. Lasoń; Knyszyn Forest District, Krzemianka Reserve (53.275861, 23.119030, FE40), 25.09.2021 – 1 ex., leg. & det. R. Królik; Supraśl Forest District, Krasne Reserve (FD59), 9.05.1993 – 1 ex., mixed coniferous forest, leg. & det. A. Lasoń; Supraśl Forest District, Kozłowy Ług Reserve (53.31989, 23.42688, FE61), 1.04.2020 – 1 ex., leg. & det. J.M. Gutowski; Waliły Forest District, Chomontowszczyzna Reserve (53.17600, 23.61311, FD79), 10.03-31.10.2021 – 1 ex., cultivated from fungi, leg. & det. K. Sućko.

Data from the literature: reported from Kopna Góra (FE60) by Kubisz & Szwałko (1991) and Iwan et al. (2010), and from Budzisk Reserve (FE50) by Kwiatkowski & Marczak (2020b) and Marczak et al. (2023c).

Distribution

It is found from eastern Siberia to Europe – from southern Scandinavia to the Balkan Peninsula, Italy, Spain, and France (Iwan & Löbl 2020). In Poland, it is known from the Baltic Coast, the Masurian Lake

District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Podlasie, Białowieża Forest, Upper Silesia, the Kraków-Wieluń Upland, the Świętokrzyskie Mountains, the Lublin Upland, Roztocze, the Western and Eastern Beskids, the Bieszczady Mountains, and the Pieniny Mountains (Iwan et al. 2012).

Biology and ecology

It develops in the fruiting bodies of *Fomes fomentarius* (L.) Fr., growing on birches *Betula* spp. and beech *Fagus sylvatica* L. (Burakowski et al. 1987).

Notes

Listed as NT (near threatened) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002), and as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

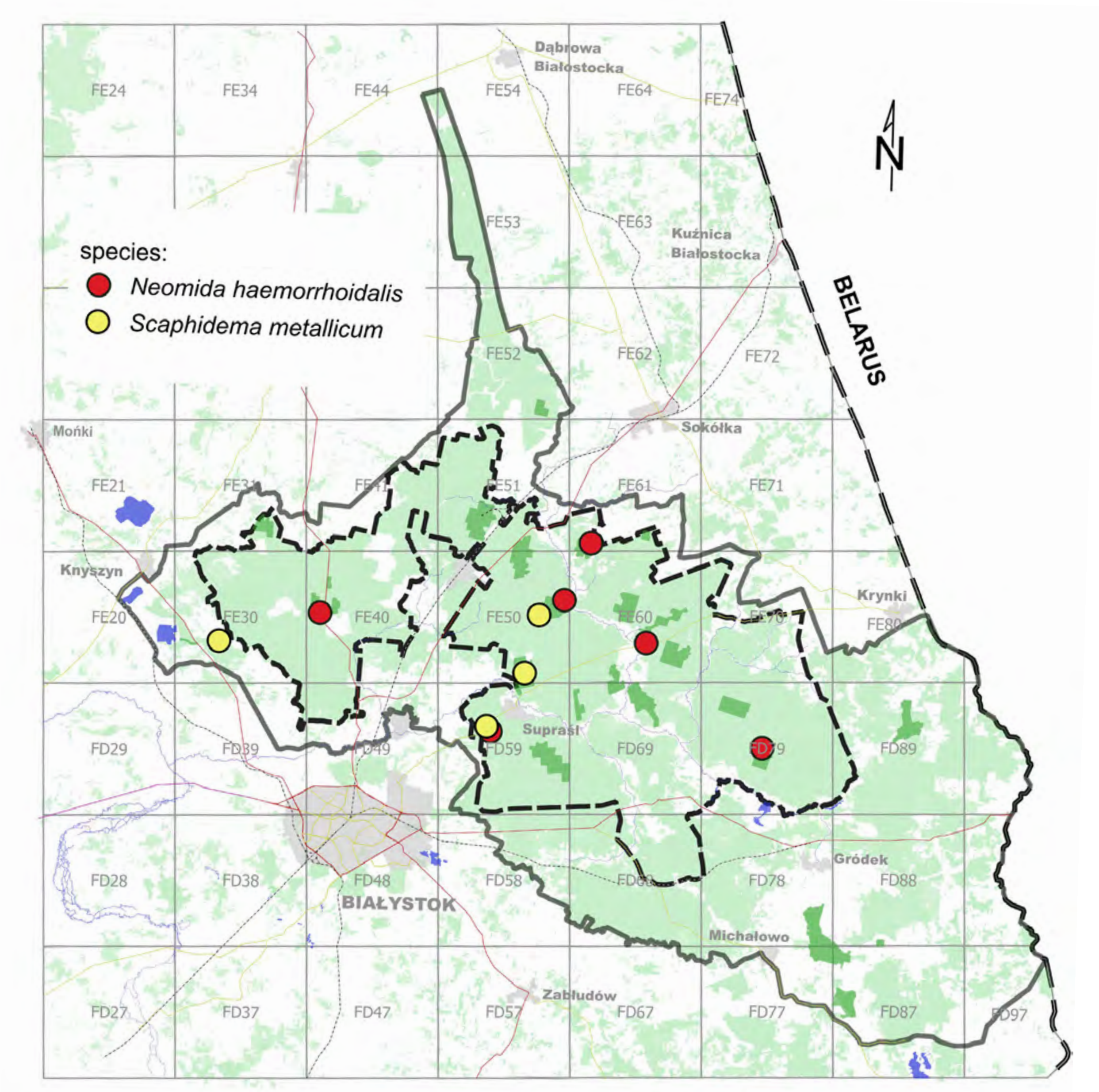


Fig. 378. Localities of *Neomida haemorrhoidalis* and *Scaphidema metallica* (Tenebrionidae) in Knyszyńska Forest

Scaphidema metallica (Fabricius, 1792) (Fig. 379)

Fig. 379. ***Scaphidema metallica*** **(Fabricius, 1792) (Tenebrionidae)** (photo G. Tarwacki)

Material examined (Fig. 378)

Original data: Supraśl Forest District, Jałówka Reserve (FD59), 13.05.2020 – 2 exx., leg. & det. M.A. Mazur; ad Krasne (FD59), 31.10.1994 – 2 exx., leg. L. Sawicki, det. A. Lasoń; ad Chraboły (FE03), 24.07.1996 – 2 exx., pine forest, rotting wood, leg. & det. A. Lasoń.

Data from the literature: Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

An Eurosiberian species, in Europe distributed from Spain, Italy, Bosnia and Herzegovina to England and Scandinavia (Burakowski et al. 1987). In Poland, it is known from the Pomeranian Lake District, the Masurian Lake District, the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Białowieża Forest, Lower Silesia, the Trzebnickie Hills, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, the Lublin Upland, Roztocze, the Sandomierz Lowland, the Western and Eastern Sudetes, the Western and Eastern Beskids, the Bieszczady Mountains, and the Pieniny Mountains (Iwan et al. 2012).

Biology and ecology

It is found in shady places in rotten, fungus-infected wood and under the bark of fallen trunks and branches lying on the ground, under fallen foliage, in humus, and among mosses at the base of trunks. Also found on the dying branches of still living trees. It has a one-year development cycle. Larvae usually feed in fungus-infected, soft wood and under rotten bark. The beetles emerge from August to September and overwinter (Burakowski et al. 1987).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Zopheridae

Colydium filiforme Fabricius, 1792 (Fig. 380)

Fig. 380. ***Colydium filiforme*** **Fabricius, 1792 (Zopheridae)** (photo R. Królik)

Material examined (Fig. 381)

Data from the literature: caught in Knyszyńska Forest in the Czarna Białostocka Forest District, the Budzisk (FE50), Jesionowe Góry (FE51) reserves (Marczak et al. 2023c), and Sławno Forest Subdistrict, compartment 42 (FE53), 10.06.2022 – 200 exx. (Mokrzycki et al. 2022).

Distribution

In northeastern Poland, it is found only in the Białowieża and Knyszyńska Forest (Kubisz et al. 2015; Mokrzycki et al. 2022; Marczak et al. 2023c). In the last century, it was still reported in other regions of the country: the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Lower Silesia, Roztocze, and the Tatra Mountains (Kubisz et al. 2015). The remaining information on this species is only of historical interest today.

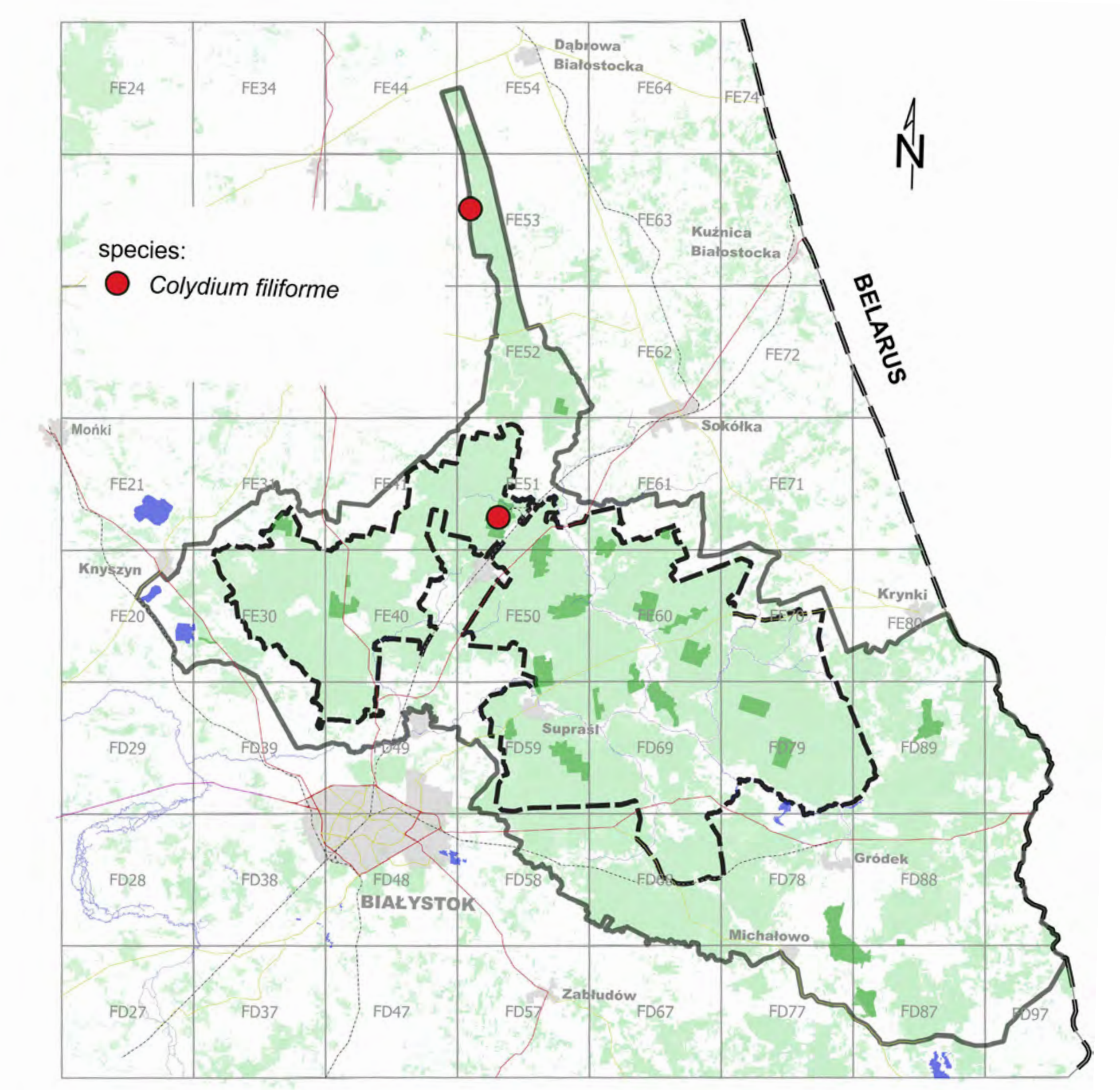


Fig. 381. Localities of *Colydium filiforme* (Zopheridae) in Knyszyńska Forest

Biology and ecology

The adults and larvae of *C. filiforme* live under the bark, as well as in the tunnels of cambio- and xylophagous beetles inhabiting coniferous and deciduous trees. They are facultative predators because they feed on the eggs or larvae of other insects encountered in the tunnels excavated by these trophic groups of beetles. However, their primary food is fungi or decomposed organic matter (Węgrzynowicz 1999).

Notes

Considered a relict of primeval forests (*sensu lato*) (Eckelt et al. 2018).

Bothrideridae

Bothrideres bipunctatus **(Gmelin, 1790)** (Fig. 382)

Fig. 382. ***Bothrideres bipunctatus*** **(Gmelin, 1790) (Bothrideridae)** (photo A. Lasoń)

Material examined (Fig. 383)

Original data: Chomontowszczyzna Reserve (FD69), 16.04-6.05.2021 – 1 ex., violet Lindgren funnel trap, leg. & det. K. Sućko.

Data from the literature: in the vicinity of Horodnianka (FE34), on dead black alder *Alnus glutinosa* (L.) Gaertn. (Kwiatkowski & Marczak 2020); Waliły Forest District, Lipnik Forest Subdistrict, compartment 255 (FD88), 2.07.2022 – 1 ex., on an old, dead Scots pine *Pinus sylvestris* L. in a 177 year-old stand; Supraśl Forest District, Jałówka, compartment 94 (FE50), 8.05.2022 – 1 ex., under the bark of *P. sylvestris* (Mokrzycki et al. 2022); Budzisk (FE50) and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c).

Distribution

A species with a Pacific-Atlantic distribution, found from Portugal to the Far East. In Europe, it inhabits the central part of the continent, reaching north to Scandinavia and south to the Balkans; it has also been reported from Syria (Ślipiński 2007). In Central Europe, it is considered a relict of primeval forests, rare everywhere, mostly found as single specimens. It has not been reported for many decades in some countries. It is a rare beetle in Poland, known from a small number of localities (Burakowski et al. 1986b).

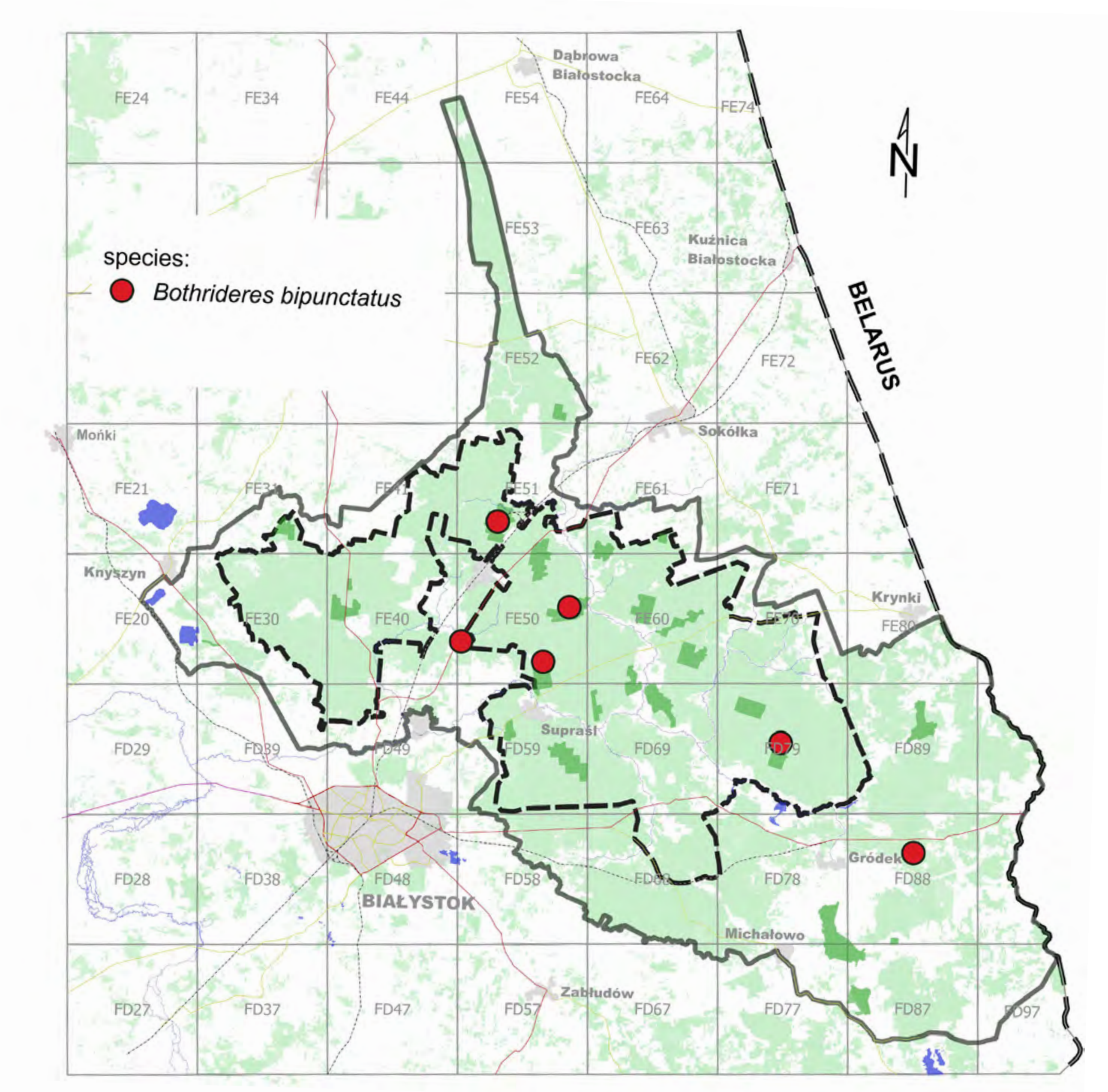


Fig. 383. Localities of *Bothrideres bipunctatus* (Bothrideridae) in Knyszyńska Forest

Biology and ecology

Found in old deciduous trees, less often in coniferous trees. It develops in the larval tunnels of underbark and wood-boring beetles, especially longhorn beetles (Cerambycidae), wood-borer beetles (Anobiinae), auger beetles (Bostrichidae), and bark beetles (Scolytinae). The young generation emerges in May or June. The development cycle probably lasts two years, as adult larvae and imagines were found in early spring after overwintering (Burakowski et al. 1986b; Gutowski original information).

Notes

Listed as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Latridiidae

Corticaria fulva (Comolli, 1837) (Fig. 384)

Fig. 384. ***Corticaria fulva*** **(Comolli, 1837) (Latridiidae)** (photo K. Wilamowski)

Material examined (Fig. 385)

Original data: Czarna Białostocka Forest District, Budzisk Reserve, compartment 100 (FE50), 16.07.2016 – 1 ex., leg. I. Sztabkowska, det. T. Mokrzycki; Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 110 (FE50), 23.09.2016 – 2 exx., leg. I. Sztabkowska, det. T. Mokrzycki.

Distribution

A widely distributed cosmopolitan species. It occurs in Asian countries, northern Africa and most of Europe (Rücker 2020). In Poland, it has been reported from several scattered localities in the last century (Bercio & Folwaczny 1979; Burakowski et al. 1986b; Skrzypczyńska et al. 1991; Borowski 2007a; Plewa & Miłkowski 2018; Ruta et al. 2022).

Biology and ecology

The habitat of this species is usually moldy hay or straw. It has often been found in barns or other structures where such a substrate has accumulated (Rücker 2020). During recent surveys in the Western Sudetes, it was found in topsoil, under decaying hay (Ruta et al. 2022). *C. fulva* is considered a synanthropic species, as it has been found in human homes or basements.

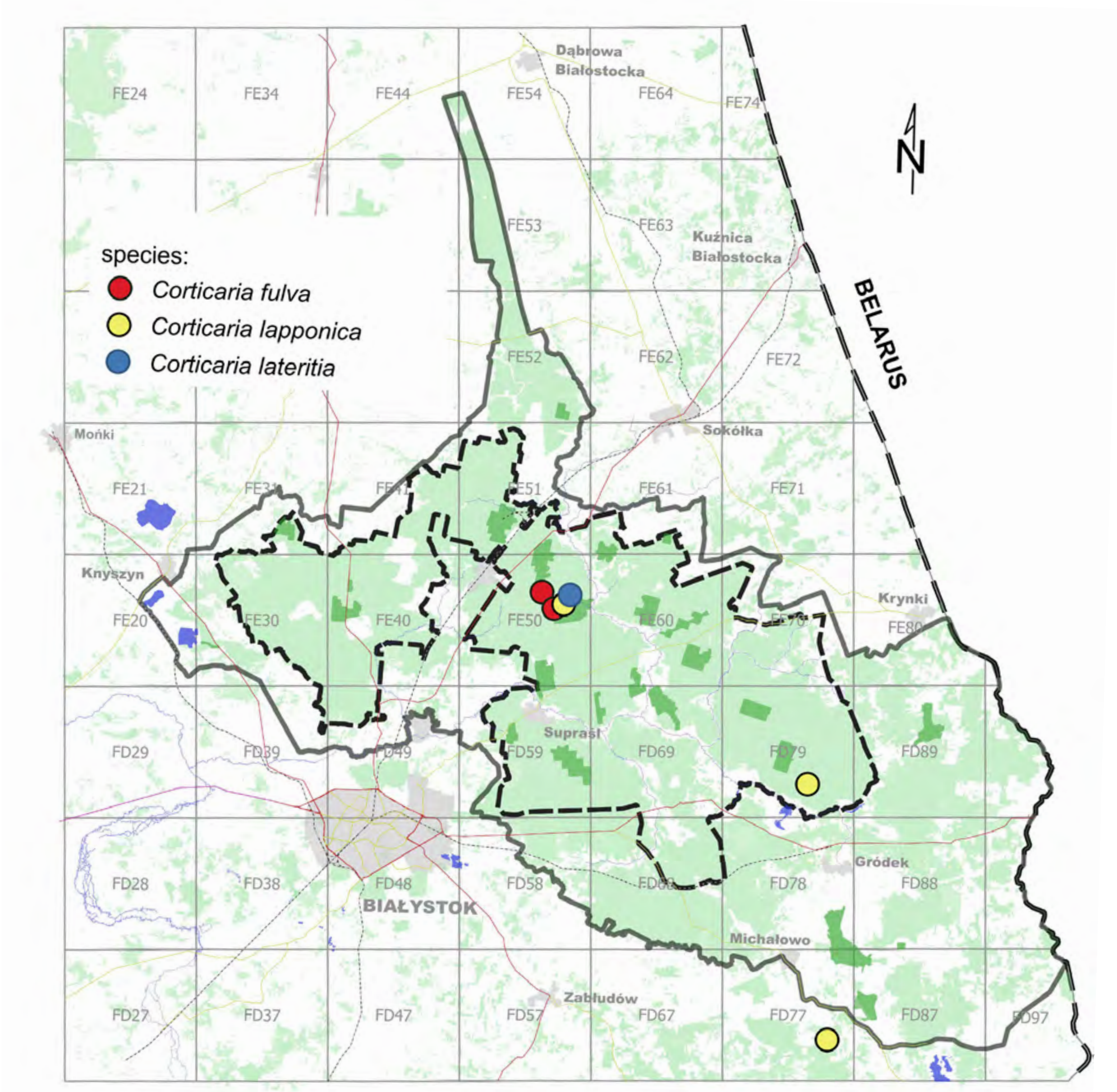


Fig. 385. Localities of *Corticaria fulva*, *C. lapponica*, and *C. lateritia* (Latridiidae) in Knyszyńska Forest

Notes

A new species for Podlasie.

Corticaria lapponica (Zetterstedt, 1838) (Fig. 386)

Material examined (Fig. 385)

Original data: Żednia Forest District, ad Krugły Lasek, compartment 164 (FD77), 22.04-9.06.2008 – 1 ex., fresh mixed forest, IBL-2 trap, leg. & det. R. Plewa; Waliły Forest District, Królowe Stojło Forest Subdistrict, compartment 148 (FD79), 22.04-09.06.2008 – 1 ex., moist forest, IBL-2 trap, leg. & det. R. Plewa; Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 110 (FE50), 27.08.2016 – 1 ex., leg. I. Sztabkowska, det. T. Mokrzycki.

Distribution

A widely distributed species, found from eastern Russia in Siberia, through areas along Lake Baikal, reaching as far as Europe. It is rare everywhere, although collectively it is known from more than a dozen countries in the eastern and the central-eastern parts of Europe (Rücker 2020). In Poland, it has been reported from the Roztocze (Majewski 1997), the Świętokrzyskie Mountains (Rücker & Borowiec 1991; Majewski 1997; Borowski 2007a), the Małopolska Upland (Borowski 2007b; Byk 2007; Mokrzycki 2011; Borowski et al. 2013), the Mazovian Lowland (Plewa & Miłkowski 2018; Marczak 2020), the Masurian Lake District (Plewa et al. 2021), Podlasie (Plewa et al. 2021; Plewa 2023), and Białowieża Forest (Plewa et al. 2022). Historical records of this species refer to the Western Sudetes (Gerhardt 1888) and Piotrków region – from 1915 (Burakowski et al. 2000).

Fig. 386. ***Corticaria lapponica*** **(Zetterstedt, 1838) (Latridiidae)** (photo L. Borowiec)

Biology and ecology

Corticaria lapponica is a boreal-mountain species, found in forests that preserve the continuity of trees. It is associated with older deciduous stands or parks, characterized by the continuous presence of dead tree wood. According to the observations of Rücker (2020), it was found under the bark of trees and on birch trees with fungal fruiting bodies of the genus *Polyporus* P. Micheli ex Adans. According to the observations of an author of the present study (R. Plewa), *C. lapponica* is also associated with birches infected with the mycelium of *Fomes fomentarius* (L.) Fr., which causes the white rot of wood. The individuals observed after dark penetrated not only the outer surfaces and interiors of the fungal fruiting bodies, but also the trunks of the trees on which they occurred.

Notes

Included in the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2018) in group 2 (relict *sensu lato*). It has not yet been recorded in Knyszyńska Forest.

Corticaria lateritia Mannerheim, 1844 (Fig. 387)

Material examined (Fig. 385)

Original data: Czarna Białostocka Forest District, ad Budzisk, compartment 110 (FE50), 7.06-29.06.2019 – 1 ex., green Lindgren funnel trap, leg. J.M. Gutowski, det. R. Plewa.

Fig. 387. ***Corticaria lateritia*** **Mannerheim, 1844 (Latridiidae)** (photo G. Tarwacki)

Distribution

The species is widely distributed, occurring from eastern Russia in Siberia to Europe, reaching southward as far as Italy (Rücker 2020). In Poland, it is known from two locations: Jegiel Reserve in Mazovia (Majewski 1997) and Białowieża Forest (Majewski 1997, 2004; Borowski 2006; Gutowski et al. 2020b; Plewa et al. 2022). The KF is the third locality of this species in Poland.

Biology and ecology

Corticaria lateritia is associated with coniferous or mixed stands with spruce and pine. It was found under the bark of trees and stumps, where various species of slime molds (Myxomycetes) were found (Rücker 2020).

Notes

According to Burakowski et al. (2000), the species is found in primeval forests. It is included in the relicts of primeval forests *sensu lato* by Eckelt et al. (2018).

A new species for Podlasie.

Corticaria pineti Lohse, 1960 (Fig. 388)

Material examined (Fig. 389)

Original data: Żednia Forest District, Cieliczanka Forest Subdistrict, compartment 78 (FD69), moist forest, 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. & det. R. Plewa.

Distribution

The species is known from several European countries, i.e., the Czech Republic, Germany, Italy, Austria, and Poland (Borowski et al. 2010; Rücker 2020), as well as Norway, Sweden, and Finland (Andersen et al.

2000). It was first recorded in Poland in Rogów near Koluszki (Borowski et al. 2010), followed by Białowieża Forest (Plewa et al. 2022). The locality in Knyszyńska Forest is currently the third in Poland.

Fig. 388. *Corticaria pineti* Lohse, 1960 (Latridiidae) (photo L. Borowiec)

Biology and ecology

In Rogów, *C. pineti* was attracted to modified Netocia-type traps provided with a substrate of wood sawdust containing the mycelium of the fungi that cause brown rot, i.e., *Fomitopsis rosea* (Alb. et Schw.: Fr.) P. Karst., *Fistulina hepatica* (Schaeff.): Fr., and *Sparassis crispa* (Wulf.) (Borowski et al. 2010). On the other hand, Rücker (2020) reports that this species is found in moldy hay or straw lying on the ground.

Notes

A new species for Podlasie.

Enicmus atriceps Hansen, 1962 (Fig. 400)

Material examined (Fig. 389)

Original data: Knyszyn Forest District, Przewalanka Forest Subdistrict, compartment 36 (FE40), 3.06-13.07.2008 – 8 exx., fresh mixed coniferous forest, IBL-2 trap, leg. & det. R. Plewa; Knyszyn Forest District, Karczmisko Reserve, compartment 144 (FE40), 7.06-13.07.2008 – 2 exx., fresh mixed coniferous forest, IBL-2 trap, leg. & det. R. Plewa; Czarna Białostocka Forest District, Taboły Reserve, compartment 144 (FE50), 30.06.2021 – 1 ex., mixed deciduous forest, beating sheet, leg. A. Lasoń, det. R. Plewa; Czarna Białostocka Forest District, ad Kumiałka, compartment 165 (FE52), 22.04-9.06.2008 – 3 exx., fresh deciduous forest, IBL-2 trap, leg. & det. R. Plewa; Supraśl Forest District, Jałówka Reserve, area 144 (FD59), 7.06-13.07.2008 – 1 ex., fresh mixed forest, IBL-2 trap, leg. & det. R. Plewa; Żednia Forest District, ad Królowy Most, compartment 167 (FD69), 7.06-13.07.2008 – 2 exx., mixed moist coniferous forest, IBL-2 trap, leg. & det. R. Plewa.

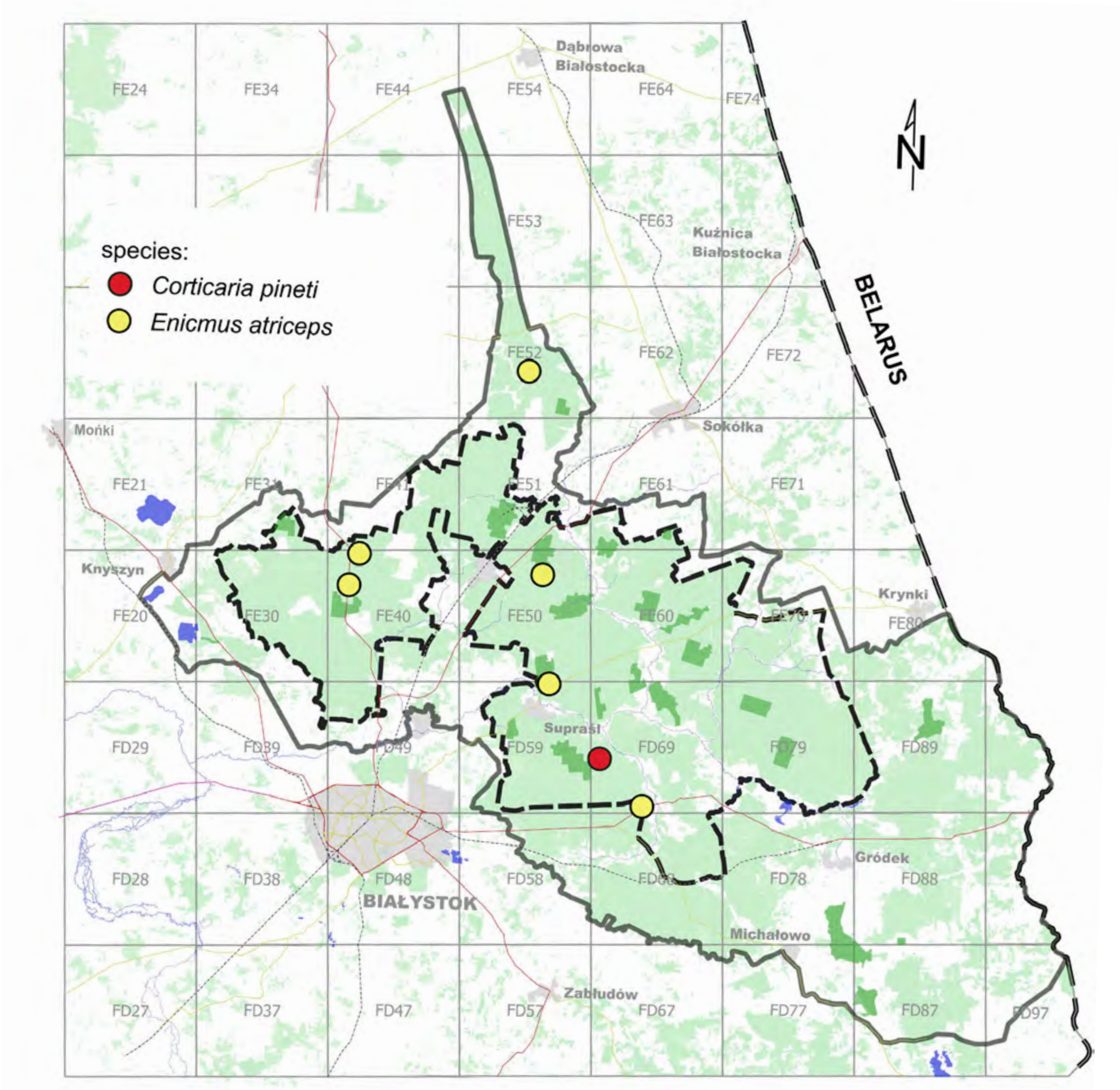


Fig. 389. Localities of *Corticaria pineti* and *Enicmus atriceps* (Latridiidae) in Knyszyńska Forest

Distribution

A European species, reported from Denmark, Germany, France, Greece, Italy, Poland, Romania, Sweden, Switzerland, and Hungary (Rücker 2020). In Poland, it is relatively rare, although it has been reported from more than a dozen scattered localities in different parts of the country, i.e., the Western Beskid (Borowiec & Kania 1994), Białowieża Forest (Majewski 1997, 2004; Gutowski et al. 2020b; Plewa et al. 2022), the Małopolska Upland (Byk 2007), the Eastern Beskid, Bieszczady (Buchholz & Melke 2018), the Świętokrzyskie Mountains (Buchholz et al. 2021), and Pieniny Mountains (Chachuła et al. 2021).

Biology and ecology

A species found mainly in deciduous forests. Trophically associated with *Lycoperdon* Pers. and slime molds (Myxomycetes) (Rücker 2020). In Poland, it was found for the first time among the dry spores of the fruiting body of an Ascomycota fungus growing on the stump of the fir tree *Abies alba* Mill. (Borowiec & Kania 1994; Burakowski et al. 2000).

Notes

A new species for Podlasie.

Fig. 400. ***Enicmus atriceps*** **Hansen, 1962 (Latridiidae)** (photo L. Borowiec)

Corylophidae

Arthrolips picea **(Comolli, 1837)** (Fig. 401)

Fig. 401. ***Arthrolips picea*** **(Comolli, 1837) (Corylophidae)** (photo A. Lasoń)

Material examined (Fig. 402)

Original data: Czarna Białostocka Forest District, Jesionowe Góry Reserve (FE51), 7.10.2022 – 1 ex., sifting plant litter, leg. T. Gazurek, det. P. Průdek; Supraśl (FD59), 21.05.2023 – 1 ex., in a pile of mowed grass, leg. & det. R. Ruta.

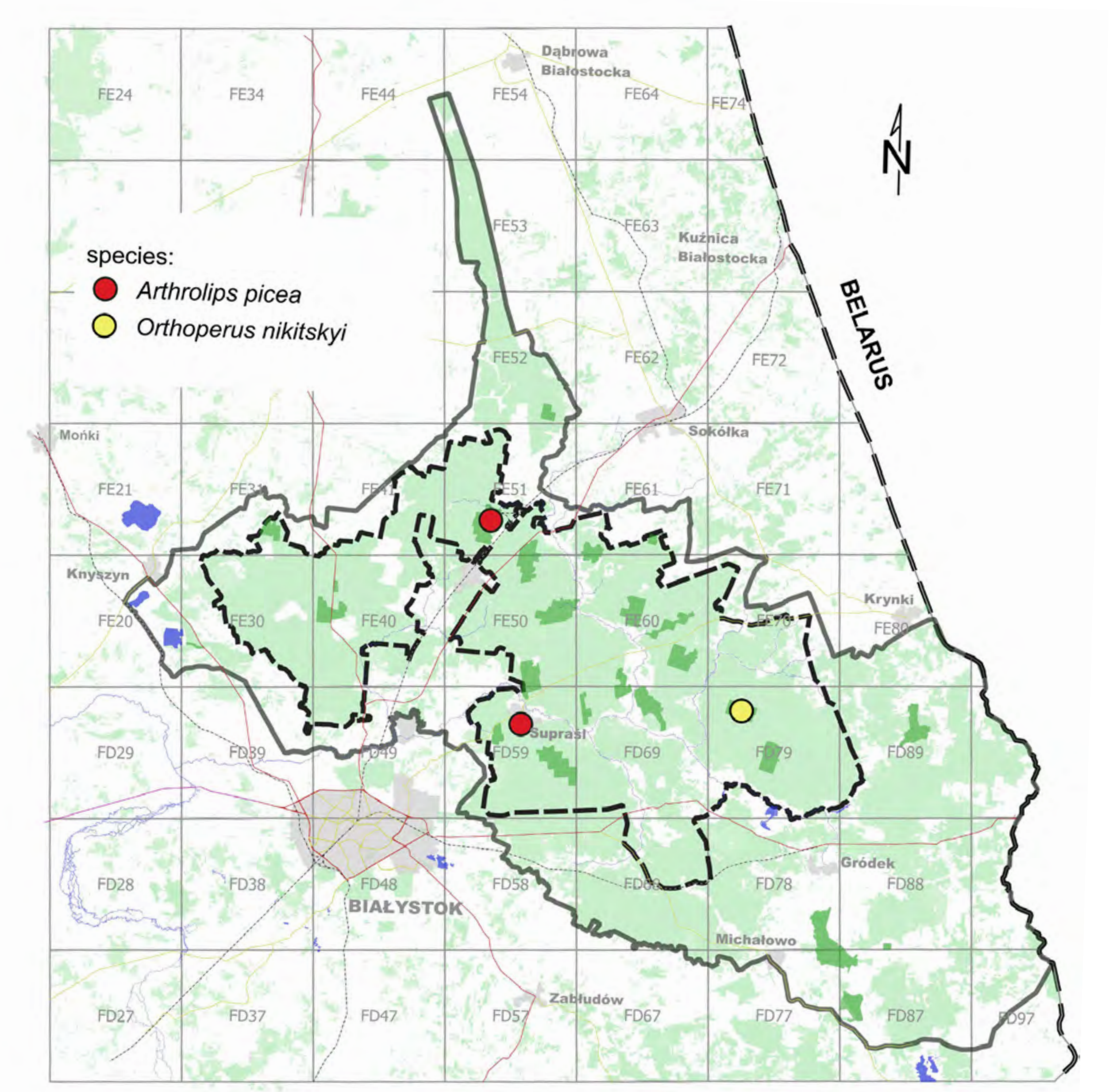


Fig. 402. Localities of *Arthrolips picea* and *Orthoperus nikitskyi* (Corylophidae) in Knyszyńska Forest

Distribution

The species is widely distributed in Europe, from Spain to the European part of Russia, and unrecorded in its northern part. In Africa, it has been reported from Tunisia to the Canary Islands, and in Asia from Turkey to Afghanistan. In Poland, the species is little known, until recently only reported from Białowieża Forest (Borowiec et al. 1992). Recent years have brought new reports from several zoogeographical regions: the villages of Małdyty and Kamieniec in the Masurian Lake District, the village of Karszew in the Wielkopolska-Kujawy Lowland, from the Józefów District of Radom in the Małopolska Upland, and from Radecznica and Górajec in the Roztocze region (Ruta et al. 2010).

Biology and ecology

Its habitat requirements are insufficiently known. In Białowieża Forest, it has been found under the bark of dead hornbeam, while in Radom it was found in a pile of decomposing, mown grass (Borowiec et al. 1992; Ruta et al. 2010).

Orthoperus nikitskyi Bowestead, 2000 (Fig. 403)

Fig. 403. *Orthoperus nikitskyi* Bowestead, 2000 (Corylophidae) (photo J. Grzywocz)

Material examined (Fig. 402)

Original data: Krynki Forest District, Góra Pieszczana Reserve (FD79), 17.06.2016 – 1 ex., 27.07.2016 – 1 ex., both specimens in an IBL-2 trap, leg. K. Komosiński, det. P. Průdek.

Distribution

The *Catalogue of Palaearctic Coleoptera* (Smetana 2007) reports this species only from the central, European part of Russia. In Poland, it is reported on the basis of a single specimen from Bystre in the Bieszczady Mountains in 2008 (Ruta et al. 2010).

Biology and ecology

Biology unknown. The individual from Russia was caught in a barrier trap, while the specimen from Bieszczady Mountains was found in plant debris under a stone, near a stream.

Notes

Described on the basis of one specimen – a female, from the Moscow area. The individual found in 2008 in Poland is the first reported specimen of a male of this species (Ruta et al. 2010).

A new species for Podlasie.

Endomychidae

Leiestes seminiger (Gyllenhal, 1808) (Fig. 404)

Material examined (Fig. 405)

Original data: Krynki Forest District, Góra Pieszczana Reserve, compartment 508, (53.20257, 23.58330, FD79), 20.08. 2021 – 1 ex., under the bark of a dead spruce, leg., det. & coll. R. Plewa; Waliły Forest District, Józefowo Forest Subdistrict, compartment 3 (53.172117, 23.693671, FD89), 7.06-13.07.2008 – 1 ex., leg. R. Plewa, det J.M. Gutowski; Żednia Forest District, Kołodno Forest Subdistrict, compartment 167 (53.13868, 23.44993, FD69), 7.06-13.07.2008 – 1 ex., leg. R. Plewa, det J.M. Gutowski.

Data from the literature: Krynki Forest District (Kwiatkowski & Marczak 2020b); Czarna Białostocka Forest District, Budzisk Reserve (FE50) (Kwiatkowski & Marczak 2020b; Marczak et al. 2023c), Czarna Białostocka Forest District, Jesionowe Góry Reserve (FE51) (Marczak et al. 2023c); Żednia Forest District, Nowa Wola Forest Subdistrict, compartment 154 (FD77) (Plewa et al. 2014).

Fig. 404. *Leiestes seminiger* (Gyllenhal, 1808) (Endomychidae) (photo A. Lasoń)

Distribution

In Europe, this species has been reported from Austria, Belgium, Belarus, Bosnia and Herzegovina, Croatia, Czech Republic, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, the northern part of the European territory of Russia, Slovakia, Slovenia, Switzerland, Sweden, and Italy, as well as generally from the Caucasus. In Asia, it has been reported from Iran and Japan (Tomaszewska 2007).

In the 19th and 20th centuries in Poland, it was found quite rarely and sporadically. At that time, it was reported from the Baltic Coast (Międzyzdroje, Wolin), the Mazovian Lowland (near Warszawa), Białowieża Forest (Białowieża National Park), Upper Silesia (Dąbrowa Górnicza), the Western Beskid (Tęgoborze near Nowy Sącz), and Eastern Beskid (Brylińce, Turnica Mountain, near Przemyśl) (Burakowski et al. 1986b). Found slightly more frequently in the current century. Reported from Białowieża Forest (Borowski 2001; Byk 2001b; Mokrzycki 2001; Byk et al. 2006), the Masurian Lake District (Gutowski et al. 2006, 2022), the Świętokrzyskie Mountains (Byk 2007), Roztocze (Papis & Mokrzycki 2015), and Podlasie (Plewa et al. 2014; Kwiatkowski & Marczak 2020b; Marczak et al. 2023c).

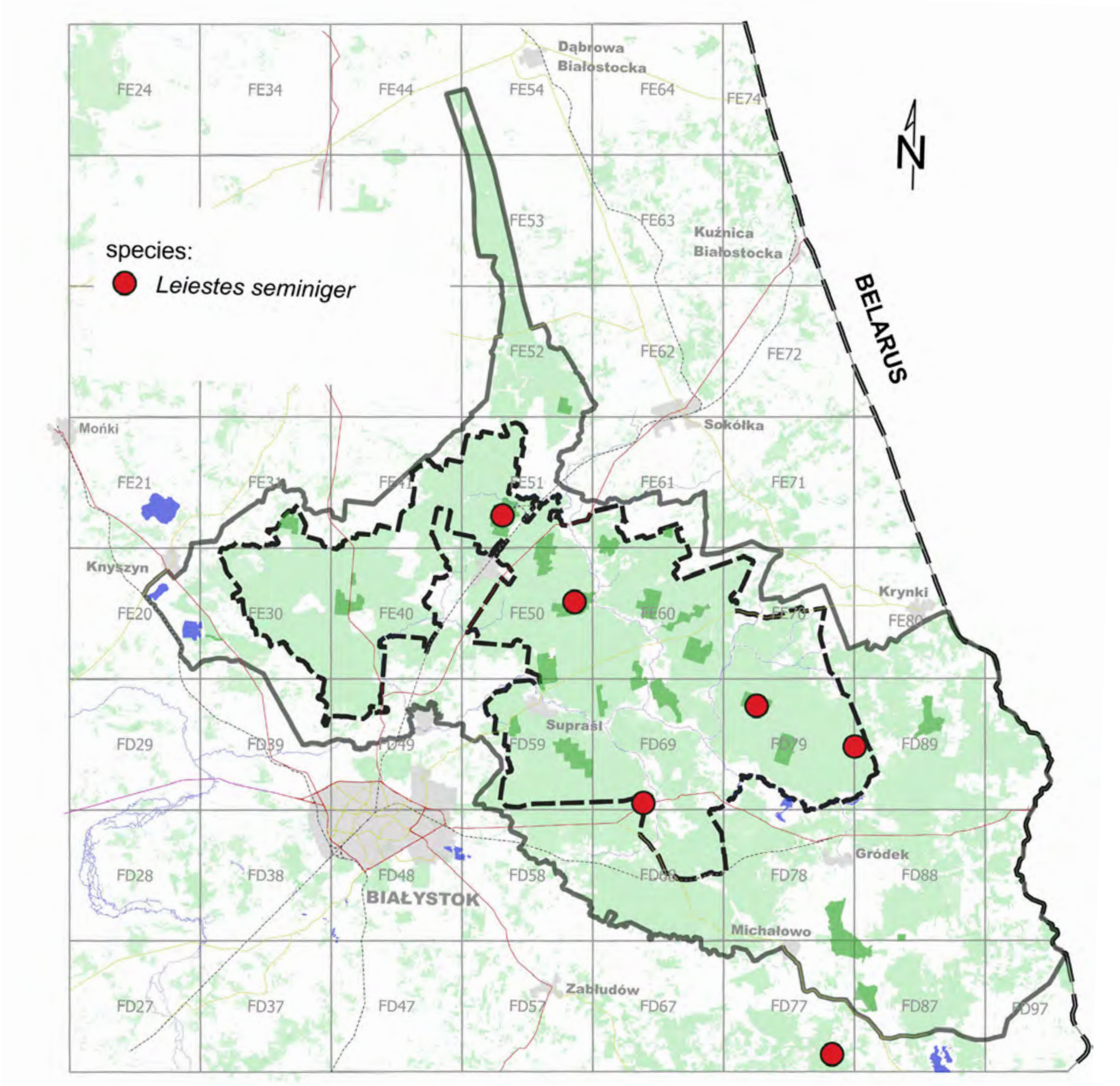


Fig. 405. Localities of *Leiestes seminiger* (Endomychidae) in Knyszyńska Forest

Biology and ecology

Knowledge about the habitat requirements and bionomics of this species is fragmented. Considered a relict of primeval forests (Burakowski et al. 1986b; Wiezik et al. 2015). Found in the overgrown mycelium of beech and fir trees, on aspen trees, and on thick, rotten birch trunks and stumps overgrown with *Fomitopsis betulina* (Bull.) B.K. Cui, M.L. Han & Y.C. Dai, and *Fomes fomentarius* (L.) Fr. Foraging larvae and imagines have been observed on the moist, soft, rotting wood of an aspen *Populus tremula* L. log lying on the ground in a heavily shaded and moist place (Burakowski et al. 1986b). More recently, a large number of individuals of this species have been found in the decayed wood of white poplar *Populus alba* L. infected with *Mycoacia fuscoatra* (Fr.) Donk (Wiezik et al. 2015).

Notes

Listed as NT (near threatened) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). It is also included in the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2017) in group 2 (relict *sensu lato*).

Coccinellidae

Adalia conglomerata (Linnaeus, 1758) (Fig. 406)

Fig. 406. ***Adalia conglomerata*** **(Linnaeus, 1758) (Coccinellidae)** (photo A. Lasoń)

Material examined (Fig. 407)

Original data: Pilnica valley (FD59), 18.06.1988 – 1 ex., leg. A. Lasoń, det. L. Borowiec; ad Supraśl (FD59), 20.07.1992 – 1 ex., leg. A. Lasoń, det. L. Borowiec.

Distribution

A species with a boreal-mountain type of distribution. It occurs mainly in Central and Northern Europe and Siberia, reaching Japan in the east, far beyond the Arctic Circle in Fennoscandia in the north, France and Britain in the west (Burakowski et al. 1986b; Kovář 2007).

In Poland, this species has been reported from 16 of the 24 zoogeographical regions (Markiewicz & Ceryngier 2020) distinguished in the *Catalogue of the Fauna of Poland*. The analysis of the data on the occurrence of *A. conglomerata* in Poland made by the above-mentioned authors indicates that until recently, this species was found mainly in the south of the country. Reports from areas located in central and north-eastern Poland are much less numerous and mostly from a later period. Its occurrence in new areas indicates an expansion that has been ongoing for at least several decades.

It is a rare species in Poland and other Central European countries (Burakowski et al. 1986b; Nedvěd 2020).

Biology and ecology

Adalia conglomerata is a specialized predator of the Hemiptera: Adelgidae. It occurs most often on spruce, less often on larch, fir, and other coniferous trees, and in the mountains on dwarf mountain pine (Burakowski et al. 1986b; Yu 2001; Nedvěd 2020).

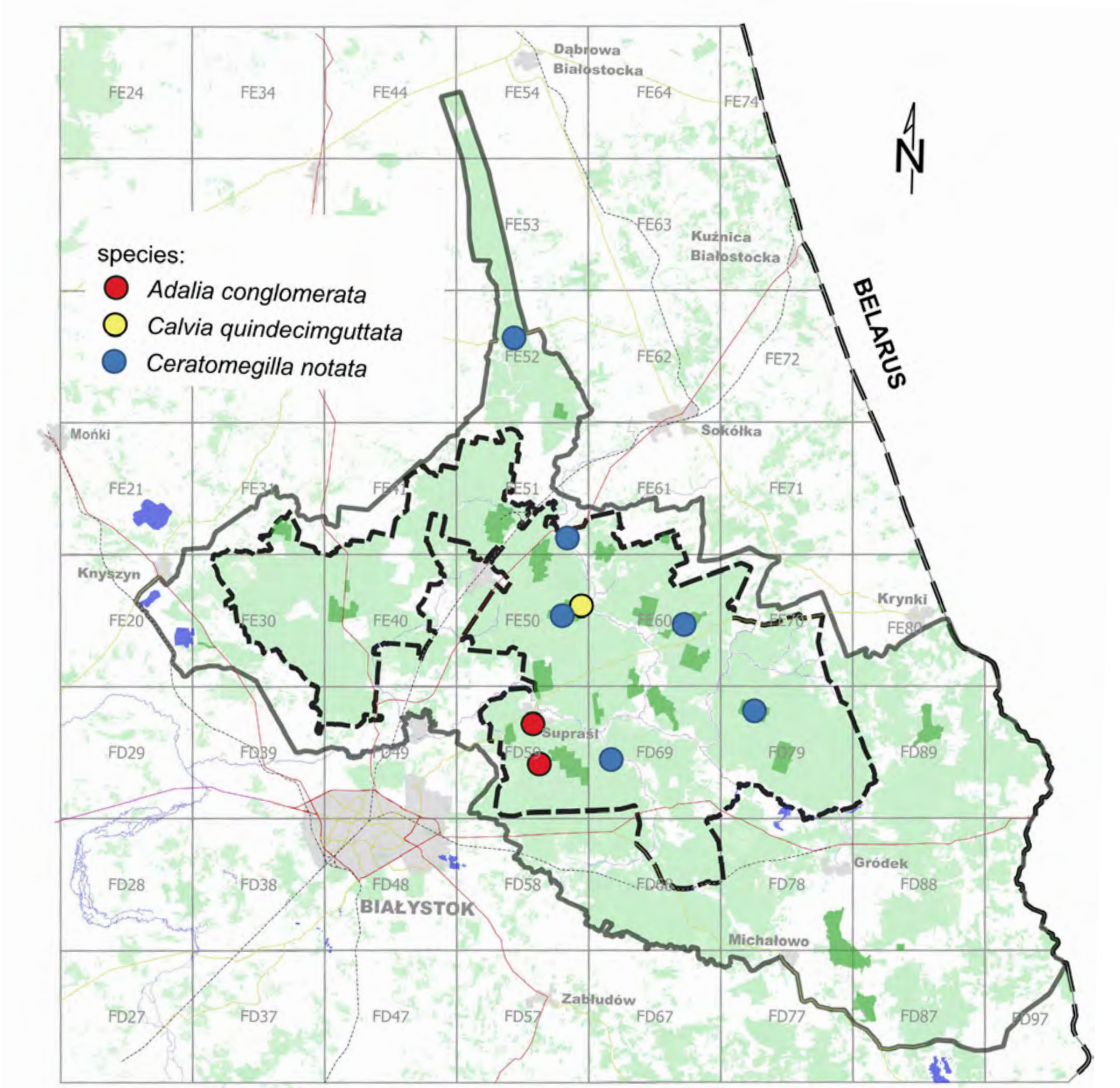


Fig. 407. Localities of *Adalia conglomerata*, *Calvia quindecimguttata*, and *Ceratomegilla notata* (Coccinellidae) in Knyszyńska Forest

Calvia quindecimguttata (Fabricius, 1777) (Fig. 408)

Material examined (Fig. 407)

Data from the literature: species reported from Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

The species is widely distributed in the Palaearctic, with most of the data coming from Asian countries. In Europe, it is found from France and Romania in the south, to Finland in the north, reported from Ukraine and Azerbaijan in the east. Despite its wide range in Europe, it has not yet been reported from many countries in the central or southern parts. In Asia, its range includes China and Siberia to Japan. According to the literature, it is very rarely and sporadically caught everywhere. In Poland, it is known from a small number of scattered localities in different parts of the country. Most of the data from the last century were compiled by Burakowski et al. (1986b), while later information refers to the Baltic Coast (Bubienko & Ciepielewska 2010) and Poleski National Park (Pietrykowska-Tudruj & Stączek 2001).

Fig. 408. ***Calvia quindecimguttata*** **(Fabricius, 1777) (Coccinellidae)** (photo A. Jadwiszczak)

Biology and ecology

It can be found on shrubs and deciduous trees growing in swamp forests, in thickets along water banks, and in moist mid-forest meadows. It overwinters in plant litter and under the detached bark of trees. The bionomy of this species has not been fully determined (Burakowski et al. 1986b).

Ceratomegilla notata (Laicharting, 1781) (Fig. 409)

Material examined (Fig. 407)

Original data: Woronicza Reserve (53.2649, 23.5074, FE60), 8.06.2010 – 3 exx., 20.07.2010 – 9 exx., leg. J.M. Gutowski, det. W. Jędryczkowski (Plan ochrony... Woronicza 2011); Budzisk Reserve (53.2783, 23.3791, FE50), 20.06.2011 – 1 ex. leg. K. Sućko, det. W. Jędryczkowski (Plan ochrony... Budzisk 2011); Czarna Białostocka Forest District, Szyndziel Forest Subdistrict (53.4641, 23.3254, FE52), 18.07.2012 – 1 ex., leg. K. Micun, det. J.M. Gutowski (Micun 2013); Krynki Forest District, Góra Pieszczana Reserve (53.2047, 23.5836, FD79), IBL-2 trap, 27.07.2016 – 1 ex., leg. K. Komosiński, det. A. Lasoń; Czarna Białostocka Forest District, Polanki Forest Subdistrict, ad Straż (53.3267, 23.3785, FE51), 9.07.2020 – 1 ex., leg. K. Sućko, det. C. Greń; Żednia Forest District, compartment 76 (53.1750, 23.4194, FD69), bark beetle pheromone trap, 12.05.2021 – 1 ex., leg. & det. C. Greń.

Distribution

A boreal-mountain species, reported from Norway, Finland, Karelia, and the mountains in Central and Southern Europe, northern Italy, and Yugoslavia, Transylvania, the Caucasus, eastward reaching Mongolia (Burakowski et al. 1986b; Kovář 2007). In Poland, it is known mainly from the south, and has been caught in the last 50 years in the mountains (the Tatra, Pieniny, Babia Góra, Bieszczady, East Beskid Mountains), near the Tarnowskie Hills in Upper Silesia, in Kampinos Forest, in the north of the country in the Masurian Lake District, in Pisz Forest, Suwałki Landscape Park, and Białowieża Forest (Burakowski et al. 1986b; Borowiec & Kania 1995; Jadwiszczak 2001; Ruta et al. 2009; Gutowski et al. 2010b; Marczak 2010; Twardowska & Ciepielewska 2011; Greń et al. 2013; Jedryczkowski & Gutowski 2014; Szczepański et al. 2015b; Wojas 2017; Gutowski et al. 2020b). Reported from several localities in KF.

Fig. 409. *Ceratomegilla notata* (Laicharting, 1781) (Coccinellidae) (photo A. Jadwiszczak)

Biology and ecology

According to Bielawski (1978), *C. notata* is found in Poland in moist, heavily shaded habitats – on bushy willows, herbaceous plants, and perennials, especially on common nettle (*Urtica dioica* L.). The national literature lacks data on its food preferences. Savoiskaya (1983) reports it as a predator of aphids feeding on nettles (*Urtica* sp.). Foraging studies of this ladybird conducted in 2002–2003 in Italy in Alpine habitats (both in natural habitats and in cultivated fields), showed that both larvae and adult insects have a wide food spectrum and feed on aphids, thrips, mites, the pollen of various plant species (e.g., Graminaceae, Asteraceae, and Apiaceae), and fungal spores (e.g. *Alternaria* spp, *Puccinia* spp., *Cladosporium* spp., *Helminthosporium* spp., and other unidentified species). Due to its abundance in the Alps, it plays an important role there in controlling harmful aphids, e.g., *Rhopalosiphum maidis* (Fitch) and *R. padi* (L.) in corn, and in crops in the 800 to 1100 m altitude range (Ricci & Ponti 2005). In natural pastures, both adults and larvae *of C. notata* prefer: *Cavariella theobaldi* G. & B., an aphid attacking *Heracleum sphondylium* L., *Sitobion avenae* L., and *Avena sativa* L.; *Megoura viciae* (B.) and *Acyrthosiphon pisum* (Harris) on *Vicia cracca* L.; *Uroleucon jaceae* (L.) on *Cirsium arvense* Scop.; *U. cichorii* (Koch) on *Hypochaeris radicata* L.; and *Macrosiphum weberi* Börn.

on *Scabiosa* sp. Thrips, on the other hand, are important alternative prey in the absence of aphids. Food selectivity and specificity is more pronounced in adults than in larvae. Depending on the availability of food sources, the diet of *C. notata* varies at different times and in various habitats.

***Coccinella hieroglyphica* Linnaeus, 1758** (Fig. 410)

Fig. 410. *Coccinella hieroglyphica* Linnaeus, 1758 (Coccinellidae) (photo G. Tarwacki)

Material examined (Fig. 411)

Original data: Woronicza Reserve (53.2649, 23.5074, FE60), 8.06.2010 – 3 exx., leg. J.M. Gutowski & K. Sućko, det. J.M. Gutowski (Plan ochrony... Woronicza 2011); Żednia Forest District, ad Krugły Lasek, compartment 164, (52.9506, 23.6650, FD77), 22.04-9.06.2008 – 1 ex., leg. R. Plewa, det. C. Greń.

Data from the literature: also found in Moskal bog (FE40) and Kopna Góra (FE60) in May 1986 by Kubisz & Pawłowski (1995).

Distribution

An Eurasian species, widely distributed in Europe from extreme northern areas to northern parts of Spain and Italy, as well as Transylvania and Ukraine, also known from Sakhalin and North America (Burakowski et al. 1986b; Kovář 2007). In Poland, it is reported from single localities throughout the country except in higher mountainous areas (Burakowski et al. 1986b; Ruta et al. 2009; Greń et al. 2013).

Biology and ecology

It is mainly found in mid-forest bogs, moist heaths, swampy meadows, and mid-forest clearings. It feeds on aphids foraging on small pines, bushy birches, and alders, as well as perennials and grasses (Bielawski 1971; Stebnicka 1972). Research has been conducted on its food preferences in Finland, where it was found to effectively reduce the abundance of *Galerucella sagittariae* (Gyll.), a beetle that feeds on the leaves of *Rubus chamaemorus* L., by consuming its eggs and larvae (Hippa et al. 1978, 1984). It appears from May to late autumn; the greatest intensity of appearance is in June. In winter, it has been found in the detritus under pines and birches (Bielawski 1971; Stebnicka 1972).

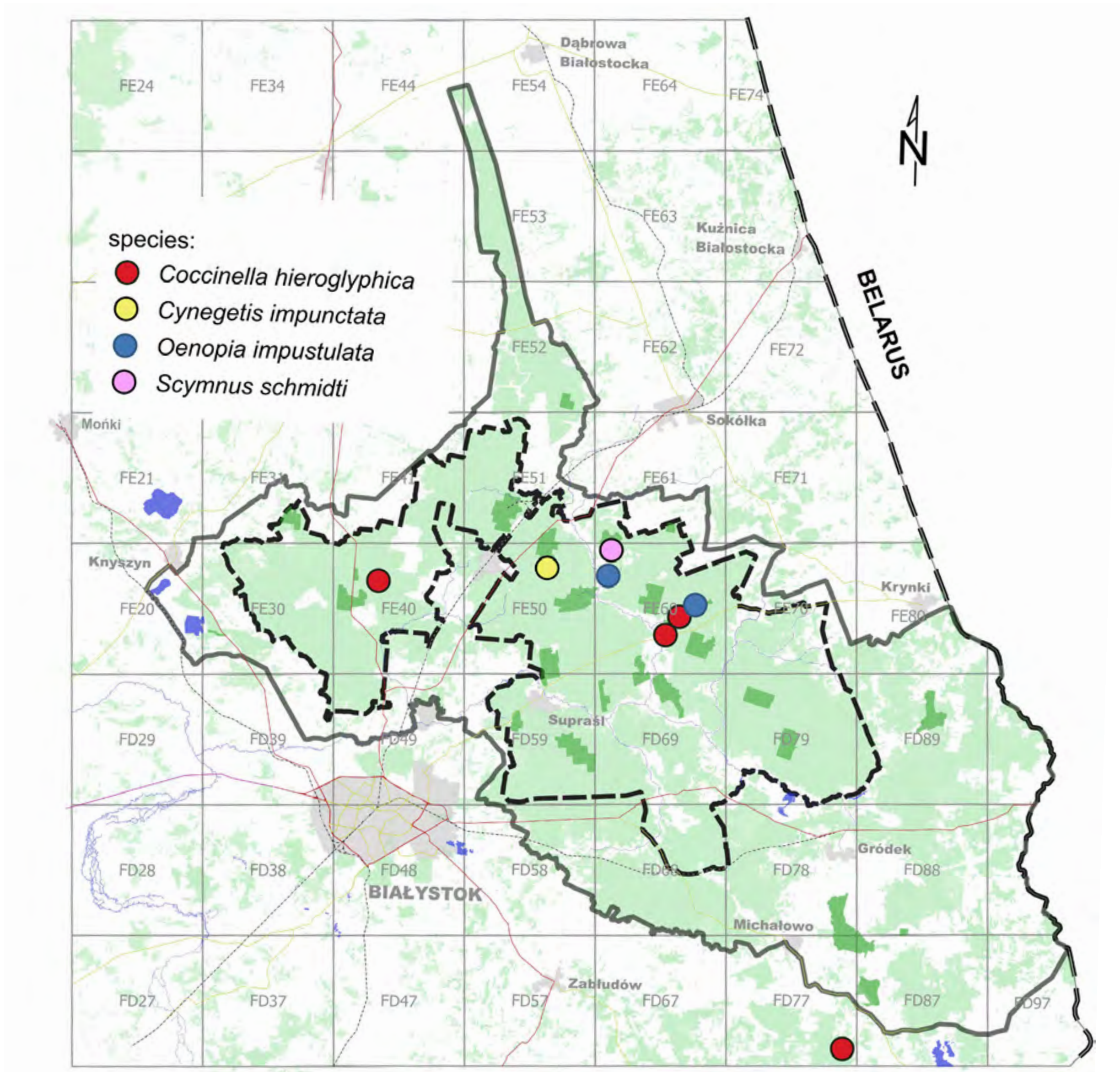


Fig. 411. Localities of *Coccinella hieroglyphica*, *Oenopia impustulata*, *Cynegetis impunctata*, and *Scymnus schmidti* (Coccinellidae) in Knyszyńska Forest

Oenopia impustulata (Linnaeus, 1767) (Fig. 412)

Material examined (Fig. 411)

Original data: Czarna Białostocka Forest District, Taboły Reserve, compartment 74/75 (53.298990, 23.346233, FE50), violet Lindgren funnel trap, 4.06-9.07.2020 – 1 ex., leg. J.M. Gutowski, det. C. Greń.

Distribution

A species found in central, eastern and northwestern parts of Europe, Italy, Asia Minor, and Transcaucasia (Iablokoff-Khnozorian 1982; Ziegler & Teunissen 1992; Kovář 2007). In Poland, according to Burakowski et al. (1986b), the beetle is very rarely recorded. It is known only from single localities scattered throughout the country and, outside of the Mazovian Lowland, only on the basis of reports from more than a century ago. However, it has recently been caught at many localities in Upper Silesia (Greń et al. 2013) and the Wielkopolska-Kujawy Lowland (Ruta et al. 2009; Markiewicz et al. 2020). It has also been reported from the Pomeranian Lake District (Ruta & Melke 2002) and Wielkopolska (Przewoźny 2004). It is reported from one locality in KF.

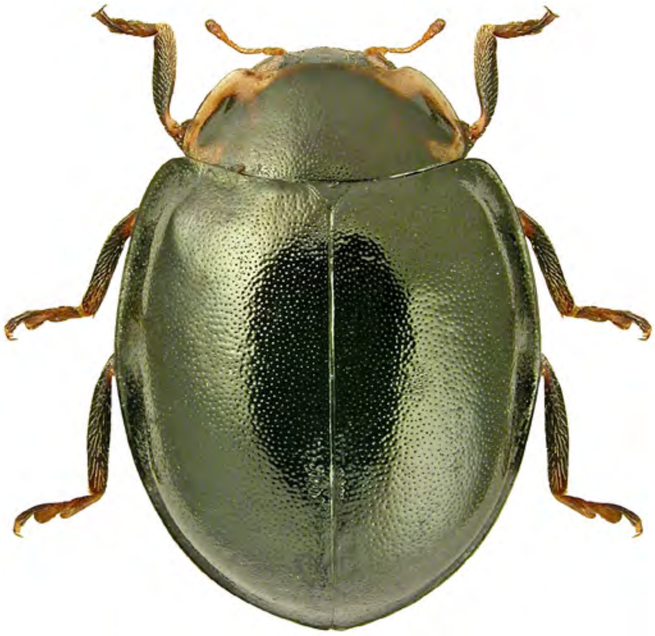


Fig. 412. ***Oenopia impustulata*** **(Linnaeus, 1767) (Coccinellidae)** (photo L. Borowiec)

Biology and ecology

It prefers areas of heathlands and bogs, and is found almost exclusively on downy birch *Betula pubescens* Ehrh., much less frequently on silver birch *Betula pendula* Roth and pedunculate oak *Quercus robur* L. The beetles appear in early May and can be found until late autumn (late October). There are no observations regarding the food of *O. impustulata*, but it can be assumed that like *O. conglobata* (Linnaeus, 1758), it feeds on aphids (Klausnitzer 1966; Ziegler & Teunissen 1992).

Cynegetis impunctata (Linnaeus, 1767) (Fig. 413)

Fig. 413. ***Cynegetis impunctata*** **(Linnaeus, 1767) (Coccinellidae)** (photo L. Borowiec)

Material examined (Fig. 411)

Original data: Woronicza Reserve (53.2649, 23.5074, FE60), 8.06.2020 – 1 ex., leg. & det. M.A. Mazur; Dworzysk (53.2823, 23.4052, FE60), 11.06.2020 – 1 ex., meadow, leg. & det. M.A. Mazur.

Distribution

A species with an Eurasian range, reported in Europe from its part, but not reaching the Atlantic. It also occurs in the southern part of Northern Europe and in mountainous areas in Southern Europe; in Asia, it is known from Russia, Kazakhstan, and North Korea (Burakowski et al. 1986b; Kovář 2007). It is very locally distributed as a result of its lack of wings, but can sometimes be numerous in the places where it occurs (Ruta et al. 2009). In Poland, it has been reported from several locations scattered throughout the country (Napiontek & Szawaryn 2017).

Biology and ecology

It inhabits dry places near moist meadows, water edges, in bogs and riparian forests. Both adults and larvae are oligophagous with respect to grasses (Poaceae), feeding on *Bromus mollis* L., *Agropyron repens* (L.) P.B. and *Arrhenatherum elatius* (L.) P. B., among others (Burakowski et al. 1986b).

Scymnus schmidti Fürsch, 1958 (Fig. 414)

Fig. 414. *Scymnus schmidti* Fürsch, 1958 (Coccinellidae) (photo L. Borowiec)

Material examined (Fig. 411)

Original data: Supraśl Forest District, Kozłowy Ług Reserve, compartment 72 (FE61), 1.06.2021 – 1 ex., mixed moist forest, beating sheet, leg. & det. A. Lasoń.

Distribution

A species with an inadequately known distribution, since it can only be identified with certainty by examining the male genital apparatus. Reported from Central Europe, Denmark, Fennoscandia, and Karelia (Burakowski et al. 1986b; Kovář 2007). In Poland, it is rarely found throughout its range. Recently recorded from the Wielkopolska-Kujawy Lowland, the Mazovian Lowland, Lower Silesia, the Małopolska

Upland, the Eastern Beskids, the Masurian Lake District, the Baltic Coast (Szawaryn et al. 2018), as well as Lower and Upper Silesia (Greń et al. 2013).

Biology and ecology

It is found in xerothermic habitats (dunes, dry meadows, heathlands), in lowlands, and the southern slopes of lower mountainous areas. During the growing season, it is mostly found on herbaceous plants, as well as on shrubs and deciduous trees in spring. It feeds on aphids. It is found in winter under fallen leaves, between dry, low grasses, in plant litter, among mosses and the roots of grasses and herbaceous plants (Burakowski et al. 1986b).

Notes

A new species for Podlasie.

Erotylidae

Dacne bipustulata **(Thunberg, 1781)** (Fig. 415)

Fig. 415. *Dacne bipustulata* (Thunberg, 1781) (Erotylidae) (photo M.W. Kozłowski)

Material examined

Original data: common species in KF, known from many localities, including the Bahno w Borkach (FD69), Budzisk (FE50), Chomontowszczyzna (FD79), Góra Pieszczana (FD79), Jałówka (FD59), Jesionowe Góry (FE51), Karczmisko (FE40), Kozłowy Ług (FE60), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), Stara Dębina (FE61), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), and Taboły (FE50) reserves.

Data from the literature: Czarny Blok (FE40) and Stare Biele Reserve (FE60) (Burakowski et al. 1986b); Budzisk (FE50) and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c).

Distribution

A widespread species in almost all of Europe, also recorded from Siberia and the Caucasus. In Poland, it is found throughout the area from the Baltic Sea to the Tatra Mountains (Burakowski et al. 1986b).

Biology and ecology

It is the most common species of the genus in question, found in polypores. It develops in the fruiting bodies of arboreal fungi and in the fungus-infected wood of deciduous and coniferous trees (Burakowski et al. 1986b).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Triplax aenea **(Schaller, 1783)** (Fig. 416)

Fig. 416. *Triplax aenea* (Schaller, 1783) (Erotylidae) (photo A. Lasoń)

Material examined (Fig. 417)

Original data: Knyszyn Forest District, Krzemianka Reserve (FE40), 10.06.2020 – 3 exx., mixed forest, beating sheet, leg. & det. A. Lasoń, 20.06.2020 – 1 ex., leg. & det. R. Królik, 20.06. 2020 – 2 exx., with *Pleurotus* (Fr.) P. Kumm. sp. on aspen, leg. & det. A. Lasoń, 1.10.2020 – 1 ex., with *Pleurotus* sp., leg. & det. A. Lasoń; Supraśl Forest District, Stara Dębina Reserve, compartment 18 (FE61), 6.05-1.06.2021 – 1 ex., violet Lindgren funnel trap, leg. & det. K. Sućko; Czarna Białostocka Forest District, Szyndziel Forest Subdistrict, compartment 144 (FE52), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń; Dojlidy Forest District, Majówka Forest Subdistrict, compartment 93 (FD59), 22.04-6.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń; Supraśl Forest District, Lipina Forest Subdistrict, compartment 112 (FE60), 22.04-6.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń; Waliły Forest District, Królowe Stojło Forest Subdistrict, compartment 148 (FD79), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń; Waliły Forest District, compartment 178 (FD79), 22.04-6.06.2008 – 1 ex., IBL-2 trap, leg. & det. A. Lasoń; Smolarnia Forest Subdistrict, compartment 227 (FD89), 22.04-6.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń.

Data from the literature: Budzisk (FE50) and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c).

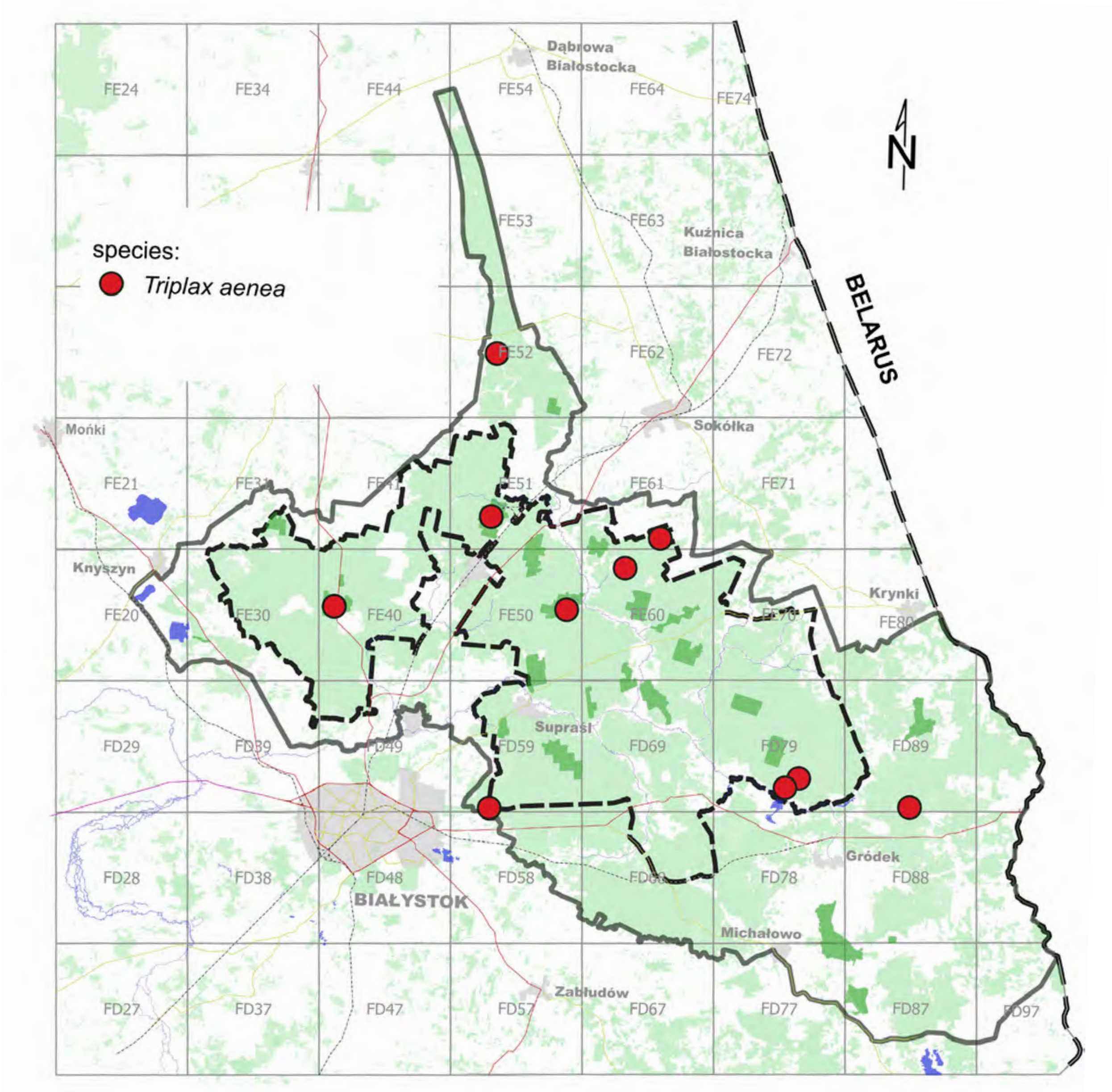


Fig. 417. Localities of *Triplax aenea* (Erotylidae) in Knyszyńska Forest

Distribution

A widespread species in the Palaearctic; in southern Europe, locally found in mountainous areas (Burakowski et al. 1986b). In Poland, known from the Baltic Coast, the Pomeranian Lake District, Podlasie, Białowieża Forest, Lower Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, Roztocze, and the Bieszczady Mountains (Ruta et al. 2011).

Biology and ecology

It occurs under the detached fungus-infected bark of trunks and on the fruiting bodies of *Pleurotus corticatus* Fr. and *Fomes fomentarius* (L. ex Fr.) Kickx. growing on beech, oak, elm, poplar, willow, linden, and fruit trees, and less frequently coniferous trees (Burakowski et al. 1986b).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Triplax rufipes (Fabricius, 1781) (Fig. 418)

Fig. 418. ***Triplax rufipes*** **(Fabricius, 1781) (Erotylidae)** (photo A. Lasoń)

Material examined (Fig. 419)

Original data: Knyszyn Forest District, Krzemianka Reserve (FE40), 7.06-10.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń, 20.06.2020 – 1 ex., leg. & det. R. Królik, mixed forest, 20.06.2020 – 4 exx., leg. & det. A. Lasoń; Dojlidy Forest District, ad Sochonie (FD49), 7.07.1996, 2 exx., leg. & det. A. Lasoń; Dojlidy Forest District, Majówka Forest Subdistrict, compartment 93 (FD59), 7.06-10.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń; Rybniki Forest Subdistrict, compartment 75 (FD59), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń; Supraśl Forest District, Lipina Forest Subdistrict, compartment 72 (FE60), 2.07-26.08.2021 – 1 ex., violet Lindgren funnel trap, leg. & det. K. Sućko; Żednia Forest District, Nowa Wola Forest Subdistrict, compartment 154 (FD77), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń.

Data from the literature: Kopna Góra (FE60) (Kubisz & Szwałko 1991).

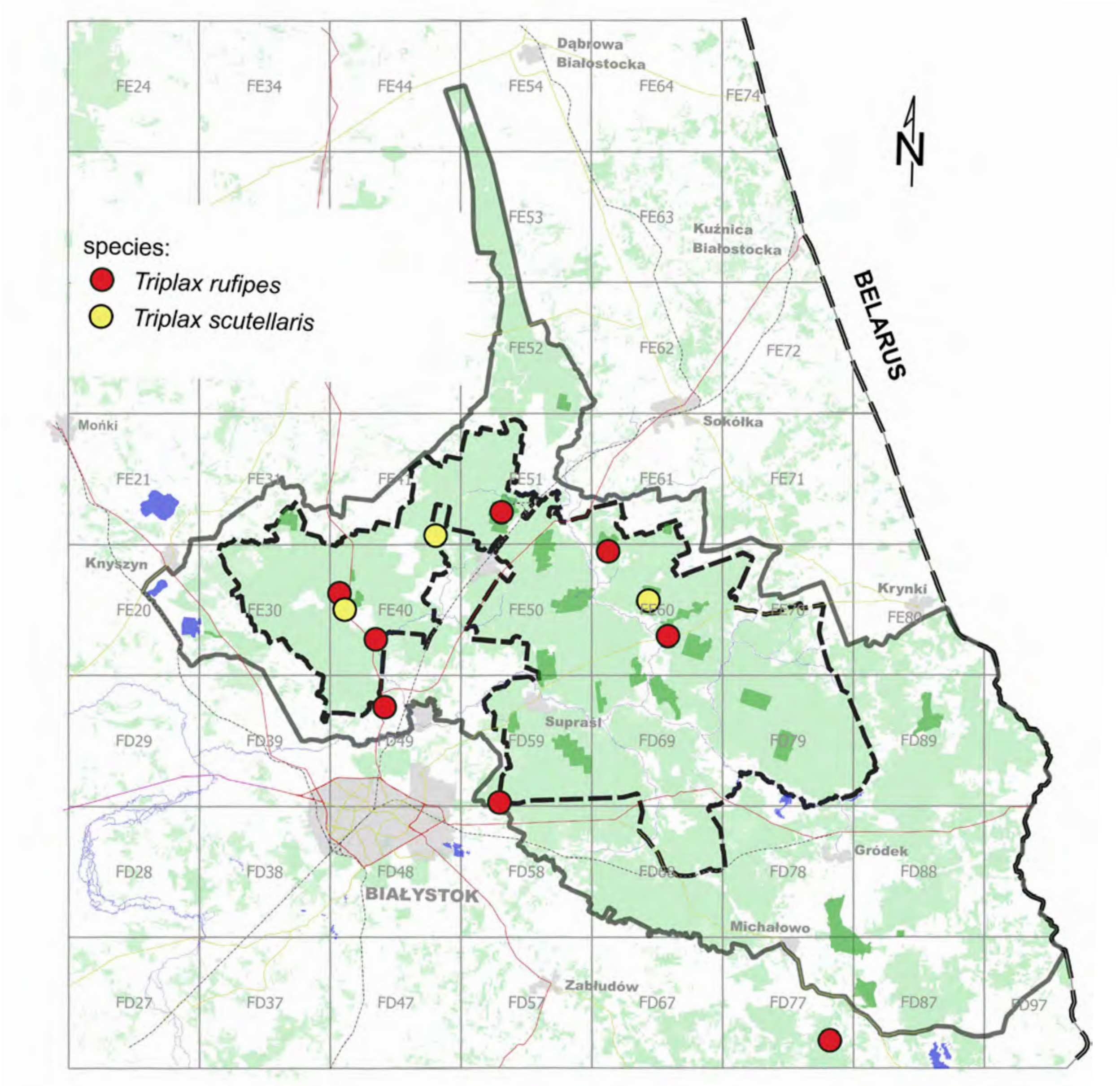


Fig. 419. Localities of *Triplax rufipes* and *T. scutellaris* (Erotylidae) in Knyszyńska Forest

Distribution

The species is mainly distributed in Southern and Central Europe, southern Scandinavia, eastward reaching the White Sea and the Urals, also reported from the Caucasus (Burakowski et al. 1986b). In Poland, it is known from Podlasie, Białowieża Forest, the Świętokrzyskie Mountains, Roztocze, and the Western Sudetes (Ruta et al. 2011).

Biology and ecology

It is found in fungus-infected and decaying wood and the fruiting bodies of arboreal fungi on beech, oak, and birch trees (Burakowski et al. 1986b).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Triplax russica* (Linnaeus, 1758)** (Fig. 420)

Fig. 420. *Triplax russica* (Linnaeus, 1758) (Erotylidae) (photo A. Lasoń)

Material examined

Original data: common species in KF, known from many localities, including the Bahno w Borkach (FD69), Budzisk (FE50), Chomontowszczyzna (FD79), Góra Pieszczana (FD79), Kozłowy Ług (FE60), Krzemianka (FE40), Krzemienne Góry (FD69), Międzyrzecze (FE60), Stare Biele (FE60), Surażkowo (FE60), and Taboły (FE50) reserves.

Data from the literature: Kopna Góra (FE60) (Kubisz & Szwałko 1991); Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

The species is widespread throughout Europe, also noted from the Caucasus and Algeria (Burakowski et al. 1986b). In Poland, it is known from the Pomeranian Lake District, the Wielkopolska-Kujawy Lowland, Podlasie, Lower Silesia, the Świętokrzyskie Mountains, Roztocze, and the Bieszczady Mountains (Ruta et al. 2011).

Biology and ecology

It lives in the old fruiting bodies of *Fomes fomentarius* (L. ex Fr.) Kickx, *Inonotus hispidus* (Bull. ex Fr.) P. Karst., and *Polyporus squamosus* (Huds.) Fr., as well as in fungus-infected wood and under the detached bark of deciduous trees, especially beech and elm. Larvae feed in May and June, adults appear in July (Burakowski et al. 1986b).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Triplax scutellaris Charpentier, 1825 (Fig. 421)

Fig. 421. *Triplax scutellaris* Charpentier, 1825 (Erotylidae) (photo A. Lasoń)

Material examined (Fig. 419)

Original data: Knyszyn Forest District, Krzemianka Reserve (FE40), 1.10.2020 – 1 ex., leg. & det. R. Królik; Międzyrzecze Reserve (FE60), 30.07.2022 – 1 ex., mixed coniferous forest, leg. & det. A. Lasoń.

Data from the literature: Czarna Białostocka Forest District, Czarna Wieś Forest Subdistrict (FE41), 7.07-8.09.2015 – 2 exx. (Plewa & Borowski 2016).

Distribution

A species of forest areas in Europe, it has also been recorded in Siberia and Central Asia (Burakowski et al. 1986b). In Poland, it is known from Podlasie (Plewa & Borowski 2016), Białowieża Forest, and the Bieszczady Mountains (Ruta et al. 2011).

Biology and ecology

It inhabits fungus-infected wood and the fruiting bodies of arboreal fungi growing on old beech, maple, and birch trees (Burakowski et al. 1986b).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Tritoma bipustulata Fabricius, 1775 (Fig. 422)

Fig. 422. ***Tritoma bipustulata*** **Fabricius, 1775 (Erotylidae)** (photo A. Lasoń)

Material examined (Fig. 423)

Original data: Kozłowy Ług Reserve (FE60), 7.05-1.06.2021 – 1 ex., violet Lindgren funnel trap, leg. K. Sućko, det. A. Lasoń; Krzemienne Góry Reserve (FD69), 28.05.2020 – 4 exx., mixed forest, polypore on *Populus tremula* L., leg. & det. A. Lasoń; Stara Dębina Reserve (FE61), 15.05.2020 – 1 ex., oak-hornbeam forest, polypores on *Carpinus betulus* L., leg. & det. A. Lasoń; Czarna Białostocka Forest District, Szyndziel Forest Subdistrict, compartment 144 (FE52), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń; Dojlidy Forest District, Krasny Las Forest Subdistrict, compartment 61 (FD59), 8.05.2020 – 2 exx., mixed coniferous forest, polypore on *P. abies* (L.), leg. & det. A. Lasoń; Knyszyn Forest District, Krzemianka Forest Subdistrict, compartment 194 (FE40), 22.04-9.06.2008 – 2 exx., IBL-2 trap, leg. R. Plewa, det. A. Lasoń; Krynki Forest District, Góra Pieszczana Reserve (FD79), 27.07.2016 – 1 ex., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń; Supraśl Forest District, Borki Forest Subdistrict, compartment 288 (FE60), 22.04-9.06.2008 – 1 ex., leg. R. Plewa, det. H. Szołtys.

Data from the literature: Kopna Góra (FE60) (Kubisz & Szwałko 1991); Budzisk (FE50) and Jesionowe Góry (FE51) reserves (Marczak et al. 2023c).

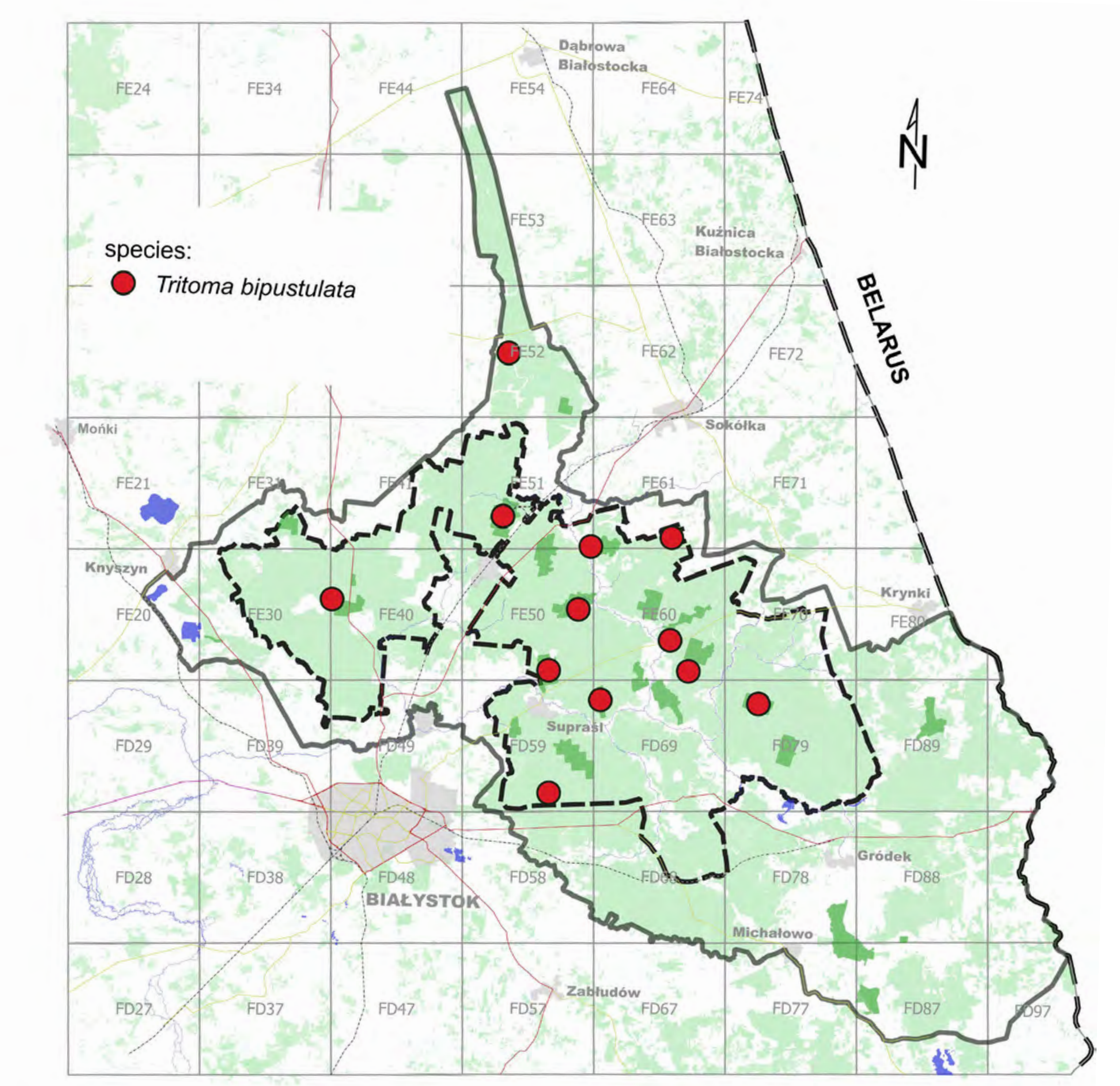


Fig. 423. Localities of *Tritoma bipustulata* (Erotylidae) in Knyszyńska Forest

Distribution

The species is widespread in Europe from the Mediterranean countries to the British Isles and Scandinavia, and has also been recorded in Siberia and the Caucasus. In Poland, it occurs throughout the country except in the higher mountainous areas (Burakowski et al. 1986b).

Biology and ecology

Development takes place under fungus-infected bark or in the fruiting bodies of arboreal fungi growing on the lying trunks, branches, and stumps of deciduous trees, especially oaks or beeches (Burakowski et al. 1986b).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Tritoma subbasalis Reitter, 1896 (Fig. 424)

Fig. 424. ***Tritoma subbasalis*** **(Reitter, 1896) (Erotylidae)** (photo A. Lasoń)

Material examined (Fig. 425)

Original data: Czarna Białostocka Forest District, Lebiedzin Forest Subdistrict, compartment 165 (53.438276, 23.338489, FE52), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski; Dojlidy Forest District, Krasny Las Forest Subdistrict (53.17351, 23.33799, FD59), 18.06.2020 – 1 ex., leg. & det. R. Królik; Supraśl Forest District, Lipina Forest Subdistrict, compartment 112 (53.300870, 23.450625, FE60), 22.04-6.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. A. Lasoń; Supraśl Forest District, ad Jałówka (FE50), 18-21.05.2023 – 1 ex.; leg. & det. B. Pacuk; Waliły Forest District, Smolarnia Forest Subdistrict, compartment 227 (53.13008, 23.76402, FD89), 22.04-9.06.2008 – 3 exx., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski & H. Szołtys; Żednia Forest District (53.169363, 23.356247, FD59), 11.05.2021 – 1 ex., bark beetle pheromone trap, leg. & det. C. Greń.

Data from the literature: Smolarnia Forest Subdistrict (FD89) reported by Plewa et al. (2014), and Budzisk Reserve (FE50) reported by Marczak et al. (2023c).

Distribution

It is found in the forests of northern Asia, from the Pacific coast to the eastern part of Europe (Burakowski et al. 1986b). In Poland, it has been reported from the Masurian Lake District, the Mazovian Lowland, Białowieża Forest, the Lublin Upland, the Sandomierz Lowland, the Bieszczady Mountains, the Western and Eastern Beskids, and the Tatra Mountains (Węgrzynowicz & Byk 2014).

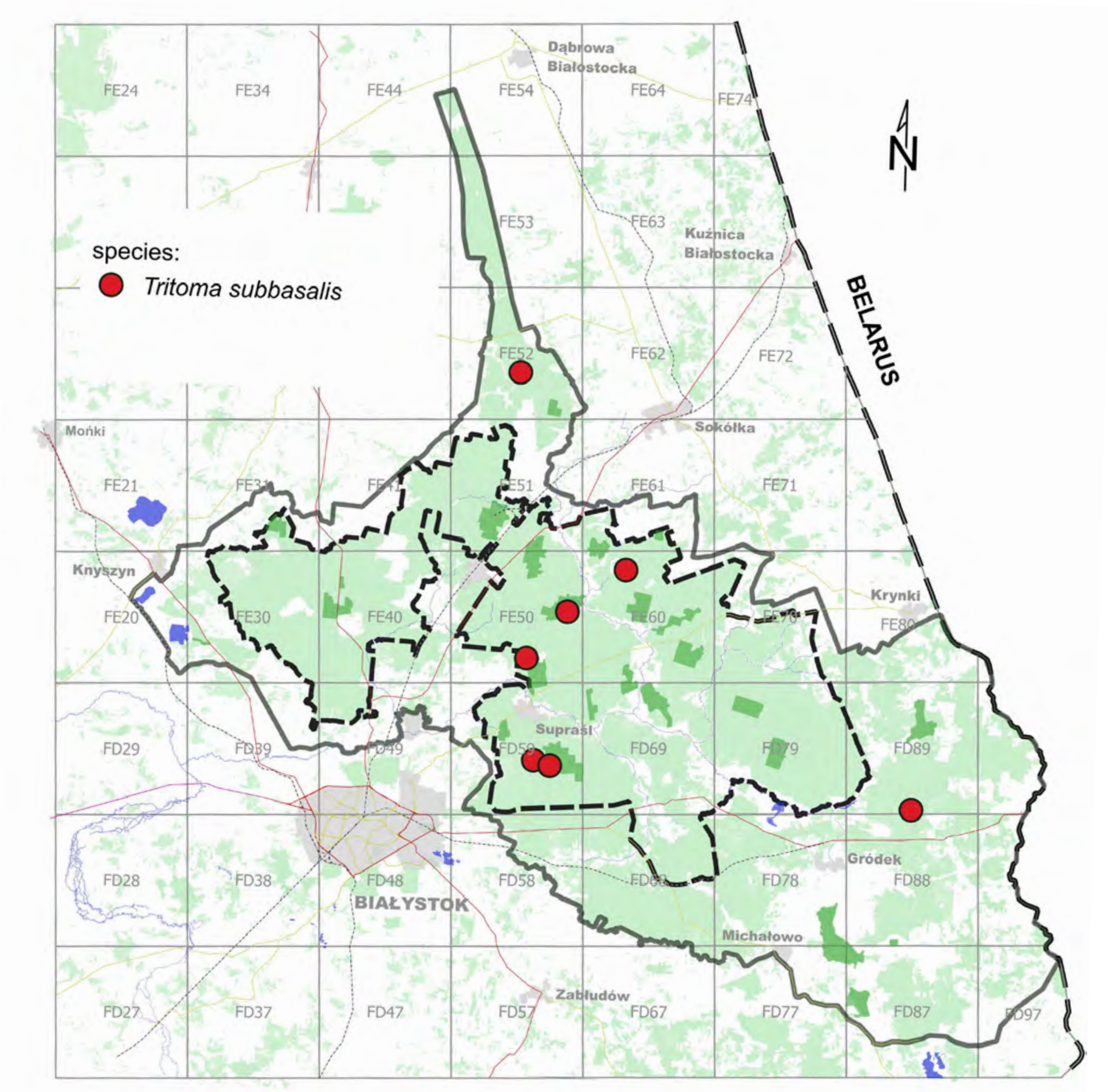


Fig. 425. Localities of *Tritoma subbasalis* (Erotylidae) in Knyszyńska Forest

Biology and ecology

Tritoma subbasalis is mycetophilic. The species develops on fungi that inhabit both living trees and deadwood. The pre-imago developmental stages of this species remain unknown. As a saproxylic beetle, this species can only live in old forests growing in fertile, moist habitats, rich in deadwood (Węgrzynowicz & Byk 2014).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). Included in the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2018) in group 2 (relict *sensu lato*).

Sphindidae

Aspidiphorus lareyniei Jacquelin du Val, 1859 (Fig. 426)

Fig. 426. ***Aspidiphorus lareyniei*** **Jacquelin du Val, 1859 (Sphindidae)** (photo R. Królik)

Material examined (Fig. 427)

Original data: Las Cieliczański Reserve (FD59), 13.06.2022 – 2 exx., mixed forest, beating sheet, leg. & det. A. Lasoń.

Data from the literature: thus far it was known in KF from only one locality in Stara Dębina Reserve (Królik & Lasoń 2020).

Distribution

Aspidiphorus lareyniei has so far been found in a small number of localities in Southern, Central and Western Europe, and the Caucasus. It has been recorded in Austria, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, France, Spain, Russia, Romania, Slovakia, Slovenia, Italy, and Ukraine (Smetana 2007; Królik & Lasoń 2020). In Poland, it is reported only from KF (Królik & Lasoń 2020).

Biology and ecology

Little is known about the biology of this species; presumably, like most Sphindidae, it lives on slime molds (Myxomycetes) (Forrester & McHugh 2010; Jelínek 2014). It presumably develops in a similar manner to the common *A. orbiculatus* (Gyll.), whose biology was described by Burakowski & Ślipiński (1987).

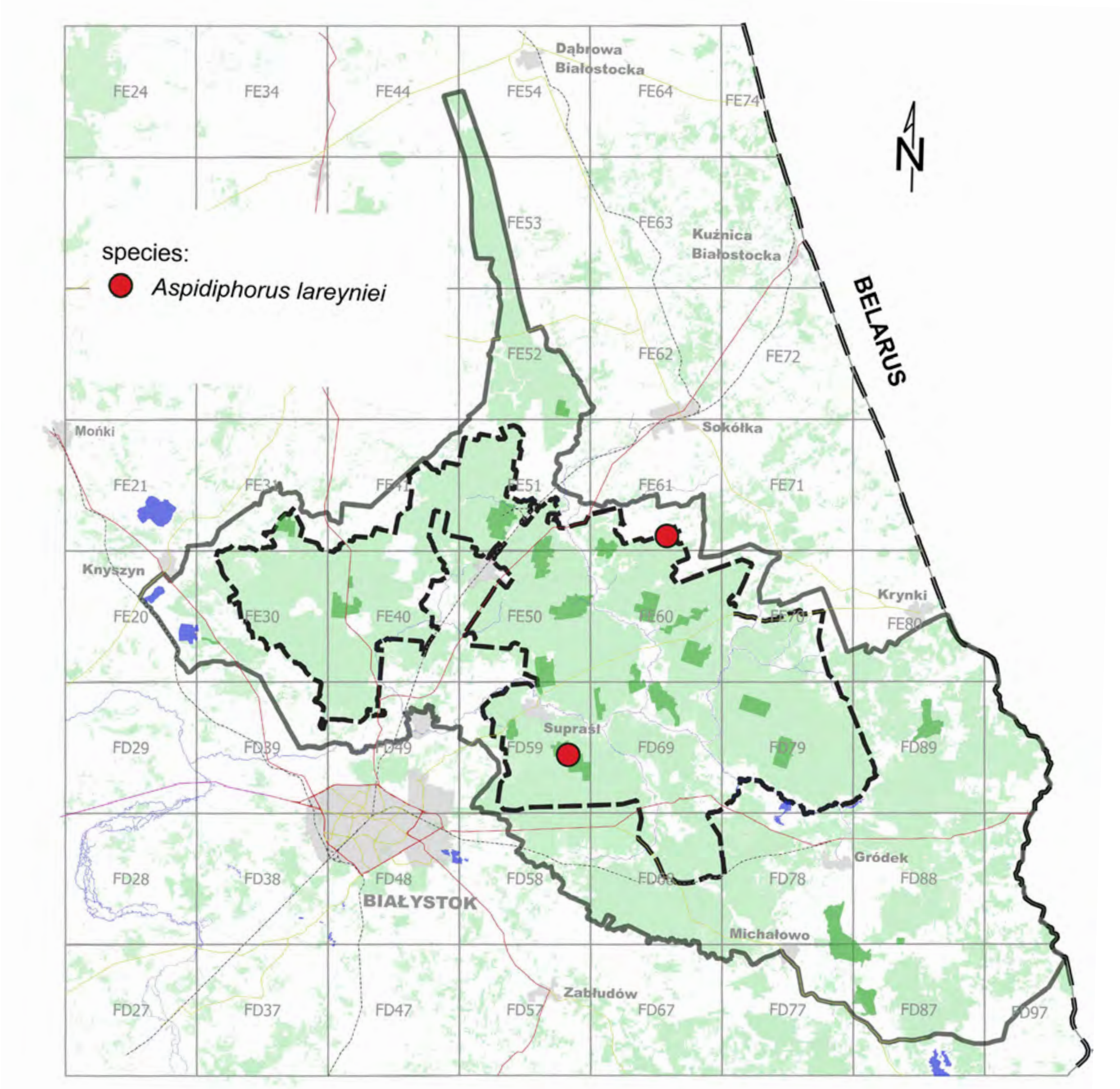


Fig. 427. Localities of *Aspidiphorus lareyniei* (Sphindidae) in Knyszyńska Forest

Monotomidae

Monotoma conicicollis Chevrolat, 1837 (Fig. 428)

Material examined (Fig. 429)

Data from the literature: known in KF from only from one locality in Stare Biele Reserve (FE60), 1.08.2022 – 1 ex., mixed coniferous forest (Ruta et al. 2023).

Distribution

The species reaches north to about 70° latitude, and south to France and northern Italy, Romania, and Ukraine. In addition, it is reported from Siberia and Kazakhstan.

Widely distributed in Poland, found in 14 zoogeographical regions until the publication of *Catalogue of the Fauna of Poland* (Burakowski et al. 1986b). In recent years, it has been reported only from the Świętokrzyskie Mountains (Bidas & Buchholz 2007), the Mazovian Lowland, and Podlasie (Ruta et al. 2024).

Fig. 428. ***Monotoma conicicollis*** **Chevrolat, 1837 (Monotomidae)** (photo A. Lasoń)

Biology and ecology

A myrmecophilic species, associated with several ant species: *Formica rufa* L., *F. polyctena* Foerst., *F. pratensis* Retzius.

Rhizophagus brancsiki Reitter, 1905 (Fig. 430)

Material examined (Fig. 429)

Data from the literature: reported in KF from only one locality in Jałówka Reserve (FE50), 8.06.2021 – 1 ex. (Ruta et al. 2023).

Distribution

A species that covers the southeastern part of Europe, noted otherwise from the Caucasus and southern Sweden, where it occurs as a relict of primeval forests from the warm post-glacial period. In Poland, it is among the great rarities, recorded only in the Western Beskid (Burakowski et al. 1986; Szafraniec 1998; Ruta et al. 2023), Białowieża Forest (Lasoń 2001; Ruta et al. 2023), the Eastern Sudetes (Borowiec 1993), the Eastern Beskid, Upper Silesia, and Podlasie (Ruta et al. 2023).

Biology and ecology

The species mainly inhabits rotten stumps as well as lying and standing trunks in a very advanced state of decay.

Notes

Listed as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

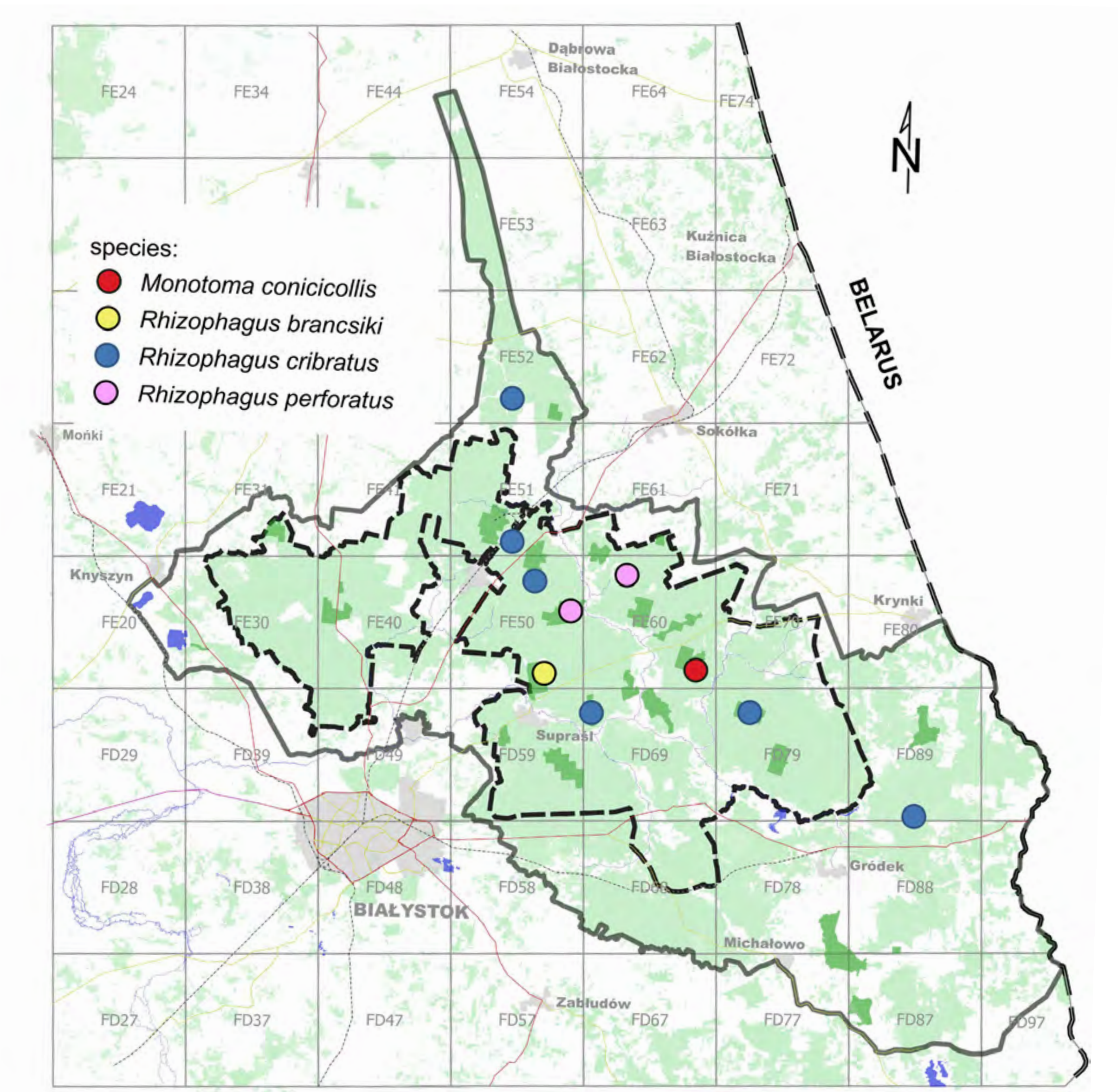


Fig. 429. Localities of *Monotoma conicicollis*, *Rhizophagus brancsiki*, *R. cribratus*, and *R. perforatus* (Monotomidae) in Knyszyńska Forest

Rhizophagus cribratus (Gyllenhal, 1827) (Fig. 431)

Material examined (Fig. 429)

Data from the literature: Czarna Białostocka Forest District, Lebiedzin Forest Subdistrict, compartment 203 (FE52), 7.06-13.07.2008 – 1 ex., IBL-2 trap; Czarna Białostocka Forest District, near Machnacz village, compartment 29 (FE51), 7.06-13.07.2008 – 1 ex., IBL-2 trap; Waliły Forest District, near the village of Skroblaki, compartment 227 (FD89), 22.04-9.06.2008 – 1 ex. IBL-2 trap; Góra Pieszczana Reserve (FD79), 27.07.2016 – 4 exx., IBL-2 trap; Budzisk Reserve (FE50), 1-31.05.2019, IBL-5 on *Acer platanoides* L. – 1 ex., on *Populus tremula* L. – 3 exx.; Taboły Reserve (FE50), 30.06.2021 – 1 ex.; Krzemienne Góry Reserve (FD69), 27.05.2022 – 2 exx. (Ruta et al. 2025).

Distribution

The species is widespread from the British Isles, the central provinces of Fennoscandia, throughout Central Europe to the central Pyrenees, Italy, and the northern part of the Balkan Peninsula (Burakowski et al. 1986b). Known from a small number of localities scattered in almost all of Poland (Burakowski et al. 1986b; Ruta et al. 2025).

Fig. 430. ***Rhizophagus brancsiki*** **Reitter, 1905 (Monotomidae)** (photo A. Lasoń)

Fig. 431. ***Rhizophagus cribratus*** **(Gyllenhal, 1827) (Monotomidae)** (photo A. Lasoń)

Biology and ecology

The species is mainly found near oozing tree sap, in bark beetle galleries, and polypores. It takes flight during the summer months, and in autumn it is found among mosses and foliage at the base of old oaks (Burakowski et al. 1986b).

***Rhizophagus perforatus* Erichson, 1845** (Fig. 432)

Fig. 432. *Rhizophagus perforatus* Erichson, 1845 (Monotomidae) (photo A. Lasoń)

Material examined (Fig. 429)

Data from the literature: Budzisk Reserve (FE50), 1.04-31.05.2019 – 31 exx., trap on *Populus tremula* L.; vicinity of Dworzysko – Supraśl Forest District, Lipina Forest Subdistrict, compartment 112 (FE60), 22.04-6.06.2008 – 1 ex., IBL-2 trap (Ruta et al. 2025).

Distribution

The species is known from almost all over Europe. In Poland, it has been recorded from a small number of scattered localities in fifteen zoogeographical regions (Burakowski et al. 1986b; Ruta et al. 2023).

Biology and ecology

The species is usually found under the bark of deciduous trees, especially beech, less frequently oak, aspen, elm, willow, and poplar, sometimes also in rotting wood, humus, among decaying plant remains, on carrion, and in mole nests (Burakowski et al. 1986b).

Kateretidae

Brachypterus fulvipes Erichson, 1843 (Fig. 433)

Fig. 433. *Brachypterus fulvipes* Erichson, 1843 (Kateretidae) (photo A. Lasoń)

Material examined (Fig. 434)

Data from the literature: known in KF only from one locality in the Knyszyn Forest District, near Kopisk village (FE30) (Lasoń 2023).

Distribution

A Eurosiberian species, it is known in the east from Mongolia and Russia, in the north from Sweden, and more widely distributed in Southern and Central Europe (Audisio 1993). In Poland, it is very rarely caught, and until the publication of *Catalogue of the Fauna of Poland*, it was known from only five zoogeographical regions (Burakowski et al. 1986). After the *Catalogue* was published, it was found again in Białowieża Forest (Gutowski & Kubisz 1995; Mazur et al. 1996; Lasoń 1999b) and the Małopolska Upland (Lasoń & Miłkowski 2022). In addition, it has been reported from Podlasie (Lasoń 2023).

Biology and ecology

The species is usually caught on nettles and flowers growing near them, mainly from the celery family. It appears between April and September. Larvae develop in nettle flowers.

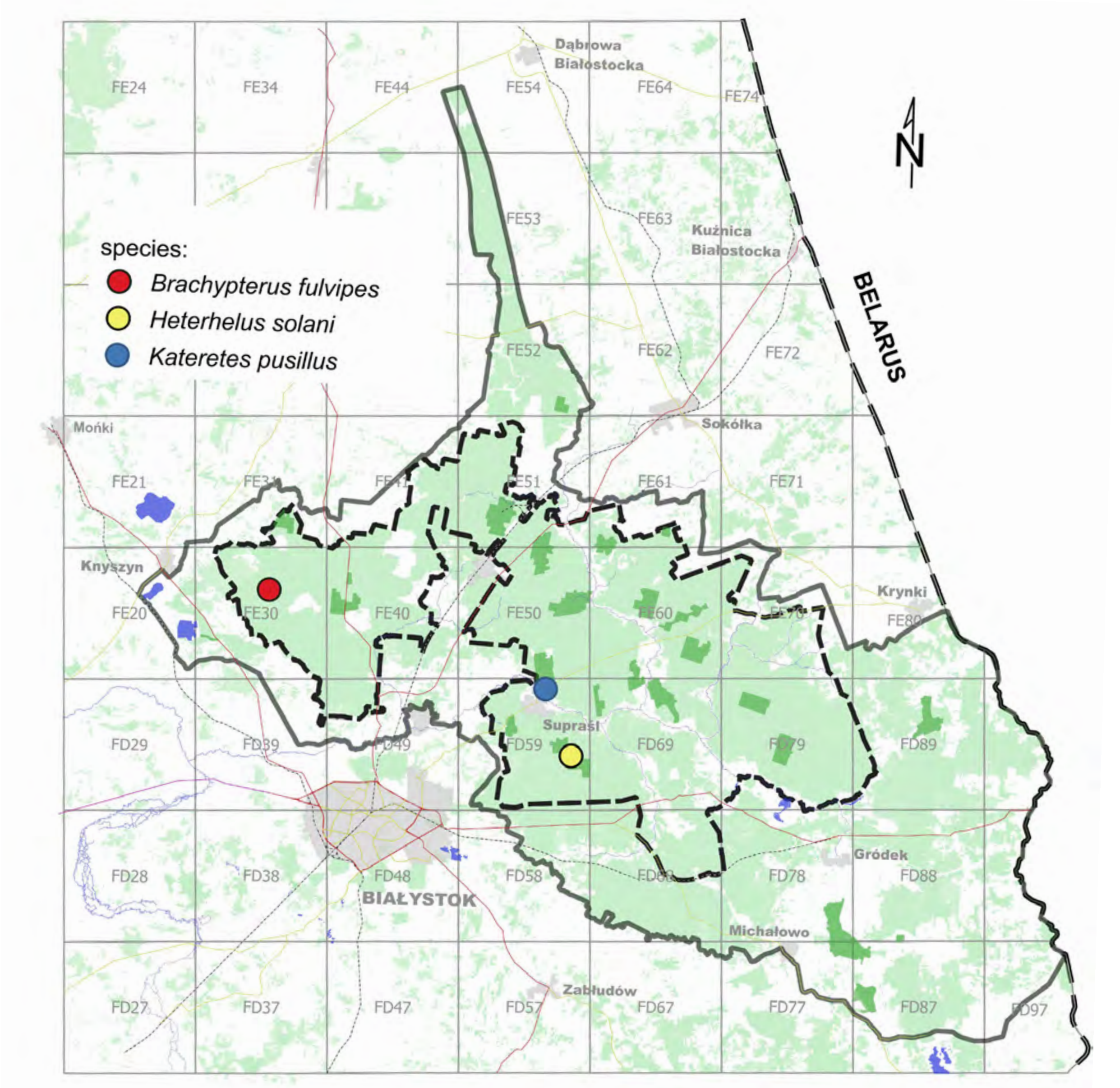


Fig. 434. Localities of *Brachypterus fulvipes*, *Heterhelus solani*, and *Kateretes pusillus* (Kateretidae) in Knyszyńska Forest

Heterhelus solani (Heer, 1841) (Fig. 435)

Material examined (Fig. 434)

Data from the literature: known in KF from only one locality in the Las Cieliczański Reserve (FD59) (Lasoń 2023).

Distribution

An Eurosiberian species, known in the east from Japan, Korea, Mongolia, and Russia, additionally occurring in Western and Central Europe. Its southernmost reaches are Bosnia and Herzegovina (Audisio 1993). In Poland, it is known from a small number of localities scattered in fourteen zoogeographical regions.

Biology and ecology

Larvae develop in the seed sacs of several species of *Sambucus* spp., mainly red elderberry *Sambucus racemosa* L. and black elder *S. nigra* L. The adults were usually caught from May to August on herbaceous plants and shrub flowers, mainly on *S. racemosa*, but also on *S. nigra*, *Prunus spinosa* L., *Spiraea* L., and *Rubus* L.

Fig. 435. ***Heterhelus solani*** **(Heer, 1841) (Kateretidae)** (photo A. Lasoń)

Kateretes pusillus **(Thunberg, 1794)** (Fig. 436)

Fig. 436. ***Kateretes pusillus*** **(Thunberg, 1794) (Kateretidae)** (photo A. Lasoń)

Material examined (Fig. 434)

Data from the literature: known in KF from only one locality in Podsupraśl (FD59) (Lasoń 1997).

Distribution

A North Holarctic species, it ranges from Western Europe to the Far East and from the British Isles and Scandinavia in the north to Serbia in the south. It is also found in Canada and the United States. In Poland, the species is very rarely caught, known from only four zoogeographical regions, with most data dating back several decades. Recently found only in the Małopolska Upland (Lasoń & Miłkowski 2022) and again in Podlasie (Lasoń 2023).

Biology and ecology

It is a hygrophilous species, inhabiting wet meadows, bogs, and temporarily flooded areas on the edges of forests. Larvae develop in several species of sedges *Carex* L., mainly *Carex pseudocyperus* L. The adult forms were caught from April to July on sedges (*Carex* spp.), rushes (*Juncus* spp.), and irises (*Iris* spp.).

Nitidulidae

***Cryptarcha undata* (Olivier, 1790)** (Fig. 437)

Fig. 437. ***Cryptarcha undata* (Olivier, 1790) (Nitidulidae)** (photo A. Lasoń)

Material examined (Fig. 438)

Data from the literature: known in KF from two localities in Stara Dębina Reserve (FE61) and Przewalanka Forest Subdistrict (FE41) (Lasoń 2023a).

Distribution

Eurasian species ranging from Western Europe to eastern Siberia and from Scandinavia to Turkey. In Poland, the species is quite rarely caught. Until the publication of *Catalogue of the Fauna of Poland*, it was known from nine zoogeographical regions, with most of the data coming from the turn of the 19th and 20th centuries. In recent years, it has been reported from the Świętokrzyskie Mountains (Byk 2007), Podlasie (Lasoń 2023a), the Masurian Lake District (Byk & Byk 2004; Marczak & Lasecki 2011), and the Małopolska Upland (Borowski & Kieszek 1999; Lasoń & Miłkowski 2011).

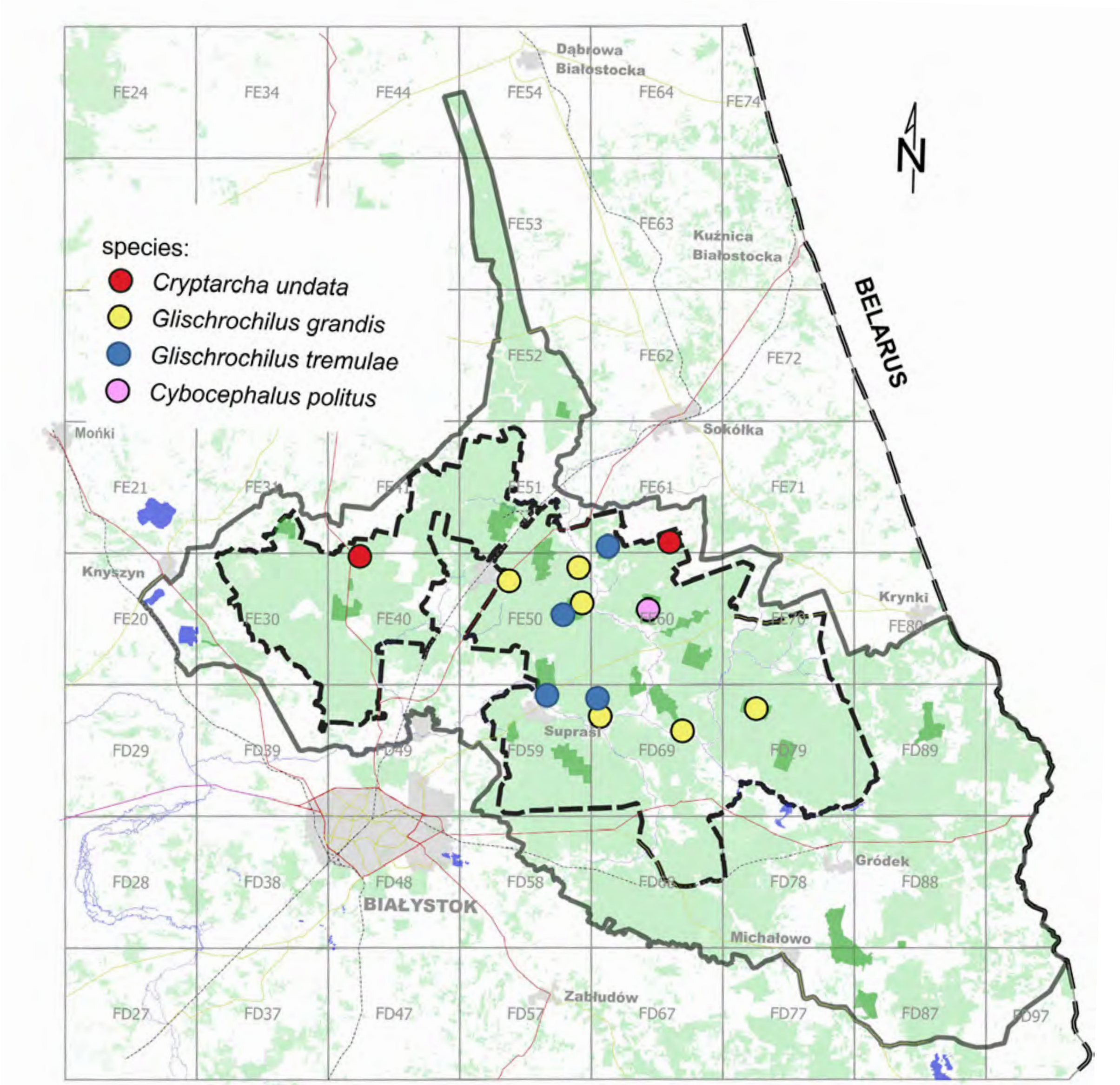


Fig. 438. Localities of *Cryptarcha undata*, *Glischrochilus grandis*, *G. tremulae*, and *Cybocephalus politus* (Nitidulidae) in Knyszyńska Forest

Biology and ecology

The species is usually caught on nettles and the flowers growing near them, mainly from the celery family. They appear between April and September. Larvae develop in nettle flowers.

Glischrochilus grandis (Tournier, 1872) (Fig. 439)

Material examined (Fig. 438)

Data from the literature: Czarna Białostocka Forest District, Buksztel Forest Subdistrict (FE51), Czarna Białostocka Forest District, Polanki Forest Subdistrict (FE50), Knyszyn Forest District, Krzemienne Góry Reserve (FD96) (Mokrzycki et al. 2022); Góra Pieszczana Reserve in Krynki Forest District (FD79) (Lasoń 2023a).

Distribution

Previously considered endemic to the Pontic-Caucasian fauna (Audisio 1993). However, in recent years it has been found in Belarus, Estonia, Finland, Latvia, Kaliningrad Oblast, and Slovakia (Lasoń & Holly

2015). All these recent sitings indicate that it is another expansive species after *Glischrochilus quadrisignatus* Say, 1825, which is expanding its range quite rapidly. In Poland, it was discovered relatively recently in the Bieszczady Mountains and Białowieża Forest (Lasoń & Holly 2015). This was followed in subsequent years with reports from the Eastern Beskid (Twardy 2018) and Podlasie (Mokrzycki et al. 2022; Lasoń 2023a).

Fig. 439. *Glischrochilus grandis* (Tournier, 1872) (Nitidulidae) (photo A. Lasoń)

Biology and ecology

It is a phytosaprophagous species, associated with decaying plant debris and the fruiting bodies of macrofungi (Macromycetes). In addition, it is caught on oozing sap from trees. It is found in forest habitats with predominantly deciduous trees.

Glischrochilus tremulae Clayhills, Audisio et Cline, 2016 (Fig. 440)

Material examined (Fig. 438)

Data from the literature: known in KF from the vicinity of Podsupraśl (FD59) as well as from Budzisk (FE50) and Krzemienne Góry (FD69) reserves (Lasoń 2023a).

Distribution

The species was described in 2016 from Finland (Clayhills et al. 2016) and so far has not been found anywhere else except in Poland, where it is known only from Podlasie and Białowieża Forest (Lasoń 2023a).

Biology and ecology

This species is associated with the old hollows of aspen trees *Populus tremula* L. or freshly fallen ones, where it feeds on various developmental stages of bark beetles (Clayhills et al. 2016).

Notes

Glischrochilus tremulae is very similar to *G. qadripunctatus*, differing from it in several faint features of body proportions and spot shapes. Positive identification can be obtained by comparing the male genital apparatus.

Fig. 440. ***Glischrochilus tremulae*** **Clayhills, Audisio et Cline, 2016 (Nitidulidae)** (photo A. Lasoń)

Cybocephalus politus **(Gyllenhal, 1813)** (Fig. 441)

Fig. 441. ***Cybocephalus politus*** **(Gyllenhal, 1813) (Nitidulidae)** (photo A. Lasoń)

Material examined (Fig. 438)

Data from the literature: known in KF from only one locality in the Międzyrzecze Reserve (FE60) (Lasoń 2023a).

Distribution

The species is widely distributed throughout Europe and also noted in Asia Minor. In Poland, it is known from scattered localities in ten zoogeographical regions. Although the authors of the key to the Cybocephalidae (Kubisz & Szwałko 1999) recognized it as the most common species in the country, I believe (A. Lasoń) that this is not reflected in the literature.

Biology and ecology

This species is found on deciduous trees, including fruit trees. Both the larvae and adults are predatory. They feed mainly on the maggots of the Diaspididae family: *Lepidosaphes ulmi* (L.), *Chionaspis salicis* (L.), and *Quadraspidiotus perniciosus* (Comst.) (Kubisz & Szwałko 1999).

Epuraea angustula **Sturm, 1844** (Fig. 442)

Fig. 442. *Epuraea angustula* Sturm, 1844 (Nitidulidae) (photo A. Lasoń)

Material examined (Fig. 443)

Data from the literature: known in KF from the Budzisk (FE50), Jesionowe Góry (FE51), and Stare Biele (FE60) reserves, as well as localities in Klin (FE40) in the Supraśl Forest District (Lasoń 2023a; Lasoń et al. 2023).

Distribution

A Eurosiberian species, widely distributed throughout Europe and Siberia (Audisio 1993). In Poland, it is very rarely caught, and until the publication of *Catalogue of the Fauna of Poland*, it was known from only five zoogeographical regions (Burakowski et al. 1986b). After the *Catalogue* was published, it was found in

Białowieża Forest (Lasoń 2004), the Świętokrzyskie Mountains (Lasoń & Bidas 2010), the Małopolska Upland (Byk et al. 2013), and Podlasie (Lasoń 2023a; Lasoń et al. 2023).

Biology and ecology

This species was caught on both coniferous and deciduous trees. Morphologically, it has adapted to live in the galleries of various bark beetle species: *Trypodendron lineatum* (Oliv.), *T. domesticum* (L.), *T. signatum* (Fabr.), and *Dryocoetes alni* Georg. It has also been caught in arboreal fungi, mainly of the Polyporaceae family.

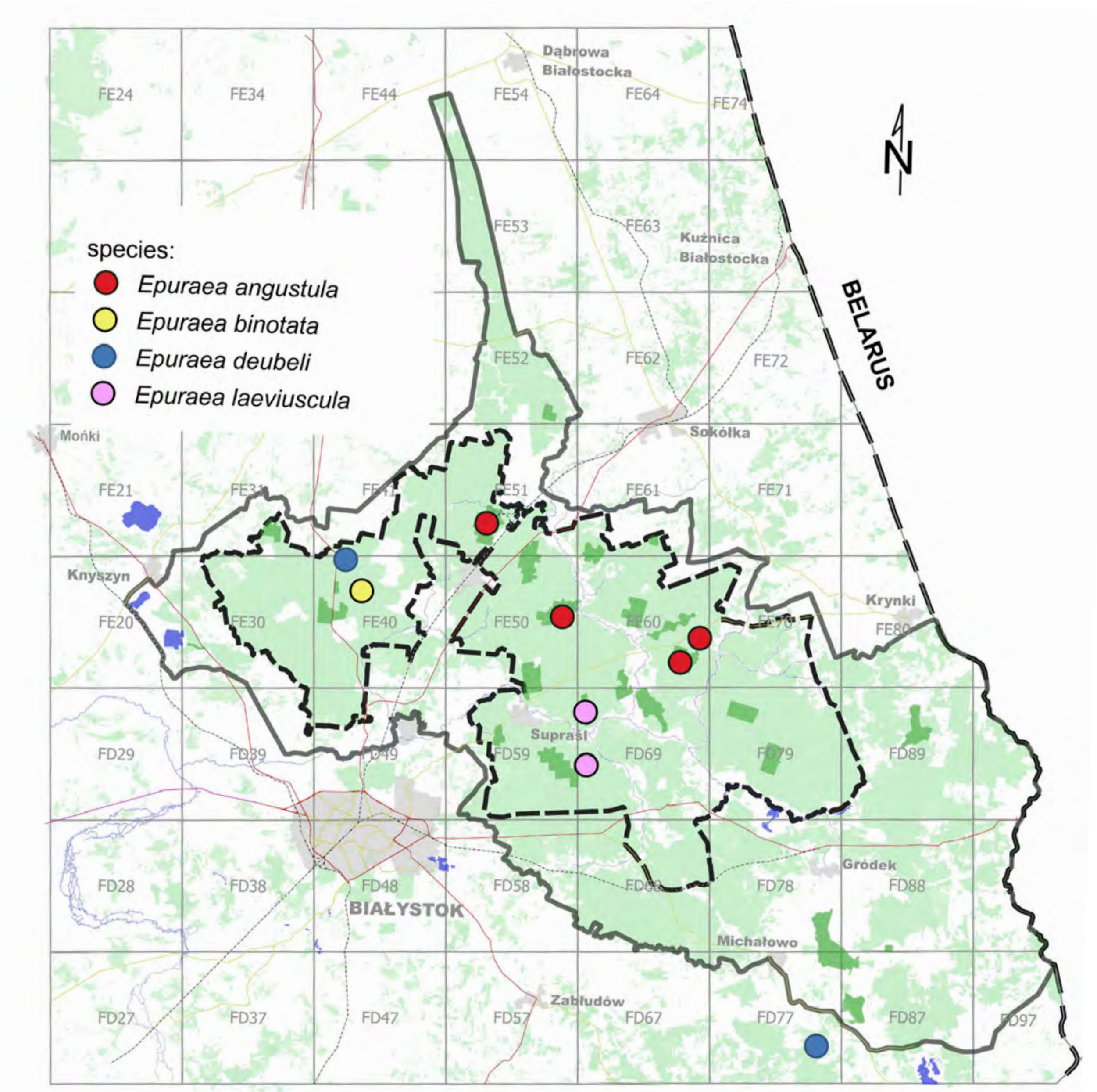


Fig. 443. Localities of *Epuraea angustula*, *E. binotata*, *E. deubeli*, and *E. laeviuscula* (Nitidulidae) in Knyszyńska Forest

Epuraea binotata Reitter, 1873 (Fig. 444)

Material examined (Fig. 443)

Data from the literature: known in KF from only one locality in the Knyszyn Forest District (FE40) (Lasoń 2023a).

Fig. 444. ***Epuraea binotata*** **Reitter, 1873 (Nitidulidae)** (photo A. Lasoń)

Distribution

Eurasian species, with a range in Siberia, Mongolia, and throughout Europe (Audisio 1993). In Poland, it is very rarely caught, and until the publication of *Catalogue of the Fauna of Poland*, it was known from only six zoogeographical regions (Burakowski et al. 1986b). After the *Catalogue* was published, it was found only in the Świętokrzyskie Mountains (Byk 2007), the Mazovian Lowland (Lasoń & Marczak 2016), and Podlasie (Lasoń 2023a).

Biology and ecology

The species is usually caught under the bark of both deciduous (beech, birch) and coniferous (spruce, fir) trees. In addition, it is found in plant litter, on decayed spruce branches lying on the ground, in mushrooms, and sometimes on the flowers of shrubs.

Epuraea deubeli Reitter, 1898 (Fig. 445)

Material examined (Fig. 443)

Data from the literature: known in KF from only two localities: Planta in Żednia Forest District (FD77) and Przewalanka in the Knyszyn Forest District (FE40) (Lasoń 2023a).

Distribution

A Eurosiberian species, it is known from Siberia in the east and found mainly in the mountainous areas of Central Europe. In addition, it is reported from Denmark, Estonia, and Sweden (Audisio 1993). In Poland, it is very rarely caught, and until the publication of *Catalogue of the Fauna of Poland*, it was known from only three zoogeographical regions (Burakowski et al. 1986b). In recent years, it was still found in Białowieża Forest (Plewa et al. 2014), the Świętokrzyskie Mountains (Buchholz et al. 2021) and Podlasie (Lasoń 2023a).

Biology and ecology

The species is associated with spruce forests, where both larvae and adults feed in bark beetle galleries, especially *Ips typographus* (L.). It is most often found in forests weakened by disease and weather phenomena that are attacked by bark beetles (Audisio 1993).

Fig. 445. ***Epuraea deubeli*** **Reitter, 1898 (Nitidulidae)** (photo A. Lasoń)

Epuraea laeviuscula (Gyllenhal, 1827) (Fig. 446)

Material examined (Fig. 443)

Data from the literature: known in KF from only two localities: Krzemienne Góry Reserve (FD96) and from the vicinity of Cieliczanka in the Żednia Forest District (FD69) (Lasoń 2023a).

Distribution

A Eurosiberian species, it ranges as far east as Siberia, and is also known in Central and Northern Europe (Audisio 1993). In Poland, it is very rarely caught, and until the publication of *Catalogue of the Fauna of Poland*, it was known from only five zoogeographical regions (Burakowski et al. 1986b). After the Catalogue was published, it was found in Białowieża Forest (Kubisz 1994; Lasoń 1999b), the Mazovian Lowland (Lasoń & Marczak 2016), the Wielkopolska-Kujawy Lowland (Lasoń 1999c), and Podlasie (Lasoń 2023a).

Biology and ecology

The species is associated with coniferous forests. Larvae develop in pines and spruces infested by bark beetles. It is most often found in the galleries of *Trypodendron lineatum* (Oliv.). Adults appear in June and are active until October.

Epuraea muehli Reitter, 1908 (Fig. 447)

Material examined (Fig. 448)

Data from the literature: known in KF from only one locality in the Las Cieliczański Reserve (FD59) (Lasoń 2023a).

Fig. 446. ***Epuraea laeviuscula*** **(Gyllenhal, 1827) (Nitidulidae)** (photo A. Lasoń)

Fig. 447. ***Epuraea muehli*** **Reitter, 1908 (Nitidulidae)** (photo A. Lasoń)

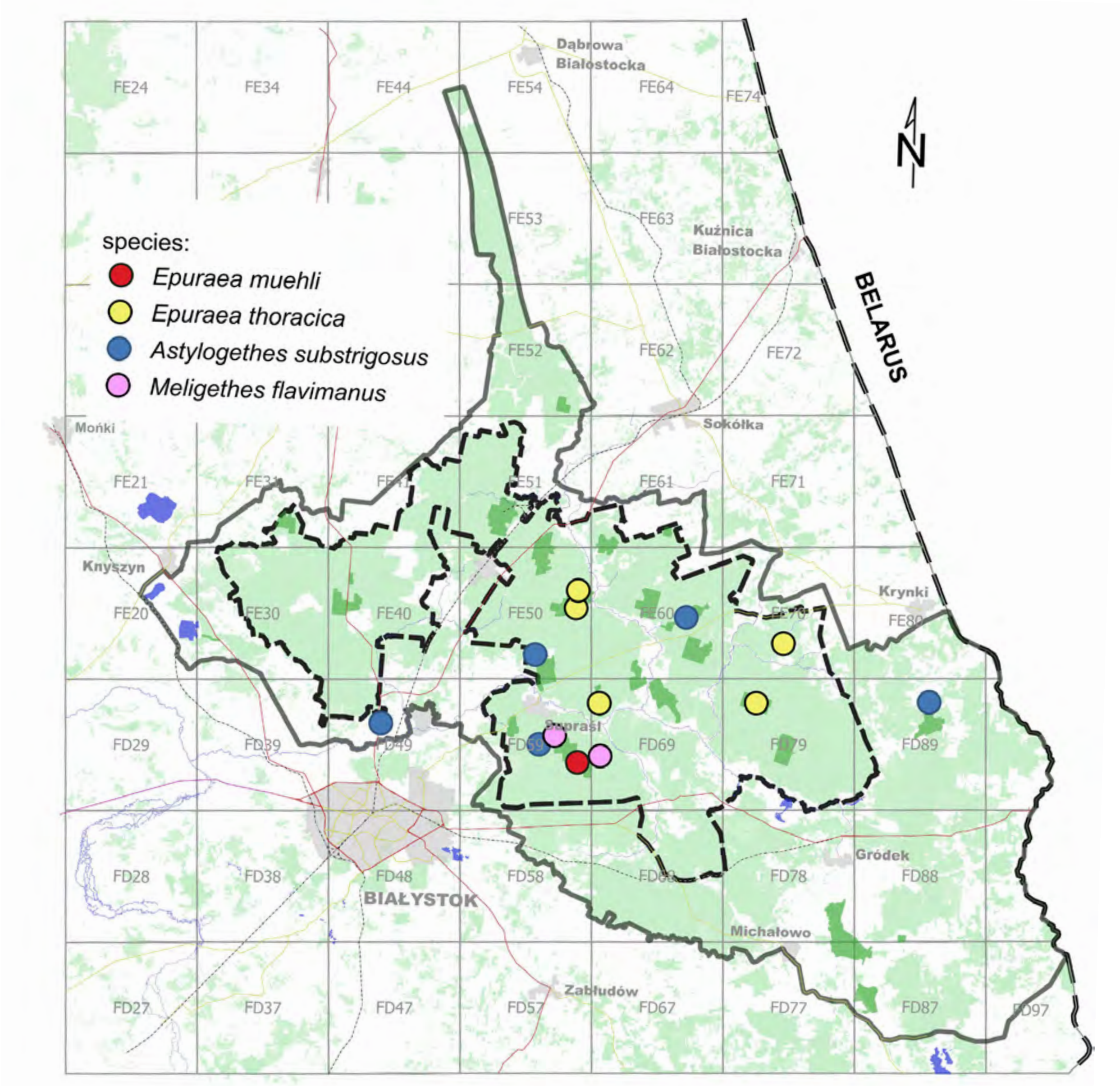


Fig. 448. Localities of *Epuraea muehli*, *E. thoracica*, *Astylogethes subrugosus*, and *Meligethes flavimanus* (Nitidulidae) in Knyszyńska Forest

Distribution

A Eurosiberian species, it was previously considered to be a boreal-mountain species, as most of the reports came from Scandinavia and Central European mountains (Tatras, Ore Mountains, Carpathians, Sudetes, Dinaric Alps, Vorarlberg, North Tyrol, Carinthia, and the central eastern Alpine arc) (Audisio 1993). However, subsequent localities indicated in the *Catalogue of Palaearctic Coleoptera* (Jelínek & Audisio 2007) point to its wider distribution. At the beginning of the last century, it was generally reported from the Tatra Mountains in Poland; however, it was later determined that the record referred to a locality on the Slovak side of the range. (Burakowski et al. 1986b). It was first reported in Poland in 2004 (Lasoń 2004) from the Mazovian Lowland and Białowieża Forest. In subsequent years, it was also reported from the Świętokrzyskie Mountains (Buchholz et al. 2021) and Podlasie (Lasoń 2023a).

Biology and ecology

The species is associated with the Norway spruce *Picea abies* (L.) Karst. and silver fir *Abies alba* Mill. It was caught on various fragments of these trees colonized by xylophages, mainly longhorn (Cerambycidae) and bark (Scolytinae) beetles. It was also found occasionally on flowers, mainly of the celery family (Apiaceae), growing on the edges of coniferous forests.

Epuraea thoracica **Tournier, 1872** (Fig. 449)

Fig. 449. ***Epuraea thoracica*** **Tournier, 1872 (Nitidulidae)** (photo A. Lasoń)

Material examined (Fig. 448)

Original data: Krynki Forest District, compartment 234 (FE70), 15-16.06.2001 – 5 exx., in bark beetle feeding areas, leg. A. Byk, T. Mokrzycki & A. Rutkiewicz, det. T. Mokrzycki.

Data from the literature: known in KF from only three localities in the Budzisk (FE50), Góra Pieszczana (FD79), and Krzemienne Góry (FD69) reserves (Lasoń 2023a; Lasoń et al. 2023).

Distribution

A Eurosiberian species, with a range in Siberia and almost all of Europe, but reported from single, scattered localities. In Poland, it is very rarely caught, known from only six zoogeographical regions until the publication of *Catalogue of the Fauna of Poland* (Burakowski et al. 1986b). In recent years, it has been found again in the Western Beskid (Szafraniec 1998) and Białowieża Forest (Mazur et al. 1996; Lasoń 1999b), as well as in the Świętokrzyskie Mountains (Buchholz et al. 2021) and Podlasie (Lasoń 2023a; Lasoń et al. 2023).

Biology and ecology

A species associated with coniferous forests, where it is found under the detached bark of trees infested by bark beetles. Like most species in this genus, it feeds in the mycelium found in the tunnels of xylophages, mainly bark beetles, and in the oozing sap from living trees. It has most often been caught in the galleries of *Ips typographus* (L.), *Tomicus piniperda* (L.), and *Dendroctonus micans* (Kug.) (Audisio 1993). Pupation occurs in the soil at the base of logs (Saalas 1917).

Astylogethes subrugosus (Gyllenhal, 1808) (Fig. 450)

Fig. 450. *Astylogethes subrugosus* (Gyllenhal, 1808) (Nitidulidae) (photo A. Lasoń)

Material examined (Fig. 448)

Data from the literature: known in KF from the vicinity of Cieliczanka (FD69) and Jałówka (FE50), as well as from the Las Cieliczański (FD59), Nietupa (FD89), and Woronicza (FE60) reserves (Lasoń 2023a).

Distribution

A species with an insufficiently known distribution, reported from very scattered localities in several European countries (Audisio 1993). In Poland, it was discovered relatively recently in the Karkonosze Mountains (Lasoń 199 9a) – reported under the name *Meligethes caudatus* Guillebeau, 1897, and since then still found only in Podlasie (Lasoń 2023a).

Biology and ecology

It develops in various species of the Campanulaceae family. Specimens in the Karkonosze Mountains have been caught on the flowers of *Campanula patula* L. as well as the flowers of Cistaceae, and asters *Aster* L.

Notes

This species requires special care in its identification and in the use of historical data due to changes in nomenclature. The confusion over the nomenclature of *Astylogethes subrugosus* (Gyllenhal, 1808) and *A. substrigosus* (Erichson, 1845) is clarified in the work of Rutanen et al. (2010). All data in *Catalogue of the Fauna of Poland* (Burakowski et al. 1986b) on *Meligethes subrugosus* Gyllenhal, 1808 refer to *A. substrigosus*, while data on *M. caudatus* Guillebeau, 1897 are about *A. subrugosus*.

Meligethes flavimanus Stephens, 1830 (Fig. 451)

Fig. 451. ***Meligethes flavimanus* Stephens, 1830 (Nitidulidae)** (photo L. Borowiec)

Material examined (Fig. 448)

Data from the literature: known in KF from only one locality in the Las Cieliczański Reserve (FD59) (Lasoń 2023a).

Distribution

An Eurasian species, known from almost all of Europe, central Asian countries, and Siberia (Audisio 1993). In Poland, it is very rarely caught, known from only seven zoogeographical regions, and since the publication of *Catalogue of the Fauna of Poland*, it has been reported only three times, from the Pomeranian Lake District (Lasoń 2004), the Baltic Coast (Konopko & Kowalczyk 2022), and Podlasie (Lasoń 2023a).

Biology and ecology

The species is usually caught on the flowers of various plants of the Dipsacaceae, Campanulaceae, and Asteraceae families. Larvae develop on the flowers of various species of the genus *Rosa* L. (Audisio 1993).

Thymogethes exilis (Sturm, 1845) (Fig. 452)

Material examined (Fig. 453)

Data from the literature: known in KF from only one locality in the Międzyrzecze Reserve (FE60) (Lasoń 2023a).

Distribution

A species with an Euro-Caucasian-Maghrebian distribution. Distributed throughout Europe and the Caucasus, in addition, reported from Morocco. In Poland, it is very rarely recorded, reported from eight zoogeographical regions, with most data dating back to the turn of the 20th century. The only current information is from Podlasie (Lasoń 2003, 2023a).

Fig. 452. *Thymogethes exilis* (Sturm, 1845) (Nitidulidae) (photo A. Lasoń)

Biology and ecology

In Poland, larvae of this species develop in various species of thyme, *Thymus serpyllum* L. The adults were caught on thyme (*Thymus* sp.), *Stellaria holostea* L., *Lotus corniculatus* L., and *Taraxacum* sp.

Physoronia wajdelota (Wańkowicz, 1869) (Fig. 454)

Material examined (Fig. 453)

Data from the literature: known in KF from the Góra Pieszczana (FD79) and Krzemianka (FE40) reserves (Lasoń 2023a).

Distribution

A species with an insufficiently known distribution, considered endemic to Central and Eastern Europe. Known from scattered localities in several countries (Austria, Belarus, Croatia, Lithuania, Germany, Russia, Slovakia, Switzerland, and Ukraine). Very rare throughout its range. It is also very rarely caught in Poland, known from only three zoogeographical regions: Podlasie (Lasoń 2023a), the Masurian Lake District, and Białowieża Forest (Burakowski et al. 1986b; Lasoń 1999b).

Biology and ecology

The species is believed to have very high, specific, trophic requirements. Larvae develop in Lycoperdaceae, especially *Lycoperdon pyriforme* Pers., growing in old beech or spruce forests. However, it seems that its occurrence is determined not only by the host fungi, but also by the existence of favorable environmental conditions of the biotope as a whole. It must be a forest almost devoid of human activity, with an abundance of trunks and trees infected by Polyporaceae, on which the adults often feed. It was caught in Białowieża Forest on *Laetiporus sulphureus* (Bull.) Murrill.

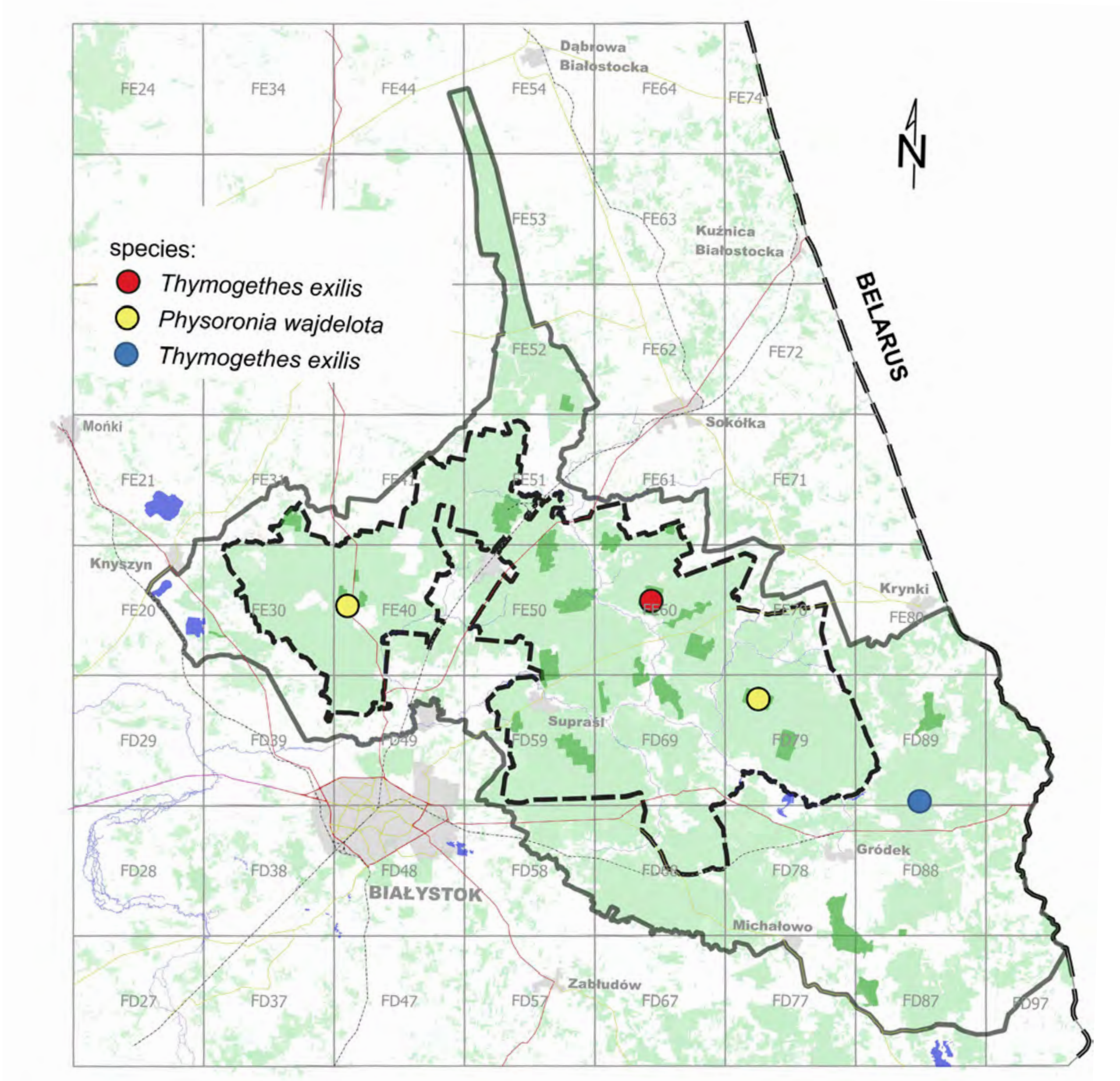


Fig. 453. Localities of *Thymogethes exilis*, *Physoronia wajdelota*, and *Thalycra fervida* (Nitidulidae) in Knyszyńska Forest

Notes

Listed as EN (endangered) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Thalycra fervida (Olivier, 1790) (Fig. 455)

Material examined (Fig. 453)

Data from the literature: known in KF from only one locality near the village of Skroblaki in the Waliły Forest District (FD89) (Lasoń 2023a).

Distribution

A species with an European-Anatolian-Caucasian distribution, known from almost all of Europe, but rarely caught everywhere (Audisio 1993). In Poland, it is reported from a small number of localities scattered in almost the entire country; so far known from fourteen zoogeographical regions (Burakowski et al.

1986b; Lasoń 1999c).

Fig. 454. ***Physoronia wajdelota*** **(Wańkowicz, 1869) (Nitidulidae)** (photo A. Lasoń)

Fig. 455. ***Thalycra fervida*** **(Olivier, 1790) (Nitidulidae)** (photo A. Lasoń)

Biology and ecology

The larva of this species develops in the underground fungi of the genus *Rhizopogon* Fr., it is found in both deciduous and coniferous forests. In addition, it is also found on flowers and grasses, most often in the evening along forest edges and mid-forest roads; sometimes it flies to artificial light.

Cryptophagidae

Atomaria morio Kolenati, 1846 (Fig. 456)

Fig. 456. *Atomaria morio* Kolenati, 1846 (Cryptophagidae) (photo L. Borowiec)

Material examined (Fig. 457)

Data from the literature: species reported from Budzisk Reserve (FE50), based on 8 specimens caught in 2019, in IBL-5 type traps suspended from maple, aspen, and spruce trees (Marczak et al. 2023c).

Distribution

A species found almost all over Europe, extending through Siberia to the Far East, also reported from North America (Johnson et al. 2007). In Poland, it was initially known only from Lower Silesia and the Eastern Beskid (Burakowski et al. 1986b). It was reported sporadically in later years, usually during inventory or zoocenological work, from Białowieża Forest (Johnson et al. 1993) and the Świętokrzyskie Mountains (Byk 2007; Borowski 2007a; Mokrzycki 2007). Mokrzycki lists this species from Rogów in 2011, and from the Spalsko-Rogowskie Forests in 2013. It is also reported from Kampinos National Park (Marczak 2020).

Biology and ecology

A species associated with trees, especially their dead parts. It is sometimes found in the nests of arboreal mammals, such as squirrels, as well as birds, especially hole nesters. It is sometimes caught in rotten wood, lateral decay, and at times found under detached bark (Burakowski et al. 1986b; Duff 2020).

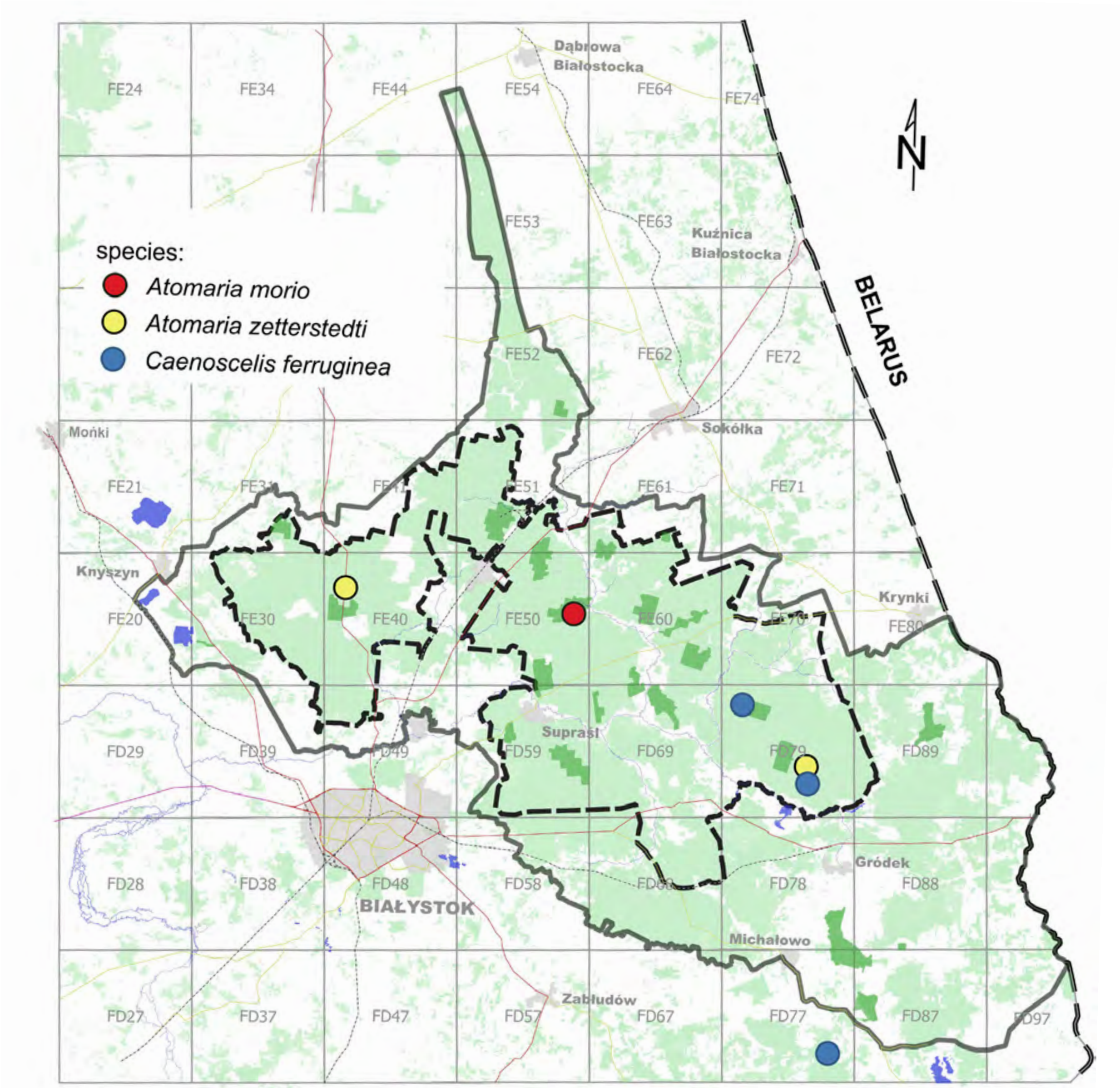


Fig. 457. Localities of *Atomaria morio*, *A. zetterstedti* and *Caenoscelis ferruginea* (Cryptophagidae) in Knyszyńska Forest

Atomaria zetterstedti (Zetterstedt, 1838) (Fig. 458)

Material examined (Fig. 457)

Original data: Knyszyn Forest District, Karczmisko Reserve, compartment 144 (FE40), 22.04-9.06.2008 – 2 exx., IBL-2 trap, leg. R. Plewa, det. J. Borowski; Waliły Forest District, compartment 104 (FD79), 22.04-9.06.2008 – 2 exx., IBL-2 trap, leg. R. Plewa, det. J. Borowski.

Distribution

A species found mainly in Central Europe, the Caucasus, and Siberia (Johnson et al. 2007). In Poland, it is known from Lower and Upper Silesia, the Sandomierz Lowland, and the Eastern Beskid (Burakowski et al. 1986b). Majewski (1997) reports this species from the Wielkopolska-Kujawy Lowland. The above data from Knyszyńska Forest is another location of this species in Poland, as well as the first record for Podlasie.

Fig. 458. ***Atomaria zetterstedti*** **(Zetterstedt, 1838) (Cryptophagidae)** (photo L. Borowiec)

Biology and ecology

A species with very poorly understood bionomics. It is usually found in early spring on or under flowering willows, among rotting leaves, and in damp and swampy habitats (Burakowski et al. 1986b; Majewski 1997; Duff 2020).

Notes

A new species for Podlasie.

Caenoscelis ferruginea (Sahlberg, 1820) (Fig. 459)

Material examined (Fig. 457)

Original data: Krynki Forest District, Góra Pieszczana Reserve, compartment 455 (FD79), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J. Borowski; Waliły Forest District, compartment 148 (FD79), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J. Borowski; Żednia Forest District, compartment 164 (FD77), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J. Borowski.

Distribution

A species found almost throughout Europe, extending through Siberia to the Far East; also known from North America (Johnson et al. 2007). In Poland, it was originally reported from four mountainous areas: the Western and Eastern Sudetes, the Western and Eastern Beskid (Burakowski et al. 1986b). In the 21st century, it was found in the Wielkopolska-Kujawy Lowland (Renner & Messutat 2007), as well as in Białowieża Forest and the Masurian Lake District (Jałoszyński et al. 2015).

Biology and ecology

A species with poorly understood bionomics. It has been caught near rotting woody debris, such as sawdust, and sometimes among decaying branches, on rotting arboreal fungi, and under fungus-infected bark (Burakowski et al. 1986b; Duff 2020).

Notes

A new species for Podlasie.

Fig. 459. ***Caenoscelis ferruginea*** **(Sahlberg, 1820) (Cryptophagidae)** (photo L. Borowiec)

Caenoscelis sibirica Reitter, 1889 (Fig. 460)

Fig. 460. ***Caenoscelis sibirica*** **Reitter, 1889 (Cryptophagidae)** (photo L. Borowiec)

Material examined (Fig. 461)

Original data: Krynki Forest District, Góra Pieszczana Reserve, compartment 455 (FD79), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J. Borowski; Waliły Forest District, compartment 178 (FD79), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J. Borowski; Żednia Forest District, compartment 164 (FD77), 22.04-9.06.2008 – 2 exx., IBL-2 trap, leg. R. Plewa, det. J. Borowski.

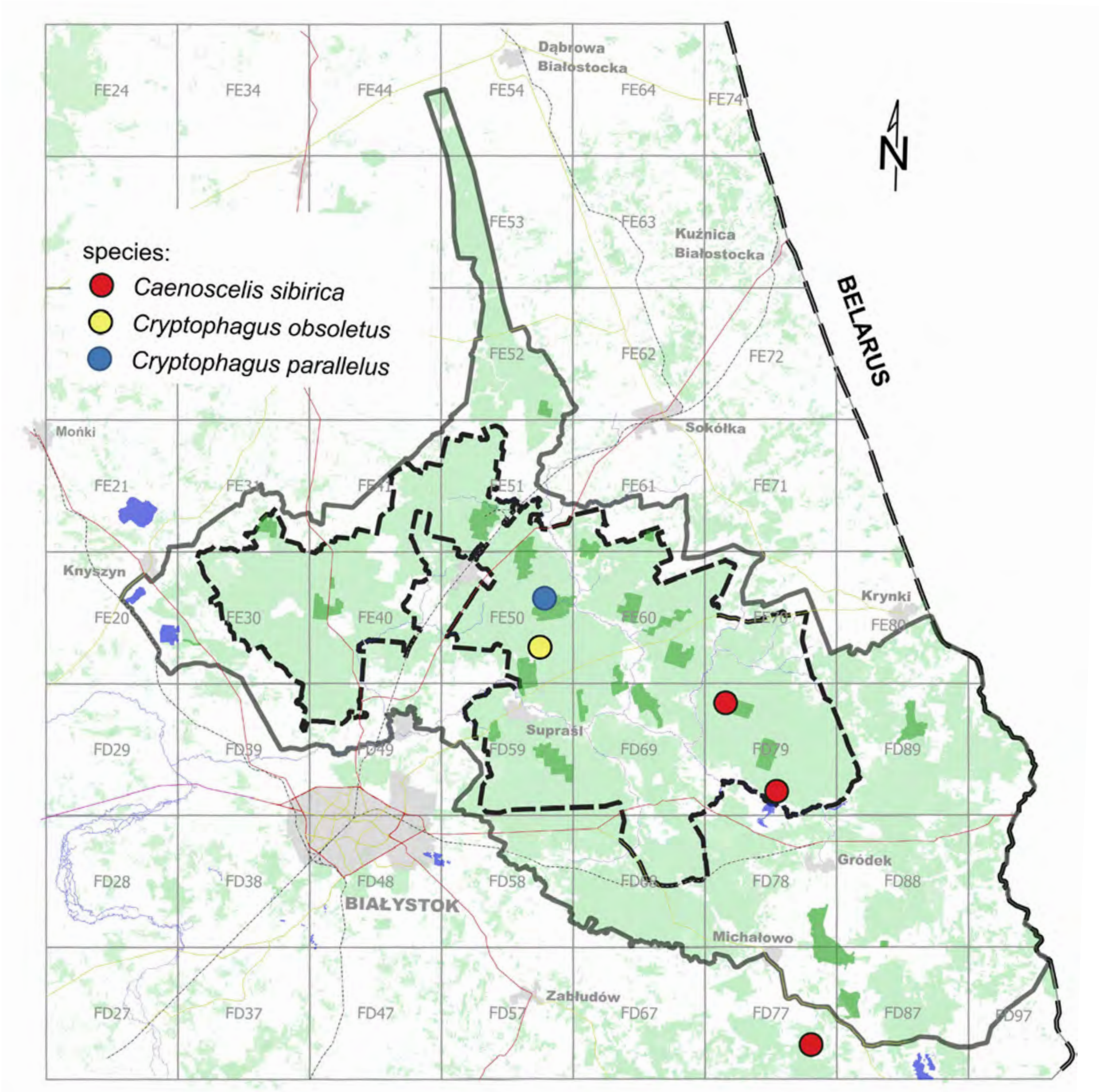


Fig. 461. Localities of *Caenoscelis sibirica*, *Cryptophagus obsoletus* and *C. parallelus* (Cryptophagidae) in Knyszyńska Forest

Distribution

A species occurring in the northern part of Central Europe, through Siberia, Mongolia to Japan (Johnson et al. 2007). In Poland, it has been reported from Białowieża Forest under the synonymous name *C. fleischeri* Reitter, 1889 by Majewski (1993). In addition, it has been reported from the Western Beskid (Majewski 2004) and the Pomeranian Lake District (Jałoszyński et al. 2015).

Biology and ecology

A species with very poorly understood bionomics. It was caught in IBL-2 traps and from forest litter siftings. In Knyszyńska Forest, it was caught in IBL-2 traps together with *C. ferruginea*.

Notes

A new species for Podlasie.

Cryptophagus obsoletus Reitter, 1879 (Fig. 462)

Fig. 462. ***Cryptophagus obsoletus*** **Reitter, 1879 (Cryptophagidae)** (photo G. Pelletier)

Material examined (Fig. 461)

Data from the literature: Supraśl Forest District, Zacisze (FE50), sifted from a pile of straw and manure lying on the edge of a mid-forest meadow, 9.05.2022 – 1 ex. (Borowski & Gazurek 2023).

Distribution

A boreal species found in the northern part of Europe, from Britain to Siberia, Mongolia and into Japan. Also reported from North America (Johnson et al. 2007). Found for the first time in Poland in KF in 2022 (Borowski & Gazurek 2023).

Biology and ecology

A species with poorly understood bionomics. In England, thought to be an imported species from eastern Siberia, occurring in a synanthropic environment (Duff 2020).

Cryptophagus parallelus Brisout de Barneville, 1863 (Fig. 463)

Fig. 463. ***Cryptophagus parallelus*** **Brisout de Barneville, 1863 (Cryptophagidae)** (photo M. Sławski)

Material examined (Fig. 461)

Original data: Czarna Białostocka Forest District, compartment 110 (FE50), 30.06-20.07.2019 – 2 exx., green Lindgren funnel trap, leg. J.M. Gutowski, det. J. Borowski.

Distribution

A species found almost all over Europe (Johnson et al. 2007). In Poland, it was reported from the Wielkopolska-Kujawy Lowland (Majewski 1997), more recently from the Świętokrzyskie Mountains (Buchholz et al. 2021).

Biology and ecology

A species with poorly understood bionomics. It occurs mainly in coniferous forests, on molds found in habitats under tree bark (Burakowski et al. 2000; Duff 2020). Majewski (1997) sifted one specimen from the rot of an old pine trunk lying on the ground. This specimen was sifted on December 25, so the species overwinters as an imago. Larval development probably takes place in tree crowns.

Notes

A new species for Podlasie.

Cucujidae

Cucujus cinnaberinus (Scopoli, 1763) (Fig. 464)

Material examined (Fig. 466)

Species frequently observed in KF (original data). There is also a considerable body of information from the literature: Bohdan 2008, 2009; Plewa et al. 2014; Kwiatkowski 2020; Kwiatkowski & Marczak 2020a, 2020b. Due to the sensitivity of locational data, the distribution of *Cucujus cinnaberinus* in KF is only presented in Fig. 466.

Fig. 464. ***Cucujus cinnaberinus*** **(Scopoli, 1763) (Cucujidae)** (photo J.M. Gutowski)

Fig. 465. ***Cucujus cinnaberinus*** **(Cucujidae) feeding on a pine tree** (photo J.M. Gutowski)

Distribution

Until recently, the species was reported mainly in the areas of Central and Northern Europe (Horák et al. 2010). It is now beginning to colonize more areas at a rapid pace. More recently, it has been recorded from Austria (Eckelt et al. 2014), Belgium (Thomaes et al. 2020), France (Fuchs et al. 2014), Germany (Esser & Mainda 2016), Slovenia (Vrezec et al. 2017), and Italy (Mazzei et al. 2011), among others. In Poland, it is relatively common in recent times, reported from many zoogeographical regions (Ruta et al. 2021; Biwo 2022; Kadej et al. 2023).

Biology and ecology

Development occurs under the bark of dead standing or lying coniferous (Fig. 466) and deciduous trees (or in their fragments), where the wood is in the initial stages of decomposition (Jaworski et al. 2019). Adult insects overwinter under detached bark.

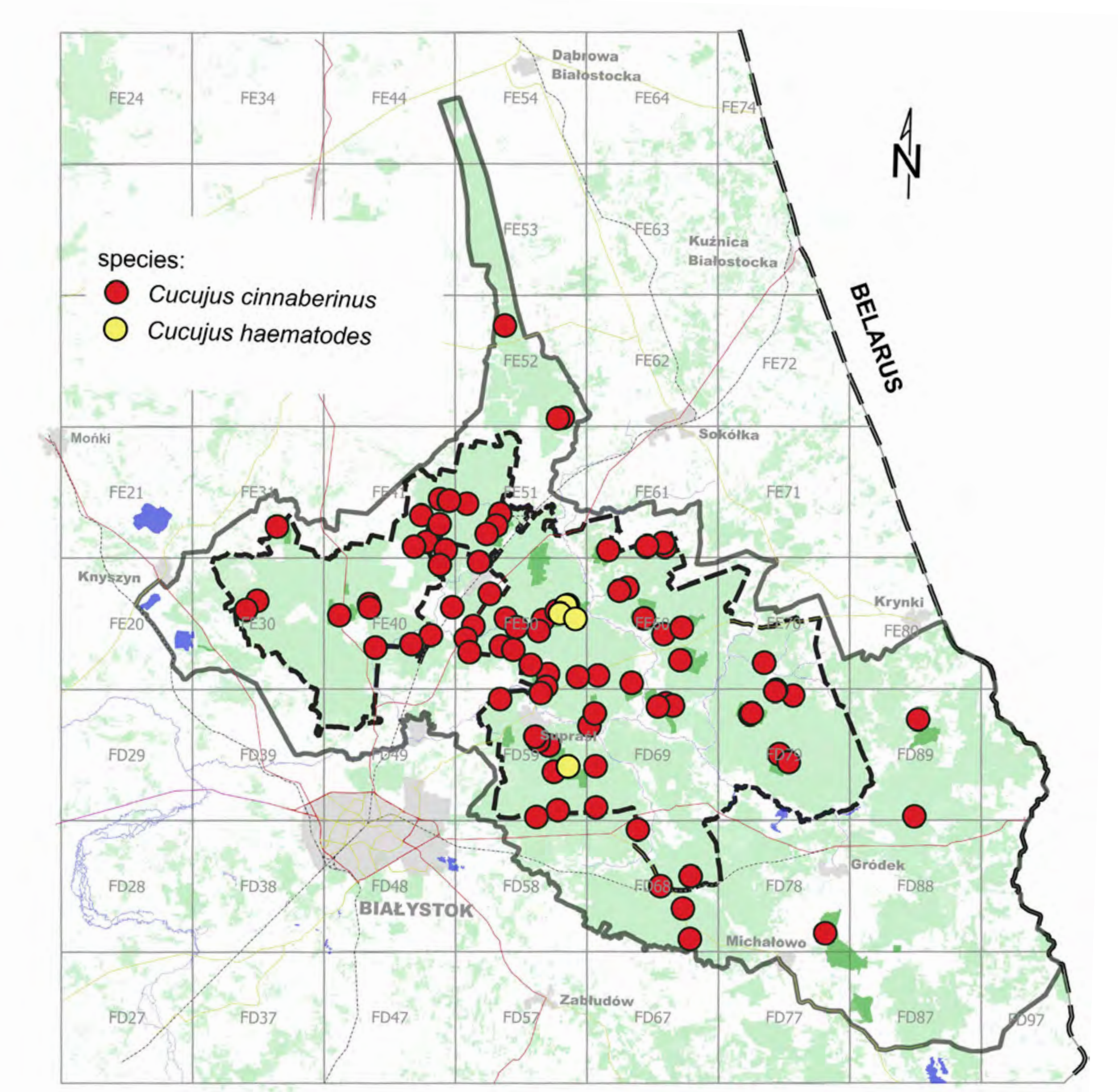


Fig. 466. Localities of *Cucujus cinnaberinus* and *C. haematodes* (Cucujidae) in Knyszyńska Forest

Notes

A strictly protected species (Rozporządzenie ... 2016), also included in Annexes II and IV of the Habitats Directive. Listed as LC (least concern) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002), and as NT (near threatened) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). One of the sites where species and habitat monitoring is conducted within the framework of State Environmental Monitoring is located in KF.

***Cucujus haematodes* Erichson, 1845** (Fig. 467)

Fig. 467. *Cucujus haematodes* Erichson, 1845 (Cucujidae) (photo K. Sućko)

Material examined (Fig. 466)

This species is definitely rarer in KF than the previous one. Found by the authors of this monograph as early as 1992, it is now known from several localities, including those published by Kwiatkowski & Marczak (2020a). Due to the sensitivity of locational data, the distribution of *Cucujus haematodes* in KF is only presented in Fig.466.

Distribution

A species with an insular distribution area. Today it occurs from Italy through areas of Central and Eastern Europe to the Far East and China (Horák et al. 2009; Spungis 2010; Bonnaci et al. 2022; Kadej et al. 2022). Very rare in Poland, known from several localities (Burakowski et al. 1986b; Borowski 2001; Cieślak 2017; Buchholz et al. 2021; Kadej et al. 2022).

Biology and ecology

Like *Cucujus cinnaberinus*, it undergoes development under the bark of dead, standing or lying coniferous and deciduous trees (or in their fragments), in which the wood is in the initial stages of decomposition, but is much rarer (Jaworski et al. 2019; Buchholz et al. 2021).

Notes

The species is strictly protected in Poland (Rozporządzenie ... 2016). Listed as LC (least concern) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002), and as EN (endangered) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). Included in the list of relict saproxylic beetles of Central Europe (Eckelt et al. 2018) in group 1 (relict *sensu stricto*). The persistence of the species is threatened by changes in the character of stands and the reduced supply of deadwood.

Laemophloeidae

***Cryptolestes weisei* (Reitter, 1880)** (Fig. 468)

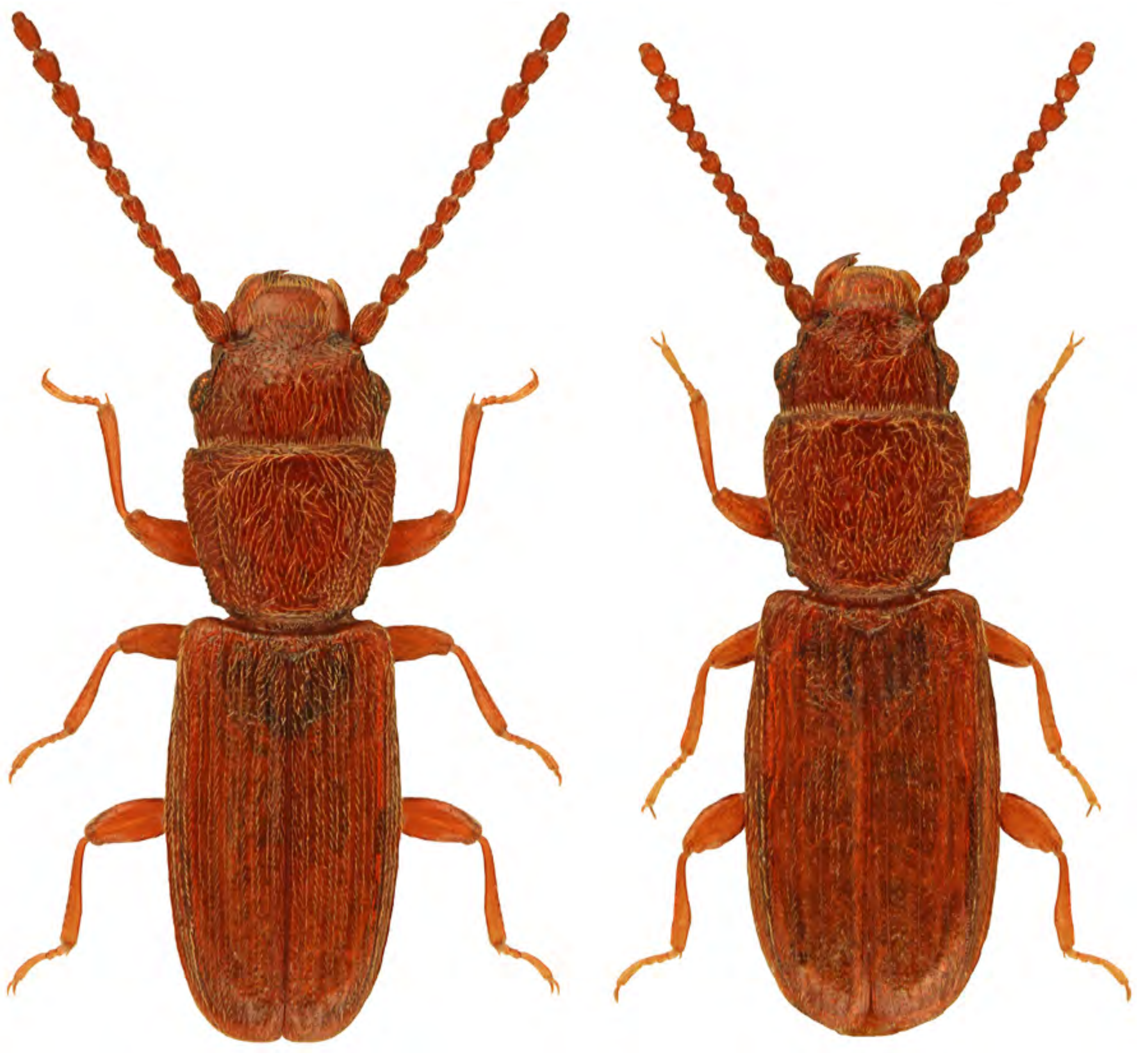


Fig. 468. *Cryptolestes weisei* (Reitter, 1880) (Laemophloeidae) (photo L. Borowiec)

Material examined (Fig. 469)

Original data: Krynki Forest District, Góra Pieszczana Reserve (FD79), 17.06.2016 – 1 ex., IBL-2 trap, leg. K. Komosiński, det. J. Borowski.

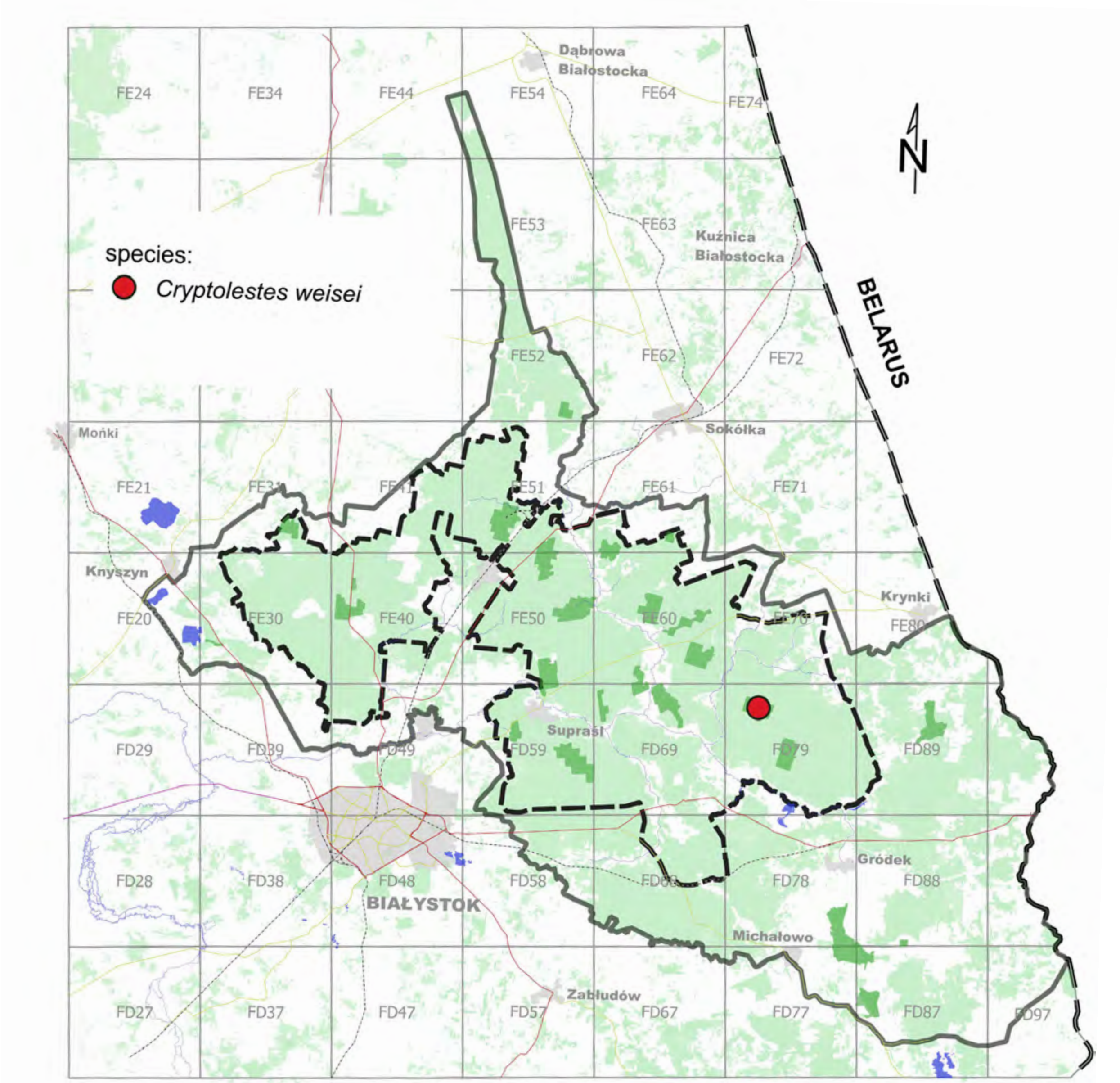


Fig. 469. Locality of *Cryptolestes weisei* (Laemophloeidae) in Knyszyńska Forest

Distribution

A species with a very poorly understood distribution. To date, it is known only from Germany, Poland, Italy, and Romania (Węgrzynowicz 2007). In Poland, it has been reported from the Wielkopolska-Kujawy Lowland and Roztocze (Burakowski et al. 1986b).

Biology and ecology

Its bionomics is not known. However, it is probably associated with forest environments.

Notes

A new species for Podlasie.

Nemonychidae

Doydirhynchus austriacus (Olivier, 1807) (Fig. 470)

Fig. 470. ***Doydirhynchus austriacus* (Olivier, 1807) (Nemonychidae)** (photo L. Borowiec)

Material examined (Fig. 471)

Data from the literature: Kopna Góra (FE60), May 1986 (Kubisz & Pawłowski 1995); KF (FD94), 14.05.1989 – 1 ex. (Stachowiak 2001); Krzemianka Reserve (FE40), 10.06.2020 – 1 ex. (Mokrzycki et al. 2022).

Distribution

A European species, ranging from northern Africa to southern Scandinavia and Asia Minor (Burakowski et al. 1992). Rare in Poland, known from more than a dozen scattered localities, most located in the south-western part of the country (database.biomap.pl).

Biology and ecology

Associated with Scots pine *Pinus sylvestris* L. Larvae feed in male inflorescences, and pupate in the soil. Adults also reside permanently on pine trees (Burakowski et al. 1992).

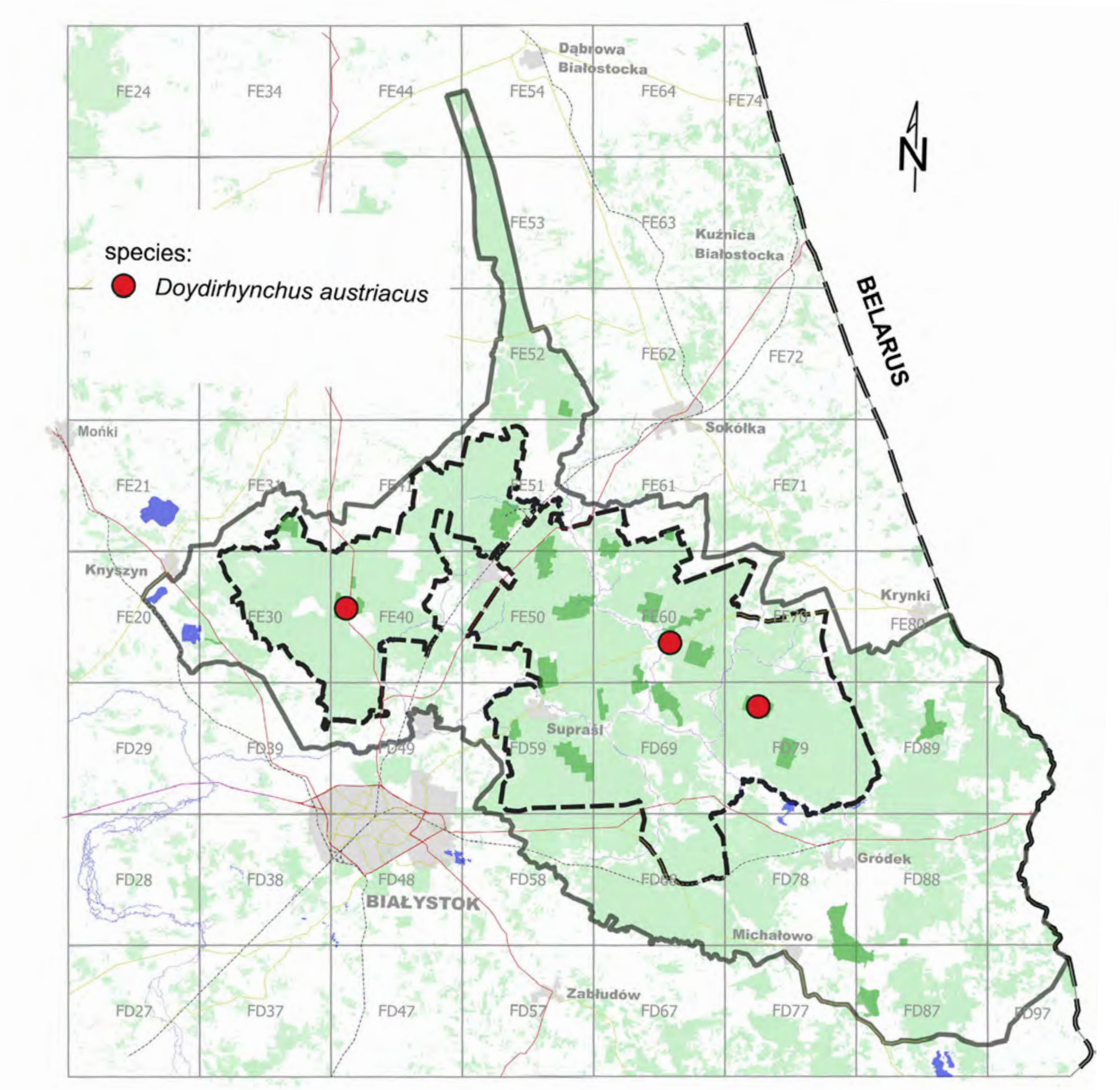


Fig. 471. Localities of *Doydirhynchus austriacus* (Nemonychidae) in Knyszyńska Forest

Anthribidae

Gonotropis dorsalis (Gyllenhal, 1813) (Fig. 472)

Material examined (Fig. 473)

Original data: vicinity of Supraśl (FD59), 24.08.1994 (Lasoń 2023b).

Data from the literature: Jesionowe Góry Reserve (FE51), 23.06.2002 – 1 ex., Moericke trap in an ash-alder riparian forest (Wanat et al. 2011).

Fig. 472. ***Gonotropis dorsalis*** **(Gyllenhal, 1813) (Anthribidae)** (photo M. Sowiński)

Distribution

A European species. Rare in Poland, known from single, scattered, often already historical localities. Reported from Podlasie (Białystok), and Biebrza National Park (Wanat et al. 2011).

Biology and ecology

A saproxylic species whose biology is not fully known. Larval development takes place in the dead branches of various deciduous trees, including fruit trees, where adult specimens also were found (Burakowski et al. 1992).

Notes

This species is most often collected using an entomological umbrella or pan traps (e.g., yellow pan traps, i.e., Moericke trap). Despite its rather large size and distinctive appearance, it is most often difficult to spot due to its rather secretive behavior and coloration, which, although contrasting, often merges with the irregular texture of wood, especially birch *Betula* L.

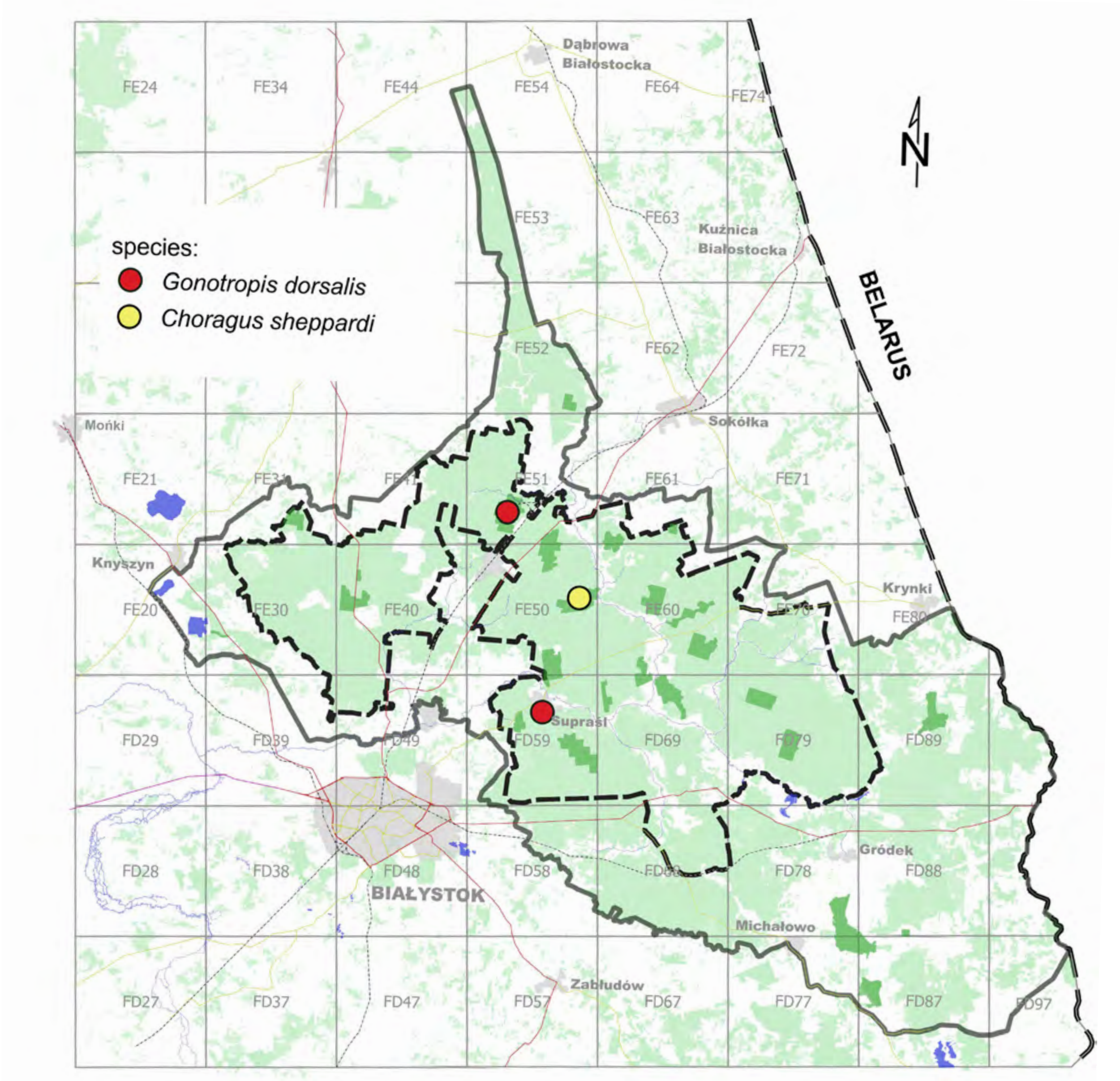


Fig. 473. Localities of *Gonotropis dorsalis* and *Choragus sheppardi* (Anthribidae) in Knyszyńska Forest

Choragus sheppardi Kirby, 1819 (Fig. 474)

Material examined (Fig. 473)

Data from the literature: Budzisk Reserve (FE50) (Marczak et al. 2023c).

Distribution

It is distributed in Central and Southern Europe to the Middle East and Asia Minor. In Poland, the species is rare, known mainly from historical localities. In Podlasie, it has been reported regularly from Białowieża Forest and Biebrza National Park (Wanat et al. 2011).

Biology and ecology

A saproxylic, mycetophilic species. This small, about 2 mm in size, beetle develops, like the previous species, on the branches of various deciduous trees. Young larvae most likely feed on fungi, and only older larvae feed in rotting wood (Burakowski et al. 1992). This species is most often collected under bark and in plant litter, less often collected by using an entomological umbrella.

Fig. 474. ***Choragus sheppardi*** **Kirby, 1819 (Anthribidae)** (photo R. Królik)

Attelabidae

Caenorhinus megacephalus **(Germar, 1823)** (Fig. 475)

Fig. 475. ***Caenorhinus megacephalus*** **(Germar, 1823) (Attelabidae)** (photo L. Borowiec, as *Deporaus mannerheimii*)

Material examined (Fig. 476)

Original data: Woronicza Reserve (FE60), 20.07.2010 – 1 ex., leg. J.M. Gutowski, det. M. Wanat (Plan ochrony... Woronicza 2011).

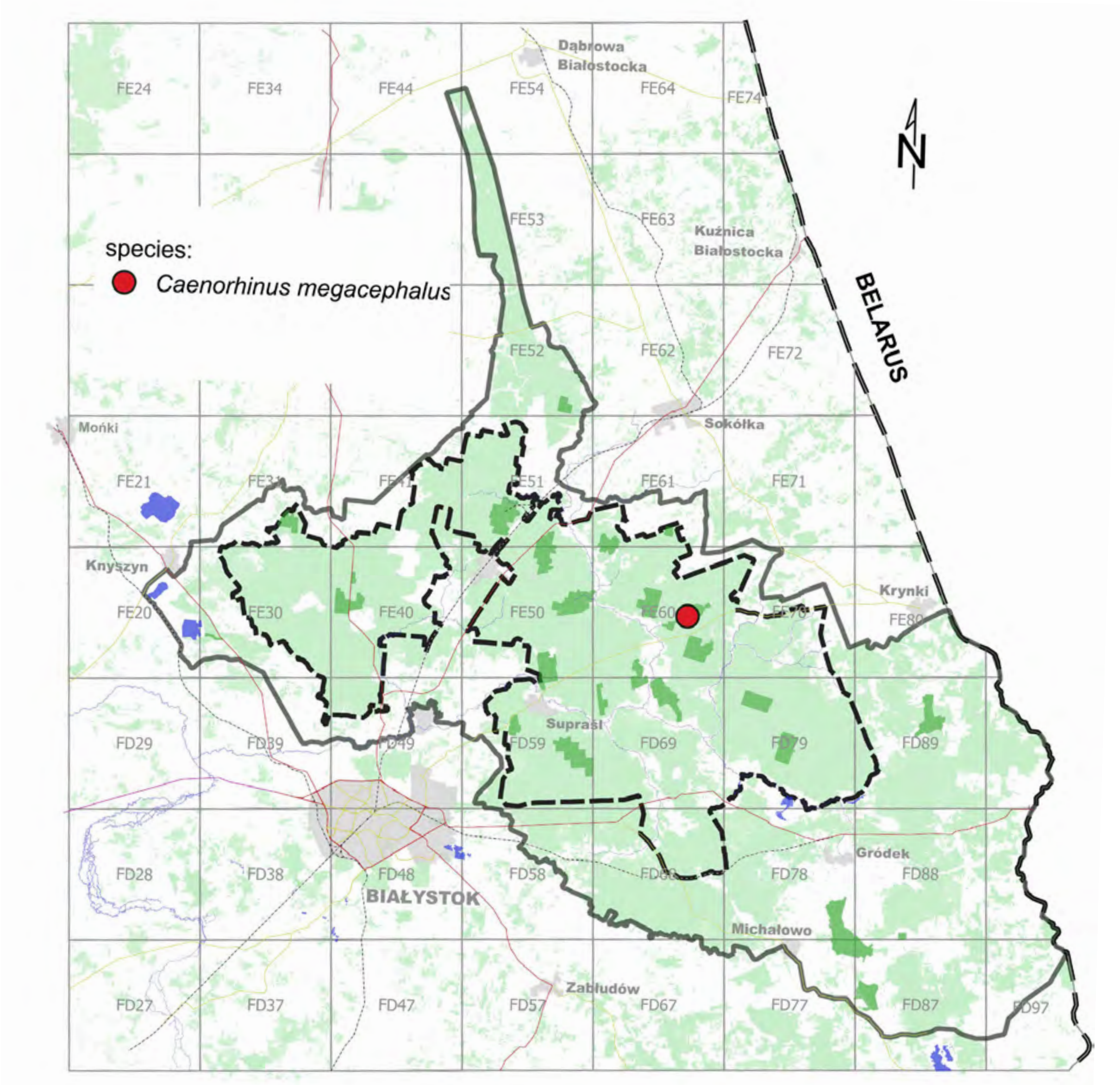


Fig. 476. Locality of *Caenorhinus megacephalus* (Attelabidae) in Knyszyńska Forest

Distribution

The species is known from Central and Northern Europe, with its range extending eastward through Siberia to Japan (Burakowski et al. 1992). A rare beetle in Poland, known mainly from the south of the country, although many of these records remain long unconfirmed. In Podlasie, it has been reported from Biebrza National Park (Wanat 2005), Białystok (Wanat 2023), and Białowieża Forest (Lasoń 2023b).

Biology and ecology

It prefers cool and moist habitats, such as bogs, moist and wet meadows. The species occurs on deciduous trees, mainly birch *Betula* L. and willow *Salix* L. Females roll leaves into characteristic tubes in which they lay their eggs. Larvae feed inside the rolled leaves on the parenchyma. Over time, the leaves wither and fall to the ground, where the larvae pupate (Cmoluch 1979).

Notes

When researching this species, it is important to be aware that older publications may list it under now-synonymous names. In the key to the identification of Polish leaf-rolling weevils (Cmoluch 1979), *Caenorhinus megacephalus* is mentioned as *Deporaus mannerheimi* (Hummel, 1823). The same name appears in the *Iconographia Coleopterorum Poloniae* (Borowiec – cassidae.uni.wroc.pl) as well as in the *Catalogue of the Fauna of Poland* (Burakowski et al. 1992). In the latest version of Burakowski's catalogue (available at baza.biomap.pl), the species is listed as *Caenorhinus mannerheimii* (Hummel, 1823), following the nomenclature adopted in the *Catalogue of Palaearctic Coleoptera* (Alonso-Zarazaga, 2011).

Brentidae

Aspidapion validum (Germar, 1817) (Fig. 477)

Fig. 477. ***Aspidapion validum* (Germar, 1817) (Brentidae)** (photo L. Borowiec)

Material examined (Fig. 478)

Data from the literature: Supraśl (FD59), 20.05.2023 – 2 exx., 21.05.2023 – 1 ex. (Wanat & Ulanowski 2023).

Distribution

This species is distributed across Central Europe and Asia. Until recently, its occurrence in Poland was uncertain, as this was based only on historical reports, some of which were certainly incorrect (Burakowski et al. 1992). It was again found in Poland at the beginning of the 21st century in the south and southeast; the history of subsequent finds is described in detail by Wanat & Ulanowski (2023).

Biology and ecology

Aspidapion validum feeds on *Alcea rosea* L. and *Althaea officinalis* L., although in Poland, it has been observed only on the former. Larvae feed in the seeds. Adults are easily observed, as they move directly on the plant (Wanat & Ulanowski 2023).

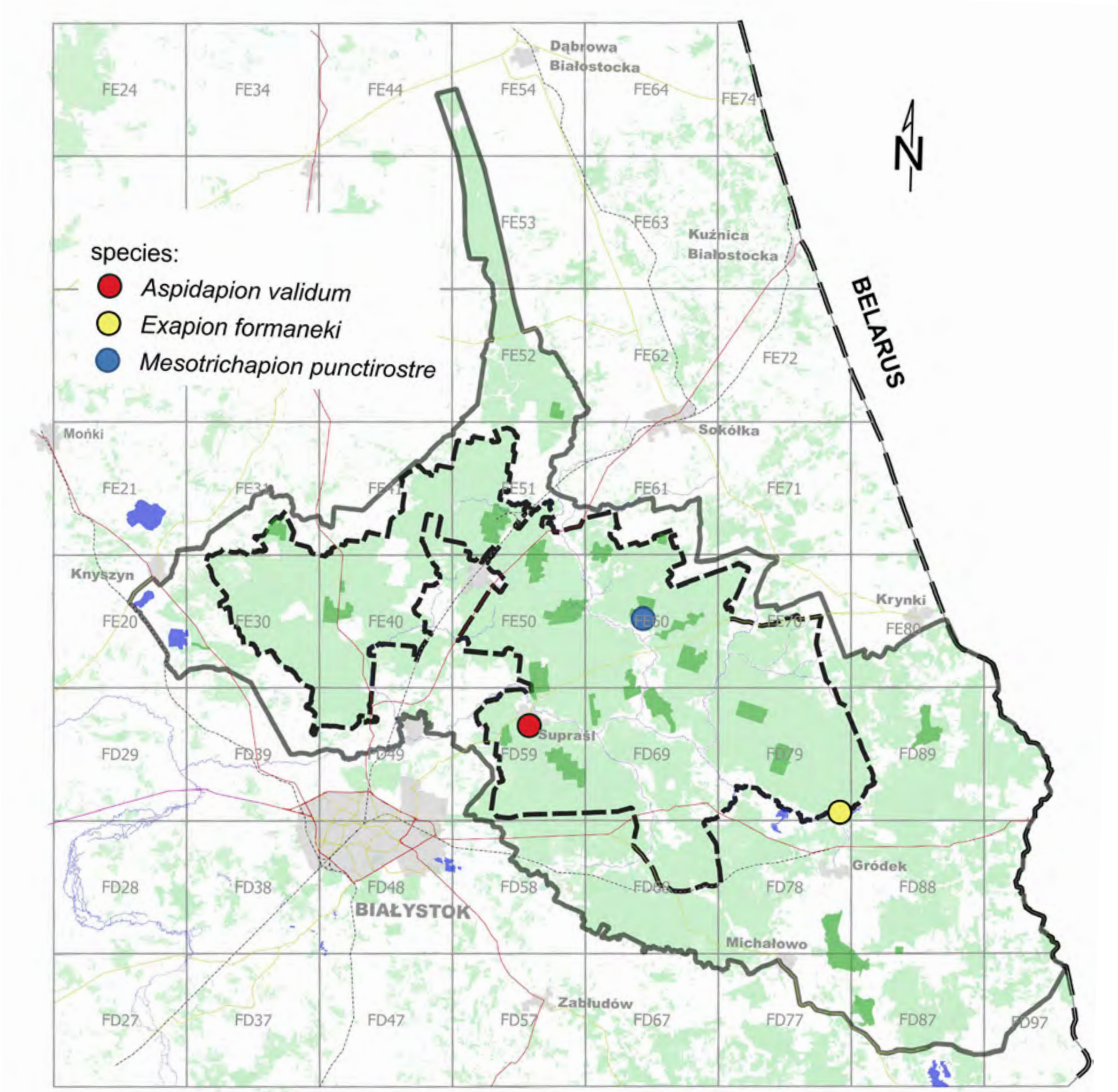


Fig. 478. Localities of *Aspidapion validum*, *Exapion formaneki*, and *Mesotrichapion punctirostre* (Brentidae) in Knyszyńska Forest

Notes

This species, which shares a similar biology with *Rhopalapion longirostre* (Olivier, 1807), is currently expanding in Poland, as evidenced by increasing observations in recent years. Arguably, like *R. longirostre*, it may become a much more common species in our country over time. This is favored by the increasingly warmer climate and the widespread cultivation of hollyhocks in gardens.

Exapion formaneki (Wagner, 1829) (Fig. 479)

Material examined (Fig. 478)

Data from the literature: reported from Piłatowszczyzna in KF (FD79), July 1990 (Kubisz & Pawłowski 1995).

Distribution

A European species. In Poland, reported mainly from the southern and eastern parts of the country. In addition to the record from KF, it is also known in Podlasie from Mielnik on the Bug River (Wanat 2023).

Fig. 479. ***Exapion formaneki*** **(Wagner, 1829) (Brentidae)** (photo L. Borowiec)

Biology and ecology

A thermophilic species, associated with *Genista* spp. Adults reside directly on the plant, from where they are easily beating sheet. The larvae feed and complete their development inside the pods.

Mesotrichapion punctirostre (Gyllenhal, 1839) (Fig. 480)

Material examined (Fig. 478)

Original data: Międzyrzecze (FE60), 11.06.2020 – 1 ex., leg. & det. M.A. Mazur.

Distribution

A species with a Siberian-Mediterranian distribution whose range extends from Italy, through Central Europe to Mongolia (Mazur 2001). In Poland, it is rarely recorded and known only from a few zoogeographical regions, mainly in the southern part of the country. From Podlasie, it is known from Mielnik on the Bug River (Wanat 2023) and Białowieża Forest (Wanat 2003). According to Mazur (2001), localities along the Vistula River are the result of the Volhynian migration. In contrast, records from northeastern Poland are thought to be the result of a second migration route (Polesie) following the Bug River (Mazur & Kubisz 2013).

Biology and ecology

A xerothermophilic species that develops on *Astragalus* spp. Despite its xerothermophilic preference, it also occurs in well sunlit, warm forests (Mazur 2001).

Notes

The locality near Międzyrzecze was located at the edge of the village bordering the reserve of the same name.

Fig. 480. ***Mesotrichapion punctirostre*** **(Gyllenhal, 1839) (Brentidae)** (photo L. Borowiec)

Curculionidae

Glocianus maculaalba (Herbst, 1795) (Fig. 481)

Material examined

Data from the literature: Tylwica (FD67) (Ruszkowski 1933), Białystok (Kuntze 1936); this information is repeated by Knutelski & Lasoń (1997).

Distribution

The range includes the western part of North Africa, Southern and Central Europe, and extends eastward to the Caucasus and Middle Eastern countries (Burakowski et al. 1997). In Poland, the species is rare, known mainly from historical localities, except for more recent reports from the Lublin region (Łętowski & Gosik 2002; Gosik & Łętowski 2003) and quite recent ones from the Eastern Sudetes (Wanat et al. 2022). It has been reported from the northeastern part of the country only from the aforementioned localities near Białystok and the Tylwica area, located near the southern border of KF, between the towns of Zabłudów and Michałowo.

Biology and ecology

In Europe, it develops on opium poppy *Papaver somniferum* L. and common poppy – *P. rhoeas* L. (Stüben et al. 2014). It inhabits wastelands, roadsides, ruderal areas, mainly on clay soils and marls (Burakowski et al. 1997).

Notes

The species was probably more widely distributed in the past due to less agricultural intensification and chemicalization, when poppies were a common feature of the rural zoogeographical regionscape. Data in the literature from the vicinity of KF are only from studies of various types of crop pests. Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

Fig. 481. ***Glocianus maculaalba*** **(Herbst, 1795) (Curculionidae)** (photo L. Borowiec, as *Neoglocianus maculaalba*)

Microplontus millefolii (Schultze, 1897) (Fig. 482)

Fig. 482. ***Microplontus millefolii*** **(Schultze, 1897) (Curculionidae)** (photo L. Borowiec)

Material examined (Fig. 483)

Original data: Ruda Rzeczka ad Czarna Białostocka (53.27564, 23.24619, FE40), 10.06.2021 – 1 ex., leg. K. Sućko, det. M.A. Mazur.

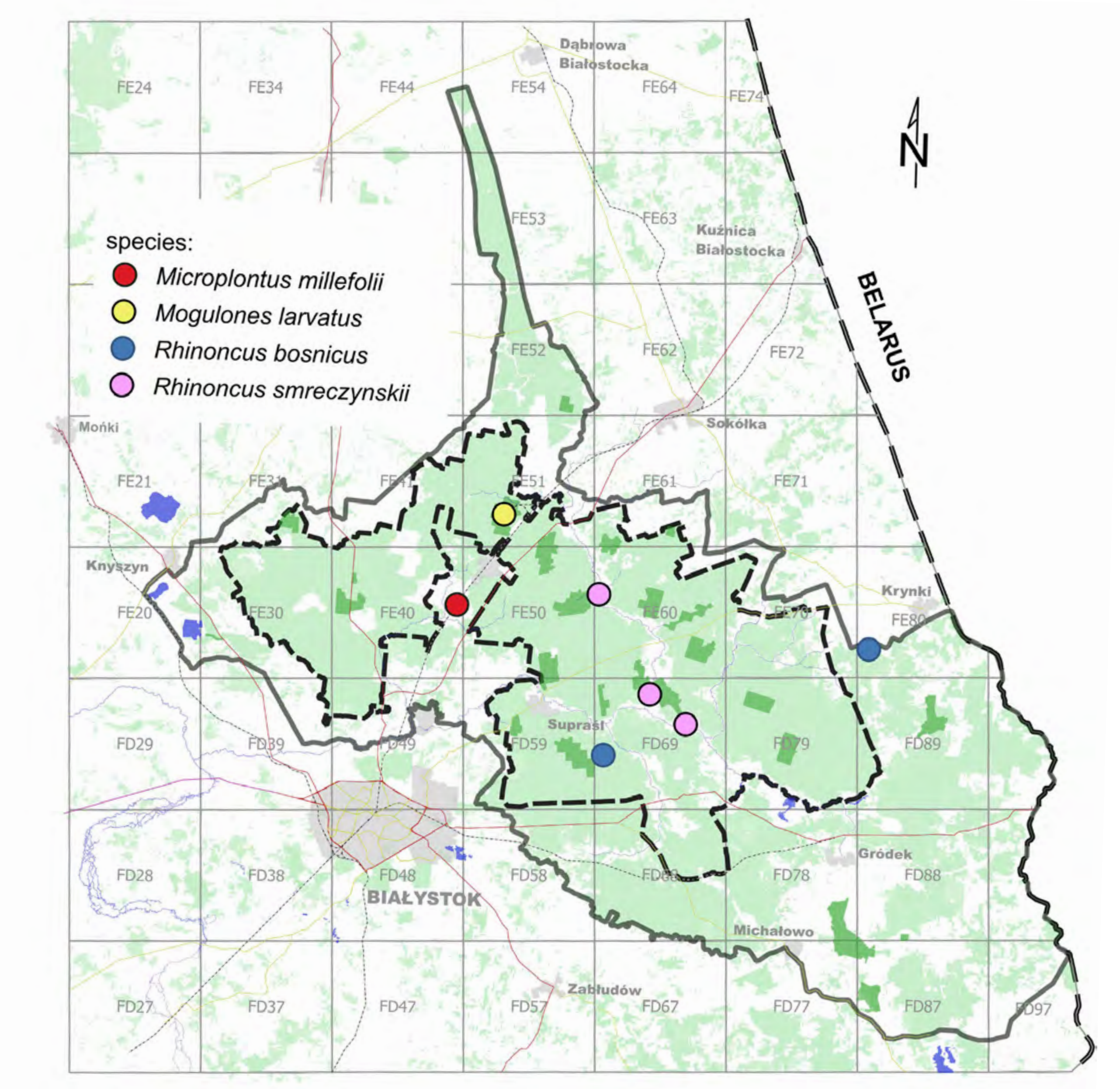


Fig. 483. Localities of *Microplontus millefolii*, *Mogulones larvatus*, *Rhinoncus bosnicus*, and *R. smreczynskii* (Curculionidae) in Knyszyńska Forest

Distribution

A Central European species, in the north it ranges from the southern reaches of Sweden, the Baltic countries, and Karelia, but not extend beyond the Alpine line to the south (Burakowski et al. 1997; Stüben et al. 2014). Until recently, it was known in Poland from a few localities in several zoogeographical regions, mainly in Lower Silesia, Wielkopolska, and Białowieża Forest (Burakowski et al. 1997; Wanat 2009; Mazur 2011). An increasing number of reports in recent years may indicate the expansion of this species.

Biology and ecology

A mesophilic species inhabiting meadows, thickets, forest edges, roadsides, and ruderal areas (Burakowski et al. 1997). It is a monophage of tansy *Tanacetum vulgare* L.

Notes

Listed as LC (least concern) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). A new species for Podlasie.

Mogulones larvatus (Schultze, 1897) (Fig. 484)

Fig. 484. ***Mogulones larvatus*** **(Schultze, 1897) (Curculionidae)** (photo G. Tarwacki)

Material examined (Fig. 483)

Original data: Jesionowe Góry Reserve (FE51), 23.06.2002 – 1 ex., Moericke trap, leg. J. Sawoniewicz, det. M. Wanat.

Distribution

The range includes Europe and North Africa, as well as Siberia (Burakowski et al. 1997). In Poland, it occurs in scattered localities in the southern, northern and eastern zoogeographical regions of the country (baza.biomap.pl). In the areas surrounding KF, it is known from Biebrza National Park (Wanat 2005) and Białowieża Forest (Wanat 1994).

Biology and ecology

A species inhabiting the undergrowth of deciduous forests, it develops on several species of lungworts *Pulmonaria* L.

Notes

A new species for Podlasie.

Rhinoncus bosnicus Schultze, 1900 (Fig. 485)

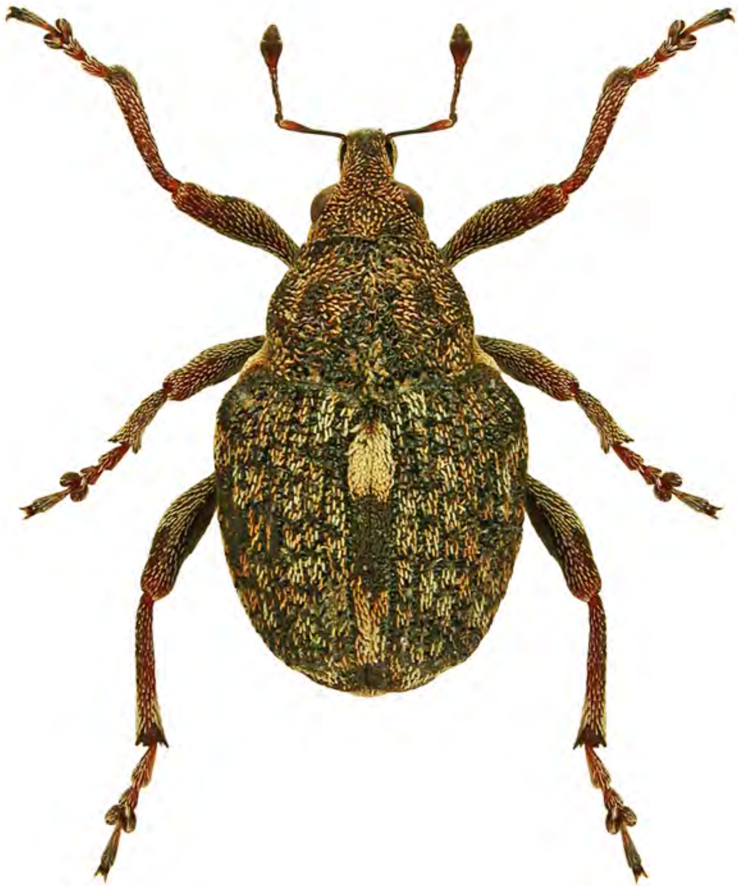


Fig. 485. ***Rhinoncus bosnicus*** **Schultze, 1900 (Curculionidae)** (photo L. Borowiec)

Material examined (Fig. 483)

Original data: Kopna Góra ad Supraśl (FE60), 29.07.1994 – 1 ex., leg. & det. A. Lasoń.

Distribution

A European species, whose range includes Central Europe, the Balkans, extending to the Caucasus. In Poland, it is known only from single localities in a few regions (Burakowski et al. 1997).

Biology and ecology

A hygrophilous species. It usually inhabits water edges, wet meadows, the edges of ditches and pits, as well as similar habitats. It develops on several species of humidophilic docks, such as *Rumex obtusifolius* L. and *R. maritimus* L., as well as *Polygonum mite* Schrank (Burakowski et al. 1997). According to some authors (Stüben et al. 2012), it may also develop on *R. palustris* Sm.

Notes

Due to the common occurrence of its host plants, it seems that it should be more widely distributed. The limited number of reports may be a result of its great similarity to the related, common *R. pericarpus* (Linnaeus, 1758) (= *R. castor* (F.)), which inhabits completely different habitats – dry and often sandy, where it develops on *R. acetosella* L.

A new species for Podlasie.

Rhinoncus smreczynskii Wagner, 1937 (Fig. 486)

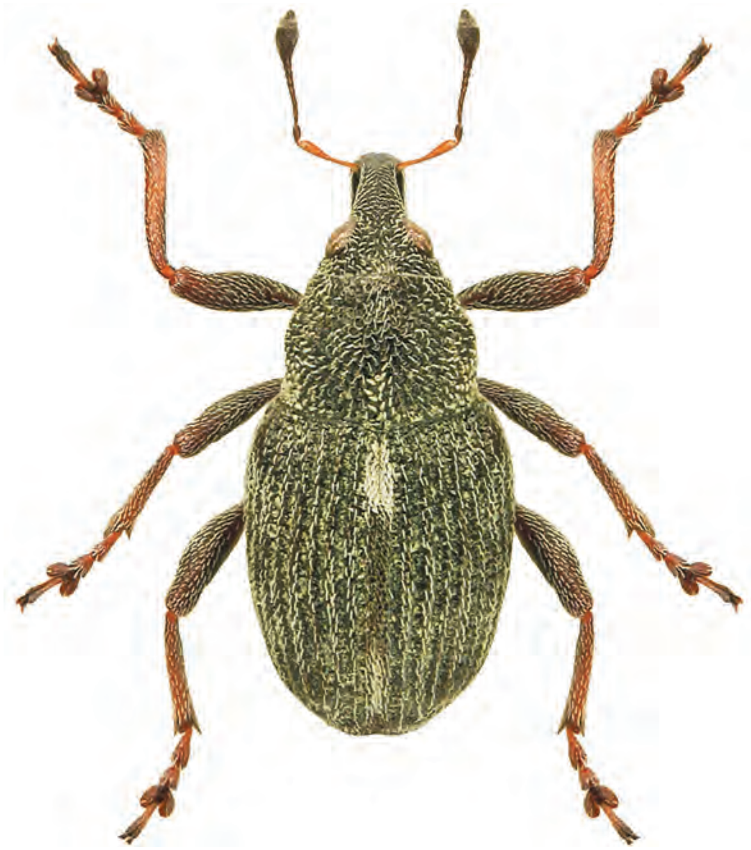


Fig. 486. ***Rhinoncus smreczynskii*** **Wagner, 1937 (Curculionidae)** (photo L. Borowiec)

Material examined (Fig. 483)

Original data: Woronicza Reserve (FE60), 20.07.2010 – 1 ex., leg. J.M. Gutowski, det. M. Wanat (Plan ochrony... Woronicza 2011); Borki (FD69), 8.06.2020 – 2 exx., leg. & det. M.A. Mazur; Dworzysk (FE60), 11.06.2020 – 1 ex., leg. & det. M.A. Mazur; Woronicze (FE69), 8.06.2020 – 2 exx., leg. & det. M.A. Mazur.

Distribution

Very little is known about this species in Europe. Single localities are reported from the Czech Republic and Germany. In Poland, it is known only from the northeastern part of the country. It is abundant in the Biebrza Basin and in a small number of localities in Białowieża Forest (Wanat 2009). In addition, it occurs in single localities in the vicinity of Siedlce, Łomża, Biała Podlaska, and Białystok (gbif.org).

Biology and ecology

A hygrophilous species that inhabits moist meadows, forest edges, ditches, and water edges, but avoids sites with standing water. A monophage of *Polygonum bistorta* L. (Wanat 2005).

Notes

For many years, it was considered a subspecies of *R. perpendicularis* (Reich, 1797), but its status was revised relatively recently (Wanat 2000). Despite the common occurrence of the host plant and seemingly suitable habitats, the species is found in greater numbers only in northeastern Poland. The *locus typicus* of the species is Białowieża Forest.

Scleropteridius fallax Otto, 1897 (Fig. 487)

Fig. 487. ***Scleropteridius fallax*** **Otto, 1897 (Curculionidae)** (photo L. Borowiec)

Material examined (Fig. 488)

Original data: Jesionowe Góry Reserve (FE51), 5.06.2003 – 2 exx., Moericke trap, leg. J. Sawoniewicz, det. M. Wanat.

Distribution

A European, boreal-mountain species, distributed from France to the Balkans, reaching northward as far as Sweden (Burakowski et al. 1997). In Poland, it is known primarily from the southern zoogeographical regions, sporadically from the lowlands. In the northern part of the country, it has been reported from a single locality in the Masurian Lake District (Gotwald 1968), as well as from he Białowieża Forest (Borowski 2001; Wanat 2003) and the Biebrza Basin (Wanat et al. 2023).

Biology and ecology

A forest-dwelling species, inhabiting the undergrowth of moist oak-hornbeam, riparian, beech, and mixed coniferous forests. It is a monophage of *Oxalis acetosella* L. (Burakowski et al. 1997).

Cleopomiarus distinctus (Boheman, 1845) (Fig. 489)

Material examined (Fig. 488)

Original data: Budzisk Reserve (53.2785, 23.3798, FE50), 7.07.2021 – 2 exx., leg. J.M. Gutowski, det. M.A. Mazur.

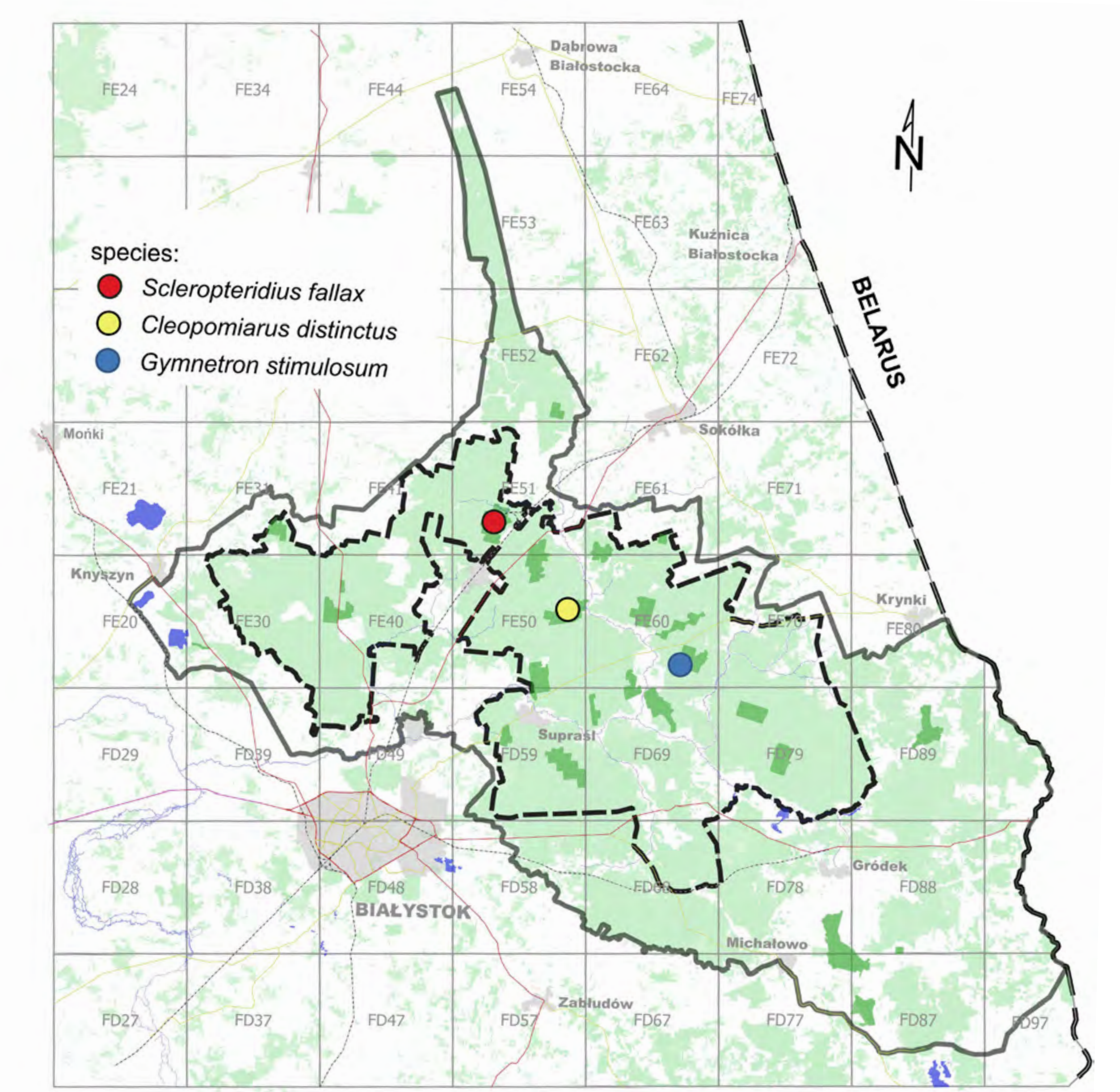


Fig. 488. Localities of *Scleropteridius fallax*, *Cleopomiarus distinctus*, and *Gymnetron stimulosum* (Curculionidae) in Knyszyńska Forest

Distribution

The species is distributed from Central Europe to Siberia and Manchuria (Burakowski et al. 1997). In Poland, it is known from scattered localities in different parts of the country. In northeastern Poland, it is fairly often reported from Biebrza National Park and Białowieża Forest (database.biomap.pl).

Biology and ecology

It usually inhabits dry and warm habitats, such as forest edges, thickets, roadsides, and clear-cut area. It develops on various species of *Campanula* L. (Burakowski et al. 1997). Smreczynski (1950) reported collecting it in large numbers in Białowieża Forest on *Campanula glomerata* L.

Notes

A new species for Podlasie.

Fig. 489. ***Cleopomiarus distinctus*** **(Boheman, 1845) (Curculionidae)** (photo G. Tarwacki)

Gymnetron stimulosum **(Germar, 1821)** (Fig. 490)

Fig. 490. ***Gymnetron stimulosum*** **(Germar, 1821) (Curculionidae)** (photo L. Borowiec)

Material examined (Fig. 488)

Original data: Stare Biele Reserve (FE60), 1.06.2021 – 1 ex., sifted from plant litter, leg. A. Lasoń, det. T. Gazurek.

Distribution

The species' range extends from North Africa to Central Europe, and eastward to the Caucasus. It is quite rare in Poland, recorded in scattered localities, many of which remain unconfirmed since historical times (Burakowski et al. 1997). In northeastern Poland, it is reported fairly frequently from Biebrza National Park (database.biomap.pl).

Biology and ecology

Details of its ecology and biology are poorly understood. It is probably a polyphagous species. It is caught on *Matricaria* L. and *Achillea* L. (Burakowski et al. 1997). According to a relatively recent revision of the genus (Caldara 2008), it has also been observed feeding on *Plantago lanceolata* L. and *Veronica* L., in addition to the above-mentioned plants.

Polydrusus pilosus **(Gredler, 1866)** (Fig. 491)

Fig. 491. *Polydrusus pilosus* (Gredler, 1866) (Curculionidae) (photo G. Tarwacki)

Material examined (Fig. 492)

Original data: Kulikówka Reserve (FE30), 22.06.2002 – 1 ex., Moericke trap, leg. J. Sawoniewicz, det. M. Wanat; Taboły Reserve (FE50), 14.05.2020 – 1 ex., leg. & det. M.A. Mazur; Surażkowo (FD69), 13.05.2020 – 1 ex., leg. & det. M.A. Mazur.

Data from the literature: Supraśl Forest District, compartment 249 (FD59), 9.05.1993 – 1 ex. (Knutelski & Lasoń 1995).

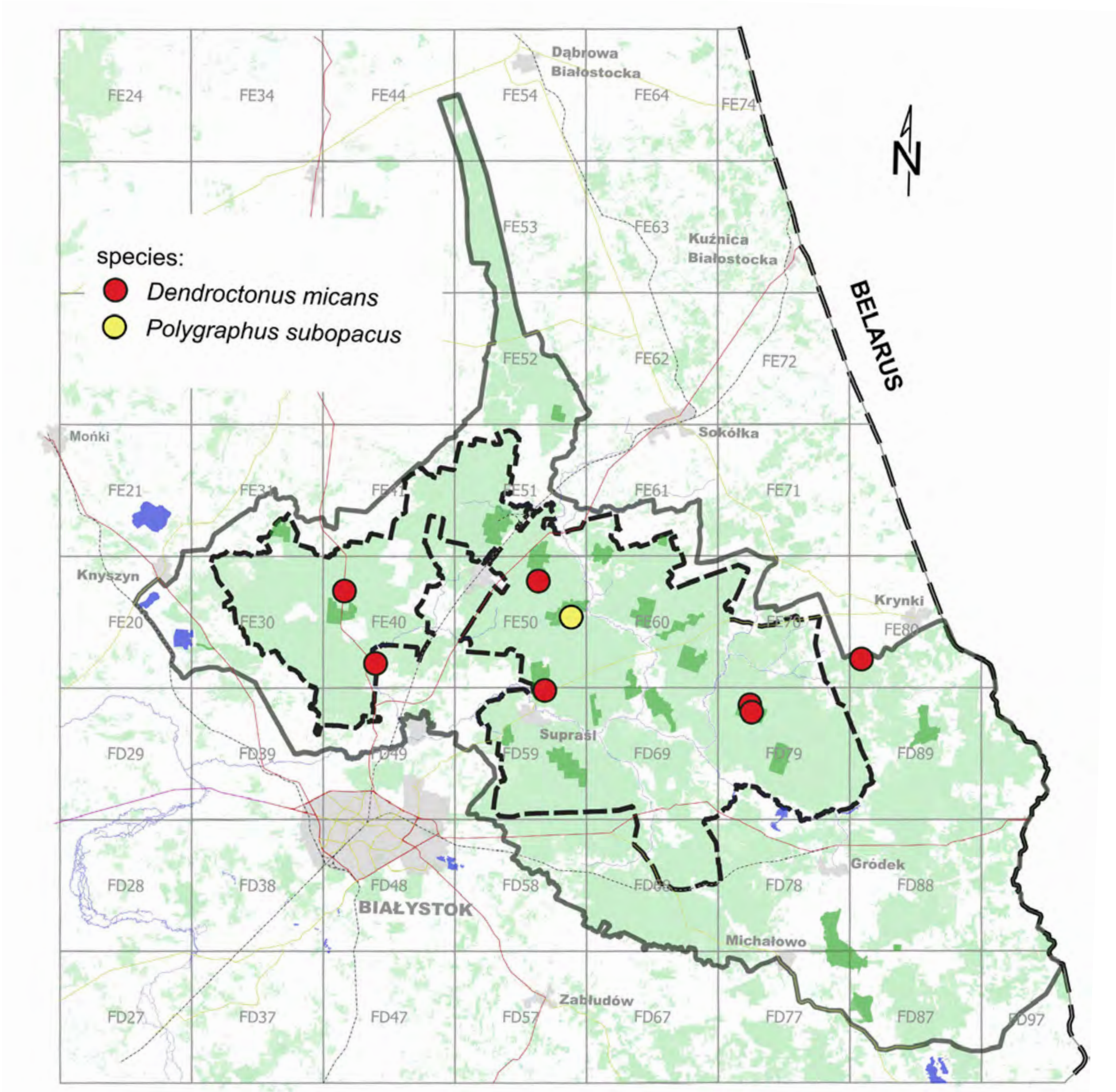


Fig. 492. Localities of *Polydrusus pilosus*, *Larinus sturnus*, and *Lixus cylindrus* (Curculionidae) in Knyszyńska Forest

Distribution

The species is locally distributed throughout Europe. In Poland, it occurs in scattered localities, mainly in the Carpathian Mountains and foothills (Burakowski et al. 1993). In the Podlasie region, it is known from the vicinity of Białystok, Biebrza National Park, and the southern boundaries of the region in the vicinity of Zbereż (FB89) in Sobibór Landscape Park (database.biomap.pl).

Biology and ecology

A polyphagous forest species. It feeds on the leaves of various deciduous trees. Its bionomy and developmental cycle are poorly understood (Burakowski et al. 1993). It is most often collected by shaking specimens off branches.

Notes

At first sight, this species can easily be mistaken for the much more common *Polydrusus cervinus* (Linnaeus, 1758).

Hypera arundinis (Paykull, 1792) (Fig. 492x)

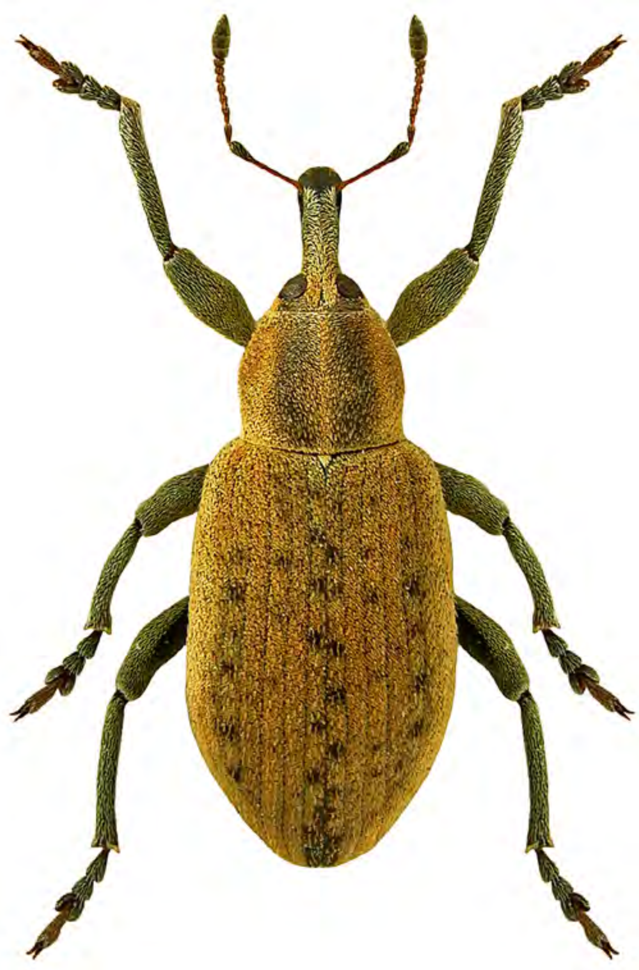


Fig. 492x. ***Hypera arundinis*** **(Paykull, 1792) (Curculionidae)** (photo L. Borowiec)

Material examined

Data from the literature: Roubal (1910) reports this species from the Białystok area. This information is repeated by Burakowski et al. (1995) and Knutelski & Lasoń (1997).

Distribution

The species is distributed from the British Isles to the European part of the former USSR. In the north it reaches the southern regions of Sweden, and in the south to Romania (Alonso-Zarazaga et al. 2023). In Poland, the species is rare, known from a larger number of localities only in the Biebrza Basin. Single localities are also known from Mazovia, Małopolska, and Pomerania. Reports from southern and western parts of Poland are limited and historical (database.biomap.pl).

Biology and ecology

A hygrophilous species. Biologically associated with *Sium latifolium* L. Larvae are exophagous, feeding on the leaves and inflorescences of the host plant, often in clusters. Pupation occurs in a characteristic reticulate cocoon. The species is usually found on the banks of water bodies, although it can also be found in permanently wet or periodically flooded meadows or bogs. Imagines reside on the host plant, although feeding has also been observed on other members of the celery family, such as *Pastinaca sativa* L. and *Daucus carota* L. (Burakowski et al. 1995).

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

***Larinus sturnus* (Schaller, 1783)** (Fig. 493)

Fig. 493. ***Larinus sturnus* (Schaller, 1783) (Curculionidae)** (photo M.W. Kozłowski)

Material examined (Fig. 492)

Original data: Dworzysk (53.2823, 23.4052, FE60), 11.06.2020 – 3 exx., leg. & det. M.A. Mazur; Chomontowszczyzna Reserve (FD79), 31.05.2021 – 1 ex., leg. R. Plewa, det. M.A. Mazur; Niemczyn area (FE41), 8.07.2020 – 3 exx., leg. K. Sućko, det. M.A. Mazur.

Distribution

The species is widely distributed in Europe and western Asia, reaching as far north as Scandinavia, as far south as Morocco, and as far east as the Altai (Burakowski et al. 1993; gbif.org). In Poland, it was once sparsely recorded but is now widespread and even common in some areas. Known in northeastern Poland from a number of localities in the Biebrza Basin and the Masurian Lake District (database.biomap.pl).

Biology and ecology

It feeds on various species of *Carduus* L., *Cirsium* Mill., *Centaurea* L., and *Carlina acaulis* L. (Burakowski et al. 1993). It inhabits a variety of habitats where its host plants grow, from moist meadows to ruderal areas.

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). While this category was adequate to the state of knowledge at the beginning of the 21st century, subsequent environmental and climatic changes have made the species one of the more common representatives of this genus in many areas.

Lixus cylindrus **(Fabricius, 1781)** (Fig. 494)

Fig. 494. ***Lixus cylindrus*** **(Fabricius, 1781) (Curculionidae)** (photo T. Mokrzycki)

Material examined (Fig. 492)

Original data: Waliły Forest District, Jozefowo Forest, compartment 221 (FD89), 1.07.2021 – 1 ex., leg. & det. K. Sućko; Station Czarny Blok ad Wasilków (FE40), 15.07.2023 – 1 ex., leg. T. Jaworski, det. R. Plewa.

Distribution

The species' range extends from Western Siberia, through areas on the Black Sea, Caspian Sea, Mediterranean Sea, reaching Spain (Burakowski et al. 1993). In Poland, it is very local, recorded only from the eastern and northeastern parts of the country, up to the line of the Vistula River. It has been reported in Podlasie from the Biebrza Basin (Wanat 2005) and Białowieża Forest (Stachowiak 1999).

Biology and ecology

A xerophilous species, preferring warm, sunny or only slightly shaded sites on a sandy substrate. It is less common in typical xerothermic habitats. In Poland, it develops only on *Peucedanum oreoselinum* (L.) Moench (Głowaciński & Nowacki 2004).

Notes

Despite favorable habitats and a commonly occurring host plant, the species itself is very local, indicating its rather narrow range of habitat preferences, still not fully known. In Biebrza National Park, it has been collected on sand dunes and small deciduous woodlots on raised areas in fairly large numbers. Due to its distinctive coloration and size, it is a very easy species to observe, although when it senses danger it falls off the plants and can then be difficult to find. Easy to positively identify from photographs. Listed as VU (vulnerable) both in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002), as well as in *Polish Red Book of Animals. Invertebrates* (Głowaciński & Nowacki 2004) as VU (vulnerable).

Crypturgus subcribrosus Eggers, 1933 (Fig. 495)

Fig. 495. ***Crypturgus subcribrosus*** **Eggers, 1933 (Curculionidae)** (photo U. Schmidt)

Material examined (Fig. 496)

Original data: Krynki Forest District, compartment 203c (FD89), 06.2013 – 2 exx., fresh mixed coniferous forest, under the bark of a spruce, leg. M. Stankiewicz, det. T. Mokrzycki.

Data from the literature: Budzisk Reserve (FE50) (Marczak et al. 2023c).

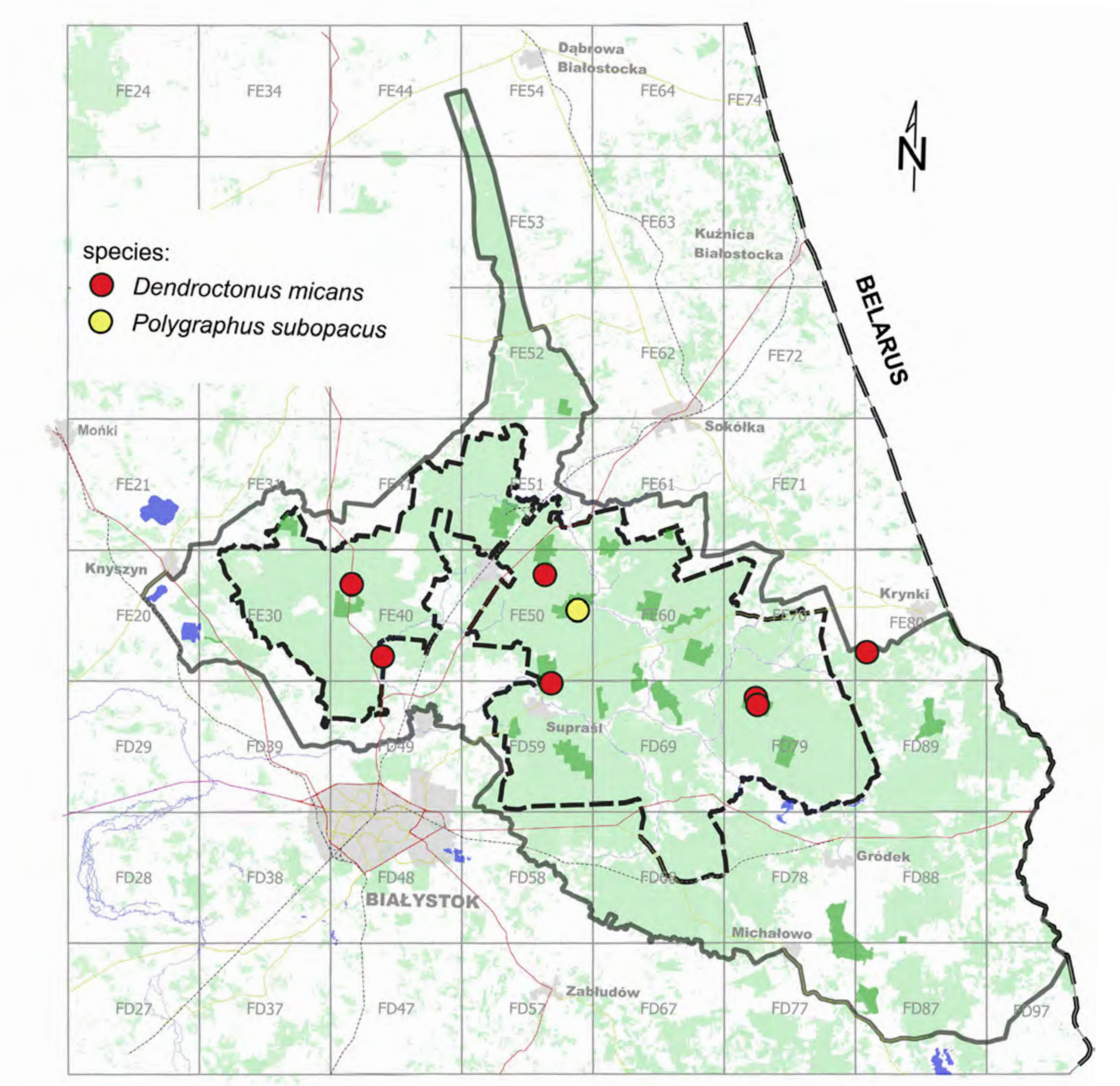


Fig. 496. Localities of *Crypturgus subcribrosus*, *Dendroctonus micans*, and *Polygraphus subopacus* (Curculionidae) in Knyszyńska Forest

Distribution

A species known from the northern and central parts of Europe and northern Asia, reaching Britain in the west, and eastern Siberia to the east (Löbl & Smetana 2011). In Poland, it is known from Biebrza National Park, Białowieża Forest, Świętokrzyski National Park, the Western Sudetes, and the Western Beskid (Mokrzycki et al. 2011).

Biology and ecology

Like its related species, *Crypturgus subcribrosus* develops under the bark of coniferous trees. The female uses the galleries of other bark beetle species to lay her own eggs.

Notes

This species was treated as a synonym of *Crypturgus cinereus* (Herbst) (Wood & Bright 1992), but research by Jordal & Knižek (2007) showed that it is a distinct species. The exact distribution of *C. subcribrosus* is not known due to previous taxonomic problems.

***Dendroctonus micans* (Kugelann, 1794)** (Fig. 497)

Fig. 497. *Dendroctonus micans* (Kugelann, 1794) (Curculionidae) (photo J.M. Gutowski)

Material examined (Fig. 496)

Original data: Czarna Białostocka Forest District, Taboły Reserve, compartment 74/75 (53.298990, 23.346233, FE50), 4.06-9.07.2020 – 1 ex., violet Lindgren funnel trap, leg. & det. J.M. Gutowski; Dojlidy Forest District, Rybniki Forest Subdistrict, compartment 110 (53.246469, 23.157917, FE40), 7.06-13.07.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski; Knyszyn Forest District, Karczmisko Reserve, compartment 144 (53.296550, 23.125094, FE40), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. T. Mokrzycki; Krynki Forest District, Grzybowszczyzna Forest Subdistrict, compartment 155 (53.237866, 23.710701, FE80), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. T. Mokrzycki; Krynki Forest District, Góra Pieszczana Reserve, compartment 454 (53.209510, 23.582052, FD79), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. R. Plewa, det. J.M. Gutowski; Supraśl Forest District, Stare Biele Reserve (53.23845, 23.50435, FE60), 22.04-9.06.2008 – 1 ex., leg. R. Plewa, det. T. Mokrzycki; Supraśl Forest District, Jałówka Reserve, compartment 144 (53.224368, 23.349359, FD59), 17.06.2016 – 1 ex., leg. R. Plewa, det. T. Mokrzycki.

Data from the literature: Kopna Góra (FE60), August 1985 (Kubisz & Pawłowski 1995).

Distribution

The species is known from Asia (China, Siberia, Turkey) and Europe, where it occurs over almost the entire area (Wood & Bright 1992). In Poland, it is reported from the Masurian Lake District, the Wielkopolska-Kujawy Lowland, Białowieża Forest, Lower and Upper Silesia, the Małopolska Upland, the Świętokrzyskie Mountains, Roztocze, the Western and Eastern Sudetes, the Western Beskid, Nowy Targ Basin, and the Tatra Mountains (Burakowski et al. 1992; Mokrzycki 2011). Recently found around Warszawa, including at the Polish Academy of Sciences Botanical Garden in Powsin (Mokrzycki inf.).

Biology and ecology

Dendroctonus micans primarily inhabits spruce *Picea* spp. and less frequently fir *Abies* spp., larch *Larix* spp. or pine *Pinus* spp. (Wood & Bright 1992). At the Forest Experimental Station in Rogów, this species readily colonized *Picea sitchensis* (Bong.) Carrière (Dominik 1972). It feeds under the bark on younger and older trees. The feeding area is irregular, with resin seeps and brown sawdust visible on the bark surface (Michalski & Mazur 1999). Unlike other cambiophagous bark beetle species, the larvae can feed in clusters. The beetles emerge in May (Mokrzycki original information).

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). According to the authors of this monograph, the species should be removed from the *Red List*, or at least its category should be lowered. This is because the research conducted and our own observations indicate that it occurs more frequently and in greater numbers than previously thought – it is not an endangered species in Poland.

Polygraphus subopacus **Thomson, 1871** (Fig. 498)

Fig. 498. *Polygraphus subopacus* Thomson, 1871 (Curculionidae) (photo G. Tarwacki)

Material examined (Fig. 496)

Data from the literature: Czarna Białostocka Forest District, Budzisk Reserve (FE50), 1-30.06.2019 – 1 ex., IBL-5 hung on *Acer* sp. (Marczak et al. 2023c).

Distribution

The species is distributed in Asia (northern part of China, Korea, Japan, Siberia) and Europe, except in its southern part (Wood & Bright 1992). In Poland, it has been reported from Podlasie, Białowieża Forest, Upper Silesia, the Kraków-Wieluń Upland, the Małopolska Upland, the Świętokrzyskie Mountains, the Lublin Upland, Roztocze, the Pieniny Mountains, and the Tatra Mountains (Burakowski et al. 1992).

Biology and ecology

A species associated with coniferous trees, mainly spruce *Picea* spp., but also pine *Pinus* spp. and Siberian fir *Abies sibirica* Ledeb. (Wood & Bright 1992). It inhabits mostly younger standing trees. Galleries have 4-6 arms up to 6 cm long, plugged with sawdust along their entire length. Galleries are found mostly in the bark. There are probably two generations per year. Swarming was observed in April and July (Nunberg 1981).

Cerambycidae

***Ergates faber* (Linnaeus, 1760)** (Fig. 499)

Fig. 499. ***Ergates faber* (Linnaeus, 1760) (Cerambycidae)** (photo J. Tatur-Dytkowski)

Material examined (Fig. 500)

Data from the literature: Krynki Forest District, Góra Pieszczana Reserve ad Lipowy Most (to the east of the village), compartment 508 (FD79), 21.10.2012 – imago remains (elytra), fresh coniferous forest, at the compartment's border (Gutowski et al. 2012c).

Distribution

Found in Europe, North Africa, Middle East, and the Caucasus (Sama 2002). In Poland, it is reported from a number of localities, mainly in the southern and western parts of the country (Burakowski et al. 1990a). More recent data are provided by: Gutowski et al. (2012c), Górski & Tatur-Dytkowski (2015), Ruta et al. (2016), Ruta (2020), Szafraniec et al. (2021), Smolis et al. (2023).

Biology and ecology

It occurs in old stands, developing in coniferous wood, especially in pine and spruce, less often in fir, cedar or larch. Larvae feed at the base of thick trunks or in stumps. Imagines are active at night. Its developmental cycle lasts at least 3 years (Burakowski et al. 1990a; Bense 1995; Gutowski original information).

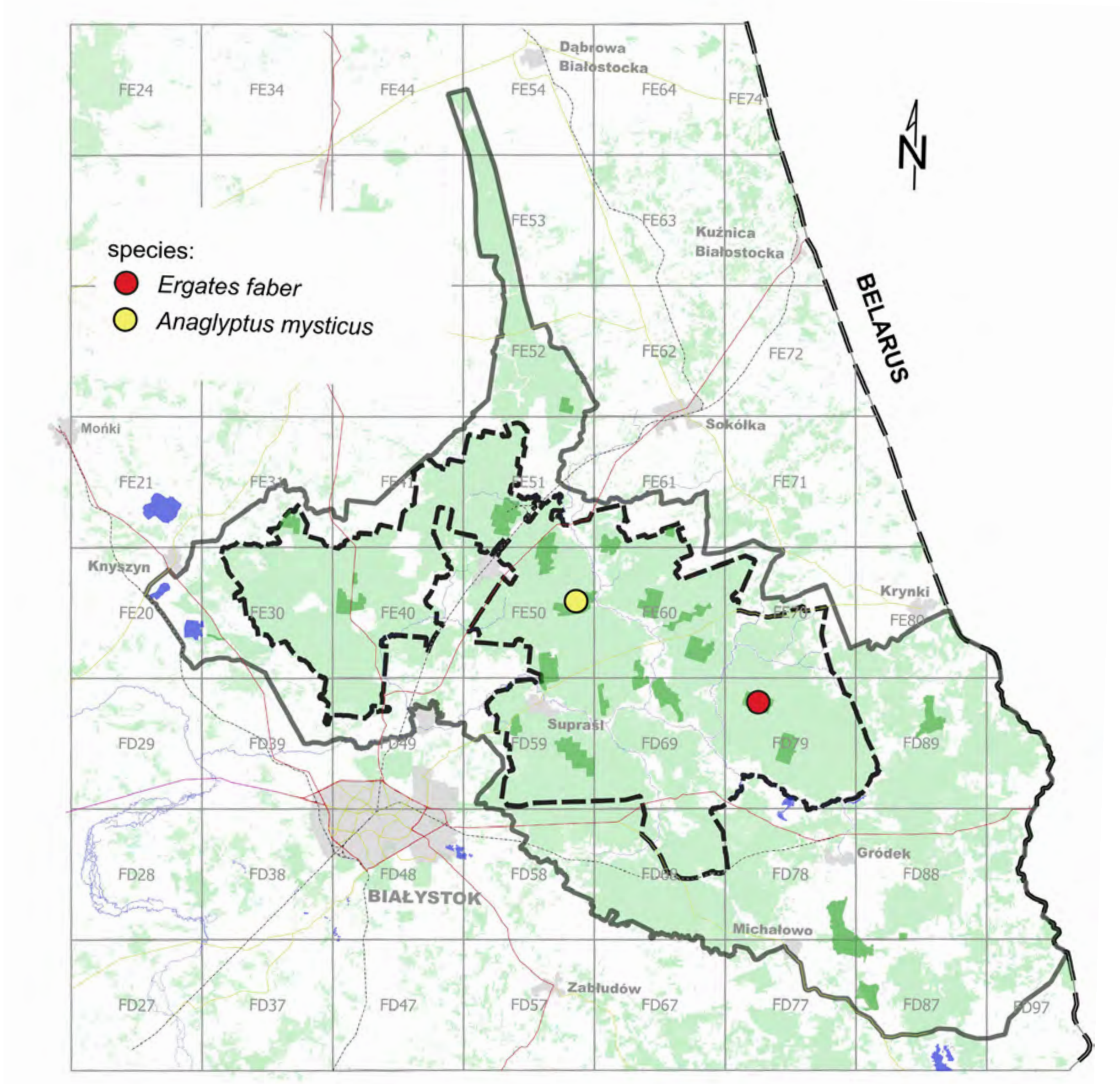


Fig. 500. Localities of *Ergates faber* and *Anaglyptus mysticus* (Cerambycidae) in Knyszyńska Forest

Notes

Listed as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002), and as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

One of the largest beetles in Poland's fauna.

***Prionus coriarius* (Linnaeus, 1758)** (Fig. 501)

A

Fig. 501. ***Prionus coriarius*** **(Linnaeus, 1758) (Cerambycidae): A – imago, B – larva in the larval gallery** (photo J.M. Gutowski)

Material examined

Original data: reported in KF from many localities, including the Budzisk (FE50), Krzemianka (FE40), Międzyrzecze (FE60), Starodrzew Szyndzielski (FE52), and Woronicza (FE60) reserves.

Data from the literature: Piłatowszczyzna (FD79), August 1993 (Kubisz & Pawłowski 1995); Gniła (FD39), 21.08.1987 – 1 ex., Podratowiec (FE40), 1.07-23.08.2021 – 3 exx., Horodnianka (FE50), 15.07.2015 – 1 ex., Międzyrzecze Reserve (FE60), 30.07.2022 – 1 ex., Woronicza Reserve (FE60), 30.07.2022 – 1 ex. (Marczak et al. 2023d).

Distribution

Widely distributed in Europe, northern Africa, Turkey, the Caucasus, Transcaucasia, and northern Iran. In Poland, it is known from many localities (Burakowski et al. 1990a, Sama 2002).

Biology and ecology

A polyphagous species of coniferous (*Pinus* L., *Picea* Dietr., *Abies* Mill.) and deciduous trees (*Quercus* L., *Fagus* L., *Alnus* Mill., *Castanea* Mill., *Malus* M., *Salix* L., *Fraxinus* L., *Betula* L., *Ulmus* L., *Corylus* L.). Larvae live in thick roots, the lower part of trunks and stumps. Development lasts at least three years. Imagines are active at night (Bense 1995; Gutowski original information).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Anaglyptus mysticus* (Linnaeus, 1758)** (Fig. 502)

Fig. 502. ***Anaglyptus mysticus* (Linnaeus, 1758) (Cerambycidae)** (photo S. Szafraniec)

Material examined (Fig. 499)

Data from the literature: Budzisk Reserve (FE50), 1-30.06.2019 – 1 ex., IBL-5 trap on aspen (Marczak et al. 2023d).

Distribution

Known from all over Europe and from Turkey (Danilevsky 2020). In Poland, it is found quite often, observed less frequently only in the northeastern part of the country (Burakowski et al. 1990a). The latest information is from several zoogeographical regions in western Poland (Bunalski et al. 2020; Smolis et al. 2023), the Kampinos Forest (Marczak 2020), and the Western Beskid (Łuszczak & Szafraniec 2021).

Biology and ecology

It inhabits deciduous trees and shrubs: beech *Fagus* L., hornbeam *Carpinus* L., maples *Acer* L., oaks *Quercus* L., alders *Alnus* Mill., lindens *Tilia* L., pear *Pirus* L., *Robinia pseudacacia* L., *Corylus avellana* L, *Sambucus racemosa* L., and *Euonymus europaeus* L. Imagines feed on flower pollen, and can be found from May to August, most abundantly at the beginning of this period. The development of one generation takes at least two years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Aromia moschata **(Linnaeus, 1758) – muskrat scent** (Fig. 503)

Fig. 503. ***Aromia moschata*** **(Linnaeus, 1758) (Cerambycidae)** (photo J. Kupryjanowicz)

Material examined (Fig. 504)

Original data: Królowy Most (FD69), 11.08.1973 – 1 ex., leg. W. Staręga, det. J.M. Gutowski, collection of the Museum and Institute of Zoology of the Polish Academy of Sciences, Łomna; Krynki Forest District, compartment 72, 27.07.1979 – 1 ex., low bog sparsely overgrown with willows and birches, leg. & det. J.M. Gutowski; Sokółka Forest District, compartment 312 (FD69), 2.08.1979 – 7 exx., swamp forest, leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, compartment 168/180 (FE50), 15.07.1981 – 1 ex., alder forest, leg. & det. J.M. Gutowski; Kopna Góra, arboretum (FE60), 23.07.1990 – 1 ex. (remains), leg. P. Szwałko, det. J.M. Gutowski; Knyszyn Forest District, Krzemianka Reserve, compartment 218 (FE40), 17.06.2011 – 1 ex., leg. K. Terlecki, det. J.M. Gutowski (Terlecki 2012); Supraśl Forest District, Woronicza Reserve, compartment 157 (FE60), 20.07.2010 – 1 ex., leg. & det. J.M. Gutowski (Plan ochrony... Woronicza 2011); Czarna Białostocka Forest District, Starodrzew Szyndzielski Reserve, compartment 208 (FE52), 25.07.2010 – 1 ex., 6.08.2010 – 1 ex. leg. Ł. Radziwon, det. J.M. Gutowski (Plan ochrony... Starodrzew Szyndzielski 2011; Radziwon 2012); Czarna Białostocka Forest District, Szyndzielski Forest Subdistrict, compartment 119 (FE52), 29.08.2012 – 4 exx., leg. K. Micun, det. J.M. Gutowski (Micun 2013); Czarna Białostocka Forest District, Brzozowo Kolonia (FE54), 22.07.2013 – 1 ex., leg. B. Szestowicka, det. J.M. Gutowski (Szestowicka 2014).

Data from the literature: Piłatowszczyzna (FD79), July 1990 (Kubisz & Pawłowski 1995).

Distribution

The species ranges from the Atlantic to the coasts of the Pacific Ocean, reaching south to North Africa, the northern parts of Mongolia, China, and Kazakhstan, reaching beyond the Arctic Circle. In Europe, it is found from Scandinavia to Sicily and southern Greece, from Portugal to southern Russia (Burakowski et al. 1990a; Sama 2002). In Poland, it is found all over the country, from the Baltic Sea to the Tatra Mountains, except in the higher mountainous areas (Burakowski et al. 1990a). It is a fairly common species in our country, but usually found singly.

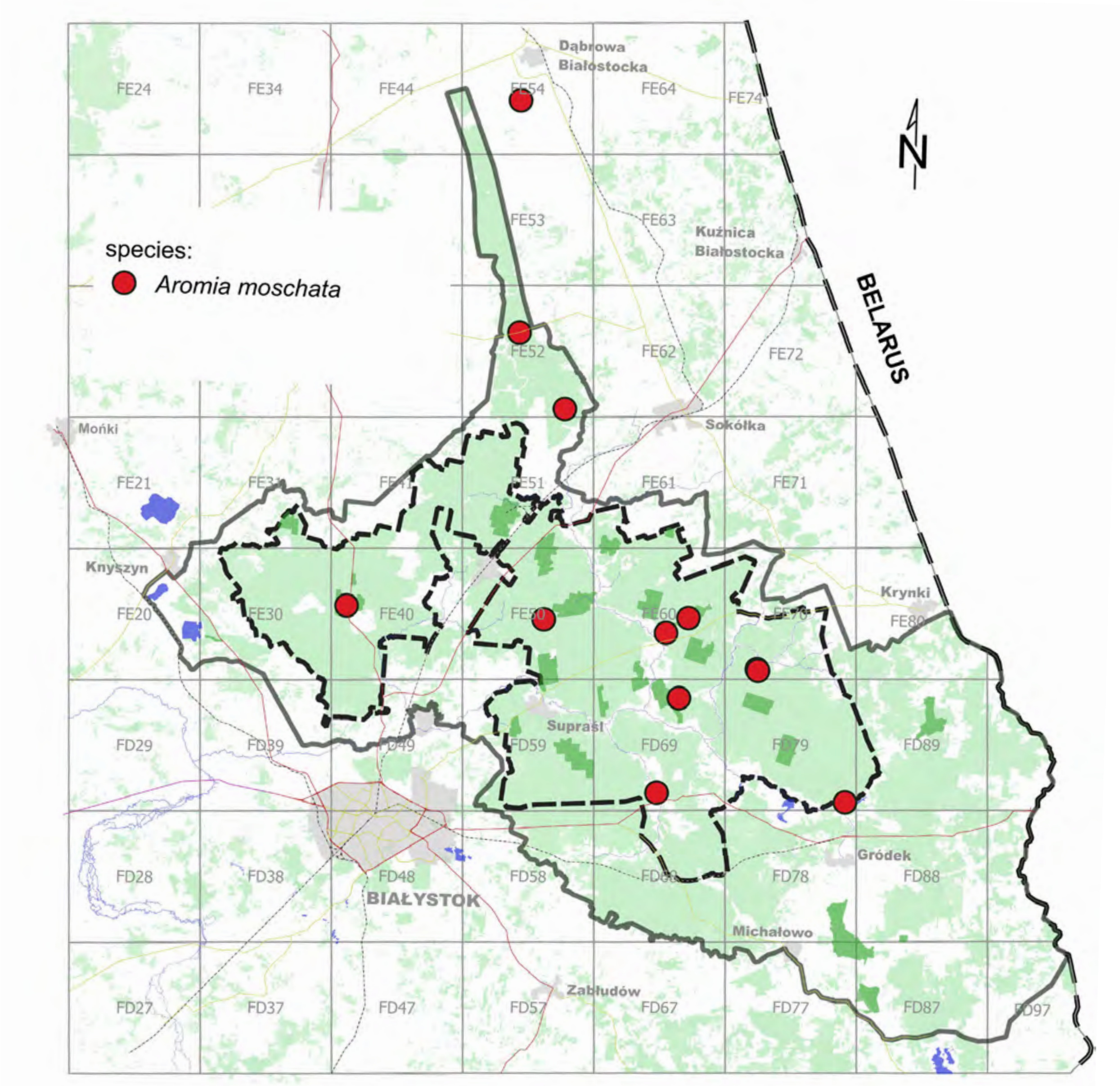


Fig. 504. Localities of *Aromia moschata* (Cerambycidae) in Knyszyńska Forest

Biology and ecology

Aromia moschata is associated with willows *Salix* L., exceptionally with other species of deciduous trees. In Poland, it prefers *Salix caprea* L. It develops in the trunks of living trees. Larvae excavate tunnels initially under the bark and later deep in the wood. The life cycle takes 2-4 years. Adults appear at the end of May and are present until early September, with the greatest intensity of occurrence in July. The beetles feed on the pollen of shrubs and herbaceous plants, the sap of fruits, and sap oozing from tree trunks. The female lays eggs in bark crevices and cracks in the wood, usually in the lower part of the trunk. It inhabits both old and young willows, several cm thick. Several generations of *Aromia moschata* can be found feeding on the same tree (Strojny 1960; Burakowski et al. 1990a; Sama 2002; Gutowski original information).

Notes

The beetle is strikingly colored (metallic green or blue), showy (up to 4 cm long), and emits a pleasant musky odor. Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Callidium aeneum* (De Geer, 1775)** (Fig. 505)

Fig. 505. *Callidium aeneum* (De Geer, 1775) (Cerambycidae) (photo G. Tarwacki)

Material examined (Fig. 506)

Original data: Supraśl Forest District, Woronicza Reserve (FE60), 8.06.2010 – larval galleries on spruce (Plan ochrony... Woronicza 2011); Waliły Forest District, Chomontowszczyzna Reserve (53.17950, 23.61478, FD79), 10.03.2021 – several larval galleries on spruce, leg. & det. J.M. Gutowski; Supraśl Forest District, Międzyrzecze Reserve (53.27494, 23.46475, FE60), 25.03.2021 – larval galleries on spruce, leg. & det. J.M. Gutowski.

Data from the literature: Kopna Góra (FE60), August 1985 (Kubisz & Pawłowski 1995; Marczak et al. 2023d).

Distribution

A species with an Eurasian range, extending to the Far East, Japan, and northeastern China (Danilevsky 2020). It occurs throughout Poland, but there are far fewer localities in the eastern part of the country (Burakowski et al. 1990a). The most recent information comes from Gołuchów and Poznań (Bunalski et al. 2020; Żurawlew & Melke 2018), the Dolina Zwoleńki Nature 2000 area (Miłkowski & Gutowski 2021), and the Western Beskid Mountains (Szafraniec et al. 2021).

Biology and ecology

Larval development takes place mainly in coniferous trees: spruce *Picea* Dietr., fir *Abies* Mill., larch *Larix* Mill., pine *Pinus* L. and juniper *Juniperus* L., less frequently in deciduous trees. Swarming begins around mid-June and continues through July. The larva feeds under the bark, excavating an elongated, winding tunnel that breaches the sapwood. After overwintering, the grown larva burrow into the wood, where it makes a pupal cell (Burakowski et al. 1990a).

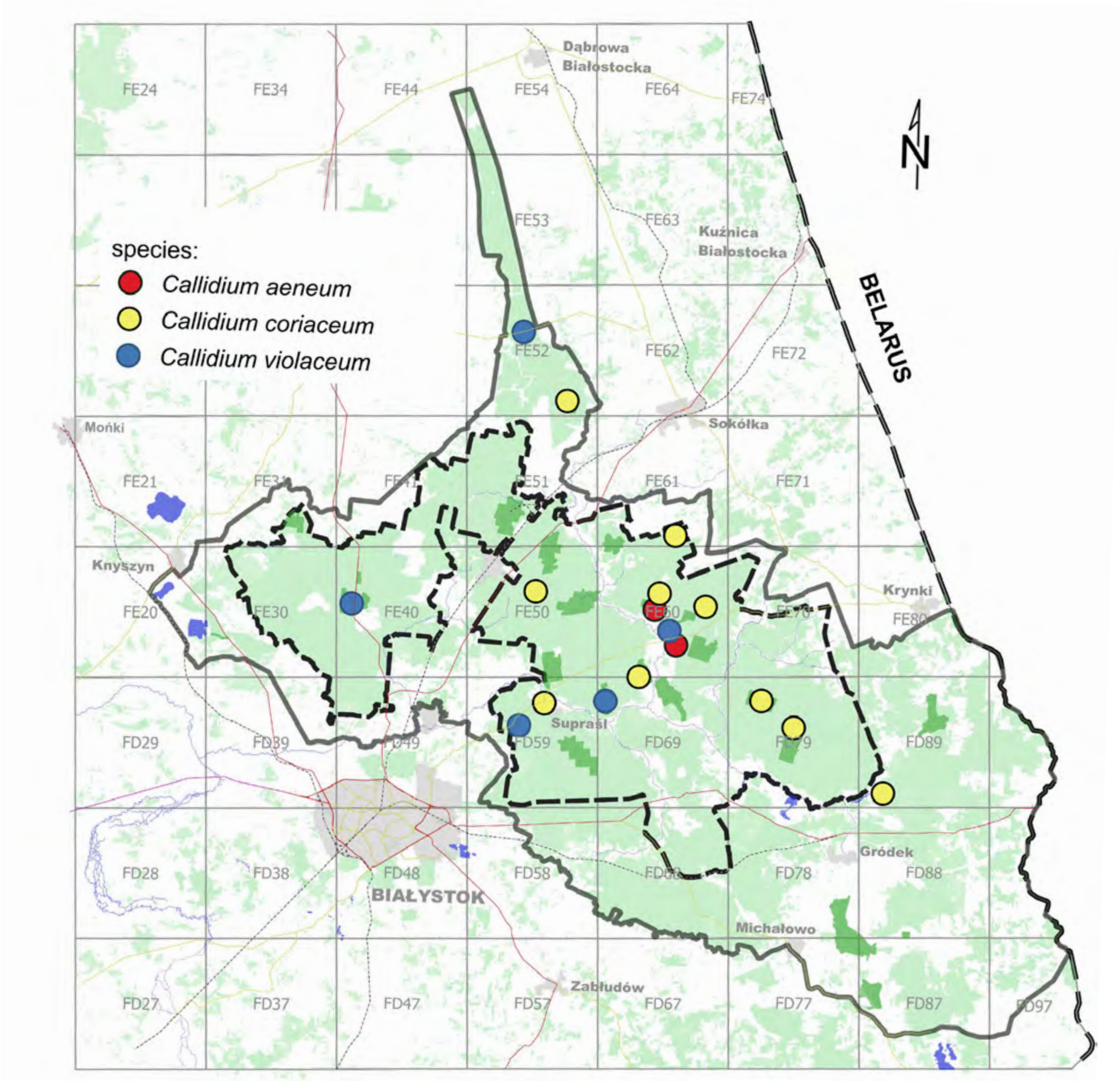


Fig. 506. Localities of *Callidium aeneum*, *C. coriaceum*, and *C. violaceum* (Cerambycidae) in Knyszyńska Forest

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Callidium coriaceum Paykull, 1800 (Fig. 507)

Material examined (Fig. 506)

Original data: Krynki Forest District, Góra Pieszczana Reserve (FD79), 27.07.2016 – 1 ex., IBL-2 trap, leg. K. Komosiński, det. A. Lasoń; Czarna Białostocka Forest District, ad Bukształ (FE50), 6.06.2019 – 1 ex., on a woodpile of spruce, which also served as the larval galleries of this species, leg. & det. J.M. Gutowski; Supraśl Forest District, Stara Dębina Reserve, compartment 18 (FE61), 3.12.2020 – larval galleries on spruce, leg. & det. R. Plewa; Waliły Forest District, Chomontowszczyzna Reserve (53.17950, 23.61478, FD79), 10.03.2021 – 2 larvae, on a dead standing spruce, leg. & det. J.M. Gutowski; Supraśl Forest District, Surażkowo Reserve, compartment 162 (FE60), 1.06.2021 – 1 ex., alder forest, leg. & det. R. Plewa; Czarna Białostocka Forest District, Starodrzew

Szyndzielski Reserve, compartment 198 (53.41579, 23.37298, FE52), 1.06-1.07.2021 – 1 ex., violet Lindgren funnel trap, leg. K. Sućko, det. J.M. Gutowski; Waliły Forest District, ad Piłatowszczyzna, compartment 224 (FD89), 20.08.2021 – 1 ex., cultivated from a spruce collected on 3.11.2020, leg., cult. & det. R. Plewa.

Data from the literature: Supraśl (FD59) (Gutowski et al. 1999; Marczak et al. 2023d).

Fig. 507. *Callidium coriaceum* Paykull, 1800 (Cerambycidae) (photo S. Szafraniec)

Distribution

It is known from Europe, Siberia, northern Mongolia, and northwestern China. In Europe, it is a boreal-mountain species, distributed from Scandinavia to the Alps, and from eastern France to the Urals (Sama 2002). In Poland, it is known from a small number of localities in lowland areas, more often recorded from mountainous regions; it is found infrequently and sporadically (Burakowski et al. 1990a). More recent data on the distribution of this species in Poland are provided by Holly (2016), Gutowski et al. (2020a, 2020b), Łuszczak & Szafraniec (2021).

Biology and ecology

It develops in coniferous trees, mainly spruce. Larvae feed under the bark, and their tunnels heavily disturb the outer layer of wood. The pupal cell is located in the wood. It inhabits weakened and freshly dead or fallen trees. Development takes one to two years. Imagines appear in June and July; they reside on the bark of host plants (Gutowski 1983; Sama 2002).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Callidium violaceum (Fabricius, 1775) (Fig. 508)

Fig. 508. ***Callidium violaceum*** **(Fabricius, 1775) (Cerambycidae)** (photo S. Szafraniec)

Material examined (Fig. 506)

Original data: Supraśl Forest District, Krasne Reserve (FD59), 10.11.2009 – 2 larvae on a lying spruce tree, leg. & det. J.M. Gutowski (Plan ochrony... Krasne 2011); Supraśl Forest District, Krzemienne Góry Reserve (FD69), 26.05.2011 – feeding on spruce, leg. & det. J.M. Gutowski (Plan ochrony... Krzemienne Góry 2011; Kisiel 2012); Knyszyn Forest District, Krzemianka Reserve (FE40), 15.06.2011 – 1 ex., leg. K. Terlecki, det. J.M. Gutowski (Terlecki 2012); Czarna Białostocka Forest District, Szyndziel Forest Subdistrict, compartment 135 (FE52), 24.05.2012 – 1 ex., leg. K. Micun, det. J.M. Gutowski (Micun 2013).

Data from the literature: Kopna Góra, compartment 272 (FE60) (Kubisz & Pawłowski 1995).

Distribution

Known from Europe, Siberia, northern Mongolia, northern China, Korea, Japan, and North America. In Europe, it is widely distributed from Fennoscandia to the Alps and the Balkans (Bulgaria, Romania), from the mountains of central France to the Crimea and the Urals (Sama 2002). It occurs throughout Poland and is a common species (Burakowski et al. 1990a; Gutowski original information).

Biology and ecology

It inhabits mixed and coniferous stands. Its development cycle takes at least two years. Adults can be found from May to July, with the greatest intensity of appearance in June. A polyphagous species, but preferring coniferous trees. Spruces *Picea* Dietr. have mainly been reported as host plants, less frequently firs *Abies* Mill., larches *Larix* Mill., pines *Pinus* L., oaks *Quercus* L., alders *Alnus* Mill. or others. The larva initially drills under the bark of trunks and thick branches strongly imprinting the sapwood with longitudinal and transverse winding, square-shaped tunnels, filling them with fine sawdust. Older larvae, after the first or second overwintering, burrow into the wood, where the pupal cell is located, exceptionally under the bark. Pupation occurs in May–June (Burakowski et al. 1990a; Sama 2002; Gutowski original information).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Chlorophorus varius* (Müller, 1766)** (Fig. 509)

Fig. 509. *Chlorophorus varius* (Müller, 1766) (Cerambycidae) (photo J. Kupryjanowicz)

Material examined (Fig. 510)

Original data: Czarna Białostocka Forest District, Starodrzew Szyndzielski Reserve (FE52), 18.06.2010 – 1 ex., leg. Ł. Radziwon, det. J.M. Gutowski (Plan ochrony... Starodrzew Szyndzielski 2011; Radziwon 2012); Knyszyn Forest District, Krzemianka Reserve (FE40), 20.07.2011 – 1 ex., leg. K. Terlecki, det. J.M. Gutowski (Terlecki 2012).

Data from the literature: Pokośno ad Suchowola (FE44), July 1989 (Kubisz & Pawłowski 1995); Sokołda (FE60), 17.07.2019 – 1 ex. (Marczak et al. 2023d).

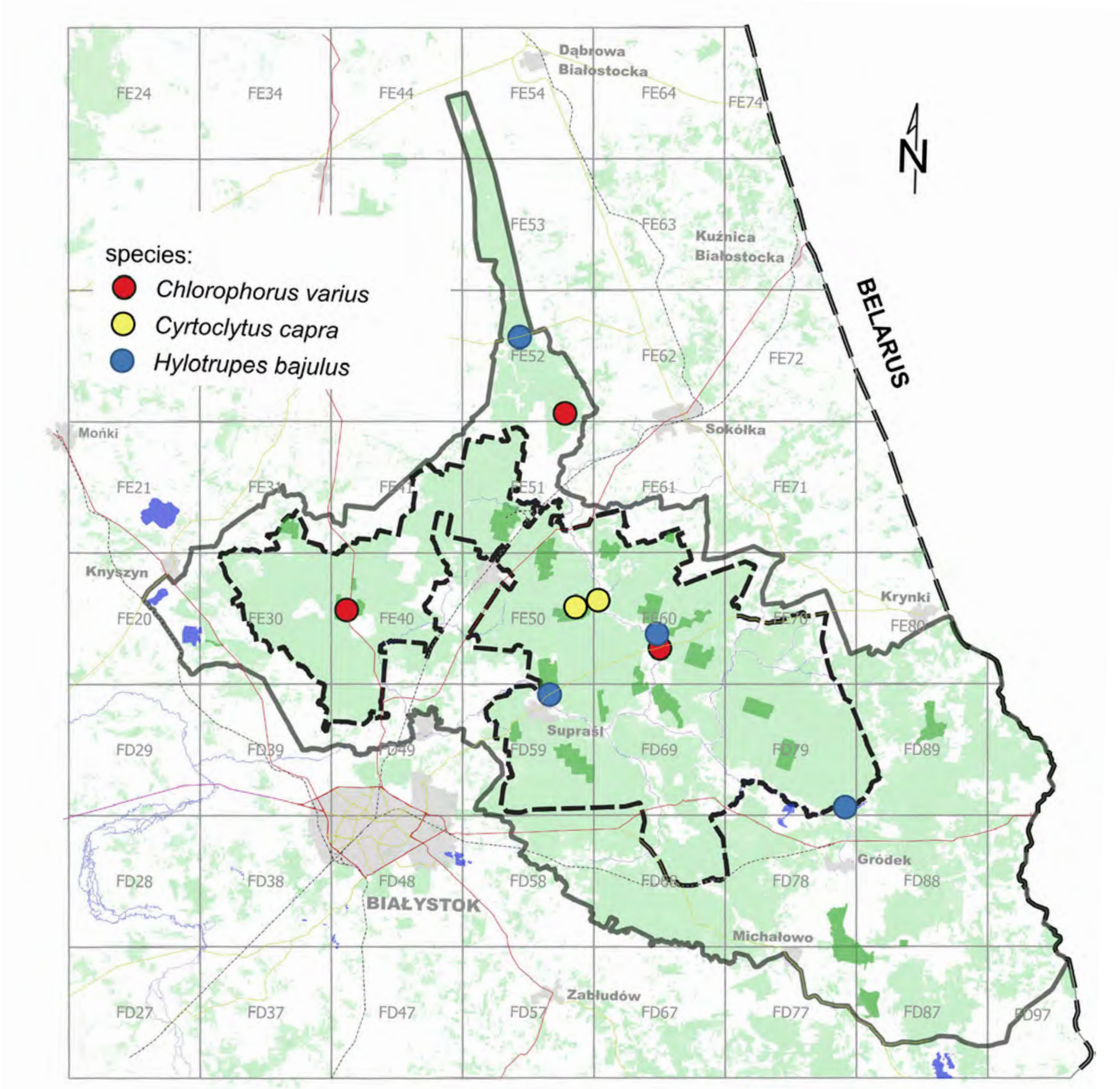


Fig. 510. Localities of *Chlorophorus varius*, *Cyrtoclytus capra*, and *Hylotrupes bajulus* (Cerambycidae) in Knyszyńska Forest

Distribution

Widespread throughout Europe and in several Asian countries: Turkey, Armenia, Azerbaijan, Georgia, Kazakhstan, and Western Siberia (Russia) (Danilevsky 2020). In Poland, it is known from a number of localities (Burakowski et al. 1990a). The most recent data are from Cegłowo (Kozakiewicz 2018), the vicinity of Konin, and Sieraków (Bunalski et al. 2020).

Biology and ecology

Biologically associated with deciduous trees and shrubs. The species is found in warm sites (well sunlit stands, forest edges, thickets). Imagines appear from May to August, but are most numerous in full summer; they visit flowers. Its development cycle usually takes two years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Clytus arietis* (Linnaeus, 1758)** (Fig. 511)

Material examined

Original data: found repeatedly in various KF localities, including the Budzisk (FE50), Jesionowe Góry (FE51), Krzemianka (FE40), Stare Biele (FE60), and Taboły (FE50) reserves.

Data from the literature: Krasny Las (FD59) and Horodnianka (FE50) (Marczak et al. 2023d).

Fig. 511. *Clytus arietis* (Linnaeus, 1758) (Cerambycidae): A – imago, B – pupa in the pupal cell (photo J. Tatur-Dytkowski)

Distribution

Known from all of Europe, additionally Madeira and Turkey (Danilevsky 2020). In Poland, it has been reported from many localities (Burakowski et al. 1990a). Recent data are included in the following works:

Marczak (2020), Bunalski et al. (2020), Tatur-Dytkowski et al. (2020), Buchholz et al. (2021), Miłkowski & Gutowski (2021), Smolis et al. (2023).

Biology and ecology

Larvae of this species feed on many deciduous trees and shrubs. Imagines feed on flower pollen. Its developmental cycle takes from one to three years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Cyrtoclytus capra (Germar, 1823) (Fig. 512)

Fig. 512. ***Cyrtoclytus capra*** **(Germar, 1823) (Cerambycidae)** (photo J. Tatur-Dytkowski)

Material examined (Fig. 510)

Data from the literature: Budzisk Reserve (FE50), 18.06.2019 – 1 ex., on the trunk of a broken maple tree; Dworzysk (FE60), 3.07.2020 – 1 ex. (Marczak et al. 2023d).

Distribution

It is found in Central and Eastern Europe, mainly in the mountains and in the north. In Asia, it ranges through Siberia to Sakhalin and through northern Mongolia, northern China to the Korean Peninsula (Sama 2002). A very rare boreal-mountain species, it is known in Poland from a small number of localities, often historical. It has been reported from the Sudetes and the Carpathian Mountains and foothills (Burakowski et al. 1990a; Gutowski 1995), as well as the Świętokrzyskie Mountains (Bidas 2002). More recently, it has been reported from the Bieszczady Mountains (Kurzawa et al. 2012), Babia Góra National Park (Szafraniec 2020), and the Western Beskid (Łuszczak et al. 2021). The closest localities to KF are in Biebrza National Park (Gutowski et al. 1999) and Białowieża Forest (Gutowski 2001).

Biology and ecology

It mainly develops on maples *Acer* spp., in Poland primarily on *Acer platanoides* L., less frequently on other deciduous tree species. Its developmental cycle takes two years. Imagines visit flowers, feeding on their pollen, and swarm from June to August (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Hylotrupes bajulus (Linnaeus, 1758) (Fig. 513)

Material examined (Fig. 510)

Original data: ad Krynki (FE80), August 1984 – 1 ex., leg. J. Witkowski (collection of M. Nunberg in the Museum and Institute of Zoology, Łomna), det. J.M. Gutowski; village of Woronicze (FE60), 1987 – many feeding sites in the walls of wooden buildings, leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, Szyndziel Forest Subdistrict (FE52), 29.07.2012 – 1 ex., leg. K. Micun, det. J.M. Gutowski (Micun 2014); village of Podsupraśl (FD59), 20.05.2023 – many feeding sites in the walls of a farm building, leg. & det. J.M. Gutowski.

Data from the literature: Piłatowszczyzna (FD79), July 1990 (Kubisz & Pawłowski 1995).

Distribution

Very widely distributed worldwide, known from Europe, Asia, northern Africa, also imported to North America, South Africa, Madagascar, and Japan (Sama 2002). Widely distributed in Poland (Burakowski et al. 1990a). More recent data have been published by, among others: Gutowski et al. 2011, 2012; Górski & Tatur-Dytkowski 2015; Borowski & Slawski 2016; Konopko et al. 2017; Żurawlew & Melke 2018; Szczepański & Herczek 2019; Bunalski et al. 2020; Marczak 2020; Buchholz et al. 2021.

Biology and ecology

A synanthropic species that inhabits residential and commercial buildings made of conifer wood. It causes great damage when occurring in greater numbers (Dominik & Starzyk 2004). It is very rare in natural conditions – in the forest. It should be noted that this species is becoming less important as a pest due to the disappearance of wooden construction in favor of masonry, and to better protection (impregnation) of the raw material used for construction (Gutowski original information).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Leioderes kollari Redtenbacher, 1849 (Fig. 514)

Material examined (Fig. 515)

Data from the literature: Czarna Białostocka Forest District, Budzisk Reserve, compartment 109 (FE50), 8.03.2017 – a dozen feeding sites in a branch of *Acer platanoides* L., oak-hornbeam forest (Tatur-Dytkowski et al. 2017); Budzisk Reserve (FE50), 20.03.2020 – 1 ex. cultivated from a branch of *A. platanoides* (Marczak et al. 2023d).

Distribution

Known from most countries in Europe, and Georgia (Danilevsky 2020). In Poland, it has rarely been reported (Burakowski et al. 1990a), but in recent years new localities have been discovered, mainly in the eastern part of the country (Tatur-Dytkowski et al. 2017).

Fig. 513. *Hylotrupes bajulus* (Linnaeus, 1758) (Cerambycidae): A – imago (photo A. Jadwiszczak)**, B – exit holes in the logs of a farm building in Podsupraśl** (photo J.M. Gutowski)

Biology and ecology

The host plants of the larvae are primarily maples *Acer* spp., less frequently other deciduous tree species. It usually inhabits dying and freshly dead branches and boughs in the lower part of the crowns of old trees. One generation most often takes two years (Gutowski 1988; Tatur-Dytkowski et al. 2017).

Fig. 514. ***Leiodere kollari*** **Redtenbacher, 1849 (Cerambycidae): A – imago** (photo J. Tatur-Dytkowski)**, B – larval galleries on maple branches** (photo J.M. Gutowski)

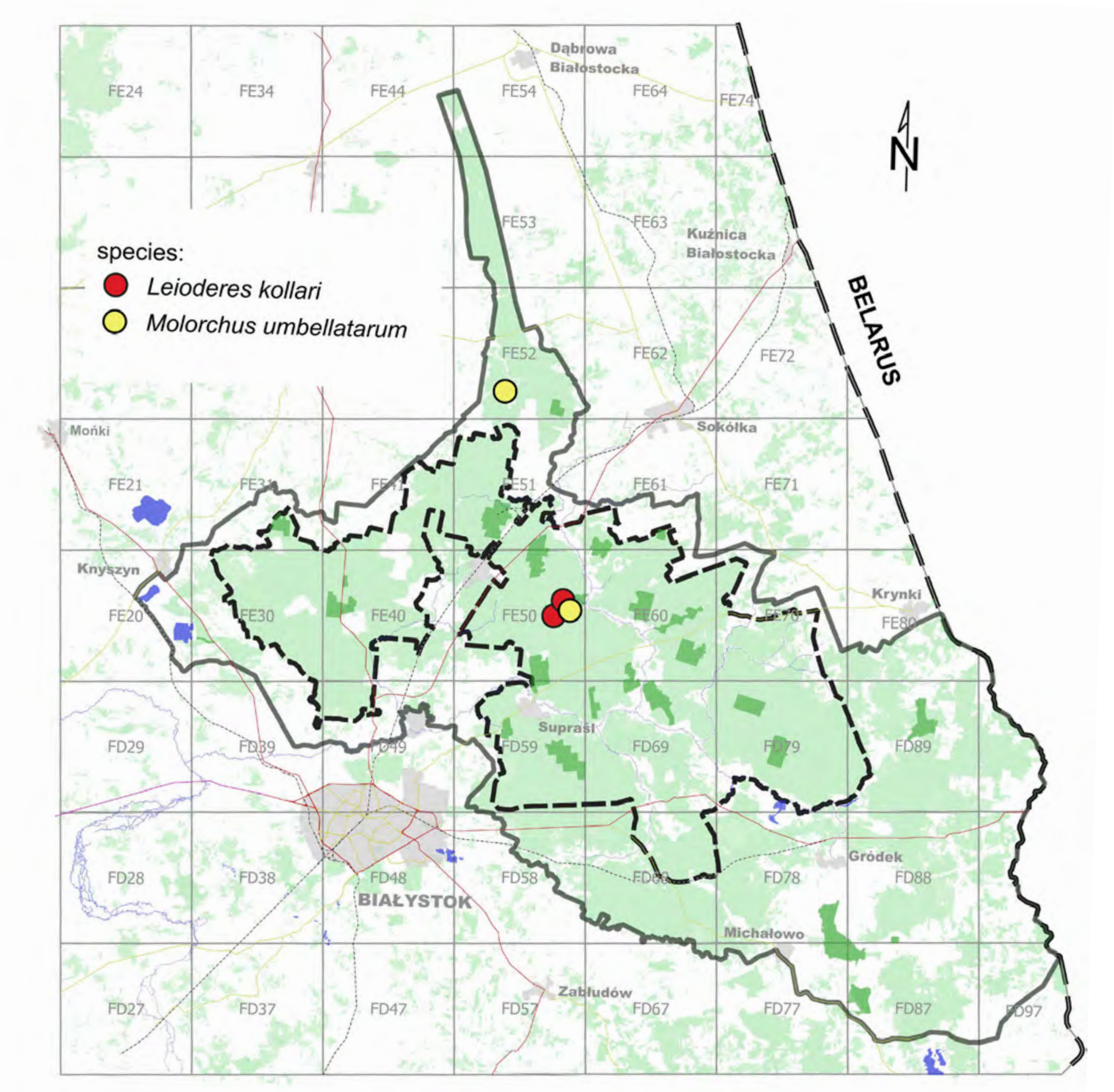


Fig. 515. Localities of *Leioderes kollari* and *Molorchus umbellatarum* (Cerambycidae) in Knyszyńska Forest

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Molorchus minor (Linnaeus, 1758) (Fig. 516)

Material examined

Original data: one of the most common species of the longhorn family in KF.

Data from the literature: Kopna Góra (FE60), August 1985 (Kubisz & Pawłowski 1995); Stara Dębina Reserve (FE61), 15.05.2020 – 1 ex., beating sheet; Międzyrzecze Reserve (FE60), 25.03.2021 – 3 exx., cultivated from *Pinus sylvestris* L. (Marczak et al. 2023d).

Fig. 516. *Molorchus minor* (Linnaeus, 1758) (Cerambycidae) (photo M.W. Kozłowski)

Distribution

It occurs in Europe, Turkey, Iran, the Caucasus, Transcaucasia, Siberia, Mongolia, the Korean Peninsula, northern China, and Japan. Widely distributed in Europe; not found in Spain, local in Italy and the Balkans (Sama 2002). In Poland, it occurs in many localities – it is a common species in coniferous and mixed stands (Burakowski et al. 1990; Gutowski original information).

Biology and ecology

The female lays eggs on branches and thin trunks 2-10 cm in diameter. Spruce trees are preferred as host plants, less often other coniferous trees. Eggs are laid on damaged branches and trunks, weakened or recently broken trees, and felled trees. Larvae excavate oblong, winding tunnels with sharp edges, deeply imprinted in the sapwood; they overwinter under the bark, and in the spring burrow into the wood, where they make a pupal cell in July-August. They pupate in late summer and overwinter again as imago in the pupal cell. The beetles leave the host material and are active from May to July; they readily feed on flower pollen (Burakowski et al. 1990a; Sama 2002).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Molorchus umbellatarum (Schreber, 1759) (Fig. 517)

Material examined (Fig. 515)

Original data: Czarna Białostocka Forest District, Lebiedzin Forest Subdistrict (FE52), 21.07.2004 – 1 ex., leg. M. Bajko, det. R. Plewa.

Data from the literature: Budzisk Reserve (FE50), 1-30.06.2019 – 3 exx., IBL-5 trap on linden (Marczak et al. 2023d).

Distribution

It occurs almost all over Europe, and is otherwise found in Turkey, Armenia, Georgia, Azerbaijan, and Turkmenistan (Danilevsky 2020). In Poland, it is known from many localities, the smallest number of records are from the northeastern part of the country (Burakowski et al. 1990a). The most recent data are from Bunalski et al. (2020), Marczak (2020), and Łuszczak & Szafraniec (2021).

Fig. 517. ***Molorchus umbellatarum*** **(Schreber, 1759) (Cerambycidae)** (photo M. Miłkowski)

Biology and ecology

Larvae develop in the thin branches of various shrubs and deciduous trees. Its developmental cycle takes two years. Imagines feed on flower pollen; they appear from May to July (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Obrium brunneum (Fabricius, 1792) (Fig. 518)

Fig. 518. ***Obrium brunneum*** **(Fabricius, 1792) (Cerambycidae)** (photo G. Niemiec)

Material examined (Fig. 519)

Original data: ad Supraśl (FD59), late June 1990 – 1 ex., leg. L. Sawicki, det. J.M. Gutowski; Czarna Białostocka Forest District, ad. Kumiałka, compartment 144 (FE52), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. & det. R. Plewa; Czarna Białostocka Forest District, ad Czarna Białostocka, compartment 195 (FE41), 05-7.07.2015 – 5 exx.; compartment 208/209 (FE41), 5-28.06.2016 – 1 ex., IBL-2 trap (Borowski et al. 2016); Krynki Forest District, Góra Pieszczana Reserve (FD79), 17.06.2016 – 2 exx., IBL-2 trap, leg. & det. K. Komosiński; Waliły Forest District, Chomontowszczyzna Reserve, compartment 63 (FD79), 1-23.06.2021 – 1 ex., green Lindgren funnel trap, leg. K. Sućko, det. J.M. Gutowski; Krynki Forest District, Kruszyniany (FD89), 23.06.2021 – 1 ex., net sweeping, leg. K. Sućko, det. J.M. Gutowski.

Data from the literature: Krasny Las (FD59), 18.06.2020 – 1 ex. (Marczak et al. 2023d).

Distribution

It is mainly found in Central Europe, reaching the British Isles, Denmark, southern Sweden, and Karelia to the north, the northern Balkans to the south, and the Caucasus, Armenia, and Iran to the east. In Poland, it probably occurs throughout the area, but is more common in the southern zoogeographical regions (Burakowski et al. 1990a; Smolis et al. 2023).

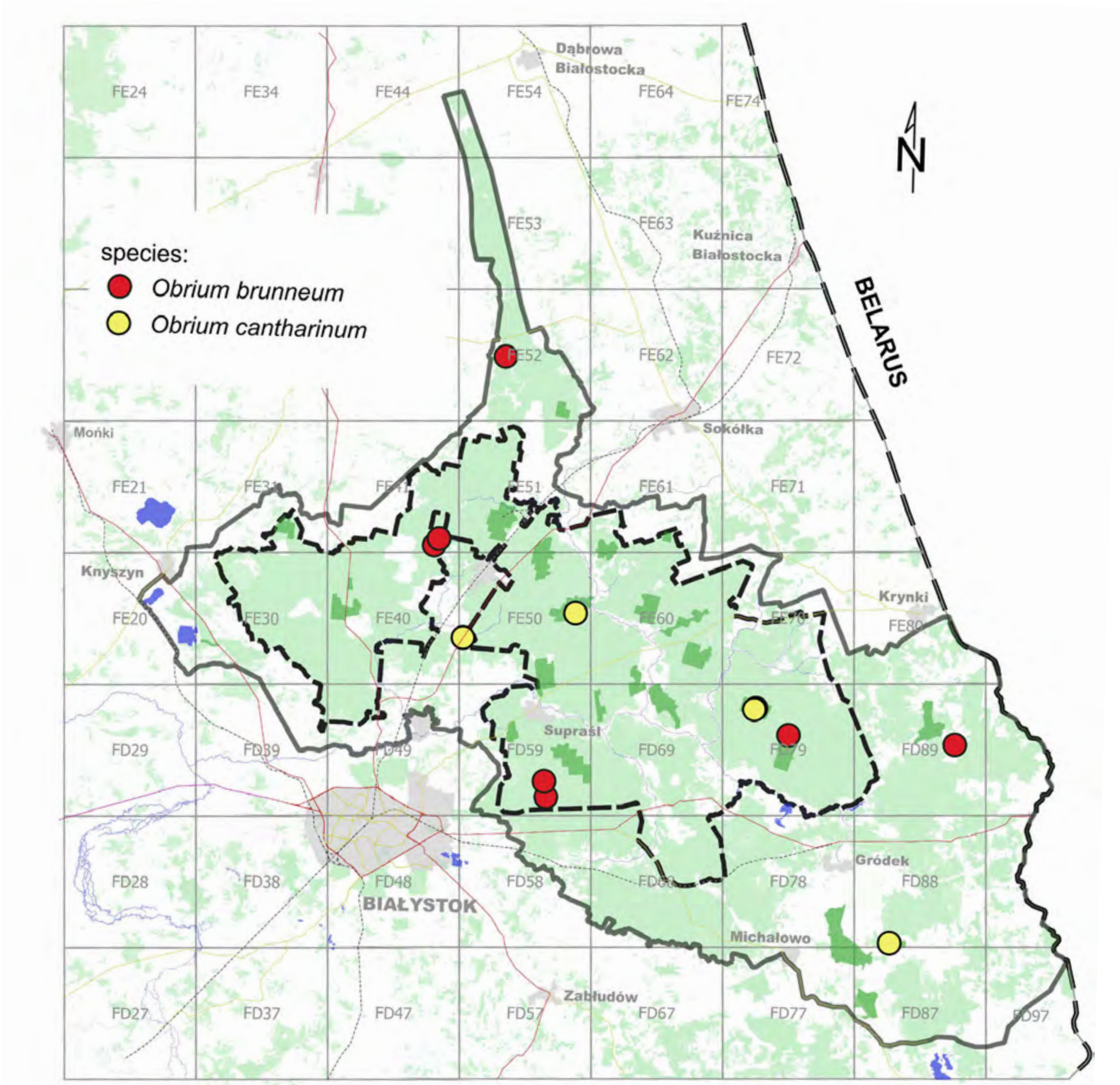


Fig. 519. Localities of *Obrium brunneum* and *O. cantharinum* (Cerambycidae) in Knyszyńska Forest

Biology and ecology

It develops in the thin branches of coniferous trees, especially spruce. Its developmental cycle probably takes two years. Imagines visit flowers in search of pollen, on which they feed (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Obrium cantharinum* (Linnaeus, 1767)** (Fig. 520)

Fig. 520. ***Obrium cantharinum* (Linnaeus, 1767) (Cerambycidae)** (photo G. Niemiec)

Material examined (Fig. 519)

Original data: Krynki Forest District, Góra Pieszczana Reserve, compartment 509 (FD79), 21.10.2012 – over a dozen larvae in a suspended, broken aspen bough, fresh mixed coniferous forest, leg. & det. J.M. Gutowski; Rabinówka Reserve (FD78), 8.10.2021-1.07.2022 – 2 exx., moist oak-hornbeam forest, cultivated from aspen, leg., cult. & det. J.M. Gutowski.

Data from the literature: Budzisk Reserve (FE50), 1-30.06.2019 – 1 ex., IBL-5 trap on aspen; Horodnianka (FD50), 24.06.2021 – 4 exx., on cut aspen (Marczak et al. 2023d).

Distribution

It is found in the central and eastern parts of Europe, northward reaching the southern provinces of Sweden and Finland, and eastward through Siberia reaching Mongolia, also recorded from the Caucasus, Transcaucasia, and the Armenian Highlands. Quite rare in Poland, its localities are concentrated in the southern and southeastern parts of the country (Burakowski et al. 1990a; Starzyk & Partyka 1993; Smolis et al. 2023).

Biology and ecology

Develops on poplars, especially aspen *Populus tremula* L. Imagines visit flowers. One generation takes two to three years (Burakowski et al. 1990a; Starzyk & Partyka 1993).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Phymatodes alni* (Linnaeus, 1767)** (Fig. 521)

Fig. 521. *Phymatodes alni* (Linnaeus, 1767) (Cerambycidae) (photo M. Tomalak)

Material examined (Fig. 522)

Original data: Czarna Białostocka Forest District, Taboły Reserve (FE50), 13.05-3.06.2020 – 10 exx., green Lindgren funnel trap, leg. & det. J.M. Gutowski; Dojlidy Forest District, Krasny Las Forest Subdistrict, compartment 10 (FD59), 27.05.2021 – 1 ex., leg. K. Sućko, det. J.M. Gutowski; Supraśl Forest District, Stara Dębina Reserve, compartment 18 (FE61), 1-23.06.2021 – 1 ex., violet Lindgren funnel trap, leg. K. Sućko, det. J.M. Gutowski; Żednia Forest District, ad Kołodno (FD69), 4.06.2022 – 2 exx., leg & det. J.M. Gutowski.

Data from the literature: Budzisk Reserve (FE50), 1-31.05.2019 – 2 exx., IBL-5 trap on aspen; Stara Dębina Reserve (FE61), 1.06.2021 – 1 ex., beating sheet (Marczak et al. 2023d).

Distribution

A species found almost throughout Europe, except in northern Fennoscandia, extending eastward to the Urals (Burakowski et al. 1990a; Bense 1995). In Poland, it probably occurs throughout the area (Burakowski et al. 1990a). More recent data are from the Wielkopolska-Kujawy Lowland (Bunalski et al. 2020), Kampinos Forest (Marczak 2020), the Zwoleńka Valley Nature 2000 area (Miłkowski & Gutowski 2021), and the Western Beskid Mountains (Szafraniec et al. 2021).

Biology and ecology

Larvae live inside the thin branches (1–7 cm in diameter) of oaks, rarely other species. The development cycle is annual, sometimes two-year. Imagines are active in May and June (Burakowski et al. 1990a).

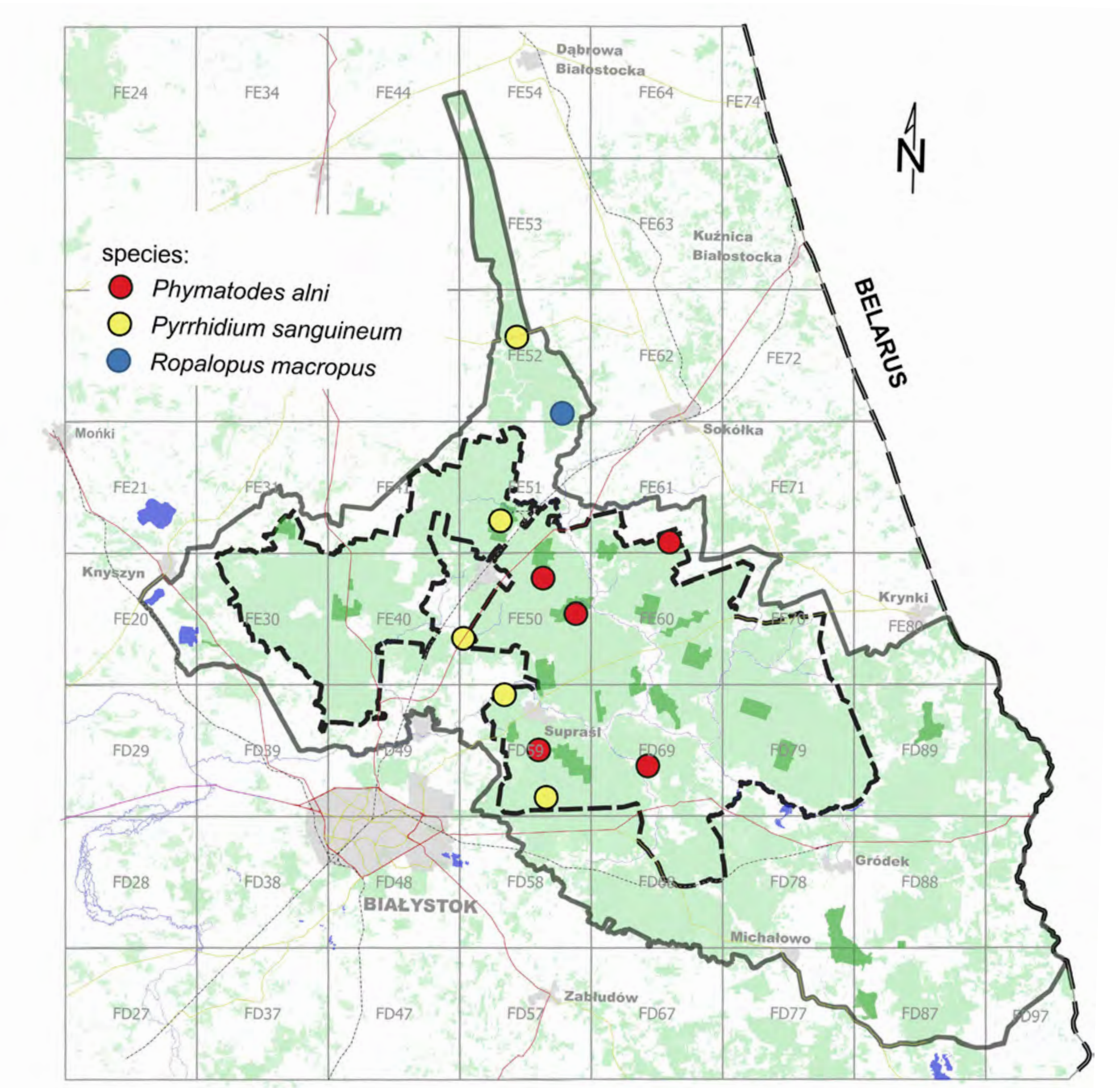


Fig. 522. Localities of *Phymatodes alni*, *Pyrrhidium sanguineum*, and *Ropalopus macropus* (Cerambycidae) in Knyszyńska Forest

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Phymatodes testaceus* (Linnaeus, 1758)** (Fig. 523)

Material examined

Original data: common species in KF, known from the Budzisk (FE50), Krzemienne Góry (FD79), Stara Dębina (FE61), and Taboły (FE50) reserves, among others.

Data from the literature: Horodnianka (FE50), 5.06.2009 – 1 ex., on a cut hornbeam; Budzisk Reserve (FE50), 1-31.05.2019 – 1 ex., 1-30.06.2019 – 1 ex., IBL-5 trap on maple (Marczak et al. 2023d).

Fig. 523. ***Phymatodes testaceus*** **(Linnaeus, 1758) (Cerambycidae)** (photo T. Mokrzycki)

Distribution

A widely distributed species throughout Europe except in the far areas of Fennoscandia. It extends eastward to the Urals, Asia Minor, the Caucasus, Armenia, Iran, and Turkestan. It also occurs in northern Africa, and has been recorded in Japan and North America (Burakowski et al. 1990a; Bense 1995). In Poland, it is known from many localities (Burakowski et al. 1990a). More recent data comes from numerous localities in western Poland (Bunalski et al. 2020, Smolis et al. 2023), the Western Beskid (Łuszczak & Szafraniec 2021), and the Zwoleńka Valley Nature 2000 area (Miłkowski & Gutowski 2021).

Biology and ecology

It usually inhabits oaks, less frequently other species of deciduous trees and shrubs. Its developmental cycle takes two years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Plagionotus arcuatus (Linnaeus, 1758) (Fig. 524)

Material examined

Original data: common species in KF, known from the Budzisk (FE50), Krzemianka (FE40), Starodrzew Szyndzielski (FE52), and Taboły (FE50) reserves, among others.

Data from the literature: Krasny Las (FD59), 8.05.2020 – 4 exx. (Marczak et al. 2023d).

Distribution

It is found throughout Europe except at its northern edges, and is also known in northern Africa (Bense 1995), reaching eastward to the Southern Urals, Asia Minor, the Caucasus, Armenia, northern Iran, and Turkmenistan. In Poland, it is known from many localities (Burakowski et al. 1990a).

Fig. 524. ***Plagionotus arcuatus*** **(Linnaeus, 1758) (Cerambycidae)** (photo T. Mokrzycki)

Biology and ecology

It inhabits deciduous and mixed stands with a high proportion of oak *Quercus* L., which is the main host plant for its larvae. Also known from beech *Fagus* L., hornbeam *Carpinus* L., ash *Fraxinus* L., linden *Tilia* L., and willow *Salix* L. Its developmental cycle takes one year (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Considered a pest by the Polish forestry industry (Dominik & Starzyk 2004).

Plagionotus detritus (Linnaeus, 1758) (Fig. 525)

Material examined

Original data: species common in KF wherever oak trees are found.

Data from the literature: reported by Gutowski (1995) from UTM grid square FD68 (without specifying localities); this information is repeated by Marczak et al. (2023d).

Distribution

Europe, Caucasus, Transcaucasia, Middle East, northern Iran. Occurs sporadically in the southern part of northern Europe; widely distributed in Western, Central and Eastern Europe from France to Russia, and east to the southern Urals; local in Southern Europe from northern Portugal, central Spain, and Italy to Greece, Crimea, and the European part of Kazakhstan (Sama 2002). It is quite rare in Poland, especially in the north of the country, but sometimes numerous locally, e.g., in Białowieża Forest (Burakowski et al. 1990a; Gutowski 1995; Gutowski original information).

Fig. 525. ***Plagionotus detritus*** **(LINNAEUS, 1758) (Cerambycidae)** (photo T. Mokrzycki)

Biology and ecology

Develops mainly on oaks *Quercus* L., less frequently on other deciduous trees, such as birch *Betula* L. and chestnut *Castanea* MILL. Inhabits dying and freshly dead trees or fallen trunks and thick branches. Larvae feed under the bark and their tunnels are heavily drilled in the wood. They pupate in a pupal cell hollowed out deep in the wood. The development cycle takes two years. Imagines can be found from June to August on host material (SAMA 2002; GUTOWSKI original information).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (CÁLIX et al. 2018).

Considered a pest by the Polish forestry industry (DOMINIK & STARZYK 2004).

Pyrrhidium sanguineum (LINNAEUS, 1758) (Fig. 526)

Material examined (Fig. 522)

Original data: Czarna Białostocka Forest District, Szyndziel Forest Subdistrict, compartment 119 (FE52), 28.04.2012 – 1 ex., leg. K. Micun, det. J.M. Gutowski (MICUN 2013); Supraśl Forest District, Pólko, compartment 214 (FD59), 15.02.2019 – 1 ex., leg. A. Kisiel, det. J.M. Gutowski.

Data from the literature: Krasny Las (FD59), 8.05.2020 – 4 exx., on felled spruce; Horodnianka (FE50), 10.05.2019 – 1 ex., on felled oak; Jesionowe Góry Reserve (FE51), 1-31.05.2020 – 3 exx., IBL-5 trap on ash (MARCZAK et al. 2023d).

Distribution

Known from most of Europe, in addition to Algeria and Tunisia in North Africa, and in several Asian countries: Turkey, Syria, Iran, the United Arab Emirates, Azerbaijan, and Georgia (DANILEVSKY 2020). In Poland, it was quite rare until recently (BURAKOWSKI et al. 1990a), as increasing numbers of reports are being made from different parts of the country (BUNALSKI et al. 2020; MARCZAK 2020; TATUR-DYTKOWSKI et al. 2020; BUCHHOLZ et al. 2021; MIŁKOWSKI & GUTOWSKI 2021; SZAFRANIEC et al. 2021; SMOLIS et al. 2023).

Fig. 526. *Pyrrhidium sanguineum* (Linnaeus, 1758)(Cerambycidae) – copulating pair (photo P. Niemiec)

Biology and ecology

It mainly inhabits oaks *Quercus* L., less frequently beech *Fagus* L., hornbeam *Carpinus* L., elm *Ulmus* L., hazel *Corylus* L., and fruit trees. Imagines appear in April and occur until June, mainly on wood and never on flowers. Its developmental cycle takes two years, but is sometimes shortened to one year (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Ropalopus macropus (Germar, 1824) (Fig. 527)

Material examined (Fig. 522)

Original data: Czarna Białostocka Forest District, Starodrzew Szyndzielski Reserve (FE52), 13.07.2010 – 2 exx., leg. Ł. Radziwon, det. J.M. Gutowski (Plan ochrony... Starodrzew Szyndzielski 2011; Radziwon 2012).

Data from the literature: Budzisk Reserve (FE50), 3.06.2019 – 3 exx., on felled oaks (Marczak et al. 2023d).

Distribution

It is mainly found in southeastern Europe, Asia Minor, the Caucasus, and northern Iran, and has also been reported from a small number of localities in Central Europe and southern Sweden (Burakowski et al. 1990a). Also found in the United Arab Emirates (Danilevsky 2020). In Poland, known from many localities, recently reported by, among others: Ceryngier & Marczak (2016), Plewa et al. (2017), Szczepański & Szczepański (2019), Marczak (2020), Buchholz et al. (2021).

Biology and ecology

It inhabits deciduous and mixed forests, thickets, gardens, parks, and woodlots. Development takes place in the thin trunks and branches of oak *Quercus* L., linden *Tilia* L., elm *Ulmus* L., willow *Salix* L., hawthorn *Crataegus* L., chestnut *Castanea* Mill., blackthorn plum *Prunus spinosa* L., and fruit trees. Swarming begins in May and lasts until August, with the greatest intensity of emergence in July. Its developmental cycle takes one to two years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Fig. 527. ***Ropalopus macropus*** **(Germar, 1824) (Cerambycidae)** (photo G. Tarwacki)

Xylotrechus antilope **(Schönherr, 1817)** (Fig. 528)

Fig. 528. ***Xylotrechus antilope*** **(Schönherr, 1817) (Cerambycidae)** (photo T. Mokrzycki)

Material examined (Fig. 529)

Original data: Czarna Białostocka Forest District, ad Budzisk Reserve (FE50), 6-29.06.2019, violet Lindgren funnel trap, compartment 110l – 7 exx., compartment 110d – 15 exx., green Lindgren funnel trap, compartment 110d – 8 exx., leg. & det. J. M. Gutowski; 7-29.06.2019 – 67 exx., green Lindgren funnel trap with bait, leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, Taboły Reserve, compartment 74/75 (FE50), 4.06-9.07.2020 – 2 exx., green Lindgren funnel trap, leg. & det. J.M. Gutowski; Szaciły ad Knyszyn (FE30), 23.06.2021 – several exx., on oak logs, leg. & det. J.M. Gutowski.

Data from the literature: Budzisk Forest Subdistrict (FE50), 3.06.2019 – 1 ex., on felled oaks (Marczak et al. 2023d).

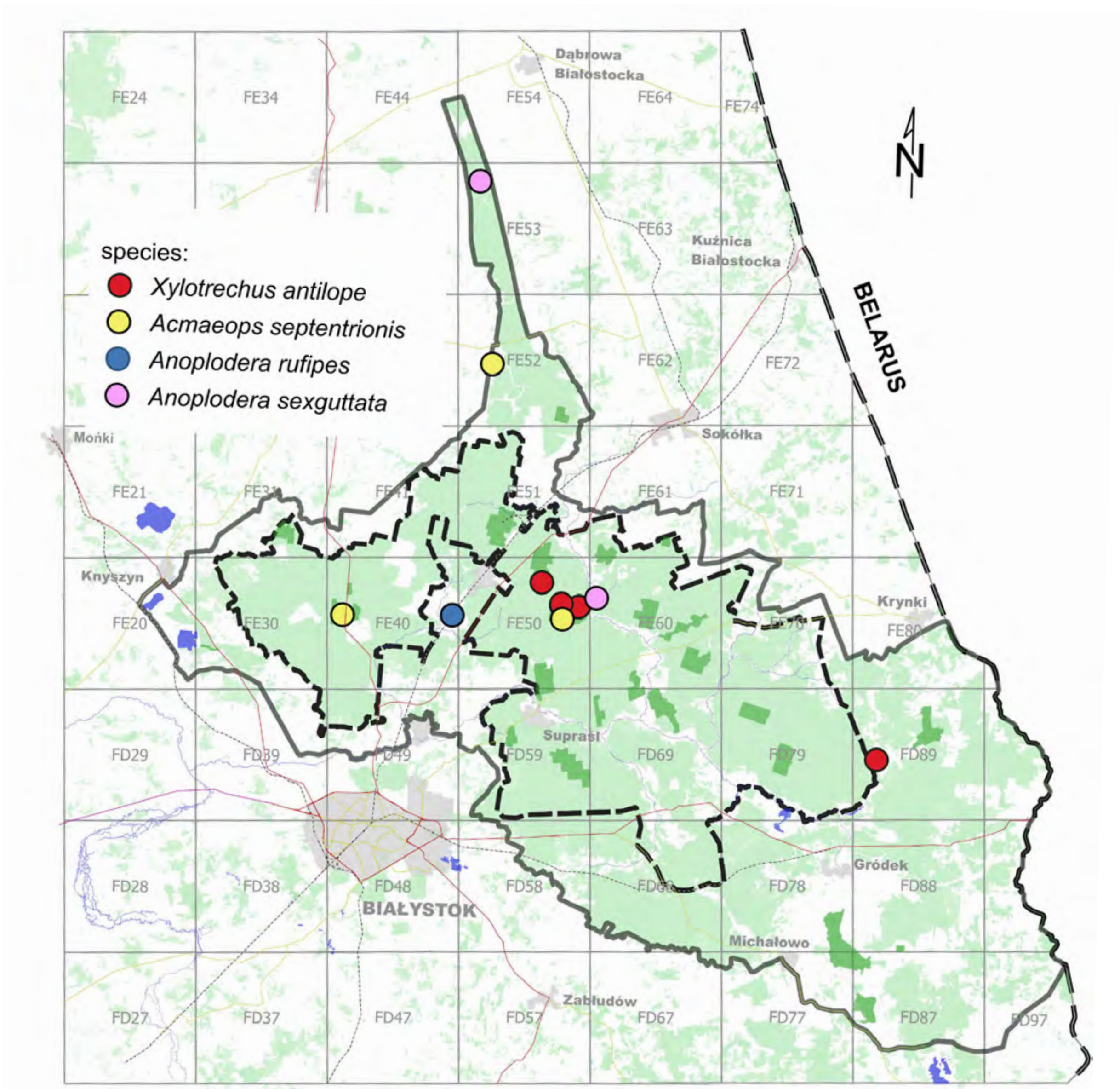


Fig. 529. Localities of *Xylotrechus antilope*, *Acmaeops septentrionis*, *Anoplodera rufipes*, and *A. sexguttata* (Cerambycidae) in Knyszyńska Forest

Distribution

Known from almost all of Europe except the British Isles and central and northern Fennoscandia (Bense 1995), reaching eastward to the Southern Urals, the Caucasus, Armenia, northern Iran, and Turkmenistan

(Burakowski et al. 1990a). In Poland, it is known from many localities. Recent information is provided, among others, in the following publications: Żurawlew & Melke (2018), Bunalski et al. (2020), Buchholz et al. (2021), Miłkowski & Gutowski (2021).

Biology and ecology

Larvae feed under the bark and in the wood of oaks *Quercus* L. Thin trunks and withering branches are occupied, mainly in tree crowns. Adults appear in June and are found until mid-August. Its development cycle takes two years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Xylotrechus rusticus (Linnaeus, 1758) (Fig. 530)

Fig. 530. ***Xylotrechus rusticus*** **(Linnaeus, 1758) (Cerambycidae): A – imago** (photo K. Sućko)**, B – larval galleries on a lying aspen** (photo J.M. Gutowski)

Material examined

Original data: species common in KF in deciduous and mixed stands. Known, among others, from the Budzisk (FE50), Chomontowszczyzna (FD79), Jałówka (FD59), Jesionowe Góry (FE51), Kozłowy Ług (FE61), Krzemienne Góry (FD69), Las Cieliczański (FD59), Międzyrzecze (FE60), Rabinówka (FD78), Szyndzielski Starodrzew (FE52), Surażkowo (FE60), and Woronicza (FE60) reserves.

Data from the literature: Kopna Góra (FE60), August 1986 (Kubisz & Pawłowski 1995); Krasny Las (FD59), 18.06.2020 – 1 ex., on felled birch trees; Podsupraśl (FD59), 8.06.1996 – 1 ex.; Budzisk Reserve (FE50), 1-30.06.2019 – 1 ex., IBL-5 trap on aspen (Marczak et al. 2023d).

Distribution

Europe, northern Africa (Morocco), Turkey, Transcaucasia, northern Iran, Central Asia, northern Asia as far as Japan. Widely distributed over most of Europe from the Iberian Plateau to Scandinavia, the northern Urals, and European Kazakhstan (Sama 2002). In Poland, it probably occurs throughout the area except in the higher mountains, but has not yet been reported from some zoogeographical regions (Burakowski et al. 1990a). Relatively fewer localities have been recorded in the western part of the country.

Biology and ecology

Ecologically associated with a variety of deciduous tree species, most frequently developing on poplars *Populus* L., followed by birches *Betula* L. and willows *Salix* L. Larvae feed initially under the bark and later in the wood, where they also form a pupal cell. In old poplars, the pupal cell can sometimes be located under the bark or even in the bark. The development cycle takes two years. Imagines can be found on host plants from June to August (Burakowski et al. 1990a; Sama 2002).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Sometimes considered a pest by the forestry industry.

Acmaeops septentrionis (Thomson, 1866) (Fig. 531)

Fig. 531. ***Acmaeops septentrionis*** **(Thomson, 1866) (Cerambycidae)** (photo S. Szafraniec)

Material examined (Fig. 529)

Original data: Krzemianka Reserve (FE40), 19.05.2023 – 1 ex., leg. & det. M. Sosnowski.

Data from the literature: Kumiałka ad Janów (FE52), 5.04.2008 – 1 ex., larva under the bark of Norway spruce *Picea abies* (L.) Karst. (Plewa 2010); Budzisk Reserve (FE50), 1-31.07.2019 – 1 ex., IBL-5 trap (Marczak et al. 2023d).

Distribution

An Eurasian species (Danilevsky 2020). In Europe, considered a boreal-mountain species. Relatively rare in Poland. Distribution of the species in question mainly overlaps with the natural range of Norway spruce *P. abies*, as well as with places of its island occurrence (Plewa 2010). Recent information from Poland about this species is from Upper Silesia (Chrul et al. 2013), the Mazovian Lowland (Górski & Tatur-Dytkowski 2015), the Małopolska Upland (Borowski & Slawski 2016), and the Kraków-Wieluń Upland (Wiśniowski & Baran 2016).

Biology and ecology

In Poland, it primarily inhabits Norway spruce with medium- and thicker-sized trunks. The choice of inhabited dead trees is determined by closely adhering bark. To lay their eggs, the females choose the lower parts of the trunks along with their buttresses. The beetles swarm from the second half of May to July. The mobility of the larvae is noteworthy, it can move very efficiently with the help of three pairs of legs. *A. septentrionis* is classified as a facultative pyrophile (Plewa 2010).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Alosterna tabacicolor (De Geer, 1775) (Fig. 532)

Fig. 532. *Alosterna tabacicolor* (De Geer, 1775) (Cerambycidae) – copulating pair (photo J. Kupryjanowicz)

Material examined

Original data: observed in many localities in both managed forests and protected reserves, including the Budzisk (FE50), Chomontowszczyzna (FD79), Jesionowe Góry (FE51), Karczmisko (FE40), Krasne (FD59), Krzemianka (FE40), Kulikówka (FE30), Las Cieliczański (FD59), Stara Dębina (FE61), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), and Woronicza (FE60) reserves.

Distribution

A widely distributed species throughout Europe and Asia (Danilevsky 2020). Common throughout Poland (Burakowski et al. 1990a). The most recent information on this species comes from Lower Silesia (Szczepański & Herczek 2019), the Mazovian Lowland (Marczak 2020), the Masurian Lake District (Gutowski et al. 2020a), the Świętokrzyskie Mountains (Buchholz et al. 2021), and the Wielkopolska-Kujawy Lowland (Bunalski et al. 2022).

Biology and ecology

Larval development takes place in various deciduous tree species: maples *Acer* L., common hornbeam *Carpinus betulus* L., oak *Quercus* L., willow *Salix* L., elm *Ulmus* L., black alder *Alnus glutinosa* (L.) Gaertn., European ash *Fraxinus excelsior* L., and even in horse chestnut *Aesculus hippocastanum* L. Swarming begins in June and continues until the end of July. Larvae feed in two ways. Those that begin feeding in fungus-infected wood burrow into its harder sections after a while. On the other hand, larvae feeding under the bark make square-like tunnels without disturbing the sapwood. The species prefers shady places (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Anastrangalia dubia reyi (Heyden, 1889) (Fig. 533)

Fig. 533. *Anastrangalia dubia reyi* (Heyden, 1889) – female (lower) and *Stictoleptura maculicornis* (De Geer, 1775) (higher) (Cerambycidae) (photo J.M. Gutowski)

Material examined

Original data: known from many localities in KF, including the Bahno w Borkach (FD69), Chomontowszczyzna (FD79), Góra Pieszczana (FD79), Krasne (FD59), Krzemianka (FE40), Las Cieliczański (FD59), Stare Biele (FE60) and Woronicza (FE60) reserves.

Data from the literature: (FE40, FE50) (Gutowski 1995); Dojlidy Forest District, ad Grabówka, compartment 93C (FD59), 8.07.2008 – 2 exx., IBL-2 trap (Plewa et al. 2014); Supraśl Forest District, ad Podsupraśl (FD59), 3.07.1994 – 1 ex. (Marczak et al. 2023d).

Distribution

A boreal-mountain species, although in recent years increasingly more localities have been recorded in the lowlands of central Poland (Danilevsky 2020). It is relatively rare in Poland. The latest information on this species comes from the Mazovian Lowland (Górski & Tatur-Dytkowski 2015; Marczak 2020).

Biology and ecology

Larval development is associated with the deadwood of coniferous trees. Adults appear in June and are found until August. They feed on the flower pollen of many species of shrubs and herbaceous plants (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Anoplodera rufipes **(Schaller, 1783)** (Fig. 534)

Fig. 534. ***Anoplodera rufipes*** **(Schaller, 1783) (Cerambycidae)** (photo J. Tatur-Dytkowski)

Material examined (Fig. 529)

Data from the literature: Ruda Rzeczka (FE40), 30.05.2019 – 1 ex. (Marczak et al. 2023d).

Distribution

The species is distributed over almost all of Europe and western Asia (Danilevsky 2020). In Poland, it is rarely found. The most recent information on this species comes from the Mazovian Lowland (Górski & Tatur-Dytkowski 2015), Lower Silesia (Szczepański & Herczek 2019), and the Wielkopolska-Kujawy Lowland (Bunalski et al. 2022).

Biology and ecology

It occurs mainly in forest complexes with a high proportion of deciduous species. Larval development takes place in dead fragments of deciduous tree branches directly in contact with living tree tissues (Sama 2002). Adults visit the flowers of various species of deciduous shrubs and herbaceous plants (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Anoplodera sexguttata (Fabricius, 1775) (Fig. 535)

Fig. 535. ***Anoplodera sexguttata*** **(Fabricius, 1775) (Cerambycidae)** (photo J. Kupryjanowicz)

Material examined (Fig. 529)

Original data: Dąbrowa ad Suchodolina (FE54), 15-16.07.2009 – 1 ex., leg. & det. R. Plewa.
Data from the literature: Dworzysk (FE60), 14.06.2020 – 1 ex. (Marczak et al. 2023d).

Distribution

The species occurs throughout Europe, western Asia, and Algeria (Danilevsky 2020). In Poland, it is not very often found. The most recent information on this species comes from the Western Beskid (Kajtoch et al. 2019), Upper Silesia (Szczepański & Herczek 2019), Lower Silesia (Smolis et al. 2023), the Pomeranian Lake District, and the Wielkopolska-Kujawy Lowland (Bunalski et al. 2022).

Biology and ecology

It occurs in sunlit or semi-shaded deciduous stands. Adults appear in May and are active until July. They visit the flowers of various species of shrubs and herbaceous plants. Larvae develop in the rotten wood of branches or trunks of oak, beech, hornbeam or alder (Burakowski et al. 1990a; Sama 2002).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Carilia virginea **(Linnaeus, 1758)** (Fig. 536)

Fig. 536. ***Carilia virginea*** **(Linnaeus, 1758) (Cerambycidae)** (photo J. Tatur-Dytkowski)

Material examined (Fig. 537)

Original data: ad Kopna Góra (FE60), 1988 – 2 exx., collection of the Kopna Góra Forest Protection Station, det. J.M. Gutowski.

Data from the literature: Dworzysk (FE60), 14.06.2020 – 1 ex. (Marczak et al. 2023d).

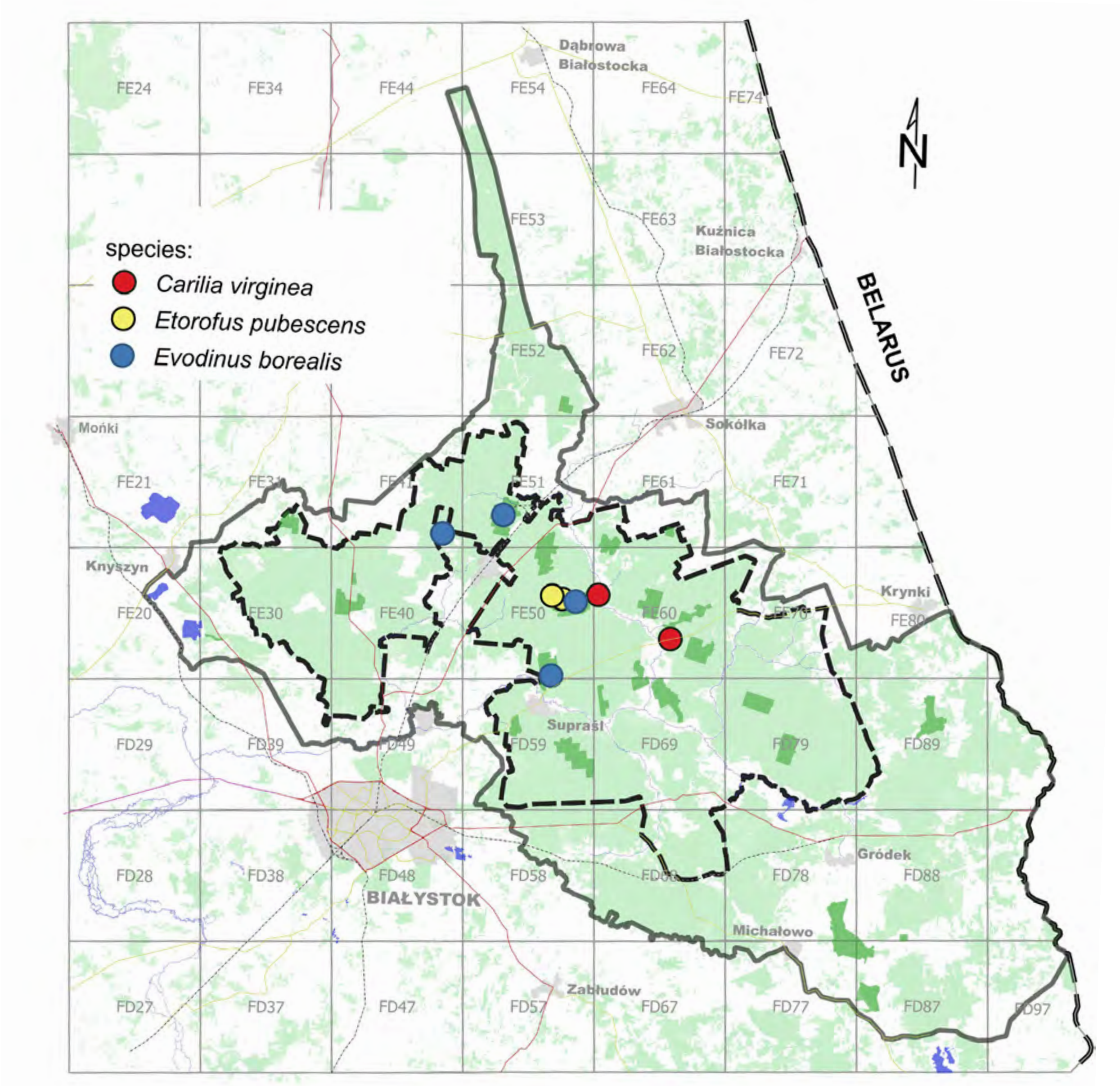


Fig. 537. Localities of *Carilia virginea*, *Etorofus pubescens*, and *Evodinus borealis* (Cerambycidae) in Knyszyńska Forest

Distribution

The species is found in many countries of Europe and the western part of Asia (Danilevsky 2020). Very rarely found in northeastern Poland, more often in the foothills and mountains in the south. The most recent information on this species is from Lower and Upper Silesia (Szczepański & Herczek 2019), and the Western Sudetes (Bunalski et al. 2022).

Biology and ecology

The bionomy of this species has been well studied (Starzyk 1971). Adults appear from mid-May and are found until the end of August. Ecologically associated with spruce, which is the main host plant for its larvae. Imagines are found on the flowers of many species of herbaceous plants and deciduous shrubs, most often at forest edges or in mid-forest clearings.

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Dinoptera collaris* (Linnaeus, 1758)** (Fig. 538)

Fig. 538. *Dinoptera collaris* (Linnaeus, 1758) (Cerambycidae) (photo A. Jadwiszczak)

Material examined

Original data: common species in KF, known from many localities, including the Bahno w Borkach (FD69), Budzisk (FE50), Chomontowszczyzna (FD79), Góra Pieszczana (FD79), Jesionowe Góry (FE51), Krasne (FD59), Krzemianka (FE41), Kulikówka (FE30), Las Cieliczański (FD59), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), Taboły (FE50), Wielki Las (FE31), and Woronicza (FE60) reserves.

Data from the literature: Budzisk Reserve (FE60), 11.06.1995 – 1 ex.; Surażkowo (FD69), 11.06.1995 – 1 ex.; Krasny Las (FD59), 18.06.2020 – 5 exx.; Horodnianka (FE50), 8.06.2021 – 5 exx. (Marczak et al. 2023d).

Distribution

Common and widely distributed throughout Europe and partly in Asia (Danilevsky 2020). In Poland, it occurs almost throughout the entire country (Burakowski et al. 1990a).

Biology and ecology

It is found in deciduous and mixed forests. Adults appear in May and live until August. The appearance of imagines intensifies in June. The beetles feed on the flower pollen of hawthorn, dogwood, wild lilac, viburnum, raspberry, plum, and plants in the Apiaceae and Asteraceae families. Larvae feed in and under the bark of withered, thin branches or snags on living or dying deciduous trees, mainly poplars and aspens, less often oaks and pears. In the first year, they overwinter under the bark, and in the second year, in August-September, they fall out through an opening in the bark into the soil, where they overwinter in a pupal cell that they make (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Etorofus pubescens (Fabricius, 1787) (Fig. 539)

Fig. 539. ***Etorofus pubescens* (Fabricius, 1787) (Cerambycidae)** (photo T. Mokrzycki)

Material examined (Fig. 537)

Original data: Złota Wieś (now Czarna Białostocka Forest District) (FE50), 14.07.1981, compartment 111/125 – 3 exx., compartment 112/126 – 1 ex., fresh mixed coniferous forest/mixed deciduous forest, leg. & det. J.M. Gutowski.

Data from the literature: UTM grid square: FE50, without specifying the information (Gutowski 1995).

Distribution

Found mainly in many European countries and the Asian part of Turkey (Danilevsky 2020). Rare in Poland, known from over a dozen scattered localities (Burakowski et al. 1990a). The most recent information on this species is from Białowieża Forest (Plewa 2008; Kolasa et al. 2018; Kajtoch et al. 2019; Gutowski et al. 2020b).

Biology and ecology

This species is most often found in dense forest complexes. The most numerous population of this species is currently in Białowieża Forest. Adults appear in late May and early June, and single individuals can still be observed in August. Ecologically associated with dying conifers, mainly pine (Sama 2002). Adults visit the flowers of various species of shrubs and herbaceous plants (Burakowski et al. 1990a). *E. pubescens* is classified as a facultatively pyrophilic species.

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Evodinus borealis (Gyllenhal, 1827) (Fig. 540)

Fig. 540. ***Evodinus borealis*** **(Gyllenhal, 1827) (Cerambycidae)** (photo J. Tatur-Dytkowski)

Material examined (Fig. 537)

Original data: Budzisk Reserve (FE50), 17.06.2006 – 1 ex., Moericke trap, leg. J. Sawoniewicz, det. M. Łuszczak; Jesionowe Góry Reserve (FE51), 23.06.2002 – 3 exx., Moericke trap under an overhanging fallen spruce, leg. J. Sawoniewicz, det. M. Łuszczak; Supraśl Forest District, Jałówka Reserve (FE50), 20.05.2023 – 1 ex., mixed forest, leg. & det. M. Miłkowski.

Data from the literature: Czarna Białostocka Forest District, Czarna Wieś Forest Subdistrict, compartment 195 (FE41), 13.05-7.07.2015 – 1 ex., IBL-2 trap (Plewa & Borowski 2016); Budzisk Reserve (FE50), 14.05.2020 – 2 exx. (Marczak et al. 2023d).

Distribution

The species reaches the western limit of its natural range in eastern Poland. It is known mainly from the eastern part of Europe and Asia (Danilevsky 2020). In addition to Knyszyńska Forest, it has been reported from three other forest complexes, i.e., Białowieża, Augustów, and Borecka Forests (Gutowski & Karaś 1991). Everywhere rare outside of Białowieża Forest. The most recent information about this species is from KF (Plewa & Borowski 2016; Marczak et al. 2023d). Recently, it has been generally mentioned from northeastern Poland (Tamutis & Alekseev 2020).

Biology and ecology

It inhabits coniferous and mixed forests with a high proportion of spruce, which is the main host plant for its larvae. In spring, the adults visit the flowers of *Anemone nemorosa* L. (Ranunculaceae), and later in the growing season, they fly to other plant species, preferring flowers with white petals. In Białowieża Forest, adults have been found feeding on the yellow flowers of *Taraxacum officinale* F.H. Wigg. (Asteraceae) (Plewa 2008). The development of young larvae occurs under the bark of dead lying branches or in the trunks of fallen trees. In autumn, older larvae chew a hole in the bark after the first or second overwintering and drop out onto the soil to establish a pupal cell. Its developmental cycle takes two years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in both the *European Red List of Saproxylic Beetles* (Cálix et al. 2018) as well as in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). *E. borealis* is classified as a relict of the primeval forest *sensu stricto* (Eckelt et al. 2018).

***Grammoptera abdominalis* (Stephens, 1831)** (Fig. 541)

Fig. 541. *Grammoptera abdominalis* (Stephens, 1831) (Cerambycidae) (photo G. Tarwacki)

Material examined (Fig. 542)

Original data: Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 110 (FE50), 6-29.06.2019 – 1 ex., violet Lindgren funnel trap, leg. & det. J.M. Gutowski.

Data from the literature: Poczopek (FE70), 19.05.2019 – 1 ex. (Marczak et al. 2023d).

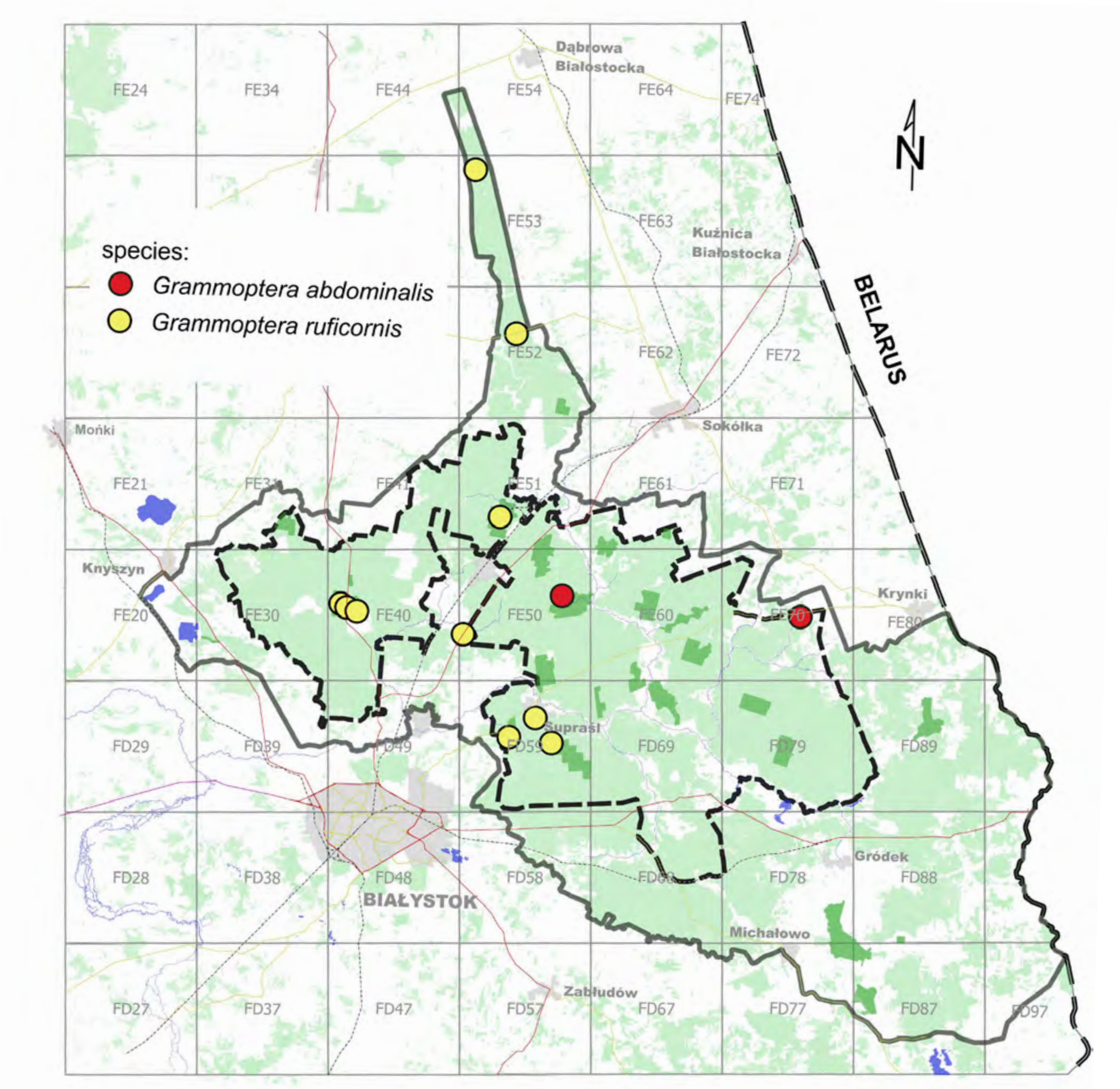


Fig. 542. Localities of *Grammoptera abdominalis* and *G. ruficornis* (Cerambycidae) in Knyszyńska Forest

Distribution

The species' range is mainly in Europe and a small number of countries in Asia (Danilevsky 2020). Due to the fact that the imagines live in treetops, it is not very often encountered. It was reported most frequently from the central and southern parts of the country. The most recent data on this species are from the Małopolska Upland (Plewa et al. 2017), Lower and Upper Silesia (Szczepański & Herczek 2019), and the Wielkopolska-Kujawy Lowland (Bunalski et al. 2022).

Biology and ecology

Ecologically associated with the deadwood of deciduous tree species, mainly oak. Larvae develop under the bark and in the wood of thin dying branches in tree crowns. They feed on the mycelium of *Vuilleminia comedens* (Nees) Maire, 1902 (Starzyk 1999). Adults appear in late April and live until mid-June. On sunny days, they conduct supplementary feeding mostly on hawthorn flowers. Its developmental cycle takes one year (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Grammoptera ruficornis (Fabricius, 1781) (Fig. 543)

Fig. 543. ***Grammoptera ruficornis*** **(Fabricius, 1781) (Cerambycidae)** (photo G. Tarwacki)

Material examined (Fig. 542)

Original data: Knyszyn Forest District, planned Krzemianka Reserve, 2.07.1982: compartment 215/Rybniki village land, riparian/alder forest, 1 ex., compartment 216/217, alder forest, 1 ex., compartment 217, fresh mixed coniferous forest, 2 exx.; Jesionowe Góry Reserve (FE51), 23.06.2002 – 1 ex., leg. J. Sawoniewicz, det. M. Łuszczak; Czarna Białostocka Forest District, Sławno Forest Subdistrict, (53.5772, 23.2850, FE63), 3.06.2020 – several exx., leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, compartment 109 (53.46995, 23.32022, FE52), 3.06.2020 – 1 ex., bog in an oak-hornbeam forest, leg. & det. J.M. Gutowski; ad Supraśl (FD59), 20-21.05.2023 – 1 ex., leg. & det. B. Pacuk; Dojlidy Forest District, Krasny Las Forest Subdistrict, compartment 8 (FD59), 2.06.2021 – 2 exx., leg. & det. R. Plewa; Supraśl Forest District, Krasne Reserve (FD59), 2010 – several exx., leg. & det. J.M. Gutowski & K. Sućko.

Data from the literature: Horodnianka (FE50), 5.05-5.06.2020 – 1 ex., IBL-5 trap on ash (Marczak et al. 2023d).

Distribution

Dispersed in many countries of Europe and the Asian part of Turkey (Danilevsky 2020). In Poland, it is the most common of all representatives of the genus. Reported from almost the entire area of Poland

(Burakowski et al. 1990a). The most recent information on this species comes from Lower and Upper Silesia (Szczepański & Herczek 2019), the Mazovian Lowland (Marczak 2020), the Świętokrzyskie Mountains (Buchholz et al. 2021), the Pomeranian Lake District, and the Wielkopolska-Kujawy Lowland (Bunalski et al. 2022).

Biology and ecology

Ecologically associated with the wood of many deciduous tree and shrub species (Starzyk 1999). It has also been reported on the Norway spruce *Picea abies* (L.) Karst. (Miłkowski & Piątek 2014). Its developmental cycle takes one year. The female lays eggs on thin, recently dead or damaged branches. Larvae feed under the bark, chewing the phloem, pulp, and surface layer of the sapwood. After overwintering, in April or May, the larvae pupate in a cradle made in the outer layer of the sapwood (Burakowski et al. 1990a). The hatched adults appear in May and are present until June, most often on the flowers of various species of shrubs and herbaceous plants.

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Judolia sexmaculata (Linnaeus, 1758) (Fig. 544)

Fig. 544. *Judolia sexmaculata* (Linnaeus, 1758) (Cerambycidae) (photo J. Kupryjanowicz)

Material examined (Fig. 545)

Original data: Budzisk Reserve, compartment 108 (FE50), 16.05.1982 – 4 exx., on *Polygonum bistorta* L. flowers, boreal meadow, leg. & det. J.M. Gutowski; Budzisk Reserve, compartment 7 (FE50), 16.05.1982 – 1 ex., on *P. bistorta* flowers, boreal meadow, leg. & det. J.M. Gutowski (Plan ochrony... Budzisk 2011); Jesionowe Góry

Reserve (FE51) (Plan ochrony... Jesionowe Góry 2011); Krzemianka Reserve, compartment 216/217 (FE40), 2.07.1982 – 2 exx., on *Aegopodium podagraria* L. flowers, leg. & det. J.M. Gutowski; Krzemianka Reserve, compartment 215 (FE40), 2.07.1982 – 1 ex., on *A. podagraria* flowers, fresh mixed coniferous forest, leg. & det. J.M. Gutowski; Krzemianka Reserve, compartment 217 (FE40), 8.07.1987 – 1 ex., on *A. podagraria* flowers, leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, near Jesionowe Góry Reserve (FE51), 19.07.2004 – 1 ex., leg. J. Sawoniewicz, det. M. Łuszczak; Krzemianka Reserve (FE40), 2010, leg. K. Terlecki (Terlecki 2012); Stare Biele Reserve, ad Kopna Góra (FE60), 3.06-9.07.2020 – 2 exx., green Lindgren funnel trap, leg. & det. J.M. Gutowski; Chomontowszczyzna Reserve, compartment 63 (FD79), 1-23.06.2021 – 1 ex., green Lindgren funnel trap, leg. K. Sućko, det. J.M. Gutowski.

Data from the literature: Knyszyn Forest District, Wielki Las Reserve, compartment 8 (FE31), 8.06-13.07.2008 – 1 ex., IBL-2 trap (Plewa et al. 2014); Horodnianka (FE50), 5.05-5.06.2020 – 1 ex. (Marczak et al. 2023e).

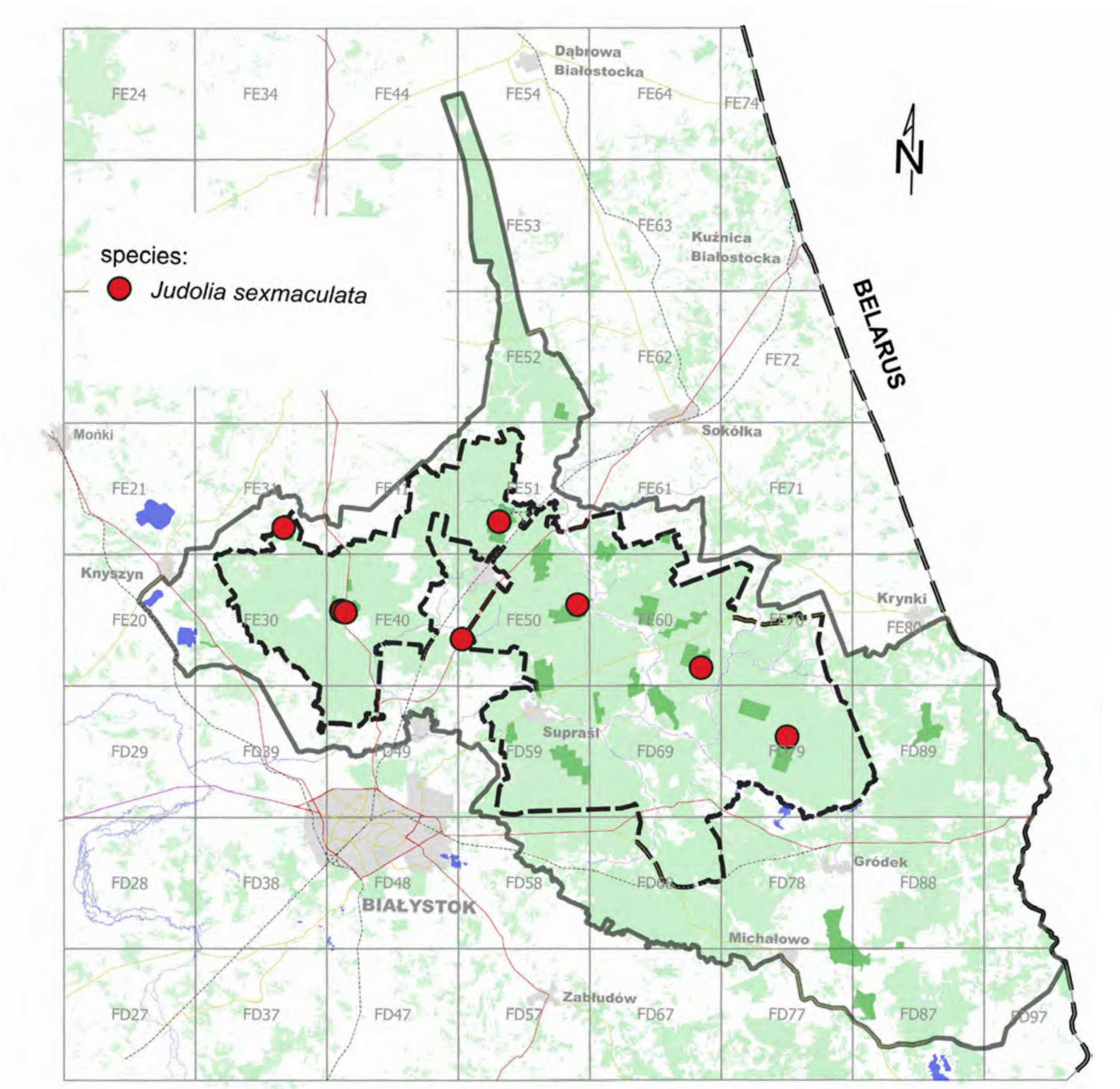


Fig. 545. Localities of *Judolia sexmaculata* (Cerambycidae) in Knyszyńska Forest

Distribution

A boreal-mountain species, distributed in many European countries and Kazakhstan (Danilevsky 2020).

Rarely found in Poland. Known from scattered localities within the natural range of the Norway spruce *P. abies*. Recent information from Poland on this species is from Białowieża Forest (Plewa 2008), the Tatra Mountains (Grodzki 2020), and the Sudetes Mountains (Plewa & Borowski 2016; Bunalski et al. 2022; Smolis et al. 2023).

Biology and ecology

Ecologically associated with dead coniferous trees, i.e., spruce, pine, fir or larch, but has also been reported from the trees of deciduous species (Starzyk 1999; Sama 2002). Larval development takes place in the ground zone of trunks, or in the roots of dead trees and stumps. The appearance of adults lasts from May to August. Imagines conduct supplementary feeding on the pollen of herbaceous plants and various species of deciduous shrubs.

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Leptura aethiops Poda von Neuhaus, 1761 (Fig. 546)

Fig. 546. *Leptura aethiops* Poda von Neuhaus, 1761 (Cerambycidae) (photo T. Mokrzycki)

Material examined (Fig. 547)

Original data: Dojlidy Forest District, ad Krasny Las (FD59), 18.06.2020 – 1 ex., leg. & det. R. Królik; Stare Biele Reserve (FE60), 3.06-9.07.2020 – 1 ex., green Lindgren funnel trap, leg. & det. J.M. Gutowski; Żednia Forest District, Pieszczaniki Forest Subdistrict (FD69), 4.06.2022 – several exx., leg. & det. J.M. Gutowski; Woronicza Reserve (FE60), leg. J.M. Gutowski, det. K. Sućko (Plan ochrony... Woronicza 2011); Woronicza Reserve (FE60), 9.06.2022 – 2 exx., leg. M.A. Mazur, det. J.M. Gutowski.

Data from the literature: Budzisk Reserve (FE50), 11.06.1995 – 2 exx.; Dojlidy Forest District, ad Krasny Las (FD59), 6.06.1996 – 1 ex. (Marczak et al. 2023d).

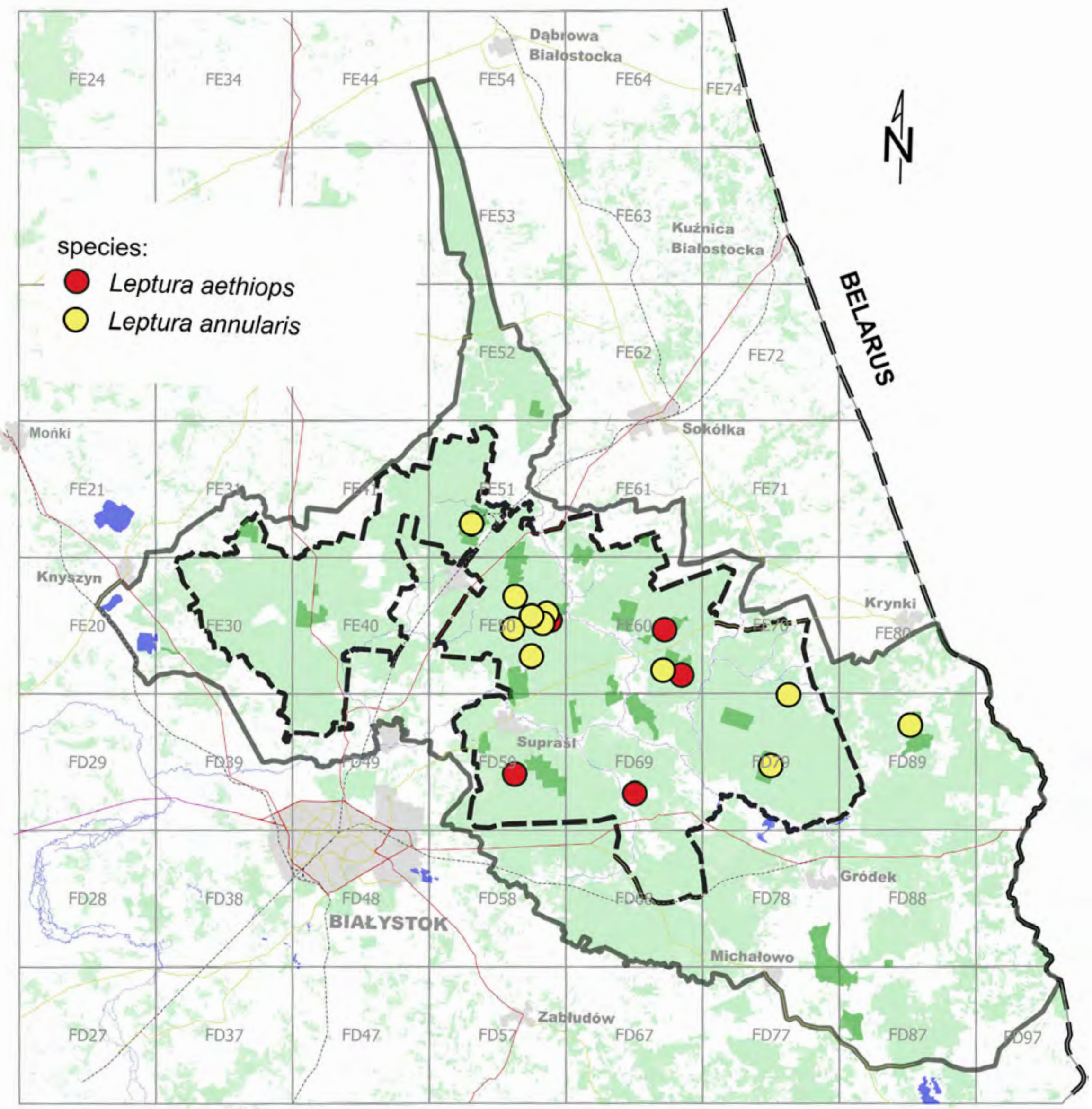


Fig. 547. Localities of *Leptura aethiops* and *L. annularis* (Cerambycidae) in Knyszyńska Forest

Distribution

The species' range includes many countries of Europe and Asia (Danilevsky 2020). In Poland, it is not very often found, although reported from many scattered localities. Recent information about this species in Poland is from Lower and Upper Silesia (Szczepański & Herczek 2019), the Masurian Lake District (Gutowski et al. 2020a), and the Wielkopolska-Kujawy Lowland (Bunalski et al. 2022).

Biology and ecology

Ecologically associated with the deadwood of deciduous tree species, although it has also been reported from pine (Starzyk 1999). Larval development takes place in dead, decayed wood, mainly in the root zone. Young larvae burrow tunnels initially under the bark, then in the wood. After overwintering, older larvae make a pupal cell at the end of a tunnel in May/June. The young beetle generation leaves the pupal cell in June or July. Adults conduct supplementary feeding on the pollen of herbaceous plants and various species of deciduous shrubs (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Leptura annularis* Fabricius, 1801** (Fig. 548)

Fig. 548. *Leptura annularis* Fabricius, 1801 (Cerambycidae) (photo J. Tatur-Dytkowski)

Material examined (Fig. 547)

Original data: Czarna Białostocka Forest District, Złota Wieś, compartment 168 (FE50), 15.07.1981 – 1 ex., on *Chaerophyllum aromaticum* L. flowers, mixed forest, leg. & det. J.M. Gutowski; Złota Wieś, compartment 109/124 (FE50), 16.06.1982 – 1 ex., on *Valeriana officinalis* L. flowers, riparian forest, leg. & det. J.M. Gutowski; Złota Wieś, compartment 140/124 (FE50), 16.06.1982 – 1 ex., on *Aegopodium podagraria* L. flowers, oak-hornbeam forest, leg. & det. J.M. Gutowski; Budzisk Reserve, compartment 7 (FE50), 16.06.1982 – 1 ex., on herbaceous vegetation, leg. & det. J.M. Gutowski (Plan ochrony... Budzisk 2011); ad Budzisk Reserve (FE50), 19.07.2004 – 2 exx., leg. & det. M. Łuszczak; Budzisk Reserve (FE50), 22.07.2006 – 1 ex., Moericke trap, leg. J. Sawoniewicz, det. M. Łuszczak; Jesionowe Góry Reserve (FE51) ad Czarna Białostocka, 19.07.2004 – 1 ex., leg. & det. M. Łuszczak (Plan ochrony... Jesionowe Góry 2011); Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 100 (FE50), 16.07. 2016 – 1 ex., leg. I. Sztabkowska, det. T. Mokrzycki; Nietupa Reserve, ad Ciumicze (FD89), 21.05.2021 – 2 exx. (larvae), in a scrap heap of black alder *Alnus glutinosa* (L.) Gaertn., leg. & det. J.M. Gutowski; ad Borsukowizna (53.21925, 23.64062, FE70), 23.06.2021 – 2 exx., leg. & det. J.M. Gutowski; Chomontowszczyzna Reserve, compartment 85 (FD79), 23.07.2021 – 1 ex., leg. & det. J.M. Gutowski; Supraśl Forest District, Zacisze ad Jałówka (FE50), 17.06.2022 – 1 ex., leg. & det. A. Byk.

Data from the literature: reported from the Budzisk (FE50) and Jesionowe Góry (FE51) reserves (Marczak et al. 2023d).

Distribution

The species is distributed from Japan, through China to France and Italy (Danilevsky 2020). In Poland, it is not very often found, reported mainly from the eastern part of the country. Recent information from Poland about this species is from the Eastern Beskid (Buchholz & Melke 2018), as well as Lower and Upper Silesia (Szczepański & Herczek 2019; Szczepański & Szczepański 2019; Smolis et al. 2023).

Biology and ecology

It is found in forest environments characterized by a relatively high moisture content of the habitat. Larvae develop initially under the bark and then in the deadwood of deciduous tree species, sometimes also coniferous trees (Starzyk 1999). The species inhabits old stumps, deadwood lying on the ground, already starting to decay. Adults appear in June and conduct supplementary feeding on the pollen of herbaceous plants and various species of deciduous shrubs. Its full developmental cycle takes two or three years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Leptura quadrifasciata Linnaeus, 1758 (Fig. 549)

Fig. 549. ***Leptura quadrifasciata*** **Linnaeus, 1758 (Cerambycidae)** (photo A. Lasoń)

Material examined

Original data: common species in KF, known from many localities, including the Budzisk (FE50), Chomontowszczyzna (FD79), Jałówka (FD59), Jesionowe Góry (FE51), Kozłowy Ług (FE61), Krzemianka (FE40), Las Cieliczański (FD59), Międzyrzecze (FE60), Rabinówka (FD78), Stare Biele (FE60), Szyndzielski Starodrzew (FE52), Surażkowo (FE60), Taboły (FE50), and Woronicza (FE60) reserves.

Data from the literature: Kopna Góra (FE60) (Kubisz & Pawłowski 1995); Stare Biele Reserve (FE60), 1-31.05.2019 – 2 exx., 1-30.06.2019 – 8 exx., 1-31.07.2020 – 1 ex.; Ogrodniczki (FD59), 7.06.1991 – 1 ex.; Krynki Forest District, Kruszyniany (FD89), 15.08.1993 – 1 ex.; Horodnianka (FE50), 1-31.07.2020 – 2 exx., 1-30.08.2020 – 2 exx., 1.09-4.11.2020 – 1 ex., 15.07.2021 – 1 ex.; Czarna Białostocka (FE50), 1.07-23.08.2021 – 1 ex. (Marczak et al. 2023d).

Distribution

Widely distributed throughout the Palaearctic region (Danilevsky 2020). Common in Poland, reported from all over the country. Recent information from Poland on this species is from the Baltic Coast, the Pomeranian Lake District, the Wielkopolska-Kujawy Lowland, the Trzebnickie Hills, and the Western Beskid (Bunalski et al. 2022).

Biology and ecology

Ecologically associated with the deadwood of many deciduous trees, less commonly coniferous species (Starzyk 1999). Larvae development takes place in moist wood in the initial stage of decomposition. The species prefers the lower parts of tree trunks, stumps or deadwood. Adults appear in June and are found until August. They feed on the flower pollen of herbaceous plants and various species of deciduous shrubs. Its full developmental cycle takes three years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Leptura thoracica Creutzer, 1799 (Fig. 550)

Material examined (Fig. 551)

Original data: Czarna Białostocka Forest District, ad Budzisk, compartment 110 (FE50), 6-29.06.2019 – 2 exx., violet Lindgren funnel trap, leg. & det. J.M. Gutowski.

Data from the literature: Supraśl Forest District, Budzisk Reserve (FE60), 1-31.07.2019 – 2 exx. (Marczak et al. 2023d).

Fig. 550. ***Leptura thoracica*** **Creutzer, 1799 (Cerambycidae): A – female** (photo J. Tatur-Dytkowski)**, B – male, C – exit hole from an aspen larval gallery** (photo J.M. Gutowski)

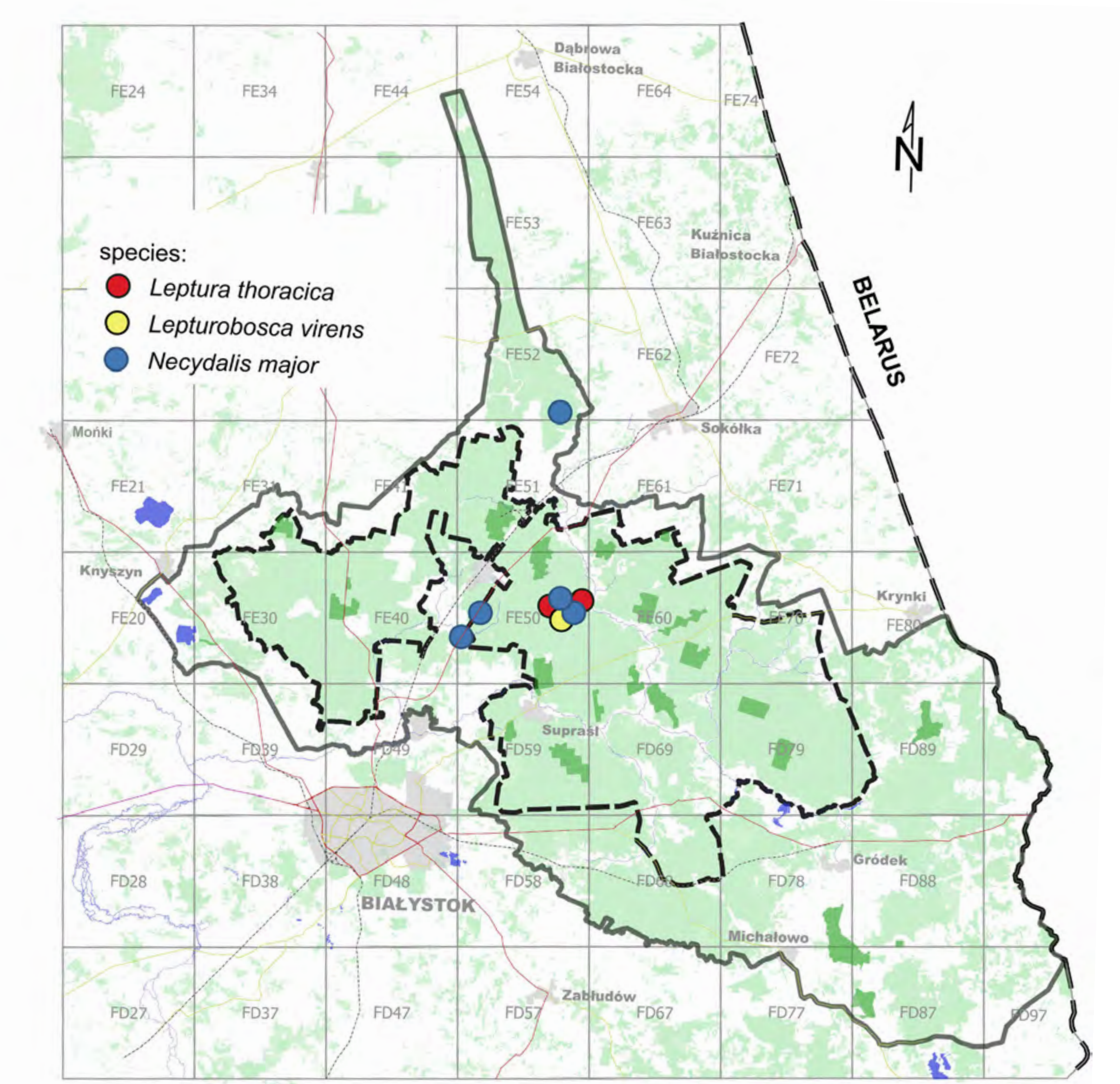


Fig. 551. Localities of *Leptura thoracica*, *Lepturobosca virens*, and *Necydalis major* (Cerambycidae) in Knyszyńska Forest

Distribution

The species is mainly found in Asia, with eastern Poland constituting the western limit of its range in Europe (Danilevsky 2020). Very rare, it is reported from only a small number of localities in the country, i.e., Białowieża Forest and Borecka Forest (Gutowski et al. 1994), Augustów Forest (Plewa 2007), the Eastern Beskid (Olbrycht & Szewkienicz 2013), and the Małopolska Upland (Bidas 2015). The most recent data on this species is from Biebrza National Park (Hilszczański et al. 2020).

Biology and ecology

Ecologically associated with the deadwood of several deciduous tree species, most notably aspen *Populus tremula* L. and silver birch *Betula pendula* Roth (Gutowski et al. 1994). Adults appear in late June/early July and live until August. Females lay eggs along the length of upright, thick tree trunks. Larvae develop in moist wood previously infected with the mycelium of arboreal fungi that cause white rot. Males of this species are less common, as they reside in the upper parts of trees, where adult beetles likely copulate (Burakowski et al. 1990). Its full developmental cycle takes three years (Gutowski et al. 1994).

Notes

Listed as NT (near threatened) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018), and as VU (vulnerable to extinction) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). *L. thoracica* is classified as a primeval forest relict *sensu stricto* (Eckelt et al. 2018). Under partial protection in Poland (Rozporządzenie... 2016).

Lepturobosca virens (Linnaeus, 1758) (Fig. 552)

Fig. 552. ***Lepturobosca virens*** **(Linnaeus, 1758) (Cerambycidae)** (photo T. Mokrzycki)

Material examined (Fig. 551)

Data from the literature: Supraśl Forest District, Budzisk Reserve (FE60), 7.05-30.06.2019 – 1 ex. (Marczak et al. 2023d).

Distribution

A rare boreal-mountain species, found in Europe and Asia (Danilevsky 2020). In Poland, it has a disjunct range of occurrence and has so far been recorded more often in the southern part of the country. In Poland's lowland areas, it has been reliably reported from the Wielkopolska-Kujawy Lowland and Białowieża Forest. Recent information on this species is from the Lublin Upland (Gutowski et al. 2012b), the Bieszczady Mountains (Kurzawa et al. 2012), and the Western Beskid (Szafraniec 2015).

Biology and ecology

Ecologically associated with the deadwood of coniferous trees (pine, spruce, fir), although it has also been found on birch (Palm 1959). It develops in the moist wood of standing tree trunks, stumps or deadwood. The female lays eggs in the crevices of the bark. Larvae initially feed in and under the bark, later excavating longitudinal tunnels in the wood. Pupation occurs in May after the second or third overwintering. Adults appear from mid-June and fly until August. Imagines feed on the flower pollen of herbaceous plants and various species of deciduous shrubs (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Necydalis major* Linnaeus, 1758** (Fig. 553)

A

B

Fig. 553. ***Necydalis major*** **LINNAEUS, 1758 (Cerambycidae): A – imago** (photo K. Sobański)**, B – larva and larval gallery, C – larval galleries visible on the cross-section of the trunk** (photo J. Tatur-Dytkowski)

Material examined (Fig. 551)

Original data: Czarna Białostocka Forest District, compartment 150/162 (FE50), 16.07.1981 – several larvae and a colorless imago in a heavily decomposed, damp, lying aspen *Populus tremula* L. log; 1 ex. imago was cultivated from this material collected on 15.06.1983, leg., cult. & det. J.M. Gutowski; Czarna Białostocka Forest District, Starodrzew Szyndzielski Reserve (FE50), 8.04.2010 – 1 larva in the wood of a lying, thick aspen tree, leg. & det. J.M. Gutowski (Plan ochrony... Starodrzew Szyndzielski 2011; RADZIWON 2012); Czarna Białostocka Forest District, ad Budzisk, compartment 110 (FE50), 30.06-20.07.2019 – 1 ex., violet Lindgren funnel trap, leg. & det. J.M. Gutowski.

Data from the literature: ad Czarna Białostocka (FE50) (GUTOWSKI et al. 1999); Budzisk Reserve (FE50), 1-30.06.2019 – 1 ex., IBL-5 trap on linden (MARCZAK et al. 2023d).

Distribution

Known from central, northern, and eastern parts of Europe, extending eastward through Siberia to the Pacific Ocean coast and Sakhalin. In Poland, it probably occurs throughout the area, but is usually rare (BURAKOWSKI et al. 1990a).

Biology and ecology

It develops in thick, moist material in deciduous trees. Larvae feed deep in the wood. Its developmental cycle takes three years (BENSE 1995).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (CÁLIX et al. 2018).

Nivellia sanguinosa **(Gyllenhal, 1827)** (Fig. 554)

Fig. 554. ***Nivellia sanguinosa*** **(Gyllenhal, 1827) (Cerambycidae): A – imago, B – larva in the larval gallery** (photo J. Tatur-Dytkowski)

Material examined (Fig. 555)

Data from the literature: Budzisk Reserve (FE50), 1-31.05.2019 – 1 ex., 1-30.06.2019 – 1 ex. (Marczak et al. 2023d).

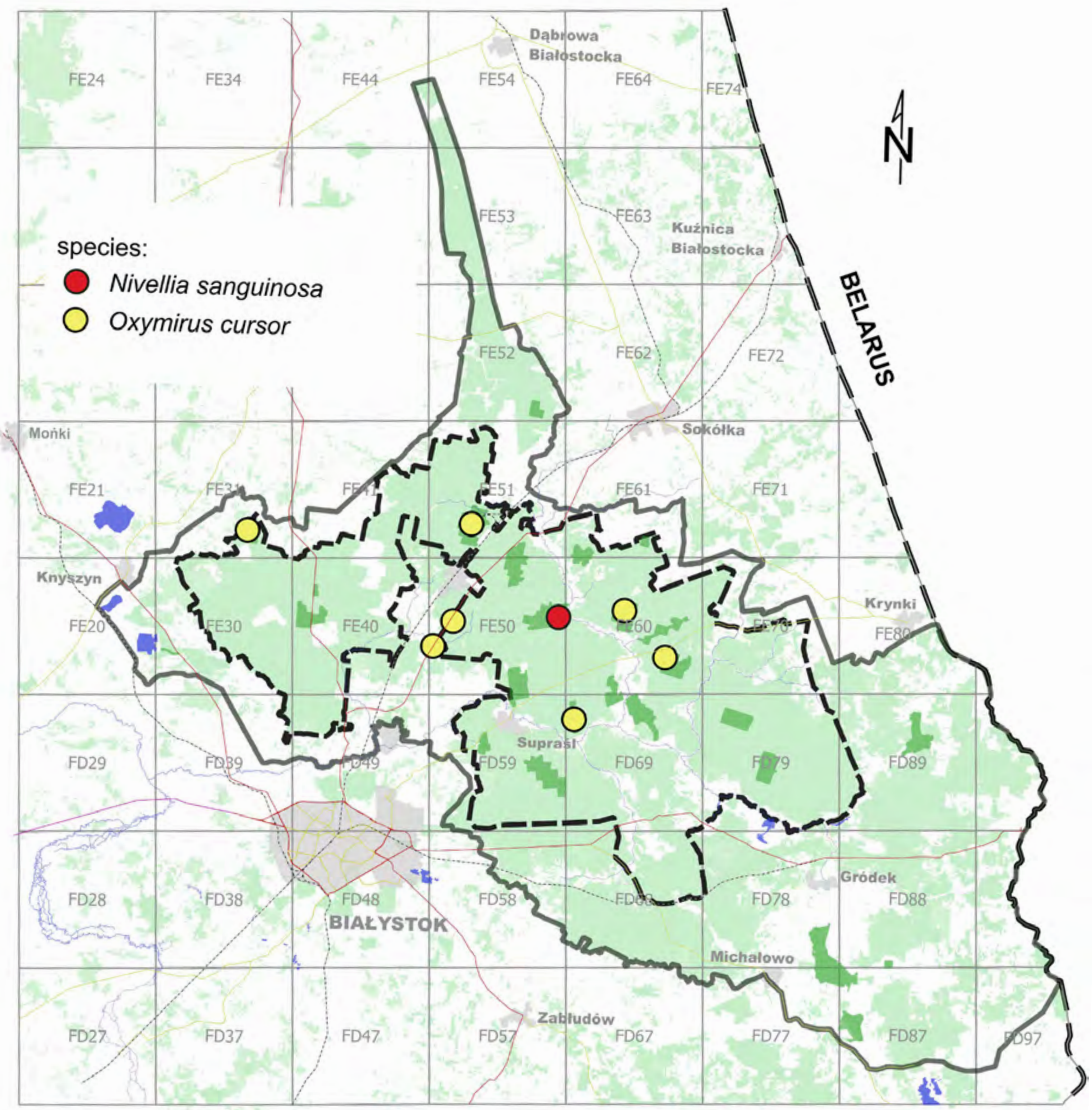


Fig. 555. Localities of *Nivellia sanguinosa* and *Oxymirus cursor* (Cerambycidae) in Knyszyńska Forest

Distribution

A boreal-mountain species occurring in European and Asian countries (Danilevsky 2020). It is rarely found in Poland. Its range of occurrence is disjunct, it has been reported mainly from the foothills and mountains in the southern part of the country. In the north, it is reported from Białowieża Forest and Borecka Forest in the boreal part of the species' range. Recent information from Poland is from the Małopolska Upland (Plewa & Borowski 2016), the Pieniny Mountains (Kolasa et al. 2018; Kajtoch et al. 2019), and the Western Beskid (Szafraniec 2020).

Biology and ecology

It is found in deciduous and mixed forests. It develops in the dead or dying wood of various deciduous tree species. Not long ago, larvae of this species were found to be developing in the fungus-infected wood of a bird cherry tree *Padus avium* (Mill.) (Karpinski et al. 2015). Swarming begins in the second half of May and is extended over time; the beetles can still be found in August. Adults feed on the flower pollen of various plants, mainly from the celery family (Burakowski et al. 1990a).

Notes

Listed as EN (endangered) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). *N. sanguinosa* is classified as a primeval forest relict *sensu lato* (Eckelt et al. 2018).

***Oxymirus cursor* (Linnaeus, 1758)** (Fig. 556)

Fig. 556. *Oxymirus cursor* (Linnaeus, 1758) (Cerambycidae): A – imago (female), B – larva in the larval gallery (photo J. Tatur-Dytkowski)

Material examined (Fig. 555)

Original data: Budzisk Reserve, compartment 124 (FE50), 5.06.1982 – 2 exx., bark beetle pheromone trap, leg. & det. J.M. Gutowski (Plan ochrony... Budzisk 2011); Jesionowe Góry Reserve (FE51), 27.04.2010 – 1 larva in the lateral deadwood of an old small-leaved linden tree *Tilia cordata* Mill., leg. & det. J.M. Gutowski (Plan ochrony... Jesionowe Góry 2011); Krzemienne Góry Reserve (FD69), 26.05.2011 – 1 larva and several feeding sites on the lying trunk of Norway spruce *Picea abies* (L.) Karst., leg. & det. J.M. Gutowski (Plan ochrony... Krzemienne Góry 2011: Kisiel 2012); Wielki Las Reserve, compartment 8 (FE31), 22.04-9.06.2008 – 1 ex., IBL-2 trap, leg. & det. R. Plewa; Stare Biele Reserve, compartment 247 (FE60), 6.05-1.06.2021 – 2 exx., violet Lindgren funnel trap, leg. & det. K. Sućko; Międzyrzecze Reserve, compartment 185 (FE60), 1.06-1.07.2021 – 2 exx., violet Lindgren funnel trap, alder forest, leg. K. Sućko, det. J.M. Gutowski.

Data from the literature: Budzisk Reserve (FE50), 17.06.2019 – 1 ex.; Horodnianka (FE50), 15.07.2015 – 1 ex. (Marczak et al. 2023d).

Distribution

The range of this species mainly includes countries in Europe and Western Siberia in Asia (Danilevsky 2020). In Poland, it is common, distributed throughout the country, but more often found in the regions of foothills and mountains. Recent information from Poland about this species is from the Eastern Beskids (Buchholz & Melke 2018), Lower Silesia (Smolis et al. 2023), the Wielkopolska-Kujawy Lowland (Zurawlew & Melke 2018), the Pomeranian Lake District, as well as the Western (Bunalski et al. 2022) and Eastern (Smolis et al. 2023) Sudetes.

Biology and ecology

Ecologically associated with many species of dead or dying conifers, less commonly deciduous trees (Starzyk 1999; Sama 2002). Adults appear from May to July. Larval development takes place in the ground zone of rotten, standing trunks, stumps or lying logs in moist habitats. Pupation takes place in the soil. Adults are found on breeding material, and less frequently on the flowers of herbaceous plants and deciduous shrubs (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Pachyta quadrimaculata **(Linnaeus, 1758)** (Fig. 557)

Fig. 557. ***Pachyta quadrimaculata*** **(Linnaeus, 1758) (Cerambycidae)** (photo T. Mokrzycki)

Material examined (Fig. 558)

Original data: Budzisk Reserve, compartment 109/124 (FE50), 14.07.1981 – 1 ex., searched for, riparian forest, leg. & det. J.M. Gutowski (Plan ochrony... Budzisk 2011); ad Budzisk Reserve (FE50), 19.07.2004 – 2 exx., leg. & det. M. Łuszczak; Budzisk Reserve (FE50), 22.07.2006 – 1 ex., leg. J. Sawoniewicz, det. M. Łuszczak; Jesionowe Góry Reserve (FE51), 19.07.2004 – 2 exx., leg. & det. M. Łuszczak (Plan ochrony... Jesionowe Góry 2011); Krzemianka Reserve, compartment 144 (FE40), 15.07.1981 – 1 ex., on *Aegopodium podagraria* L. flowers, fresh mixed coniferous forest, leg. & det. J.M. Gutowski; Stara Dębina Reserve, compartment 18 (FE61), 15.07.1981 – 1 ex., on *Chaerophyllum aromaticum* L. flowers, alder forest, leg. & det. J.M. Gutowski; Stara Dębina Reserve (FE64), 19.06.2020 – 1 ex., from dead branches, leg. & det. R. Królik; Krzemianka Reserve, compartment 217/218 (FE40), 2.07.1982 – 10 exx., on flowers of *A. podagraria*, fresh mixed coniferous forest, leg. & det. J.M. Gutowski; Krzemianka Reserve, compartment 217 (FE40), 8.07.1987 – 2 exx., on *A. podagraria* flowers, fresh mixed coniferous/oak-hornbeam forest, leg. & det. J.M. Gutowski; Krzemianka Reserve, compartments 218 and 219 (FE40), 8.07.1987 – 11 exx., on *A. podagraria* flowers, fresh mixed coniferous/oak-hornbeam forest, leg. & det. J.M. Gutowski; Krzemianka Reserve (FE40), 15.06.2011 – 1 ex., leg. K. Terlecki, det. J.M. Gutowski (Terlecki 2012); Stare Biele Reserve, ad Kopna Góra (FE60), 3.06-9.07.2020 – 3 exx., green Lindgren funnel trap, leg. & det. J.M. Gutowski; Góra Pieszczana Reserve, compartment 453 (FD79), 2.07-26.08.2021 – 1 ex., violet Lindgren funnel trap, leg. & det. K. Sućko.

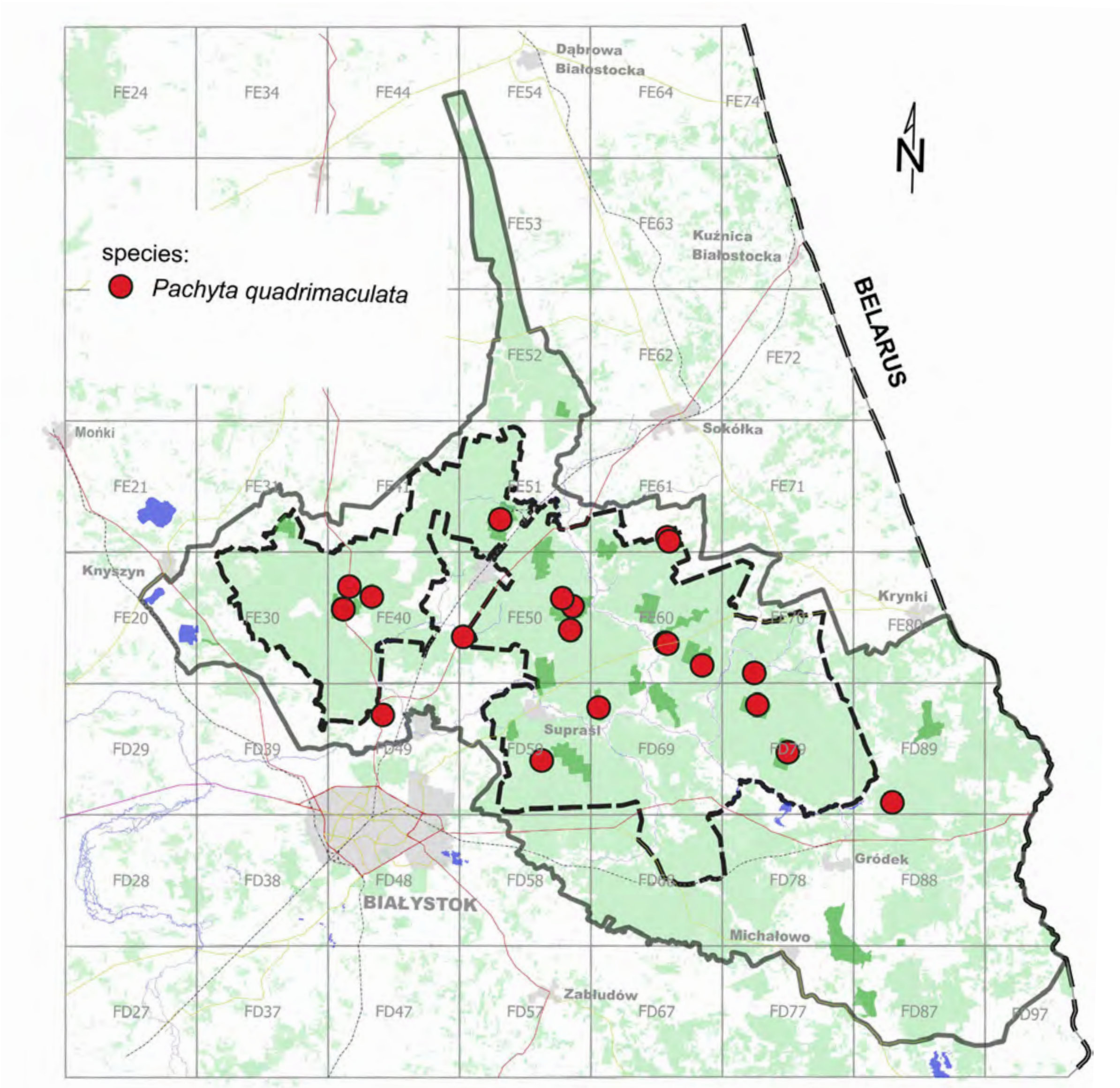


Fig. 558. Localities of *Pachyta quadrimaculata* (Cerambycidae) in Knyszyńska Forest

Data from the literature: Jesionowe Góry Reserve (FE51), 1-30.06.2020 – 1 ex.; Sochonie (FD49), 14.07.1996 – 1 ex.; Krasny Las (FD59), 18.06.2020 – 1 ex.; Chraboły (FE30), 24.08.1996 – 1 ex., 27.06.1999 – 1 ex.; Horodnianka (FE50), 25.06.2020 – 1 ex., Knyszewicze, Sokólskie Hills (FE71), 3.07.1992 – 1 ex. (Marczak et al. 2023d).

Distribution

In Europe, it has a boreal-mountainous type of distribution. In Asia, it was reported from China, Kazakhstan, Mongolia, and Western Siberia (Danilevsky 2020). In Poland, the range of this species is disjunct, it has been reported from the southern and northeastern parts of the country. Recent information from Poland about this species is from the Tatra Mountains (Grodzki 2020), the Masurian Lake District (Gutowski et al. 2020a), and the Western Beskid (Szafraniec 2020).

Biology and ecology

It is found in coniferous and mixed forests. Ecologically associated with coniferous species, mainly spruce. Larvae develop in the ground zone of thick trees, i.e., in the root crown or in the roots themselves. They make a pupal cell in shallow soil for pupation. Adults appear in June and occur until August, visiting the flowers of various herbaceous species. Its developmental cycle takes two years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Pachytodes cerambyciformis* (Schrank von Paula, 1781)** (Fig. 559)

Fig. 559. ***Pachytodes cerambyciformis* (Schrank von Paula, 1781) (Cerambycidae)** (photo J. Tatur-Dytkowski)

Material examined (Fig. 560)

Original data: Budzisk Reserve (FE50), searched for, leg. J.M. Gutowski (Plan ochrony... Budzisk 2011); Woronicza Reserve (FE60) 20.07.2010 – 1 ex., leg. & det. J.M. Gutowski (Plan ochrony... Woronicza 2011); Czarna Białostocka Forest District, Szyndziel Forest Subdistrict, compartment 108 (FE52), 18.06.2012 – 1 ex., leg. K. Micun, det. J.M. Gutowski (Micun 2013); Stare Biele Reserve ad Kopna Góra (FE60), 3.06-9.07.2020 – 12 exx., green Lindgren funnel trap, leg. & det. J.M. Gutowski; Chomontowszczyzna Reserve, compartment 85 (FD79), 23.06.2021 – 1 ex., leg. & det. J.M. Gutowski; Las Cieliczański Reserve (FD59), 16.06.2010 – 1 ex., leg. J.M. Gutowski & K. Sućko, det. J.M. Gutowski (Plan ochrony... Las Cieliczański 2011); Złota Wieś, compartment 111/125 (FE50), 14.07.1981 – 1 ex., fresh mixed coniferous/mixed deciduous forest, leg. & det. J.M. Gutowski; Zacisze ad Jałówka, compartment 26 (FE50), 15.07.1981 – 5 exx., leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, ad Jesionowe Góry Reserve (FE51), 19.07.2004 – 6 exx., leg. & det. M. Łuszczak (Plan ochrony... Jesionowe Góry 2011); Waliły Forest District, ad Królowe Stojło (FD79), 8.07.2021 – 1 ex., on flowers, leg. & det. R. Plewa.

Data from the literature: Krasny Las (FD59), 18.06.2020 – 2 exx.; Buksztel (FE50), 12.07.2020 – 1 ex.; Horodnianka (FE50), 18.07.2021 – 1 ex. (Marczak et al. 2023d).

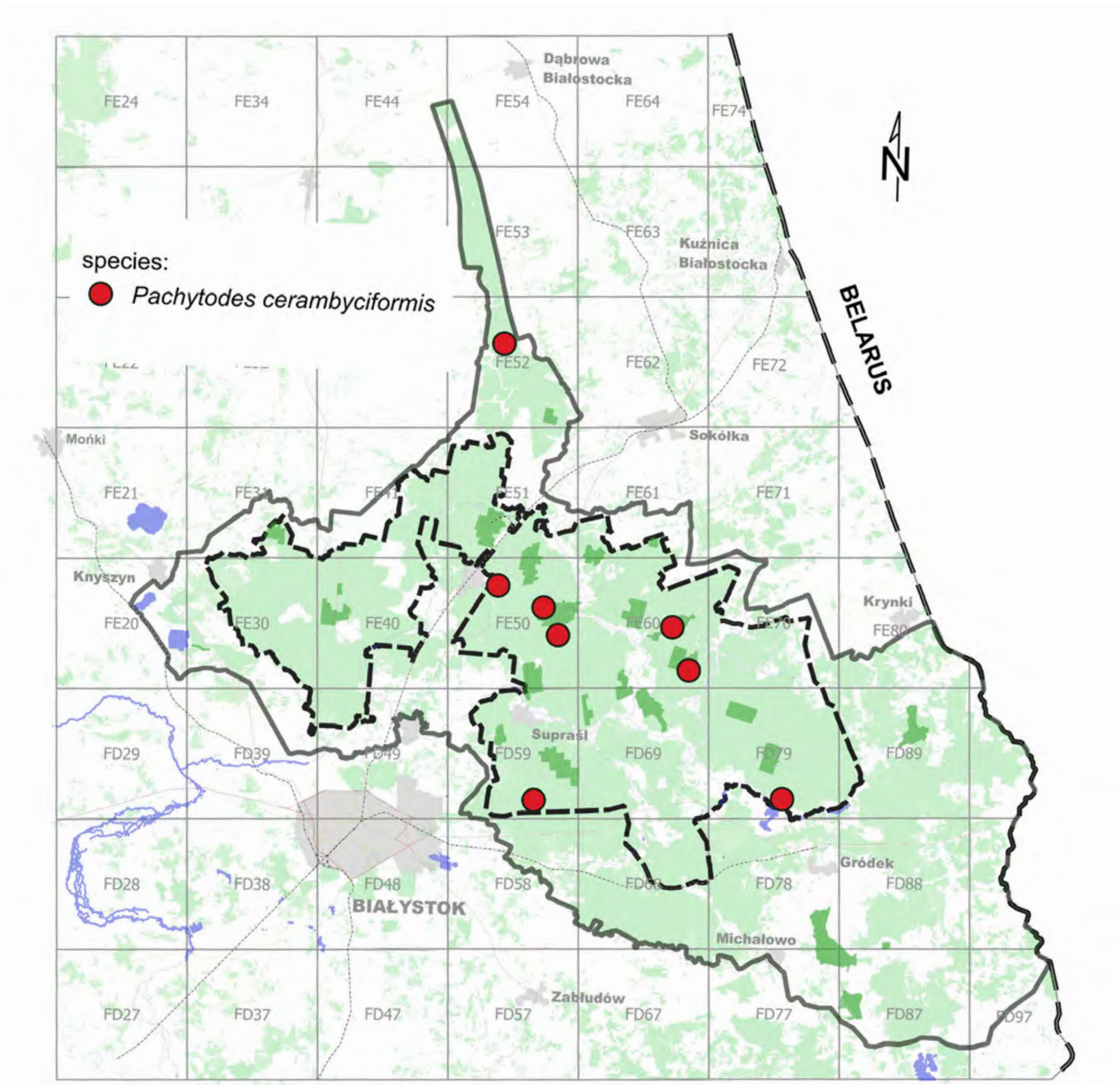


Fig. 560. Localities of *Pachytodes cerambyciformis* (Cerambycidae) in Knyszyńska Forest

Distribution

A boreal-mountain species, it occurs only in Europe, not crossing the Ural Mountain range (Danilevsky 2020). In Poland, it is most often recorded from the southern and northeastern parts of the country. It was also reported from northwestern Poland from the territory of former Prussia, where spruce was introduced into stands during World War II. Recent information from Poland on this species is from the Sudetes (Smolis et al. 2023), Lower and Upper Silesia (Szczepański & Herczek 2019; Smolis et al. 2023), the Masurian Lake District (Gutowski et al. 2020a), and the Western Sudetes (Bunalski et al. 2022).

Biology and ecology

It is found in deciduous and mixed forests. Larvae develop in dead roots encased in soil or in the ground zones, in areas with increased moisture, such as with moss. It primarily inhabits the wood of various deciduous tree species, sometimes also coniferous trees (Danilevsky 2014). Adults appear from May to the end of July and conduct supplementary feeding on the pollen of herbaceous plants and various species of deciduous shrubs. Its developmental cycle takes two years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Rhagium inquisitor (Linnaeus, 1758) (Fig. 561)

Material examined

Original data: one of the most common species of the longhorn beetle family in KF; known from many localities, including the Bahno w Borkach (FD69), Budzisk (FE50), Chomontowszczyzna, Góra Pieszczana (FD79), Jałówka (FE50), Jesionowe Góry (FE51), Karczmisko (FE40), Kozłowy Ług (FE61), Krasne (FD59), Krzemianka (FE40), Krzemienne Góry (FD69), Kulikówka (FE30), Las Cieliczański (FD59), Międzyrzecze (FE60), Nietupa (FE30), Stara Dębina (FE61), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), Wielki Las (FE31), and Woronicza (FE60) reserves.

Data from the literature: Kopna Góra (FE60), August 1985, Piłatowszczyzna (FD79), May 1982 (Kubisz & Pawłowski 1995); Budzisk Reserve (FE50), 1-30.04.2019 – 4 exx., 1-31.05.2019 – 3 exx.; Jesionowe Góry Reserve (FE51), 1.05-4.06.2020 – 1 ex.; Jałówka Reserve (FE50), 10.05.2021 – 1 ex. (Marczak et al. 2023d).

Distribution

The species is distributed throughout the Palaearctic (Danilevsky 2020). In Poland, it is one of the most common species, occurring throughout the country. The latest information from Poland about this species is from the Baltic Coast, the Wielkopolska-Kujawy Lowland, and the Western Sudetes (Bunalski et al. 2022).

Biology and ecology

It is found in coniferous and mixed forests, mainly inhabiting pine and spruce. Larval development takes place in dead standing and lying trees, as well as in trunks and lying trees with thick, adherent or slightly detached bark. Larvae excavate irregular, branching, in places squarish tunnels under the bark, mainly disturbing the phloem, less often the sapwood. After overwintering in pupal cells, adults appear in spring and throughout the summer. Its full developmental cycle takes two years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Fig. 561. *Rhagium inquisitor* (Linnaeus, 1758) (Cerambycidae): A – imago (photo T. Mokrzycki)**, B – larvae in the larval gallery** (photo J.M. Gutowski)

Rhagium mordax (De Geer, 1775) (Fig. 562)

Fig. 562. ***Rhagium mordax*** **(De Geer, 1775) (Cerambycidae)** (photo J.M. Gutowski)

Material examined

Original data: one of the most common species of the longhorn beetle family in KF, reported, among others, from the Bahno w Borkach (FD69), Budzisk (FE50), Chomontowszczyzna (FD79), Jałówka (FD59), Jesionowe Góry (FE51), Karczmisko (FE40), Kozłowy Ług (FE61), Krasne (FD59), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), Międzyrzecze (FE60), Nietupa (FD89), Rabinówka (FD78), Stara Dębina (FE61), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), Surażkowo (FE60), Taboły, and Woronicza (FE60) reserves.

Data from the literature: Budzisk Reserve (FE50), 26.05.2020 – 2 exx.; Jesionowe Góry Reserve (FE51), 1-31.05.2019 – 2 exx., 1-30.06.2019 – 4 exx., 1-31.07.2019 – 2 exx.; Krzemienne Góry Reserve (FD69), 28.05.2020 – 1 ex.; Jałówka Reserve (FD59), 10.05.2021 – 1 ex.; Krasne (FD59), 11.05.2002 – 1 ex.; Horodnianka (FE50), 15.04-5.05.2020 – 1 ex.; 1-30.06.2020 – 2 exx. (Marczak et al. 2023d).

Distribution

The species is distributed throughout Europe and the western part of Asia (Danilevsky 2020). In Poland, it occurs throughout the country and is one of the more common species. Recent information from Poland is from the Baltic Coast, the Pomeranian Lake District, the Wielkopolska-Kujawy Lowland, and the Western Sudetes (Bunalski et al. 2022).

Biology and ecology

It is found in deciduous and mixed forests, inhabiting various species of deciduous trees and shrubs, less frequently conifers (Starzyk 1999). The development of the species is analogous to that of *R. inquisitor* (Burakowski et al. 1990a). Adults sometimes visit the flowers of herbaceous vegetation (Gutowski original information).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Rhagium sycophanta (Schrank von Paula, 1781) (Fig. 563)

Fig. 563. ***Rhagium sycophanta*** **(Schrank von Paula, 1781) (Cerambycidae)** (photo G. Tarwacki)

Material examined (Fig. 564)

Original data: Supraśl Forest District, compartment 105 (FE50), 15.05.1980 – 1 ex. (larva), under the bark of an oak log of *Quercus robur* 1 m in diameter, oak-hornbeam forest, leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, Dąbrowa Forest Subdistrict, compartment 42 (FE53), 31.08.2014 – 2 exx., leg. B. Kowal, det. T. Mokrzycki.

Distribution

The species is distributed throughout Europe and Western Siberia (Danilevsky 2020). In Poland, it is rare, although it has been reported from many localities in different parts of the country outside the higher mountainous areas. Recent information from Poland on this species is from the Mazovian Lowland (Tatur-Dytkowski et al. 2020), the Wielkopolska-Kujawy Lowland, and Lower Silesia (Bunalski et al. 2022; Smolis et al. 2023).

Biology and ecology

It is found in deciduous and mixed forests, inhabiting various deciduous tree species, but oak is the most common (Starzyk 1999). The development of the species is analogous to that of *R. mordax*, with the exception that the larvae can disturb the sapwood part of the wood when feeding (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

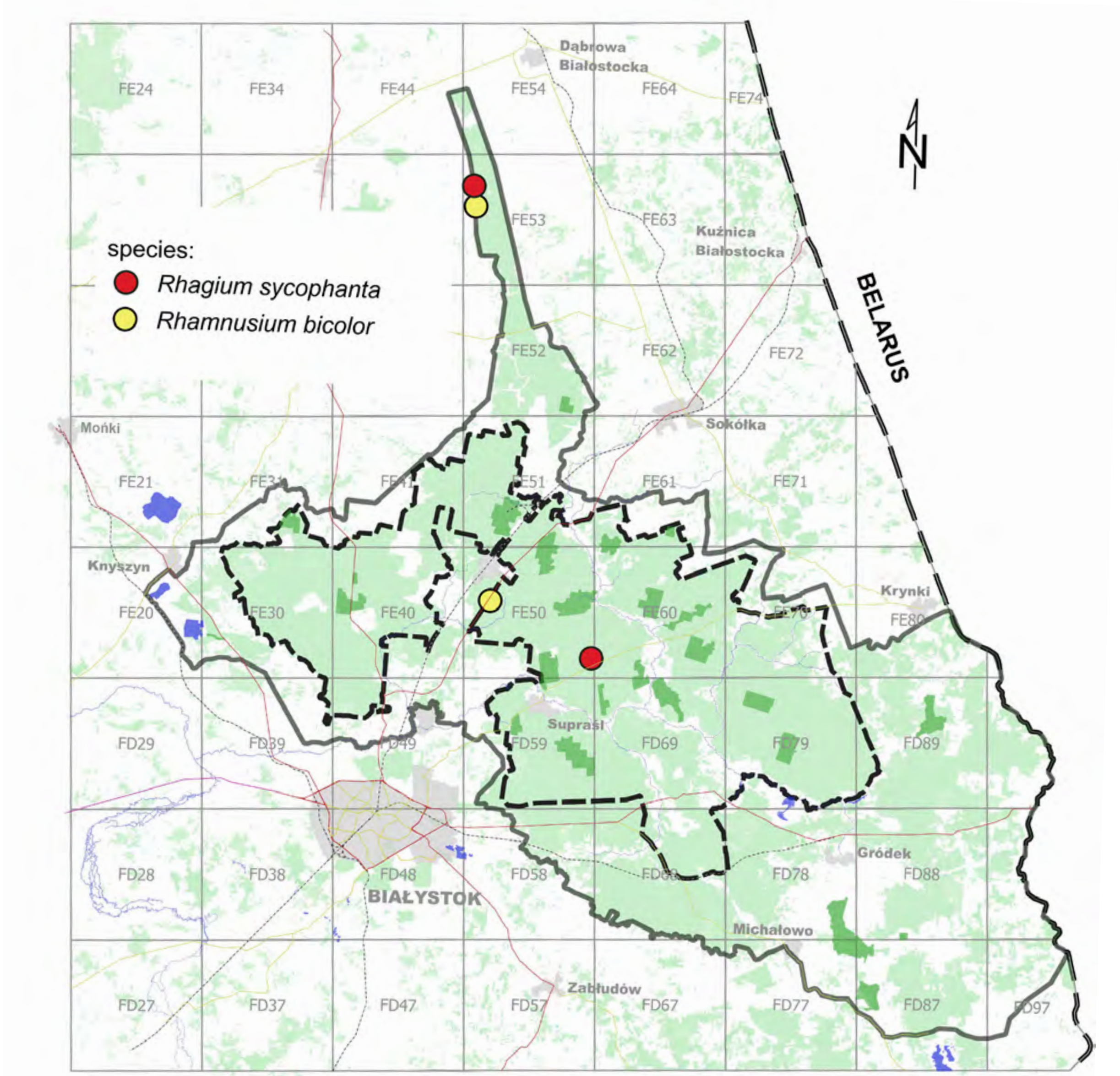


Fig. 564. Localities of *Rhagium sycophanta* and *Rhamnusium bicolor* (Cerambycidae) in Knyszyńska Forest

Rhamnusium bicolor (Schrank von Paula, 1781) (Fig. 565)

Material examined (Fig. 564)

Data from the literature: Czarna Białostocka (FE51) (Gutowski et al. 1999) [the basis of this information was finding its larval galleries on a Norway maple tree *Acer platanoides* L., growing near the railroad station, 17.06.1982]; Czarna Białostocka Forest District, Dąbrowa Forest Subdistrict, compartment 42 (FE53), 17.05.2014 – 1 ex. (Mokrzycki et al. 2022).

Distribution

It is distributed over almost all of Europe and partly in the western part of Asia (Danilevsky 2020). Based on the morphology of different populations, as many as 10 subspecies have been distinguished within this taxon. The nominate subspecies occurs in Poland. To date, it has been reported from many localities in different parts of the country outside the higher mountainous areas. Recent information from Poland on this species is from the Mazovian Lowland (Ceryngier & Marczak 2016), the Masurian Lake District (Gutowski et al. 2020a), the Wielkopolska-Kujawy Lowland (Bunalski et al. 2022), and Lower Silesia (Smolis et al. 2023).

Fig. 565. ***Rhamnusium bicolor*** **(Schrank von Paula, 1781) (Cerambycidae): A – imagines, colorful forms** (photo P. Niemiec)**, B – larval galleries** (photo J.M. Gutowski)

Biology and ecology

It is less common in dense forest complexes, most often found in strong sunlight, such as on single-growing trees in parks, gardens, alleys, less dense tree canopies or in urban areas. Ecologically associated with a variety of deciduous tree species, preferring softwoods, i.e., poplar, chestnut, maple or linden. It inhabits deadwood in direct contact with layers of living tissue, i.e., lateral deadwood, extensive hollows or sites left by previously removed thicker branches. The development cycle takes two or three years. Adults appear from May to July, active in the evening and at night, usually residing in the trees in which they develop (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Rutpela maculata* (Poda von Neuhaus, 1761)** (Fig. 566)

Fig. 566. *Rutpela maculata* (Poda von Neuhaus, 1761) (Cerambycidae) (photo T. Mokrzycki)

Material examined (Fig. 567)

Original data: Budzisk Reserve, compartment 7 (FE50), 14.07.1981 – 1 ex., on *Torilis japonica* (Houtt.) D.C. flowers, thicket, leg. & det. J.M. Gutowski (Plan ochrony... Budzisk 2011); Krzemianka Reserve, compartment 216/Rybaki village land (FE40), 2.07.1982 – 1 ex., on *Aegopodium podagraria* L., mixed moist coniferous forest/meadow, leg. & det. J.M. Gutowski; Krzemianka Reserve, compartment 217a (FE40), 8.07.1987 – 1 ex., on *A. podagraria*, fresh mixed coniferous forest/oak-hornbeam forest, leg. & det. J.M. Gutowski (Terlecki 2012); Jesionowe Góry Reserve (FE51) (Plan ochrony... Jesionowe Góry 2011); ad Jesionowe Góry Reserve (FE50), 19.07.2004 – 2 exx., leg. & det. M. Łuszczak; Starodrzew Szyndzielski Reserve (FE52), 2010 – 1 ex., searched for, leg. & det. J.M. Gutowski; Starodrzew Szyndzielski Reserve (FE52), 12.06.2010 – 1 ex., leg. Ł. Radziwon, det. J.M. Gutowski (Plan ochrony... Starodrzew Szyndzielski 2011, Radziwon 2012); Dojlidy Forest District, Krasny Las (FD59), 18.06.2020 – 1 ex., leg. & det. R. Królik; Czarna Białostocka Forest District, Szyndziel Forest, compartment 115 (FE53), 14.07.1981 – 1 ex., leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, Złota Wieś, compartment 111/125 (FE50), 14.07.1981 – 4 exx., mixed forest, compartment 129/130 (FE50), 15.07.1981 – 1 ex., fresh mixed coniferous forest, compartment 129 (FE50), 15.07.1981 – 2 exx., fresh mixed coniferous forest, compartment 143/144 (FE50), 15.07.1981 – 1 ex., fresh mixed coniferous forest, compartment 168 (FE50), 15.07.1981 – 2 exx., leg. & det. J.M. Gutowski; Supraśl Forest District, Zacisze ad Jałówka, compartment 26 (FE50), 15.07.1981 – 1 ex., moist mixed forest, leg. & det. J.M. Gutowski; Knyszyn Forest District, compartment 168 (FE30), 8.07.1987 – 2 exx., compartment 169 (FE30), 8.07.1987 – 2 exx., poor oak-hornbeam forest, leg. & det. J.M. Gutowski; Żednia Forest District, ad Kołodno (FD69), 13.07.1997 – 1 ex., leg. & det. J.M. Gutowski.

Data from the literature: Dębowickie Góry (FD59), 11.07.1993 – 1 ex.; Horodnianka (FE50), 18.07.2021 – 2 exx.; Ponure (FE50), 19.07.2021 – 1 ex. (Marczak et al. 2023d).

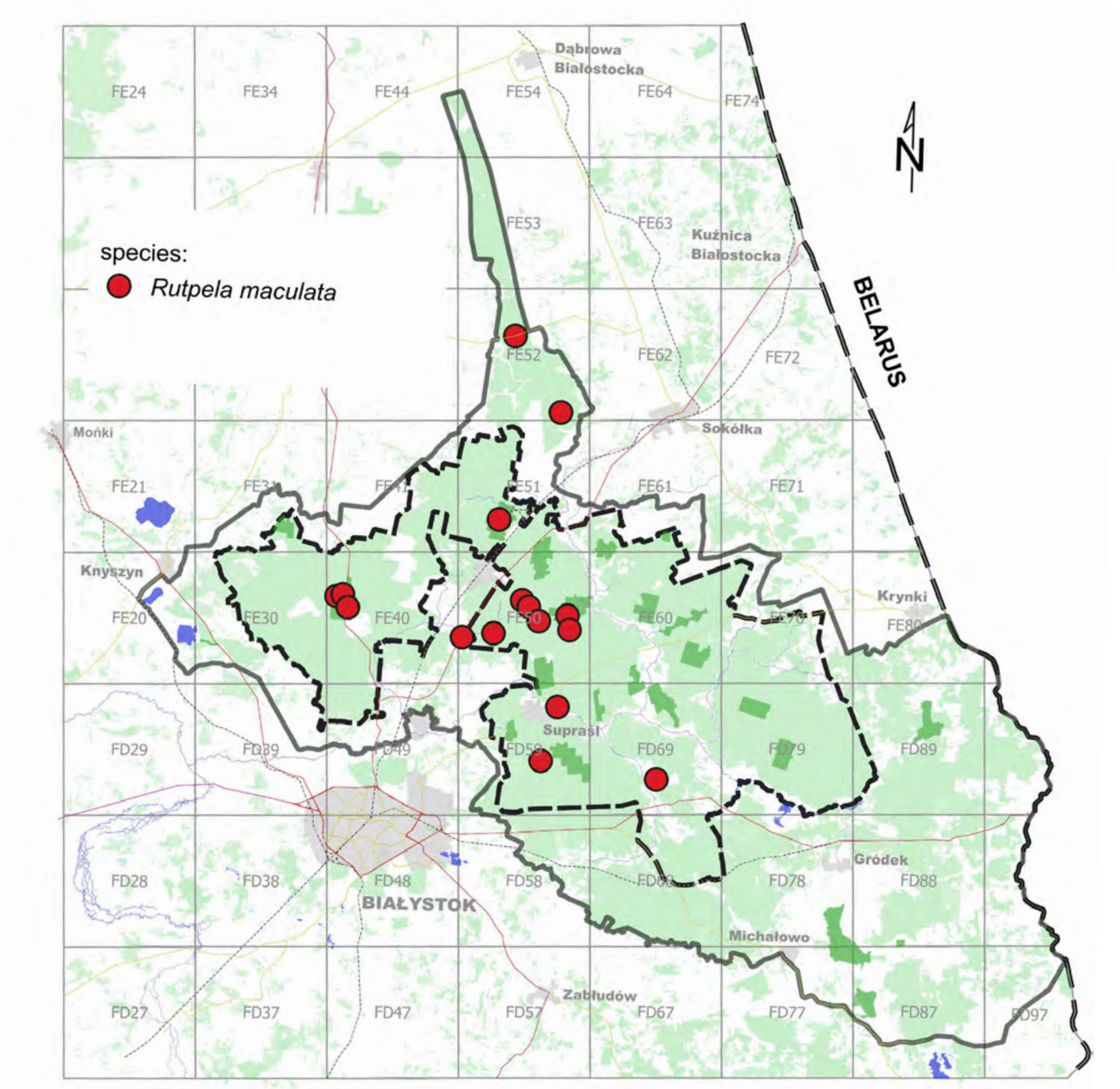


Fig. 567. Localities of *Rutpela maculata* (Cerambycidae) in Knyszyńska Forest

Distribution

Rutpela maculata has been divided into three subspecies. The nominate subspecies occurs in Poland, as well as throughout Central and Eastern Europe. Its range also includes the territory of Kazakhstan and Turkey (Danilevsky 2020). It occurs throughout Poland, except for the higher mountainous areas. The latest information from Poland about this species is from the Baltic Coast (Konopko & Kowalczyk 2020), the Wielkopolska-Kujawy Lowland, and Lower Silesia (Szczepański & Herczek 2019; Bunalski et al. 2022).

Biology and ecology

It occurs mainly in deciduous or mixed forests. Larval development takes place in the rotting wood of the ground-level parts of trunks, stumps, deadwood or in roots. Adults appear in June and are active until August. They collect flower pollen for food from herbaceous plants and various species of deciduous shrubs. Its developmental cycle lasts up to several years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Rutpela nigra **(Linnaeus, 1758)** (Fig. 568)

Fig. 568. *Rutpela nigra* (Linnaeus, 1758) (Cerambycidae) – copulating pair (photo J. Tatur-Dytkowski)

Material examined

Original data: known from many localities in KF, including the Bahno w Borkach 9FD69), Budzisk (FE50), Krzemienne Góry (FD69), Las Cieliczański (FD59), Wielki Las (FE31), and Woronicza (FE60) reserves.

Data from the literature: Dębowickie Góry (FD59), 11.07.1993 – 1 ex.; Podsupraśl (FD59), 3.07.1994 – 1 ex.; Krzemienne Góry Reserve (FD69), 2.06.1996 – 1 ex., Budzisk Reserve (FE50), 11.06.1995 – 2 exx.; Czarna Białostocka (FE50), 1.07-23.08.2021 – 1 ex. (Marczak et al. 2023d).

Distribution

The nominate species is distributed throughout Europe and the Asian part of Turkey (Danilevsky 2020). It occurs throughout Poland, although single specimens have been recorded in some places. Recent information from Poland about this species is from Lower and Upper Silesia (Szczepański & Herczek 2019), the Mazovian Lowland (Marczak 2020), the Pomeranian Lake District, and the Wielkopolska-Kujawy Lowland (Bunalski et al. 2022).

Biology and ecology

It occurs mainly in deciduous or mixed forests. Ecologically associated with the deadwood of many species of deciduous trees and shrubs (Starzyk 1999). Larval development takes place in thinner, rotting branches located in relatively highly moist areas. Adults are found from late May to August on the sunny edges of forests, where they consume the flower pollen of many species of herbaceous plants and deciduous shrubs. Its developmental cycle takes one or two years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Stenocorus meridianus **(Linnaeus, 1758)** (Fig. 569)

Fig. 569. ***Stenocorus meridianus*** **(Linnaeus, 1758) (Cerambycidae) – copulating pair** (photo T. Mokrzycki)

Material examined (Fig. 570)

Original data: Supraśl Forest District, Budzisk Reserve, compartment 6/7 (FE50), 14.07.1981 – 1 ex., on *Chaerophyllum aromaticum* L. flowers, leg. & det. J.M. Gutowski (Plan ochrony... Budzisk 2011); Budzisk Reserve (FE50), 22.07.2006 – 2 exx., leg. J. Sawoniewicz, det. M. Łuszczak, Moericke trap; Budzisk Reserve (FE50), 20.06.2011 – 1 ex., leg. K. Sućko, det. J.M. Gutowski; ad Budzisk Reserve (FE50), 19.07.2004 – 1 ex., leg. & det. M. Łuszczak; Czarna Białostocka Forest District, Taboły Reserve (FE50), 4.06-9.07.2020 – 2 exx., green Lindgren funnel trap, leg. & det. J.M. Gutowski; Jesionowe Góry Reserve (FE51), 23.06.2002 – 1 ex., leg. J. Sawoniewicz, det. M. Łuszczak, Moericke trap (Plan ochrony... Jesionowe Góry 2011); Krzemianka Reserve, compartment 217 (FE40), 8.07.1987 – 1 ex., on *Aegopodium podagraria* L., fresh mixed coniferous forest/oak-hornbeam forest, leg. & det. J.M. Gutowski (Terlecki 2012); Dojlidy Forest District, ad Krasny Las (FD59), 28.06.1992 – 2 exx., leg. A. Lasoń, det. J.M. Gutowski; ad Cieliczanka (FD59), 1993 – 1 ex., leg. L. Sawicki, det. J.M. Gutowski.

Data from the literature: Krasny Las (FD59), 6.06.1996 – 2 exx.; Jesionowe Góry Reserve (FE51), 1-30.06.2020 – 1 ex. (Marczak et al. 2023d).

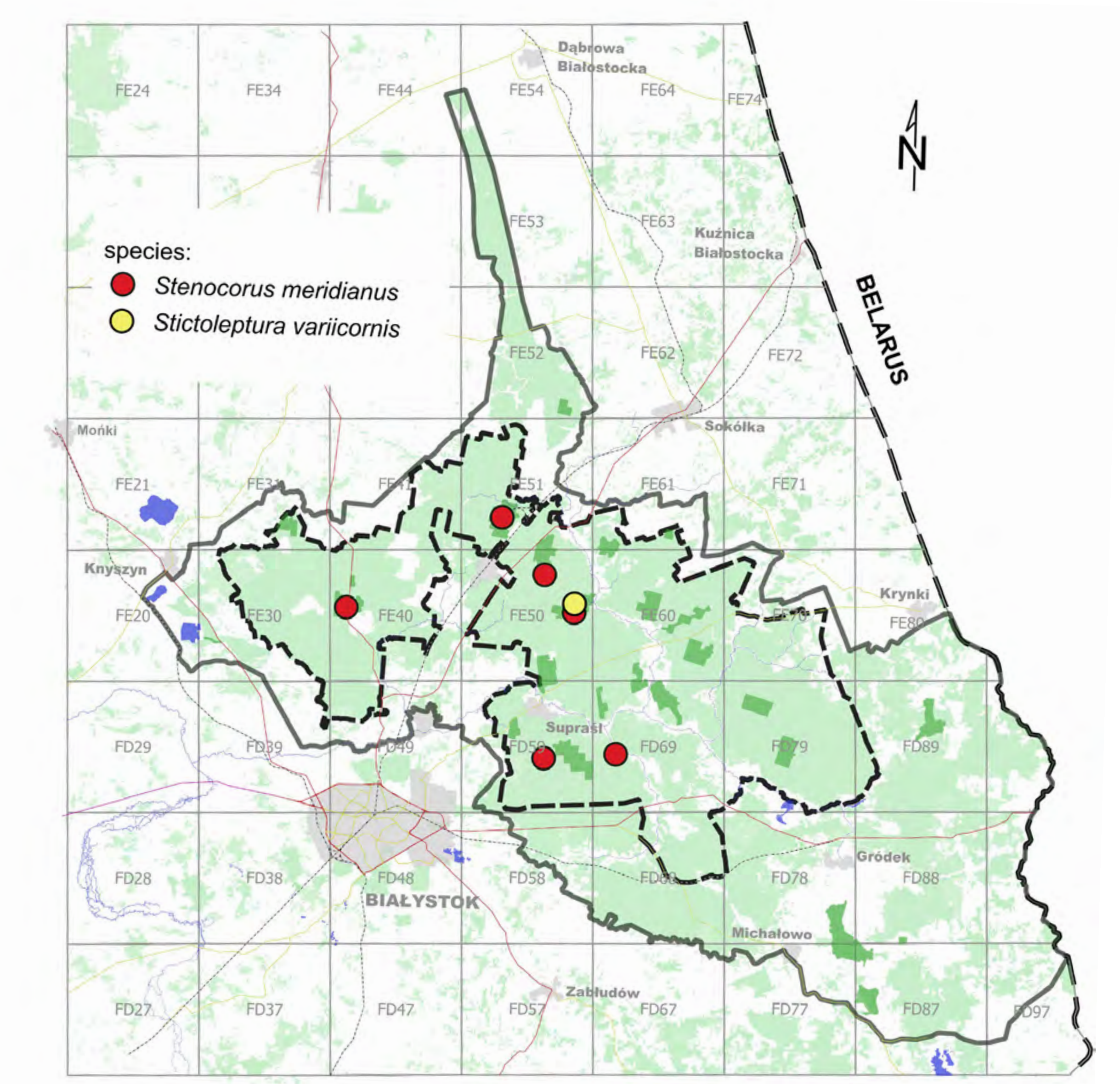


Fig. 570. Localities of *Stenocorus meridianus* and *Stictoleptura variicornis* (Cerambycidae) in Knyszyńska Forest

Distribution

The species is mainly distributed in Europe, Kazakhstan, and Western Siberia (Danilevsky 2020). It is rarely found in Poland, although it has been reported from many scattered localities. Recent information from Poland on this species is from the Mazovian Lowland (Mokrzycki 2019), the Masurian Lake District (Gutowski et al. 2020), the Wielkopolska-Kujawy Lowland, and Lower Silesia (Bunalski et al. 2022; Smolis et al. 2023).

Biology and ecology

It occurs mainly in deciduous or mixed forests. Ecologically associated with a variety of deciduous tree species (Starzyk 1999). Larvae develop on dead roots and pupate in rotten wood or next to it in the soil (Sama 2002). The species prefers sunny places and often visits the flowers of herbaceous plants and deciduous shrubs. Its developmental cycle takes three years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Stenurella bifasciata* (Müller, 1776)** (Fig. 571)

Fig. 571. Female of *Stenurella bifasciata* (Müller, 1776) (Cerambycidae) (photo J. Tatur-Dytkowski)

Material examined

Original data: a common species in KF, known from many localities in nature reserves and especially in the poorer habitats of commercial forests. Reported from the Góra Pieszczana (FD79), Jesionowe Góry (FE51), Karczmisko (FE40), Krasne (FD59), Krzemienne Góry (FD69), Wielki Las (FE31), and Woronicza (FE60) reserves, among others.

Data from the literature: Knyszewicze (FE71), 18.07.1992 – 1 ex., 24.07.1992 – 1 ex.; Chraboły (FE30), 24.07.1996 – 2 exx.; Horodnianka (FE50), 18.07.2021 – 2 exx. (Marczak et al. 2023d).

Distribution

A species with a wide distribution area. It ranges from China, through Kazakhstan, the Caucasus to the western edges of Europe (Danilevsky 2020). Reported from almost the entire area of Poland, except in higher mountainous areas. Recent information from Poland on this species is from the Baltic Coast (Konopko & Kowalczyk 2020), the Masurian Lake District (Gutowski et al. 2020), and the Wielkopolska-Kujawy Lowland (Bunalski et al. 2022).

Biology and ecology

Ecologically associated with the deadwood of deciduous and coniferous trees and shrubs (Starzyk 1999). Larval development takes place in the wood of thinner branches or ground-level tree fragments in strongly sunlit places. Adults are found from June to August on the sunny edges of forests, clearings or xerothermic sites, on the flowers of many species of herbaceous plants or deciduous shrubs (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Stenurella melanura **(Linnaeus, 1758)** (Fig. 572)

Fig. 572. ***Stenurella melanura*** **(Linnaeus, 1758) (Cerambycidae): A – female** (photo T. Mokrzycki)**, B – male** (photo J. Kupryjanowicz)

Material examined

Original data: one of the most common species of longhorn beetles in KF, known from many localities, including the Bahno w Borkach (FD69), Budzisk (FE50), Góra Pieszczana (FD79), Jesionowe Góry (FE51), Krzemianka (FE40), Las Cieliczański (FD59), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), and Woronicza (FE60) reserves.

Data from the literature: Pilatowszyzna (FD79), July 1990 (Kubisz & Pawłowski 1995); Sochonie (FD49), 20.07.1996 – 2 exx.; Chraboły (FE30), 24.07.1996 – 2 exx.; Krynice (FE30), 11.08.1996 – 2 exx.; Czarna Białostocka (FE50), 1.07-23.08.2021 – 1 ex.; Knyszewicze (FE71), 6.07.1992 – 1 ex., 10.07.1992 – 2 exx., 12.07.1992 – 1 ex., 29.07.1992 – 1 ex. (Marczak et al. 2023d).

Distribution

The species is found from the Japanese islands to Portugal in Western Europe (Danilevsky 2020). Common, reported from all over Poland. The latest information from Poland on this species is from the Pomeranian Lake District, the Wielkopolska-Kujawy Lowland, and the Western Sudetes (Bunalski et al. 2022).

Biology and ecology

Ecologically associated with many species of dead or dying coniferous and sometimes deciduous trees (Starzyk 1999). Larval development takes place in decaying wood, tunnels are dug parallel to the axis of the trunk. Adults are found from June to August in sunny forest edges, clearings or along mid-forest roads on the flowers of many species of herbaceous plants and deciduous shrubs (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Stictoleptura maculicornis* (De Geer, 1775)** (Fig. 573)

Fig. 573. *Stictoleptura maculicornis* (De Geer, 1775) (Cerambycidae) (photo J. Kupryjanowicz)

Material examined

Original data: one of the most common species of longhorn beetles in KF, known from many localities, including the Budzisk (FE50), Chomontowszczyzna (FD79), Góra Pieszczana (FD79), Jesionowe Góry

(FE51), Karczmisko (FE40), Krasne (FD59), Las Cieliczański (FD59), Stara Dębina (FE61), Starodrzew Szyndzielski (FE52), Surażkowo (FE60), and Woronicza (FE60) reserves.

Data from the literature: Budzisk Reserve (FE50), 11.06.1995 – 1 ex.; Jesionowe Góry Reserve (FE51), 1-30.06.2020 – 1ex., Woronicza Reserve (FE60), 30.07.2022 – 1 ex.; Sochonie (FD49), 14.07.1996 – 1 ex., 20.07.1996 – 1 ex. (Marczak et al. 2023d).

Distribution

A species found throughout Europe. Its range in the east ends in the foothills of the Caucasus (Danilevsky 2020). Common, reported from all over Poland. Recent information from Poland about this species is from the Baltic Coast (Konopko 2019), the Masurian Lake District (Gutowski et al. 2020a), and the Wielkopolska-Kujawy Lowland (Bunalski et al. 2022).

Biology and ecology

It occurs in deciduous and mixed stands, reaching the upper forest limit in the mountains. Ecologically associated with species of dead deciduous and coniferous trees and shrubs (Starzyk 1999). Larval development takes place in thin, fungus-infected branches, lying mainly on the ground. Adults are found from May to July on many species of herbaceous plants and deciduous shrubs. Its developmental cycle takes two years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Stictoleptura rubra (Linnaeus, 1758) (Fig. 574)

Material examined

Original data: one of the most common species of longhorn beetles in KF, known from many localities, including the Budzisk (FE50), Chomontowszczyzna (FD79), Góra Pieszczana (FD79), Jesionowe Góry (FE51), Karczmisko (FE40), Krasne (FD59), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), Międzyrzecze (FE60), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), Surażkowo (FE60), and Woronicza (FE60) reserves.

Data from the literature: Kopna Góra (FE60), August 1985; Piłatowszczyzna (FD79), July and August 1990 (Kubisz & Pawłowski 1995); Żednia Forest District, Kołodno Forest Subdistrict, compartments 120 and 132 (FD69), 2.07-13.08.2004 – 4 exx. (Skłodowski 2011); Budzisk Reserve (FE50), 26.05.2020 – 1 ex.; Woronicza Reserve (FE60), 30.07.2022 – 1 ex.; Pólko ad Supraśl (FD59), 3.07.1994 – 1 ex.; Grzybowce (FD88), 26.07.2008 – 1 ex.; Podratowiec (FE40), 1.07-23.08.2021 – 1 ex.; Czarna Białostocka (FE50), 1.07-23.08.2021 – 6 exx.; Horodnianka (FE50), 1-31.08.2020 – 1 ex.; Knyszewicze (FE71), 12.07.1992 – 1 ex., 24.07.1992 – 2 exx. (Marczak et al. 2023d).

Distribution

It is found throughout Europe, in Russia (Siberia), and Kazakhstan (Danilevsky 2020). The most common of all representatives of the genus. Reported from the entire area of Poland. The most recent information from Poland about this species is from the Baltic Coast, the Pomeranian Lake District, the Trzebnickie Hills, the Wielkopolska-Kujawy Lowland, and the Western Sudetes (Bunalski et al. 2022).

Biology and ecology

It occurs in coniferous and mixed stands. Ecologically associated with species of dead or dying coniferous trees, although outside of Poland it has also been reported in the wood of oak, beech or birch (Starzyk 1999; Sama 2002). Larval development takes place in the thicker fragments of standing trunks, stumps or deadwood. Adults are found from June to August. Imagines consume the pollen of many species of herbaceous plants and deciduous shrubs. It has a two-year development cycle (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Fig. 574. *Stictoleptura rubra* (Linnaeus, 1758) (Cerambycidae): A – female, B – male, C – pupa in a pupal cell in a pine stump (photo J.M. Gutowski)

Stictoleptura variicornis (Dalman, 1817) (Fig. 575)

Material examined (Fig. 570)

Data from the literature: Czarna Białostocka Forest District, Budzisk Reserve (FE50), 22.07.2006 – 2 exx., Moericke trap, leg. J. Sawoniewicz, det. M. Łuszczak (Plan ochrony... Budzisk 2011).

Distribution

An Eurasian species (Danilevsky 2020). It is very rarely found in Poland. The western limit of its range is in northeastern Poland. Outside Knyszyńska Forest, it currently occurs only in Białowieża Forest, where the most numerous population of the species is located. Historical references from the 19th century from the area of former Prussia require confirmation with new material. The most recent information on this species is from Białowieża Forest (Gutowski 1995; Tamutis & Alekseev 2020).

Fig. 575. *Stictoleptura variicornis* (Dalman, 1817) (Cerambycidae) (photo J.M. Gutowski)

Biology and ecology

It is found in coniferous and mixed stands with Norway spruce *Picea abies* (L.) Karst., which is the main host plant for the larvae of this species. In Białowieża Forest, it is also found on Scots pine *Pinus sylvestris* L. (Gutowski 1995). Adults appear in the second half of June and are present until August. Females lay eggs in cracks or old exit holes of other beetles in dead, dry wood – both on standing trees and fallen trunks, windthrows, and thick branches lying on the ground. Larvae initially feed in the sapwood, then burrow into the heartwood, excavating longitudinal tunnels. After the second or third overwintering, the larvae prepare a pupal chamber, and metamorphosis occurs in June or July (Burakowski et al. 1990a). Adults visit the flowers of plants in the Apiaceae, Rosaceae, and Compositae families (Gutowski 1995).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018), and as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). Under partial protection in Poland (Rozporządzenie... 2016). *S. variicornis* is classified as a primeval forest relict *sensu lato* (Eckelt et al. 2018).

Strangalia attenuata (Linnaeus, 1758) (Fig. 576)

Material examined

Original data: common species in KF, found in many localities, including the Budzisk (FE50), Jesionowe Góry (FE51), Krzemianka (FE40), Stara Dębina (FE61), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), and Woronicza (FE60) reserves.

Data from the literature: Piłatowszczyzna (FD79), July 1990 (Kubisz & Pawłowski 1995); Podsupraśl (FD59), 1.08.1992 – 1 ex.; Krynice (FE30), 11.08.1996 – 2 exx.; Podratowiec (FE40), 1.07-23.08.2021 – 1 ex.; Czarna Białostocka (FE50), 1.07-23.08.2021 – 2 exx.; Horodnianka (FE50), 18.07.2021 – 1 ex., 1-31.08.2020 – 1 ex.; Ponure (FE50), 19.07.2021 – 1 ex.; Knyszewicze (FE71), 10.07.1992 – 1 ex. (Marczak et al. 2023d).

Fig. 576. *Strangalia attenuata* (Linnaeus, 1758) (Cerambycidae) (photo J. Tatur-Dytkowski)

Distribution

Found from Japan through China, Kazakhstan to the western borders of France (Danilevsky 2020). In Poland, it is relatively common, distributed mainly in the central and eastern parts of the country. Recent information from Poland about this species is from Lower and Upper Silesia (Szczepański & Herczek 2019), the Mazovian Lowland (Marczak 2020), and the Wielkopolska-Kujawy Lowland (Bunalski et al. 2022).

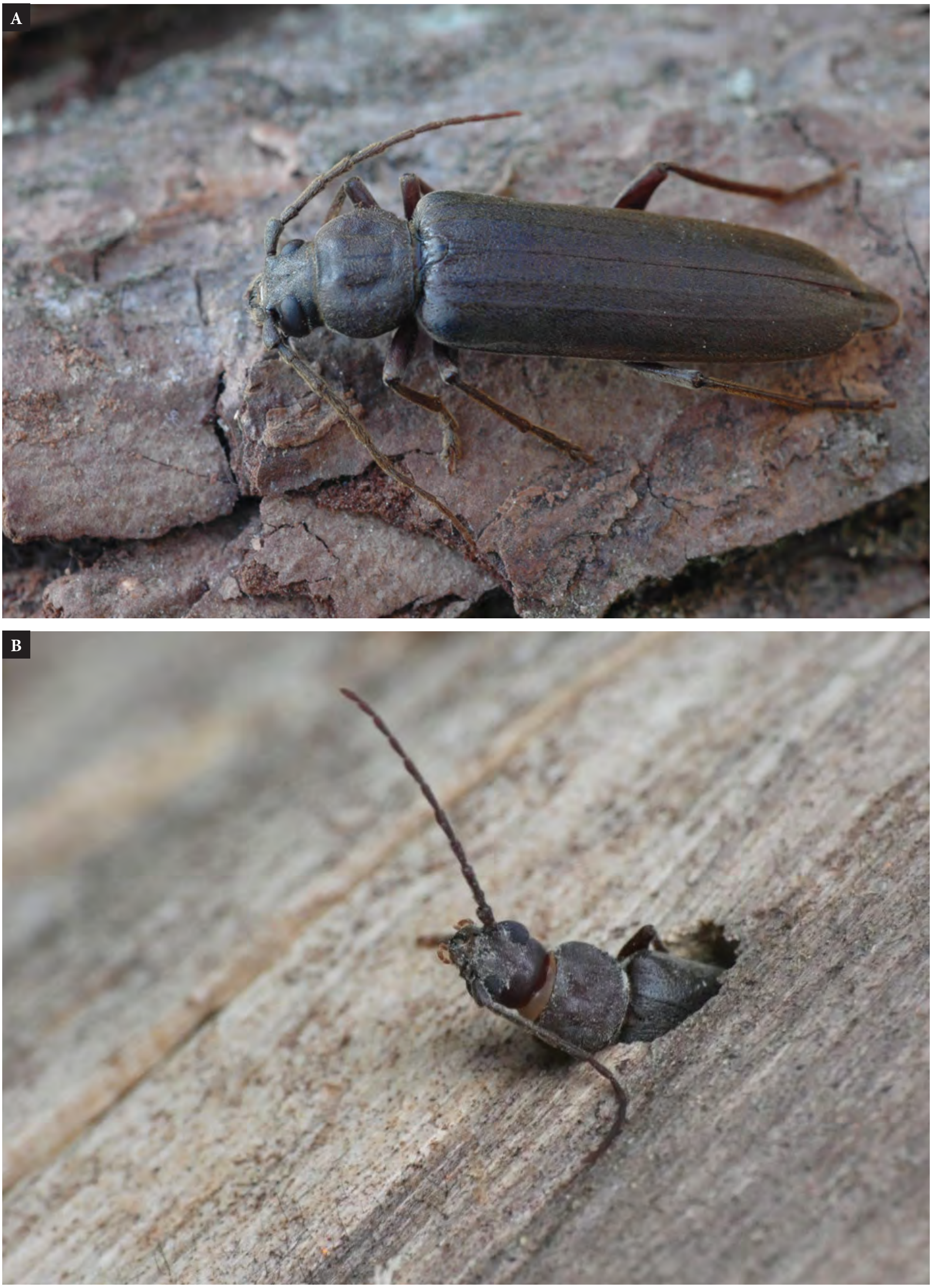
Biology and ecology

It occurs in deciduous and mixed stands. Ecologically associated with many species of dead or dying deciduous trees and shrubs (Starzyk 1999). Larval development takes place in the ground zone of standing trunks, stumps or in lying logs in moist forest habitats. Adults are found from June to August on many species of flowers of herbaceous plants and deciduous shrubs. Its developmental cycle takes two to three years (Burakowski et al. 1990a).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Arhopalus rusticus **(Linnaeus, 1758)** (Fig. 577)



Return to contents

Fig. 577. *Arhopalus rusticus* (Linnaeus, 1758) (Cerambycidae): A – imago (photo J.M. Gutowski)**, B – imago gnawing out of a pine trunk** (photo J. Tatur-Dytkowski)**, C – larval galleries in the lower part of the pine trunk** (photo J.M. Gutowski)

Material examined

Original data: common species, recorded in KF from many localities, including the Budzisk (FE50), Chomontowszczyzna (FD79), Jesionowe Góry (FE51), Krasne (FD59), Karczmisko (FE40), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), Stare Biele (FE60) and Starodrzew Szyndzielski (FE52) reserves.

Data from the literature: Kopna Góra (FE60), August 1985 (Kubisz & Pawłowski 1995); Gniła (FD39), 21.08.1987 – 1 ex.; Knyszewicze (FE71), 12.07.1992 – 1 ex., 26.08.1992 – 1 ex.; Czarna Białostocka (FE50), 1.07-23.08.2021 – 1 ex. (Marczak et al. 2023d).

Distribution

Recorded in Europe, North Africa, Turkey, the Caucasus, Iran, Central Asia, Siberia and Japan (Sama 2002). Common in Poland, known from throughout the country (Burakowski et al. 1990a).

Biology and ecology

It inhabits the trunks and stumps of pine, less often of spruce or fir. Larvae excavate tunnels deep in the wood. Imagines are active at night. Its developmental cycle takes two to three years (Bense 1995).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Considered a pest by the forestry industry.

Asemum striatum (Linnaeus, 1758) (Fig. 578)

Fig. 578. ***Asemum striatum* (Linnaeus, 1758) (Cerambycidae)** (photo T. Mokrzycki)

Material examined

Original data: species recorded in KF from a number of localities, including Krasne Reserve (FD59).

Data from the literature: Piłatowszczyzna (FD79), June 1990 (Kubisz & Pawłowski 1995); Krasny Las (FD59), 18.06.1988 – 1 ex. (Marczak et al. 2023d).

Distribution

Known from Europe, northern Turkey, the Caucasus, Siberia, Manchuria, Korea, Sakhalin, Japan, and North America (Sama 2002). A common species, widely distributed in Poland (Burakowski et al. 1990a).

Biology and ecology

Inhabits coniferous trees, mainly *Pinus* L. Larvae develop in the lower part of the trunks, in roots and stumps. Imagines appear from May to July (Sama 2002). Often found on freshly felled trees (Gutowski original information).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Spondylis buprestoides* (Linnaeus, 1758)** (Fig. 579)

Fig. 579. *Spondylis buprestoides* (Linnaeus, 1758) (Cerambycidae): A – imago (photo T. Mokrzycki)**, B – imagines exit holes in a pine stump** (photo J.M. Gutowski)

Material examined

Original data: species very common in KF, recorded from many localities, including the Budzisk (FE50), Góra Pieszczana (FD79), Jesionowe Góry (FE51), Karczmisko (FE40), Krasne (FD59, Krzemianka (FE40), Międzyrzecze (FE60), Starodrzew Szyndzielski (FE52), and Woronicza (FE60) reserves.

Data from the literature: Kopna Góra (FE60), August 1985; Wierobie (FD88), August 1993 (Kubisz & Pawłowski 1995); Grzybowce (FD88), 26.07.2008 – 1 ex., Budzisk Reserve (FE50), 1.07-23.08.2021 – 1 ex.; Woronicza Reserve (FE60), 30.07.2022 – 1 ex. (Marczak et al. 2023d).

Distribution

It is found in Europe, northern and southwestern Turkey, Siberia, Sakhalin, northern Mongolia, northern China, the Korean Plateau, and Japan; also reported from North Africa (Sama 2002). Very common in Poland (Burakowski et al. 1990a; J.M. Gutowski, original information).

Biology and ecology

Associated with coniferous trees, mainly pine. Larvae live in dead roots, stumps, and in the lower part of trunks. Imagines are active at night (Sama 2002).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Tetropium castaneum* (Linnaeus, 1758)** (Fig. 580)

Fig. 580. *Tetropium castaneum* (Linnaeus, 1758) (Cerambycidae) (photo T. Mokrzycki)

Material examined

Original data: common in KF, found in many different places, including the Budzisk (FE50), Krzemianka (FE40), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), and Woronicza (FE60) reserves.

Data from the literature: Kopna Góra (FE60), August 1985 (Kubisz & Pawłowski 1995); Krasne (FD59), 28.05.1992 – 1 ex.; Krasny Las (FD59), 6.06.1996 – 4 exx.; Budzisk Reserve (FE50), 1-31.05.2019 – 1 ex.; Jesionowe Góry Reserve (FE51), 1-30.06.2020 – 8 exx.; Horodnianka (FE50), 5.06.2021 – 1 ex. (Marczak et al. 2023d).

Distribution

A species occupying the northern Palaearctic, from Western Europe to Japan (Sama 2002). Common in Poland (Burakowski et al. 1990a; Gutowski original information).

Biology and ecology

Develops in conifers, mainly firs *Abies* Mill., spruces *Picea* Dietr., and pines *Pinus* L. Inhabits the lower parts of the trunks of weakened or freshly dead trees. It has a one-year, sometimes two-year development cycle (Bense 2002; Gutowski original information).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). Considered a pest by the forestry industry.

***Tetropium fuscum* (Fabricius, 1787)** (Fig. 581)

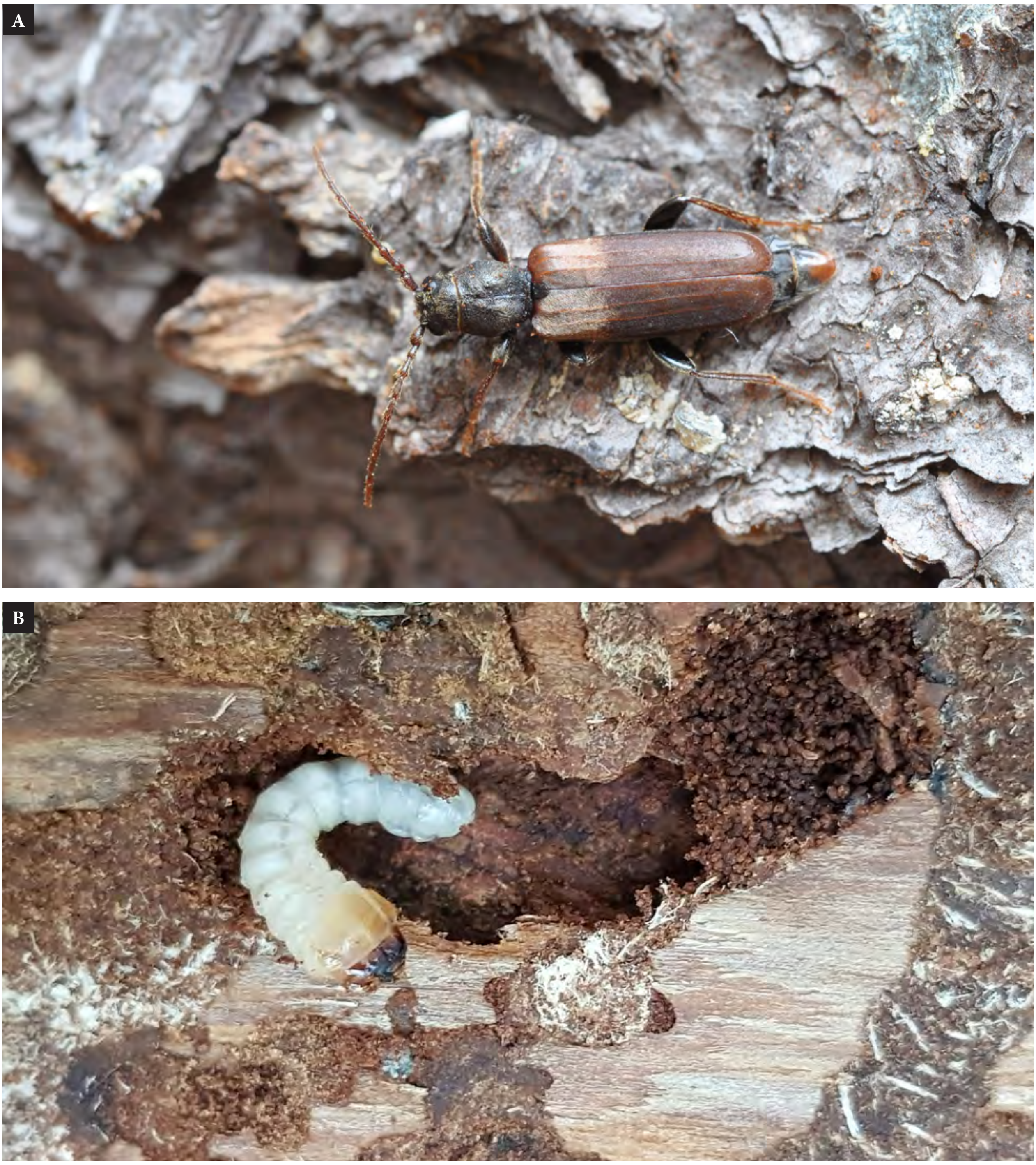


Fig. 581. ***Tetropium fuscum* (Fabricius, 1787) (Cerambycidae): A – imago** (photo T. Mokrzycki)**, B – larva in the larval gallery** (photo J.M. Gutowski)

Material examined

Original data: a very common species in KF, known from many localities, including the Budzisk (FE50), Chomontowszczyzna (FD79), Góra Pieszczana (FD79), Jesionowe Góry (FE51), Karczmisko (FE40), Krasne (FD59), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), Międzyrzecze (FE60), Szyndzielski Starodrzew (FE52), Surażkowo (FE60), Wielki Las (FE31), and Woronicza (FE60) reserves.

Data from the literature: Czarna Białostocka (FE50), Supraśl (FD59) (Capecki 1980, Burakowski et al. 1990a); Budzisk Reserve (FE50), 1-31.05.2019 – 7 exx., IBL-5 trap on aspen and spruce, 1-30.06.2019 – 2 exx., to IBL-5 trap on spruce, Jesionowe Góry Reserve (FE51), 1-30.06.2020 – 4 exx., to IBL-5 trap on spruce (Marczak et al. 2023d).

Distribution

It is found in Central and Northern Europe as weel as in Western Siberia (Sama 2002). Common in Poland (Burakowski et al. 1990a; Gutowski original information).

Biology and ecology

It develops on coniferous trees, mainly spruce. Its developmental cycle takes one year (Bense 1995).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).
Considered a pest by the forestry industry.

Tetropium gabrieli Weise, 1905 (Fig. 582)

Fig. 582. *Tetropium gabrieli* Weise, 1905 (Cerambycidae): A – imago (photo K. Wilamowski)**, B – larva in the pupal cell** (photo J. Tatur-Dytkowski)

Material examined (Fig. 583)

Original data: Czarna Białostocka Forest District, Czarna Wieś Forest Subdistrict, compartment 208/209 (FE41), 05-7.07.2015 – 2 exx., compartment 195 (FE41), 05-28.06.2016 – 3 exx., IBL-2 trap, leg. & det. R. Plewa (Borowski et al. 2016).

Distribution

A species found mainly in Central Europe, known from the following countries: Ireland, Great Britain, France, Belgium, Luxembourg, the Netherlands, Sweden, Denmark, Germany, Poland, Belarus, Central European Russia, Ukraine, Slovakia, Hungary, Czech Republic, Austria, Liechtenstein, Switzerland, Italy, Slovenia. Introduced in Mexico (Danilevsky 2020). In Poland, known from a number of scattered localities from almost the entire country. Rare in eastern and northern Poland. A species expanding its range with the spread of larch growing outside of mountainous areas (Burakowski et al. 1990a; Gutowski 1995). More recent data are provided by: Hilszczański & Plewa (2009), Michalcewicz (2010), Hofmański & Karg (2011), Olbrycht & Szewkiewicz (2013), Chmielewski (2015), Gorski & Tatur-Dytkowski (2015), Zurawlew & Melke (2018), Szczepański & Szczepański (2019), Buchholz et al. (2021), Szafraniec et al. (2021).

Biology and ecology

A monophage of larch *Larix* Mill. It inhabits the lower parts of the trunks of weakened and dying trees, stumps, as well as fresh windthrows or recently felled trees. Larvae feed under the bark and pupate in the wood or thick bark. Its development cycle takes one year (Burakowski et al. 1990a; Bense 1995; Gutowski original information).

Notes

A new species for Podlasie.

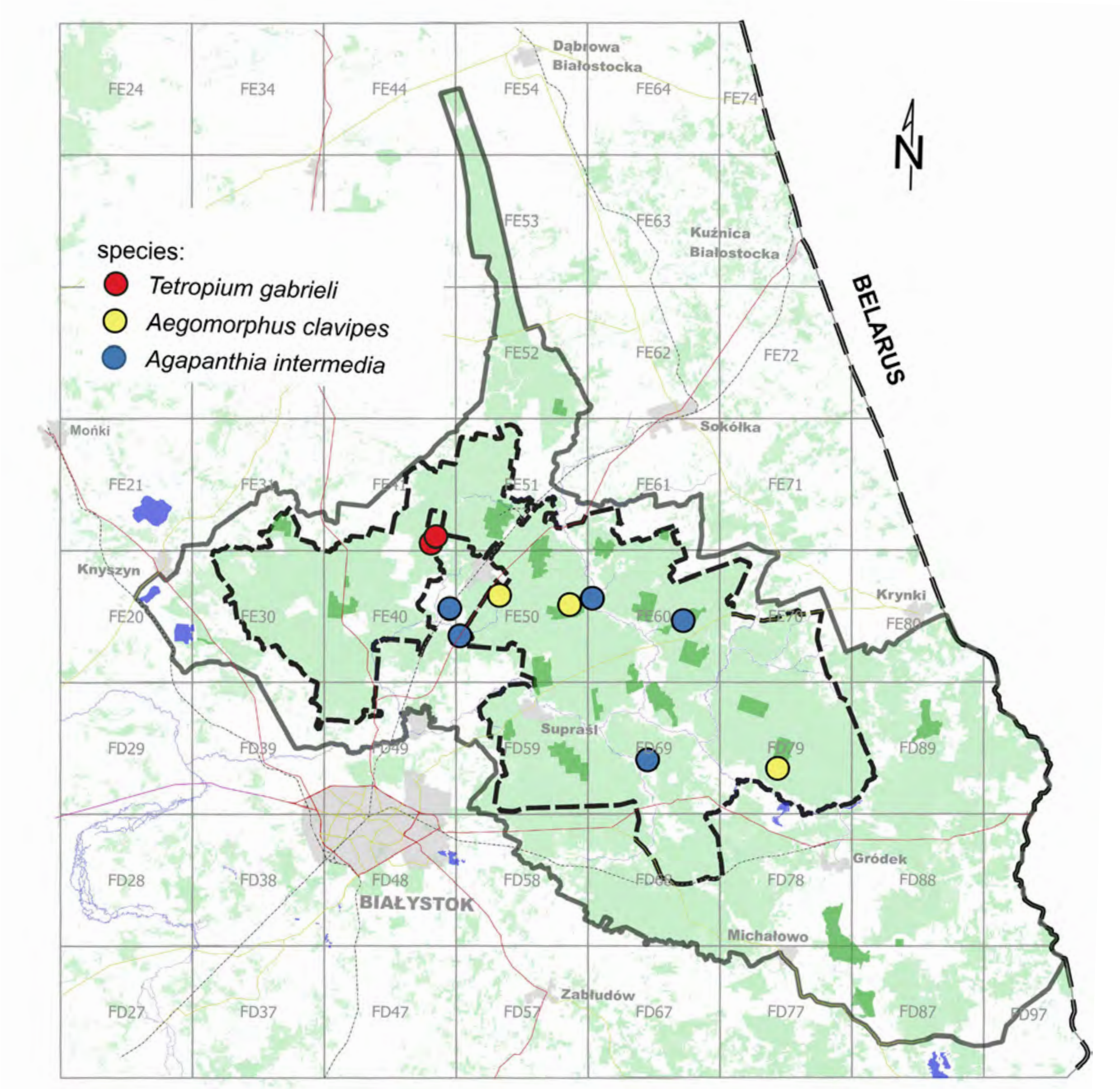


Fig. 583. Localities of *Tetropium gabrieli*, *Aegomorphus clavipes*, and *Agapanthia intermedia* (Cerambycidae) in Knyszyńska Forest

Aegomorphus clavipes (Schrank von Paula, 1781) (Fig. 584)

Material examined (Fig. 583)

Original data: Czarna Białostocka Forest District, Złota Wieś Subdistrict, compartment 118/133 (FE50), 16.07.1981 – 3 larvae, in a lying aspen log, oak-hornbeam forest, leg. & det. J.M. Gutowski; Waliły Forest District, Radunin Forest Subdistrict (FD79), 26.07.2002 – 1 ex., on a birch log, leg. K. Gabiec, det. J.M. Gutowski.

Data from the literature: ad Czarna Białostocka (FE50) (Gutowski et al. 1999); Budzisk Reserve (FE50), 18.06.2019 – 2 exx., felled aspen trees (Marczak et al. 2023d).

Distribution

Recorded in Europe, North Africa (Algeria, Tunisia), Asia Minor (northern Turkey), the Caucasus, Transcaucasia, Siberia up to the Pacific, Japan. Widely distributed in Europe except for most of Spain and southern Greece (Sama 2002). In Poland, reported from a small number of localities scattered in different parts of the country, mostly in the mountains (Burakowski et al. 1990a). More recent data are from, among others, Białowieża Forest (Gutowski & Jaroszewicz 2001), the Bieszczady Mountains (Kurzawa et al. 2012), and the Western Beskid (Łuszczak, Szafraniec 2021).

Fig. 584. *Aegomorphus clavipes* (Schrank von Paula, 1781) (Cerambycidae) (photo T. Mokrzycki)

Biology and ecology

It develops in dead deciduous trees with a preference for poplar *Populus* L. and birch *Betula* L. Imagines appear from May to August. Its development cycle takes two years (Bense 1995).

Agapanthia intermedia Ganglbauer, 1884 (Fig. 585)

Material examined (Fig. 583)

Original data: Supraśl Forest District, Woronicza Reserve (FE60), 9.06.2020 – 1 ex., leg. M.A. Mazur, det. J.M. Gutowski; Żednia Forest District, ad Kołodno (FD69), 4.06.2022 – several exx., old gravel pit, leg. & det. J.M. Gutowski.

Data from the literature: Ruda Rzeczka (FE40), 10.06.2019 – 4 exx.; Horodnianka (FE50), 22.07.2019 – 1 ex.; Dworzysk (FE60), 26.05.2020 – 3 exx. (Marczak et al. 2023d).

Distribution

It is found in Central and Southern Europe, except for Fennoscandia, the British Isles, and most of the Iberian Peninsula (Bense 1995). Recently reported from Denmark and Estonia. Outside Europe, it is found in Georgia and Kazakhstan (Danilevsky 2020). Rare in Poland, found mainly in the south. Recent reports are from Upper and Lower Silesia, the Kraków-Wieluń Upland, the Eastern and Western Sudetes (Szczepański & Szczepański 2019; Smolis et al. 2023), Poznań and surroundings (Bunalski et al. 2021), the Zwoleńka Valley Nature 2000 area (Miłkowski & Gutowski 2021), and the Western Beskid (Szafraniec et al. 2021).

Biology and ecology

Larvae develop in the shoots of herbaceous plants, mainly *Knautia arvensis* (L.) J.M. Coult. It has a one-year development cycle (Bense 1995). It occurs in sunny, semi-open or open sites (Gutowski original information).

Notes

Listed as LC (least concern) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). All reports from Poland of *Agapanthia violacea* (Fabricius, 1775) are in fact about this species.

Fig. 585. ***Agapanthia intermedia*** **Ganglbauer, 1884 (Cerambycidae)** (photo J. Tatur-Dytkowski)

Leiopus punctulatus (Paykull, 1800) (Fig. 586)

Fig. 586. ***Leiopus punctulatus*** **(Paykull, 1800) (Cerambycidae)** (photo J. Tatur-Dytkowski)

Material examined (Fig. 587)

Original data: Supraśl Forest District, Budzisk Reserve, compartment 1/2 (FE50), 16.06.1982 – 1 ex., on a pile of aspen branches, oak-hornbeam forest, leg. & det. J.M. Gutowski (Plan ochrony... Budzisk 2011); Czarna Białostocka Forest District, Jesionowe Góry Reserve (FE51), 27.04.2010 – 2 larvae, on lying Aspen tree, leg. J.M. Gutowski & K. Sućko, det. J.M. Gutowski (Plan ochrony... Jesionowe Góry 2011); Żednia Forest District, Las Cieliczański Reserve (FD59), 16.06.2010 – 2 exx., on lying aspen branches, leg. J.M. Gutowski & K. Sućko, det. J.M. Gutowski (Plan ochrony... Cieliczański Forest 2011).

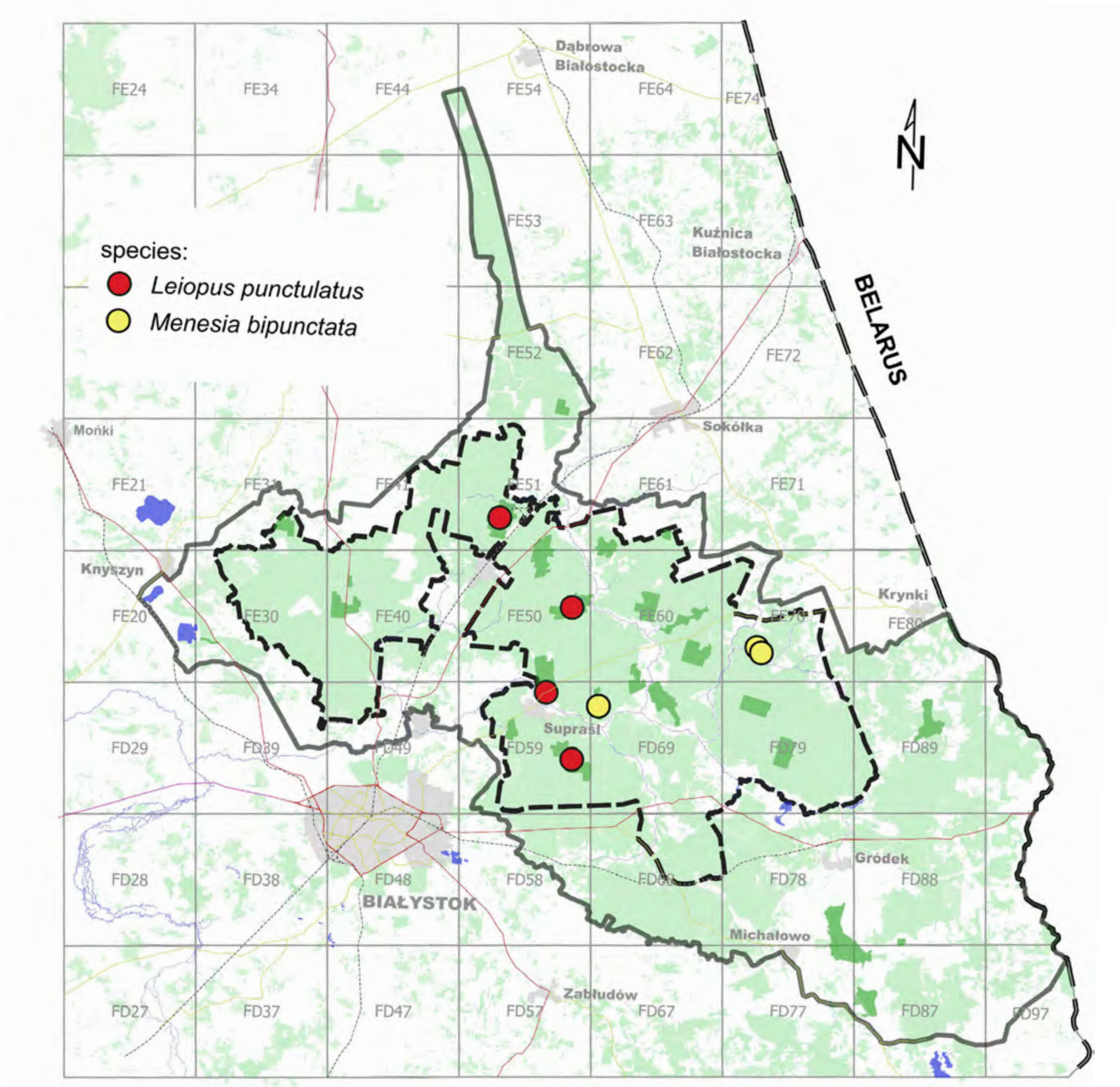


Fig. 587. Localities of *Leiopus punctulatus* and *Menesia bipunctata* (Cerambycidae) in Knyszyńska Forest

Data from the literature: Supraśl Forest District (FE60) (Gutowski 1995; Gutowski et al. 1999); Podsupraśl (FD59), 6.06.1996 – 1 ex., mixed forest (Marczak et al. 2023d).

Distribution

A species known from Central and Northern Europe (Bense 1995). Rare in Poland (Burakowski et al. 1990a). Recently reported from Romincka Forest (Gutowski et al. 2011), the Spalsko-Rogowskie Forests (Byk et al. 2013), the Warszawa area (Górski & Tatur-Dytkowski 2015), and Świętokrzyski National Park (Buchholz et al. 2021).

Biology and ecology

It develops in freshly dead branches and trunks of poplars *Populus* L., preferring *Populus tremula* L. Larvae feed under the bark. It has a one- to two-year development cycle. Imagines appear from May to July (Bense 1995).

Menesia bipunctata **(Zubkov, 1829)** (Fig. 588)

Fig. 588. ***Menesia bipunctata*** **(Zubkov, 1829) (Cerambycidae)** (photo J. Tatur-Dytkowski)

Material examined (Fig. 587)

Data from the literature: Sokółka Forest District, compartment 257 (FE60), 26.07.1979 – 1 dead imago in the pupal cell and several abandoned larval galleries, mossy alder, compartment 246/258 (FE60), 1 dead larva in the pupal cell in the stem of an alder buckthorn *Frangula alnus* Mill. (Gutowski 1995); Supraśl Forest District, Krzemienne Góry Reserve (FD69), 2.06.1996 – 1 ex. (Gutowski et al. 1999; Marczak et al. 2023d).

Distribution

A European species, found from western France to the southern Urals and from the Baltic countries to northeastern Italy, the Balkans, and the southern part of European Russia (Sama 2002). Until recently, it was known in Poland from a small number of localities (Burakowski et al. 1990a). In recent years, it has been reported more frequently (Żurawlew & Melke 2018; Gutowski et al. 2020a; Marczak 2020; Smolis et al. 2023), probably occurring more widely than previously thought.

Biology and ecology

It develops mainly in the shoots of alder buckthorn *Frangula alnus* Mill. and less frequently in willows *Salix* L., aspen *Populus tremula* L., and walnut *Juglans regia* L. Larvae initially excavate tunnels under the bark, later deep in the wood. Imagines appear in May and June. The beetles feed on the tissues of leaves and young shoots; when mature, they copulate and the females lay eggs on thin, 2–5 cm diameter, dying, broken or cut branches and trunks. Its developmental cycle takes one or two years (Burakowski et al. 1990; Sama 2002; Gutowski original information).

Notes

Listed as R (rare) in *Longhorn beetles (Cerambycidae: Coleoptera) of the eastern part of Poland* (Gutowski 1995).

Monochamus galloprovincialis **(Olivier, 1800)** (Fig. 589)

Material examined

Original data: common in Poland, recorded in KF from a number of localities, including the Jałówka (FD59), Karczmisko (FE40), Krasne (FD59), Krzemianka (FE40), Kulikówka (FE30), and Las Cieliczański (FD59) reserves.

Data from the literature: Kopna Góra, August 1985 (FE60) (Kubisz & Pawłowski 1995); Krasny Las (FD59), 12.06.1992 – 1 ex. (Marczak et al. 2023d).

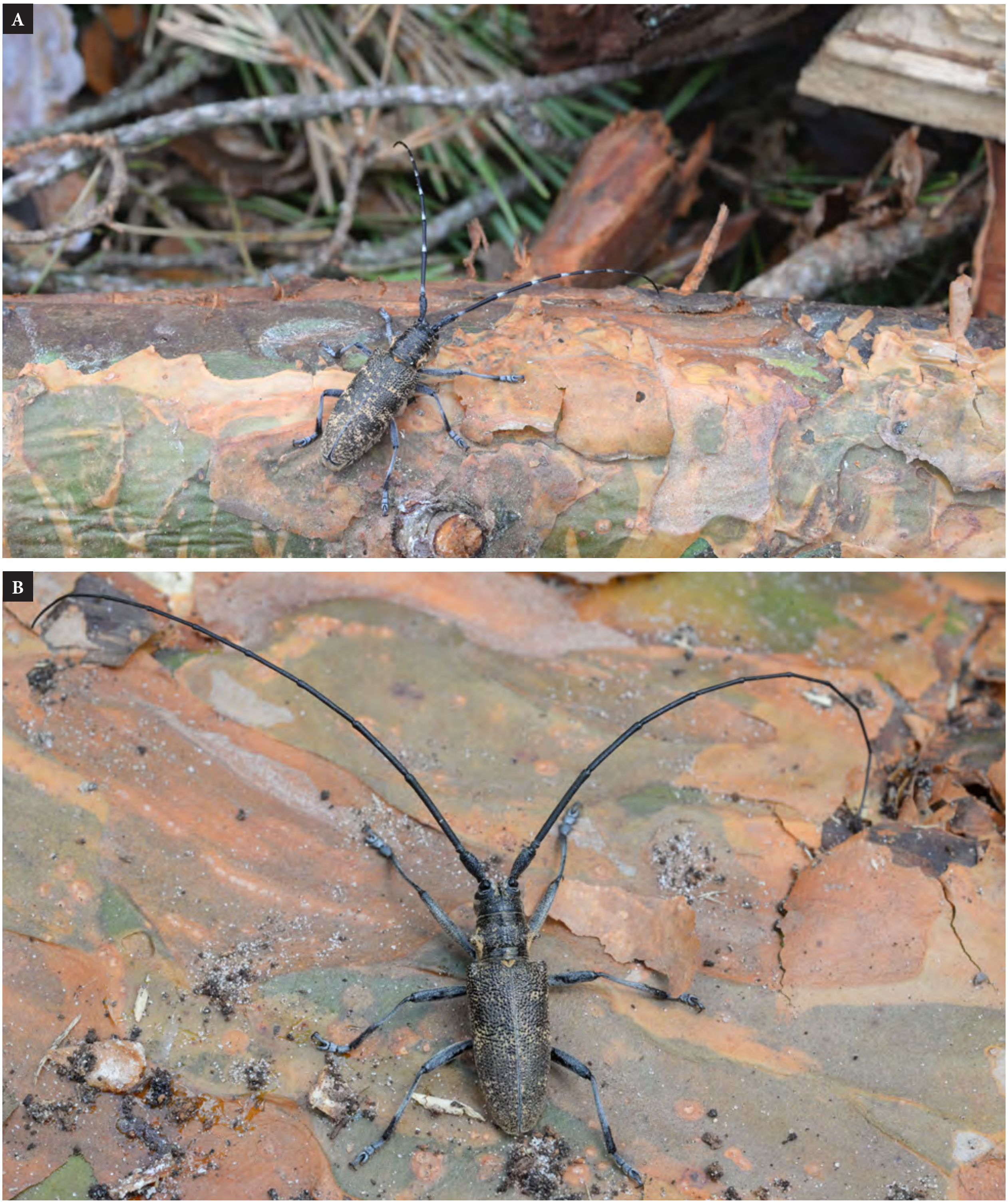


Fig. 589. ***Monochamus galloprovincialis*** **(Olivier, 1800) (Cerambycidae): A – female, B – male** (photo T. Mokrzycki)**, C – sawdust spilling out of the larval gallery** (photo J.M. Gutowski)

Distribution

The species is distributed almost throughout Europe and the northern part of Asia, reaching the Arctic Circle to the north, the Mediterranean, western North Africa, Asia Minor, the northern part of Kazakhstan and Mongolia to the south. In Poland, it is found throughout the country except in the higher mountainous areas, and is particularly abundant in poor pine stands of the western and central parts of the country (Burakowski et al. 1990; Gutowski 1995).

Biology and ecology

It inhabits both weakened standing trees and freshly fallen or felled trees and scrap wood. It usually develops in the thicker branches and fresh bark covered trunks of pine trees, but sometimes also in both thinner and thicker material. Swarming takes place in June and July, with single individuals found in May and August. After emerging from their pupal cells, the imagines conduct supplementary feeding on the fresh bark of young shoots in the tree crowns of live pines. Copulation takes place in the tree crown or on the trunk. The larva initially feeds under the bark, and after the first overwintering, it burrows into the wood. After the second overwintering, the larva makes a pupal cell deep in the wood, from which the imago emerges through a circular exit hole (different from the larva's entrance hole) (Burakowski et al. 1990; Gutowski 1995).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Considered a pest by the forestry industry.

Monochamus saltuarius occidentalis **(Sláma, 2017)** (Fig. 590)

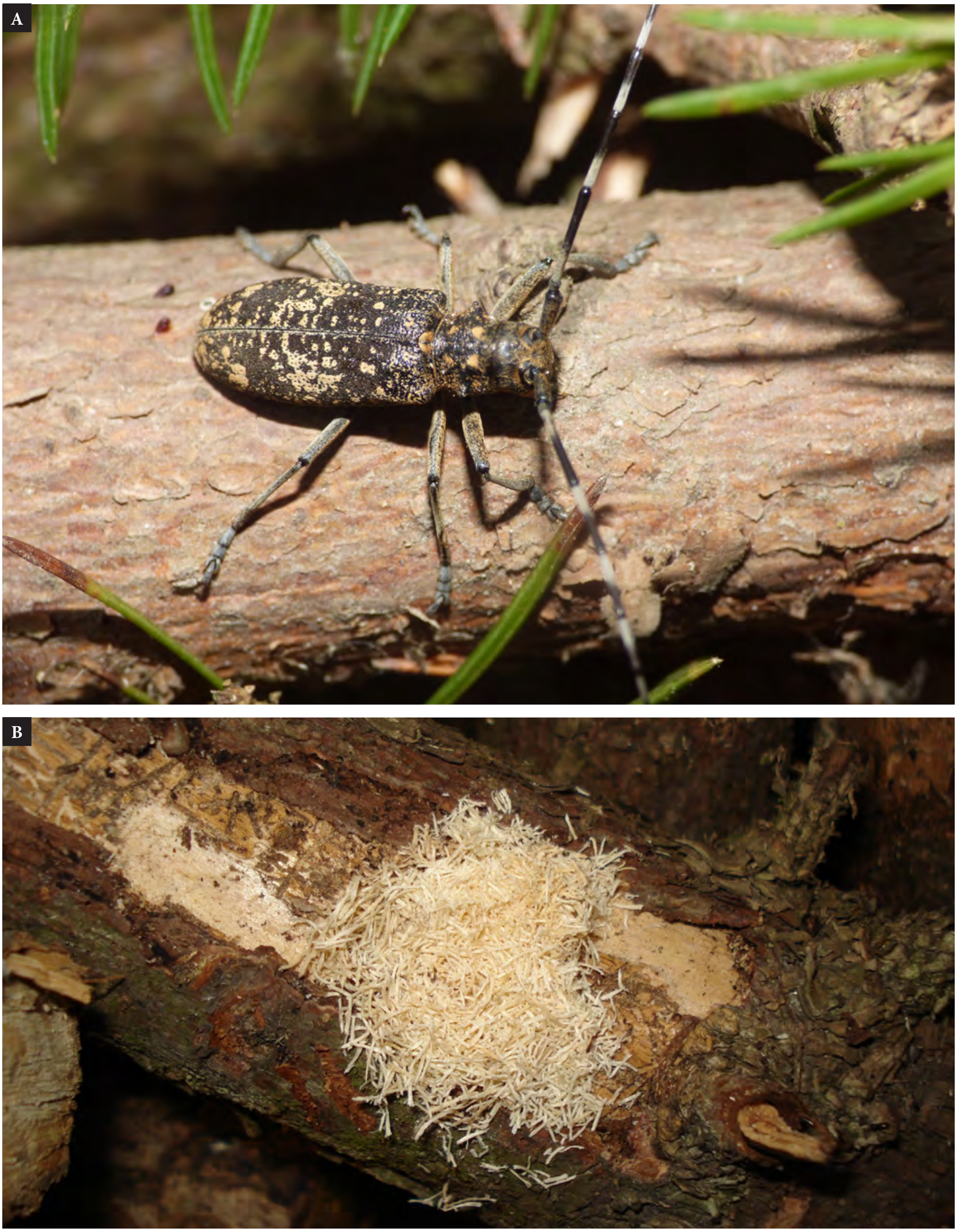


Fig. 590. ***Monochamus saltuarius occidentalis*** **(Sláma, 2017) (Cerambycidae): A – imago, B – sawdust spilling out from the larval gallery on a spruce tree** (photo J. Tatur-Dytkowski)

Material examined (Fig. 591)

Original data: Czarna Białostocka Forest District, ad Budzisk Reserve, compartment 110l (FE50), 6-29.06.2019 – 5 exx., violet Lindgren funnel trap, leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 110d (FE50), 6-29.06.2019 – 3 exx., violet Lindgren funnel trap, leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 110d (FE50), 6-29.06.2019 – 7 exx., green Lindgren funnel trap, leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 110d (FE50), 6-29.06.2019 – 1 ex., 30.06-20.07.2019 – 1 ex., violet Lindgren funnel trap in the tree crown, leg. & det. J.M. Gutowski; Waliły Forest District, ad Waliły-Stacja (FD78), 20-29.06.2021 – 2 exx., black Lindgren funnel trap, leg. & det. R. Plewa.

Data from the literature: Kopna Góra ad Supraśl (FE60), 11.06.2002 – 1 ex. on a spruce woodpile (Plewa et al. 2011b; Marczak et al. 2023d).

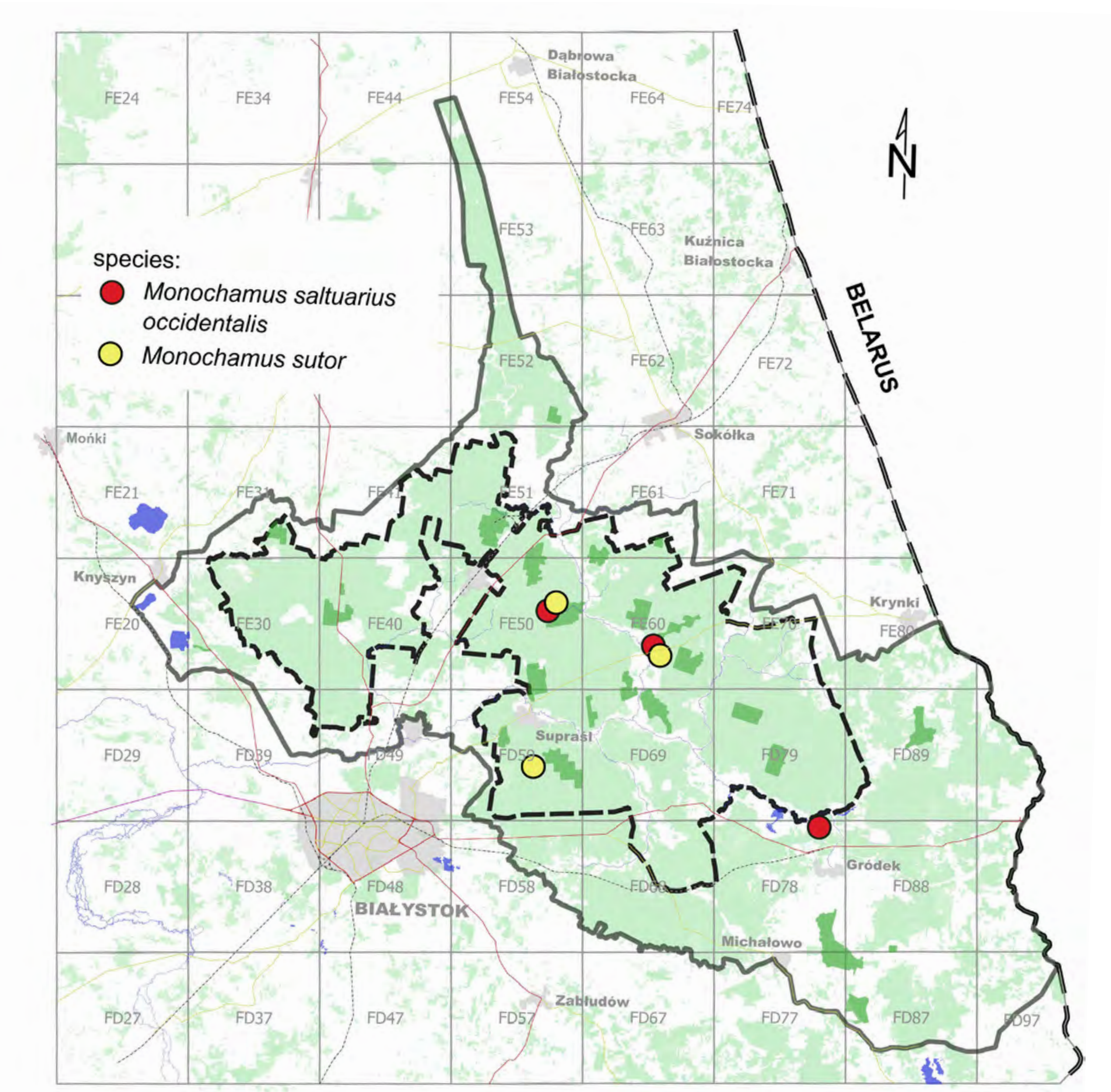


Fig. 591. Localities of *Monochamus saltuarius occidentalis* and *M. sutor* (Cerambycidae) in Knyszyńska Forest

Distribution

Monochamus saltuarius (Gebler, 1830) is a species with an Eurasian distribution. The eastern limit of its range runs along the western coasts of the Pacific Ocean, through Sakhalin, Japan, the northern part of Mongolia, and China. Germany and Poland form the western limit of its range. The subspecies *M. s. occidentalis* occupies Central and Eastern Europe, including Poland, and the nominate type – Asia (Danilevsky 2020). Until 1990, it was reported from only seven zoogeographical regions in Poland, some of which have not been confirmed for many decades (Burakowski et al. 1990a). It was later recorded from the Sandomierz Lowland (Gutowski 1995), the Świętokrzyskie Mountains (Bidas 2002; Buchholz et al. 2021), the Wielkopolska-Kujawy Lowland, Lower Silesia (Plewa et al. 2011b), the Bieszczady Mountains (Kurzawa et al. 2012), the Warszawa area (Górski & Tatur-Dytkowski 2015), the Tatra Mountains (Szczepański & Szczepański 2019), and the Western Beskid (Szafraniec et al. 2021), among others. For many years, *M. saltuarius occidentalis* was considered a very rare species in Poland, and only since the end of the 20th century has there been an increase in the number of its reports.

Biology and ecology

Develops in coniferous trees, mainly in Norway spruce *Picea abies* (L.) Karst. and less frequently in pine *Pinus* L. (Sama 2002). It inhabits dying branches in the lower part of the crown (Gutowski original information).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Monochamus sartor urussovii* (Fischer von Waldheim, 1805)** (Fig. 592)

Fig. 592. ***Monochamus sartor urussovii*** **(Fischer von Waldheim, 1805) (Cerambycidae): A – female** (photo archives FRI)**, B – male** (photo T. Mokrzycki)**, C – feeding imagines on live spruce twigs in the tree crown** (photo J.M. Gutowski)

Material examined (Fig. 593)

Original data: Czarna Białostocka Forest District, Budzisk Reserve, compartment 109 (FE50), 15.06.1982 – 1 ex., 8.03.2017 – 4 larvae and abandoned larval galleries in trunks of lying spruce trees, riparian forest, leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, Budzisk Reserve (FE50), 7.07.2015 – several feeding sites on fallen spruce trees, leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, Budzisk Reserve, compartment 124A (FE50), 8.03.2017 – several abandoned feeding sites on spruce trees, leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, Budzisk Reserve, compartment 109 (FE50), 28.06-26.07.2017 – 1 ex., black Lindgren funnel trap with bait, fresh mixed forest, leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, ad Budzisk, compartment 110 (FE50), 6-29.06.2019 – 1 ex., violet Lindgren funnel trap, leg. & det. J.M. Gutowski; Czarna Białostocka Forest District, ad Budzisk, compartment 110 (FE50), 6-29.06.2019 – 4 exx., violet Lindgren funnel trap, leg. & det. J.M. Gutowski; Supraśl Forest District, Międzyrzecze Reserve, compartment 203 (FE60), 25.03.2020 – larval gallery on spruce, leg. & det. K. Sućko; Waliły Forest District, Chomontowszczyzna Reserve, compartment 63 (FD79), 10.03.2021 – several foraging sites on spruce trees, leg. & det. J.M. Gutowski; Waliły Forest District, ad Waliły-Stacja (FD78), 20-29.06.2021 – 2 exx., black Lindgren funnel trap, leg. & det. R. Plewa.

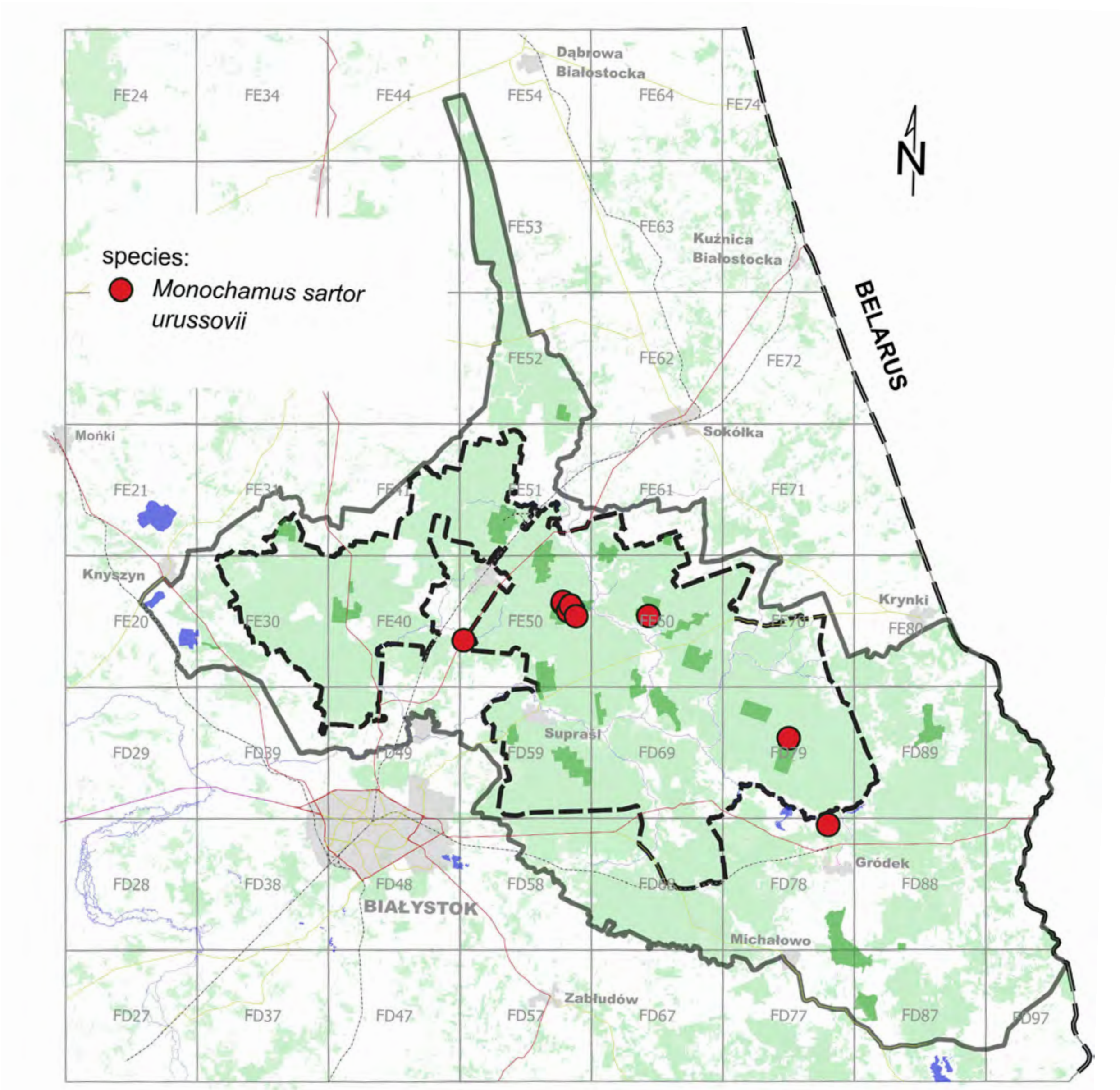


Fig. 593. Localities of *Monochamus sartor urussovii* (Cerambycidae) in Knyszyńska Forest

Data from the literature: Budzisk Reserve (FE50) (Gutowski 1995); KF (Plewa et al. 2018); Budzisk Forest Subdistrict (FE50), 5.07.2019 – 3 exx., on felled spruce trees; Horodnianka (FE50), 21.06.2021 – 2 exx., on felled spruce trees (Marczak et al. 2023d).

Distribution

This subspecies is widely distributed – its range includes Northern and Eastern Europe, northern Asia up to the Pacific Ocean and Japan. In Poland, it is found in the northeastern part of the country (Plewa et al. 2018).

Biology and ecology

Larvae of this species develop in Europe mainly on the Norway spruce *Picea abies* (L.) Karst., but also on other conifers, as well as on birch *Betula* L. in the eastern part of its range (Cherepanov 1983; Plewa et al. 2018).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018). Until recently, the subspecies had the status of a species – *Monochamus urussovii*.

***Monochamus sutor* (Linnaeus, 1758)** (Fig. 594)

Fig. 594. *Monochamus sutor* (Linnaeus, 1758) (Cerambycidae) (photo S. Szafraniec)

Material examined (Fig. 591)

Original data: ad Kopna Góra (FE60), 1988, several specimens in the collection of the Kopna Góra Forest Protection Station, det. J.M. Gutowski; Żednia (FD68), 5.06.1995 – 2 exx., wood depot, leg. M. Chilimoniuk, det. J.M. Gutowski; Czarna Białostocka Forest District, ad Budzisk Reserve, compartment 110 (FE50), 6-29.06.2019 – 5 exx., green Lindgren funnel trap, leg. & det. J.M. Gutowski.

Data from the literature: Kopna Góra (FE60), August 1985 (Kubisz & Pawłowski 1995); Krasny Las (FD59), 21.07.1990 – 1 ex., 6.06.1991 – 1 ex. (Marczak et al. 2023d).

Distribution

A boreal-mountain species, widely distributed in Europe as well as Siberia, northern Mongolia, northern China, the Korean Peninsula, and Japan (Bense 1995). In Poland, it is known from a number of localities, mainly in the mountains and the northeastern part of the country (Burakowski et al. 1990a). In recent years, it has been reported from Suwałki Landscape Park (Gutowski et al. 2020a), the Pomeranian Lake District (Bunalski et al. 2021), the Western Beskid (Łuszczak & Szafraniec 2021), and the Eastern Sudetes (Smolis et al. 2023), among others.

Biology and ecology

It develops under the bark and in the wood of coniferous trees, mainly *Picea* Dietr. spruce. It inhabits weakened, felled or freshly fallen trees. The development cycle usually takes one year (Burakowski et al. 1990a; Starzyk & Hilszczański 1997).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Considered a pest by the forestry industry.

Oberea pupillata (Gyllenhal, 1817) (Fig. 595)

Material examined (Fig. 596)

Original data: Czarna Białostocka Forest District, ad Czumażówka, compartment 172 (FE50), 6.11.2019 – foraging on the shoots of *Lonicera xylosteum* L., ash-alder forest, leg. & det. R. Plewa; Żednia Forest District, ad Kołodno (FD69), 28.05.2021 – several feeding sites on shoots of *L. xylosteum*, 4.06.2021 – several feeding sites on branches of *L. xylosteum*, leg. & det. J.M. Gutowski.

Data from the literature: Kopna Góra (FE60), 8.05.1986 – 2 exx. and abandoned larval gallery (Gutowski 1995; Kubisz & Pawłowski 1995); Podsokołda (FE60), 3.06.2005 – 1 ex. (Marczak et al. 2023d).

Distribution

A European species, widely distributed from France to Poland, Belarus, Ukraine, and the European part of Russia; in the south reaching northern Spain and northern Italy, sporadic in the Balkans (Danilevsky 2020; Sama 2002). It is very rare in Poland, only slightly more common in the mountains; its localities are concentrated in the south and in northeastern Poland. Earlier data on its distribution in Poland were collected by Burakowski et al. (1990a); more recent information is provided by: Starzyk et al. (1991), Gutowski (1995), Michalcewicz (2010), Plewa et al. (2011a), Kurzawa et al. (2012), Buchholz & Melke (2018), Gutowski et al. (2020a), Bunalski et al. (2021), Łuszczak & Szafraniec (2021).

Biology and ecology

A monophage of *Lonicera* L.; found in Poland on *L. nigra* L. and *L. xylosteum* L. Females lay eggs in holes made by chewing the bark of living shoots. Young larvae feed initially under the bark and later chew the wood, making tunnels. Its developmental cycle takes two years. Imagines can be found on host plants from May to July (Gutowski 1995; Sama 2002).

Notes

Listed as R (rare) in *Longhorn beetles (Cerambycidae: Coleoptera) of the eastern part of Poland* (Gutowski 1995).

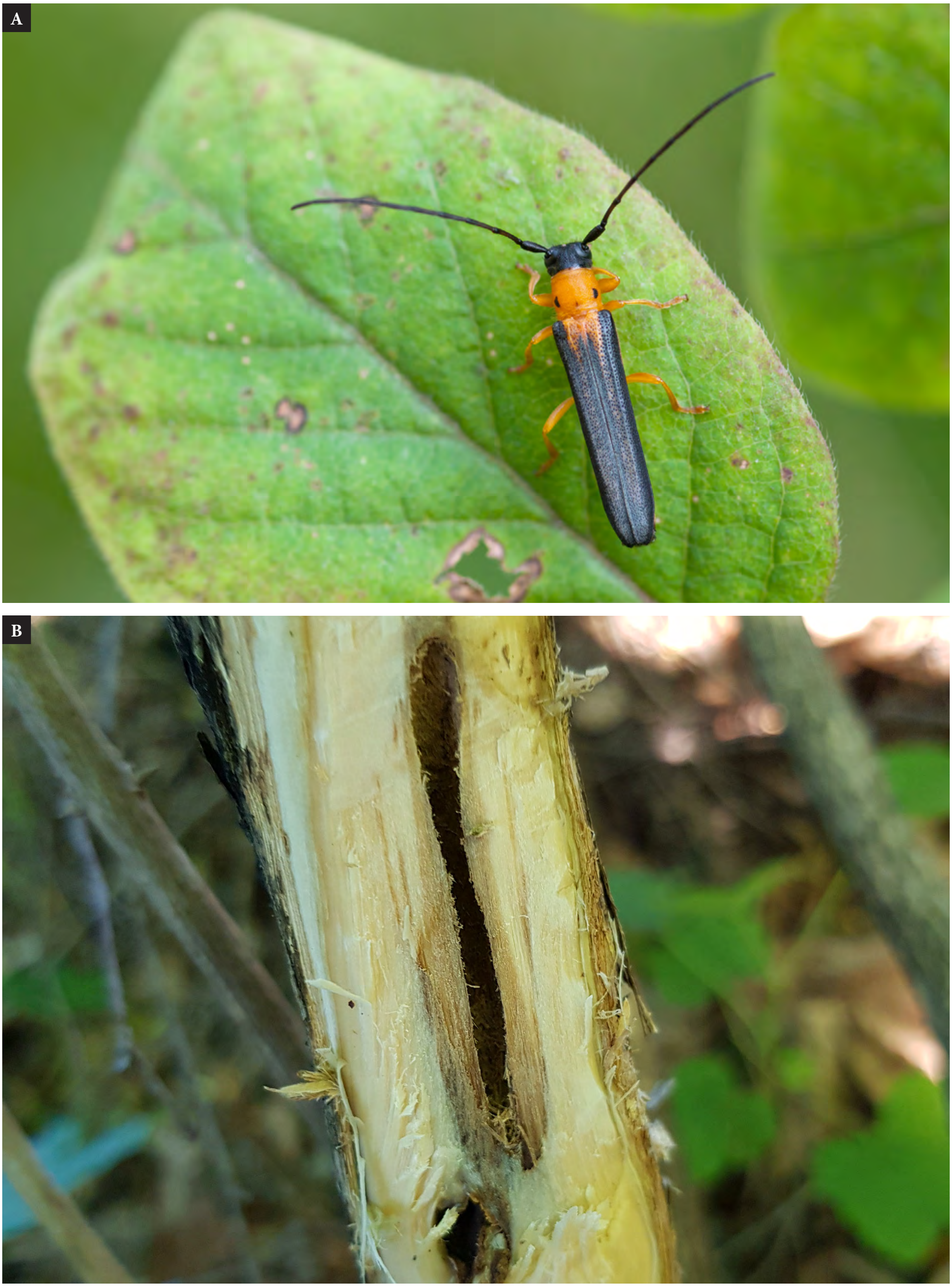


Fig. 595. ***Oberea pupillata*** **(GYLLENHAL, 1817) (Cerambycidae): A – imago** (photo P. Niemiec)**, B – larval gallery on** ***Lonicera xylosteum*** **L.** (photo J.M. Gutowski)

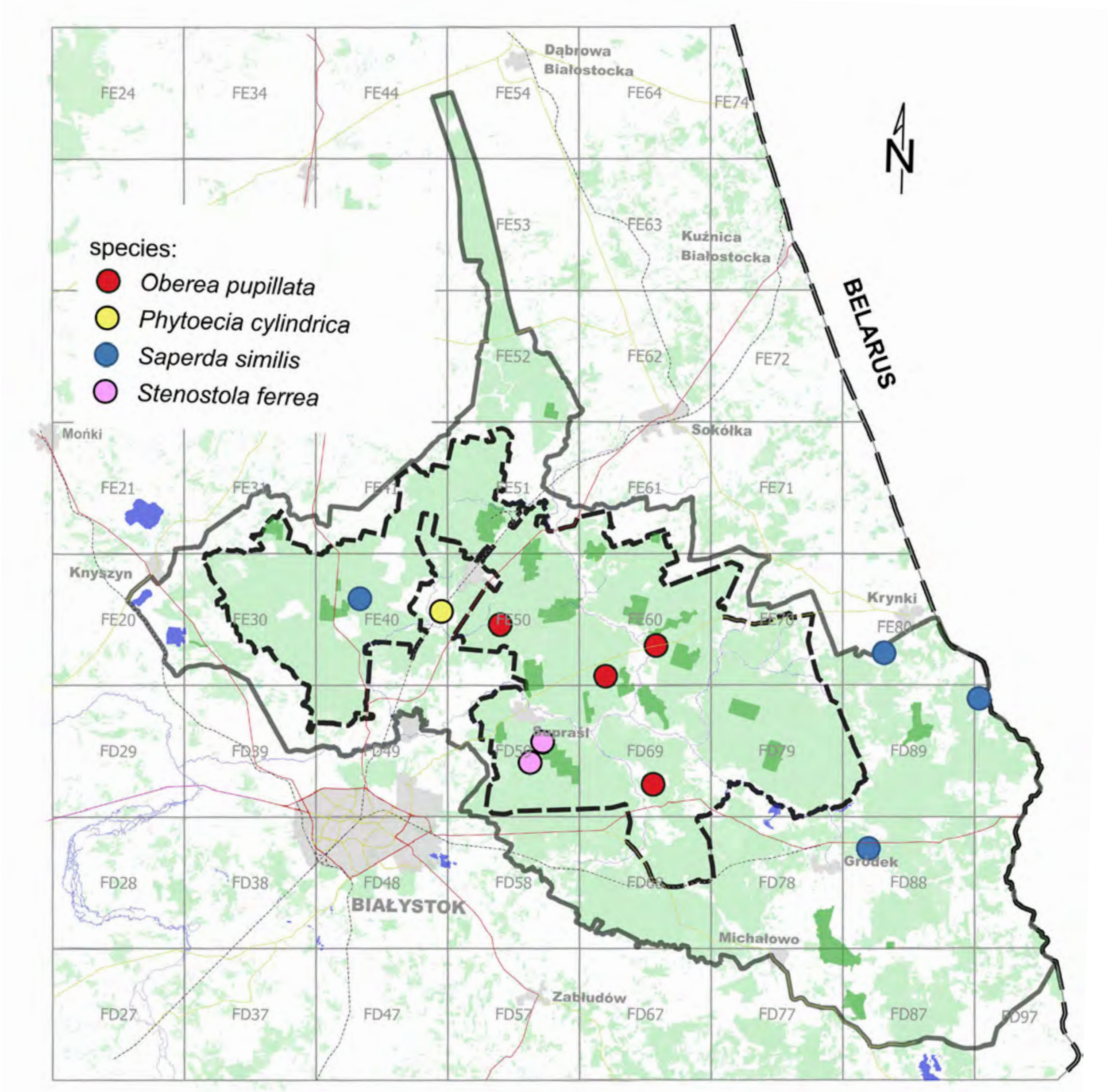


Fig. 596. Localities of *Oberea pupillata*, *Phytoecia cylindrica*, *Saperda similis*, and *Stenostola ferrea* (Cerambycidae) in Knyszyńska Forest

Phytoecia cylindrica (Linnaeus, 1758) (Fig. 597)

Material examined (Fig. 596)

Data from the literature: Ruda Rzeczka (FE40), 11.06.2020 – 1 ex., caught in a net in a dry meadow (Marczak et al. 2023d).

Distribution

It occurs almost all over Europe, in Asia Minor, the Caucasus, Transcaucasus, Iran, Central Asia, Siberia, and northern China (Bense 1995). In Poland, it is known from a small number of scattered localities, mainly in the south of the country (Burakowski et al. 1990a). Recently reported from the Western Sudetes (Smolis et al. 2023).

Fig. 597. ***Phytoecia cylindrica*** **(Linnaeus, 1758) (Cerambycidae)** (photo P. Niemiec)

Biology and ecology

It inhabits open and semi-open areas, such as wide mid-forest clearings. Females lay eggs in living herbaceous plants, 5–6 mm in diameter, usually in the upper part of the stem below the inflorescence. Larvae excavate tunnels in the stem to the pith, then toward the base of the stem. The host plants of the larvae are species of the celery family (Apiaceae): *Chaerophyllum temulum* L., *Heracleum sphondylium* L., *Anthriscus sylvestris* (L.) Hoffm., *Astrantia* major L., *Daucus carota* L., and others. In August, older larvae make a pupal chamber in the upper part of the roots, where they pupate and then overwinter as an imago. Its developmental cycle takes one year, exceptionally two years (Burakowski et al. 1990a; Sama 2002).

Saperda perforata (Pallas, 1773) (Fig. 598)

Material examined

Original data: common species in KF, known from many localities; among others, reported from the Budzisk (FE50), Chomontowszczyzna (FD79), Jesionowe Góry (FE51), Kozłowy Ług (FE61), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), Rabinówka (FD78), Szyndzielski Starodrzew (FE52), and Woronicza (FE60) reserves.

Data from the literature: Kopna Góra (FE60), May 1986 (Kubisz & Pawłowski 1995); Budzisk Reserve (FE50), 1-30.04.2019 – 1 ex., IBL-5 trap on maple, 1-31.05.2019 – 2 exx., 1-30.06.2019 – 1 ex., IBL-5 trap on aspen (Marczak et al. 2023d).

Fig. 598. ***Saperda perforata*** **(Pallas, 1773) (Cerambycidae): A – imago, B – larva in an aspen larval gallery** (photo J. Tatur-Dytkowski)

Distribution

It is distributed from the southern provinces of Fennoscandia to the Mediterranean countries and North Africa, reaching eastward through Siberia to the Sea of Okhotsk and Japan and the northern part of China (Burakowski et al. 1990a; Danilevsky 2020). In Poland, it probably occurs throughout the area except in the higher mountains, although not yet reported from some zoogeographical regions (Burakowski et al. 1990a).

Biology and ecology

It develops in poplars *Populus* L., mainly in aspens *Populus tremula* L. in Poland. Larvae feed in dead trunks and thick branches. They excavate tunnels under the bark, disturbing the outer layers of wood; they pupate in the wood, very rarely under or inside the bark. Imagines occur on their host plants in June and July (Sama 2002; Gutowski original information).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

***Saperda scalaris* (Linnaeus, 1758)** (Fig. 599)

Fig. 599. *Saperda scalaris* (Linnaeus, 1758) (Cerambycidae) (photo J. Tatur-Dytkowski)

Material examined

Original data: one of the most common species of longhorn beetles in KF, found in many different places, including the Bahno w Borkach (FD69), Budzisk (FE50), Chomontowszczyzna (FD79), Jałówka (FD59), Jesionowe Góry (FE51), Kozłowy Ług (FE61), Krasne (FD59), Krzemianka (FE40), Krzemienne Góry (FD69), Las Cieliczański (FD59), Międzyrzecze (FE60), Rabinówka (FD78), Stara Dębina (FE61), Stare Biele (FE60), Starodrzew Szyndzielski (FE52), Surażkowo (FE60), Woronicza (FE60) reserves.

Data from the literature: Las Cieliczański Reserve (FD59), 18.06.2020 – 1 ex., Horodnianka (FE50), 5.07.2013 – 1 ex., Jesionowe Góry Reserve (FE51), 1-30.06.2020 – 2 exx. (Marczak et al. 2023d).

Distribution

Found in Europe, North Africa, Siberia, Asia Minor (northern Turkey), Caucasus. A common species in most of Europe, rare in Spain (Sama 2002). It is common in Poland and reported from throughout the country (Burakowski et al. 1990a; Gutowski original information).

Biology and ecology

A polyphagous species of deciduous trees, occasionally also found on coniferous trees. It develops under the bark of dead branches and trunks. Larvae chew tunnels into the wood, and the pupal cell is usually under the surface of the wood, less often under the bark. Its developmental cycle takes two years. Imagines can be found on host plants from May to July (Starzyk 1988; Sama 2002).

Notes

Listed as LC (least concern) in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018).

Considered a pest by the forestry industry.

***Saperda similis* Laicharting, 1784** (Fig. 600)

Material examined (Fig. 596)

Original data: Waliły Forest District, Gródek Forest Subdistrict, compartment 411 (FD78), 2009 – larval galleries on *Salix caprea* L., leg. & det. T. Popławski (Popławski 2010); Krynki Forest District, compartment 142 (FE80), 11.07.2023 – numerous larvae in larval galleries on *S. caprea*, leg. & det. R. Plewa; Knyszyn Forest District, Karczmisko Forest Subdistrict, compartment 164 (FE40), 14.07.2023 – larvae in larval galleries on *S. caprea*, leg. & det. R. Plewa.

Data from the literature: Ozierany ad Krynki (FD89), 07.2008 – foraging on *S. caprea* branches (Plewa et al. 2011a).

Distribution

The species occurs in Europe, in Siberia as far south as Primorsky Krai, and in the northern part of Mongolia. In Europe, it is fairly widely distributed, but rare or very rare everywhere, especially in the south of the continent (Sama 2002). In Poland, it is infrequently encountered, recorded from a small number of localities mainly in the eastern part of the country (Burakowski et al. 1990a). More recent occurrence data are provided by: Gutowski (1995); Najbar (1998); Gutowski et al. (1999); Bidas (2005); Miłkowski et al. (2008); Gutowski et al. (2011, 2012, 2020a); Plewa et al. (2011a).

Biology and ecology

Probably a monophage of *S. caprea*. Larvae inhabit living branches, excavating tunnels mainly in the wood. Swarming takes place from June to August. Imagines feed on willow leaves and the bark of young shoots; they are active at dusk and night. Its developmental cycle takes two years (Burakowski et al. 1990a; Sama 2002).

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002); listed as R (rare) in *Longhorn beetles (Cerambycidae: Coleoptera) of the eastern part of Poland* (Gutowski 1995).

The paper by Marczak et al. (2023e) includes erroneous information that this species was reported by Gutowski et al. (1999) from Czarna Białostocka. In fact, there is no information about *S. similis* from Knyszyńska Forest in the cited work.

Fig. 600. ***Saperda similis*** **Laicharting, 1784 (Cerambycidae): A – imago** (photo J. Tatur-Dytkowski)**, B – larval galleries in a branch of *Salix caprea* L.** (photo J.M. Gutowski)

Stenostola ferrea (Schrank, 1776) (Fig. 601)

Fig. 601. *Stenostola ferrea* (Schrank, 1776) (Cerambycidae) (photo P. Niemiec)

Material examined (Fig. 596)

Original data: Dojlidy Forest District, Krasny Las Forest Subdistrict (FD59), 18.06.2020 – 1 ex., leg. & det. R. Królik; Dojlidy Forest District, Las Cieliczański Reserve (FD59), 18.06.2020 – 2 exx., leg. & det. R. Królik.

Data from the literature: Krasny Las (FD59), 18.06.2020 – 1 ex. (Marczak et al. 2023d).

Distribution

It is found in Central Europe, the British Isles, and southern Fennoscandia (Bense 1995), as well as in the Caucasus and Transcaucasus (Burakowski et al. 1990a). In Poland, it probably occurs throughout the area, but is not often found (Burakowski et al. 1990a).

Biology and ecology

Develops in deciduous trees, mainly linden *Tilia* L., also reported from walnut *Juglans* L., beech *Fagus* L., oak *Quercus* L., willow *Salix* L., pear *Pyrus* L., chestnut *Castanea* Mill., and elm *Ulmus* L. Its developmental cycle takes two years (Bense 1995).

Chrysomelidae

Chaetocnema picipes Stephens, 1831 (Fig. 602)

Material examined (Fig. 603)

Original data: Czarna Białostocka Forest District, Budzisk Forest Subdistrict, compartment 110 (53.28388, 23.36765, FE50), 7-29.06.2019 – 1 ex., green Lindgren funnel trap, leg. J.M. Gutowski, det. T. Gazurek.

Fig. 602. *Chaetocnema picipes* Stephens, 1831 (Chrysomelidae) (photo L. Borowiec)

Distribution

A species with a wide geographic range, found from Spain to the Far East (Konstantinov et al. 2011). Quite rare in Poland, reported from Bytom, Warszawa, Urle (Borowiec 1992), Bieszczady National Park (Borowiec & Kania 1996), Białowieża Forest, Biebrza National Park, Tuchola Forest (Gutowski et al. 2006), the Pisz area (Gutowski et al. 2010b), Poleski National Park (Ścibior & Pietrykowska-Tudruj 2010), and Suwałki Landscape Park (Gutowski et al. 2020a). Also found by one of the authors of this study (A. Lasoń) in and around Białystok (Olmonty).

Biology and ecology

It lives on plants in the Polygonaceae and Brassicaceae families, such as *Polygonum aviculare* L., *P. persicaria* L., and *Brassica rapa* L. (Konstantinov et al. 2011).

Notes

The species is very similar to *Chaetocnema concinna* (Marsham, 1802), from which it differs in the structure of the penis and spermatheca. The literature also reports it under the synonymous names of: *C. heikertingeri* Lyubishchev and *C. laevicollis* Thomson.

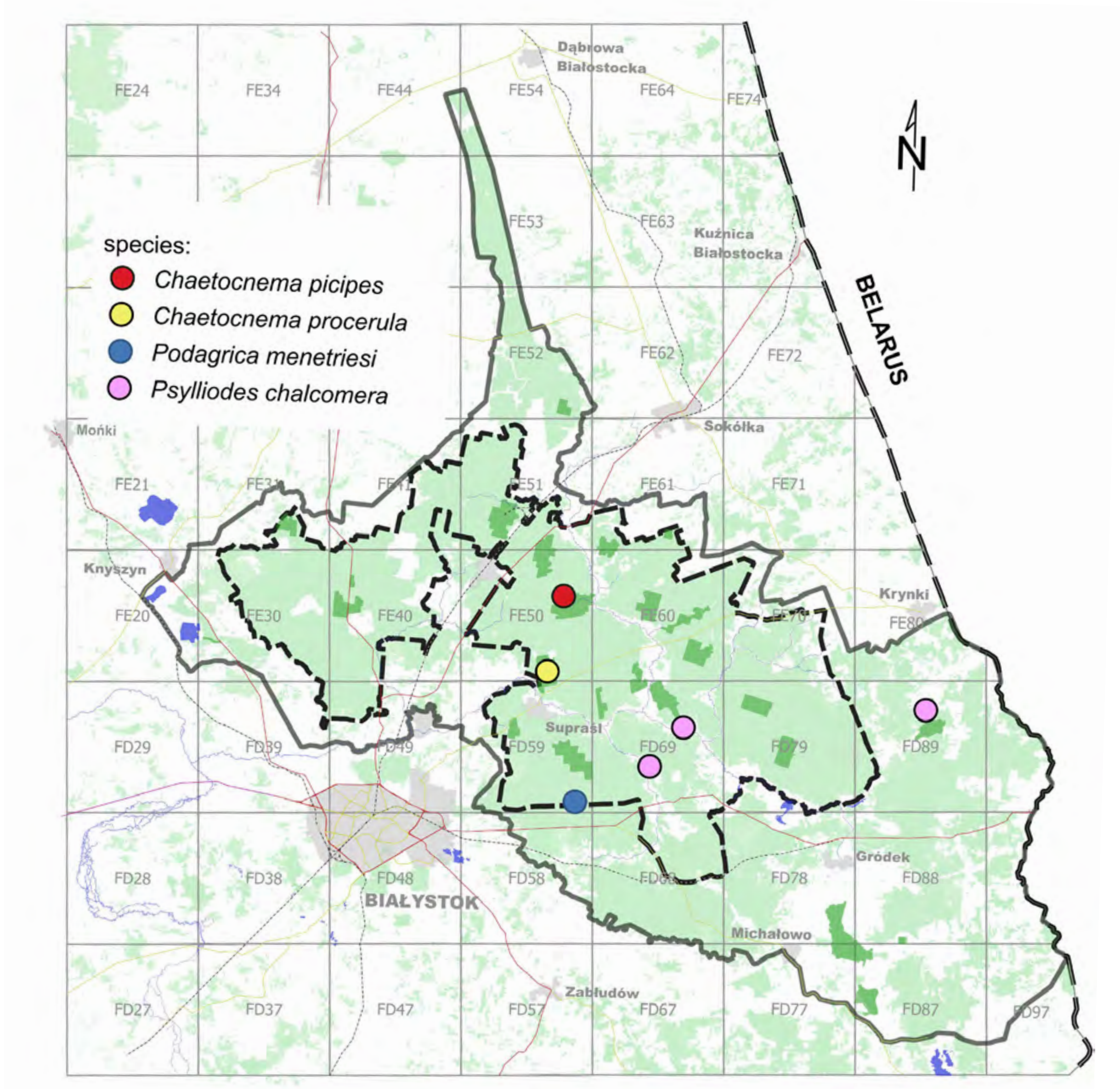


Fig. 603. Localities of *Chaetocnema picipes*, *C. procerula*, *Podagrica menetriesi*, and *Psylliodes chalcomera* (Cerambycidae) in Knyszyńska Forest

Chaetocnema procerula (Rosenhauer, 1856) (Fig. 604)

Material examined (Fig. 603)

Original data: Supraśl Forest District, Jałówka Reserve (53.23290, 23.34611, FE50), 13.05.2020 – 1 ex., sweep net, leg. J.M. Gutowski, det. T. Gazurek.

Distribution

The species is found from Spain through the European part of Russia to Turkey and Azerbaijan. Also known from northwest Africa: Algeria, Morocco, and Tunisia. Not reported from northern European countries (Konstantinov et al. 2011). Considered a very rare species in Poland, reported so far from only a small number of localities in three zoogeographical regions, where all the data refer to reports from several decades ago. These data were compiled by Burakowski et al. (1991) and refer to Zimna Woda Reserve in Lower Silesia, the villages of Góra and Słubice in the Wielkopolska-Kujawy Lowland, and Florianka in Roztocze. In Podlasie, it was recorded on the basis of a report from Poleski National Park (Ścibior & Petrykowska-Tudruj 2008).

Fig. 604. ***Chaetocnema procerula*** **(Rosenhauer, 1856) (Chrysomelidae)** (photo L. Borowiec)

Biology and ecology

Found on various species of sedges *Carex* L. (Burakowski et al. 1991) and on *Rumex crispus* L. (Konstantinov et al. 2011).

Notes

Listed as as VU (vulnerable) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

The is a new species for Knyszyńska Forest.

Podagrica menetriesi (Faldermann, 1837) (Fig. 605)

Material examined (Fig. 603)

Original data: Żednia Forest District, Kołodno Forest Subdistrict, compartment 157, Majdańskie Bagna (53.14311, 23.37250, FD59), 12.06.2020 – 1 ex., leg. M.A. Mazur, det. T. Gazurek.

Distribution

Species known from the southern and southeastern parts of Europe, the Caucasus, Transcaucasia, Turkey, Iraq, Kazakhstan, and Central Asia (Borowski 2020a). Of the countries neighboring Poland, it is reported from Germany, Czech Republic, Slovakia, and Ukraine (Biondi 2023).

Biology and ecology

It lives on mallow family (Malvaceae) plants, including *Abutilon theophrasti* Medik., *Alcea rosea* L., *Althaea officinalis* L., *Malva arborea* (L.) Webb & Berthel (Plant Parasites of Europe 2020a).

Fig. 605. ***Podagrica menetriesi*** **(Faldermann, 1837) (Chrysomelidae)** (photo L. Borowiec)

Notes

A species similar in appearance to *Podagrica fuscicornis* (Linnaeus, 1767), from which it is distinguished by the stronger indentations on the elytra.

A new species for the fauna of Poland!

Psylliodes chalcomera (Illiger, 1807) (Fig. 606)

Material examined (Fig. 603)

Original data: Żednia Forest District, Kołodno (53.16541, 23.45890, FD69), 7.06.2020 – 1 ex., sweep net, leg. M.A. Mazur, det. T. Gazurek; Supraśl Forest District, Borki (53.1913, 23.4989, FD69), 8.06.2020 – 1 ex., leg. M.A. Mazur, det. T. Gazurek; Krynki Forest District, Nietupa Reserve, compartment 393 (53.19685, 23.77558, FD89), 21.05.2021 – 1 ex., leg. K. Sućko, det. T. Gazurek.

Distribution

A species with a wide geographic range, it is found from Spain to the Far East, northward reaching as far as Denmark and southern Sweden. Also known from northwest Africa – Algeria, Morocco, and Tunisia. In Poland, the beetle is rarely recorded, reported from a small number of localities in ten lands (Burakowski et al. 1991; Borowiec 1992). After 2000, it was reported from Bagno Bubnów near Sęków, on the border of Podlasie and the Lublin Upland (Ścibior 2010).

Biology and ecology

Found on various species of plumeless thistles *Carduus* L. and plume thistles *Cirsium* Mill. (Burakowski et al. 1991).

Fig. 606. ***Psylliodes chalcomera*** **(Illiger, 1807) (Chrysomelidae)** (photo L. Borowiec)

Bruchus brachialis **Fåhraeus, 1839** (Fig. 607)

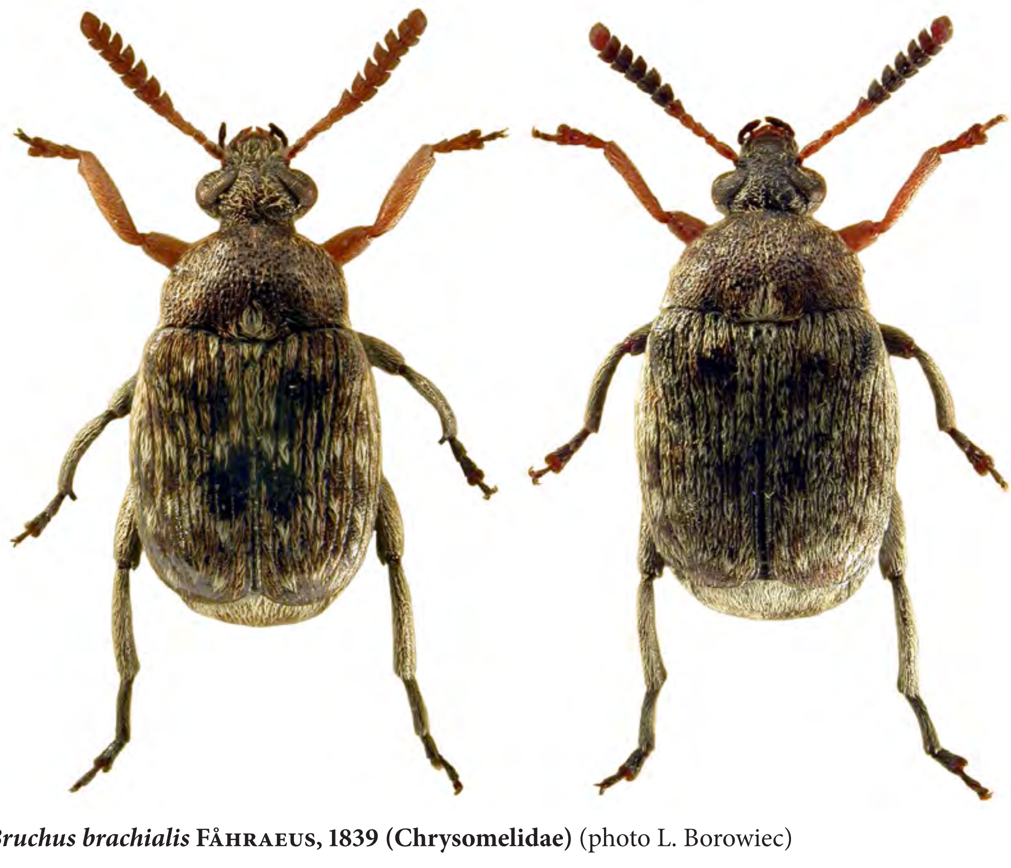


Fig. 607. ***Bruchus brachialis*** **Fåhraeus, 1839 (Chrysomelidae)** (photo L. Borowiec)

Material examined (Fig. 608)

Original data: Dojlidy Forest District, Krasny Las Forest Subdistrict, compartment 6 (53.18527, 23.36599, FD59), 28.05.2021 – 1 ex., leg. J.M. Gutowski, det. T. Gazurek; Dojlidy Forest District, Krasny Las Forest Subdistrict, compartment 10 (53.1817, 23.33481, FD59), 2.06.2021 – 1 ex., leg. K. Sućko, det. T. Gazurek; ad Ruda Rzeczka (53.27866, 23.23862, FE40), 10.06.2021 – 1 ex., leg. K. Sućko, det. T. Gazurek; ad Krynki, sandpit (53.24849, 23.78459, FE80), 23.06.2021 – 1 ex., sweep net, leg. J.M. Gutowski, det. T. Gazurek; Żednia Forest District, Pieszczaniki Forest Subdistrict (53.1580, 23.4686, FD69), 4.06.2022 – 1 ex., leg. J.M. Gutowski, det. T. Gazurek.

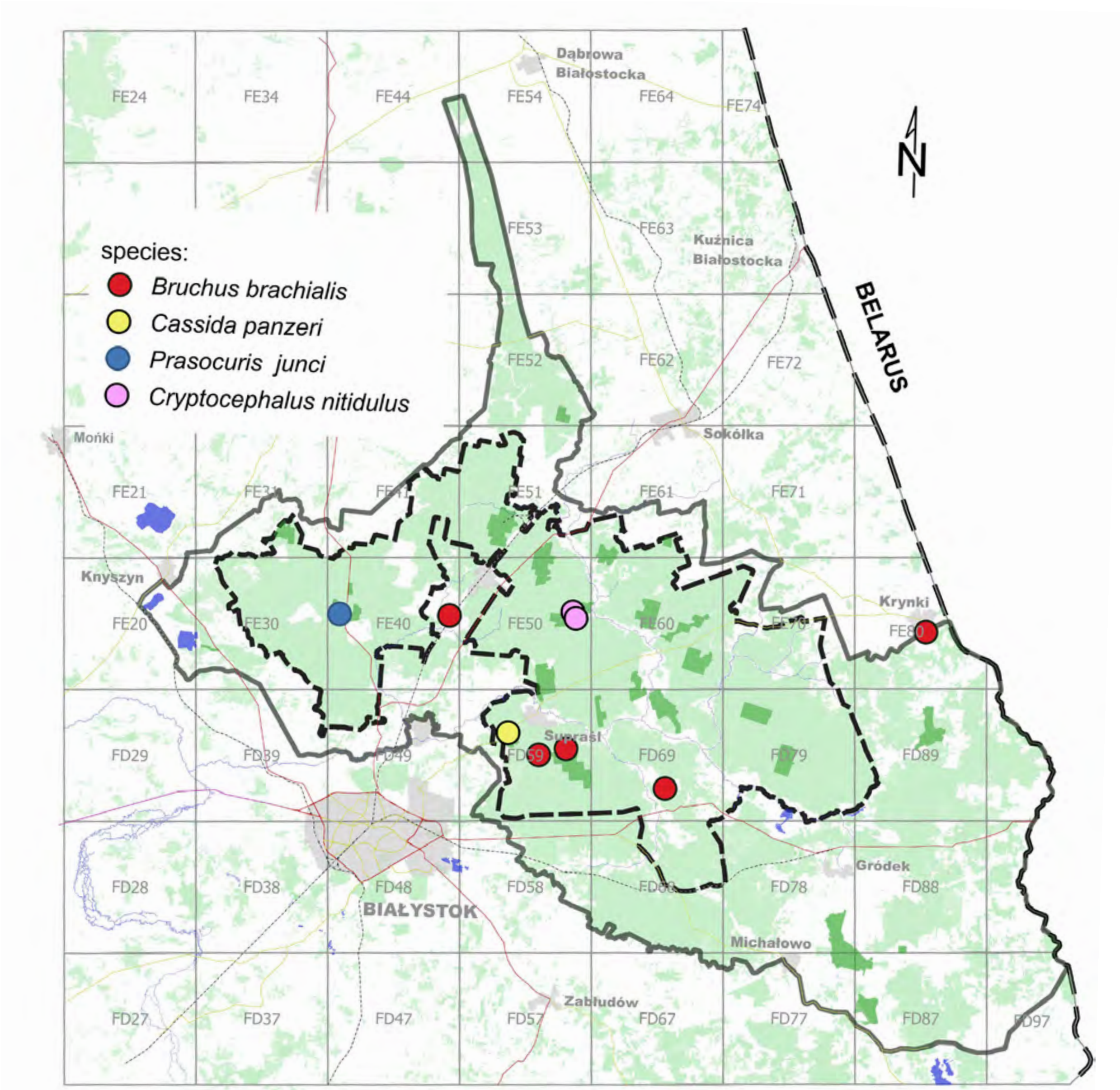


Fig. 608. Localities of *Bruchus brachialis*, *Cassida panzeri*, *Prasocuris junci*, and *Cryptocephalus nitidulus* (Chrysomelidae) in Knyszyńska Forest

Distribution

A species found in Central and Southern Europe, North Africa (Algeria), Asia Minor, and the Caucasus, it has also been reported from North America and the Orient. Until recently, the species was considered rare in Poland, known from an old report from Cieszyn and a general report from Silesia (Burakowski et al. 1990a), but subsequent finds indicate its progressive expansion. Recent reports are from Wrocław (Borowiec 1995), the vicinity of Milicz (Borowiec 2000), Piła (Ruta 2001), and Gdynia (Konopko et al. 2017).

Biology and ecology

Larvae feed in the seeds of *Vicia villosa* Roth, *V. cracca* L., *V. pannonica* Cr., and *V. sativa* L. *Lens culinaris* Medik has also been reported as a host plant (Burakowski et al. 1990a).

Notes

Listed as DD (data deficient) in the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002).

***Cassida panzeri* Weise, 1907** (Fig. 609)

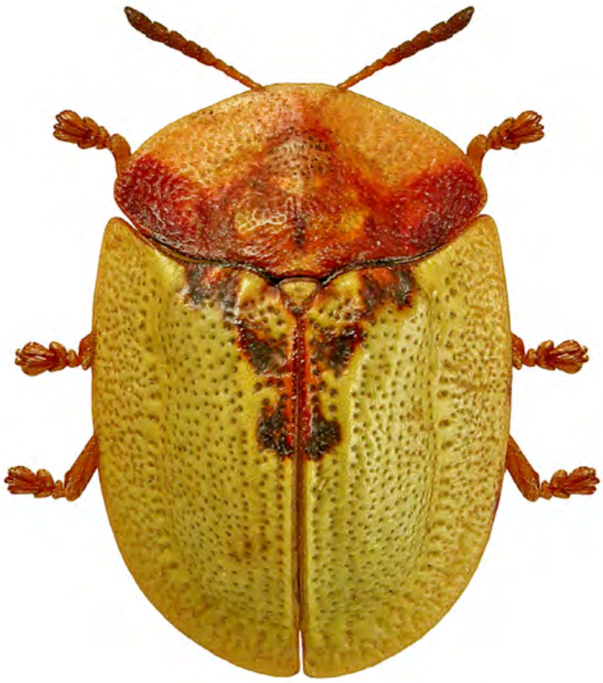


Fig. 609. *Cassida panzeri* Weise, 1907 (Chrysomelidae) (photo L. Borowiec)

Material examined (Fig. 608)

Original data: Supraśl Forest District, Krasne (FE59), 11.05.2002 – 1 ex., leg. & det. A. Lasoń.

Distribution

A species with a wide geographic range, found from Spain to the Far East, in Europe reaching the southern provinces of Fennoscandia and Karelia to the north. In Poland, the beetle is considered a rarity, known from a small number of reports. Older data on the distribution of this species were summarized by Burakowski et al. (1991), more recent reports are from Leszczynowe Grądy in Podlasie (Borowiec 2003), Olsztyn in the Masurian Lake District (Marczak & Lasecki 2011), Kampinos National Park (Marczak et al. 2012), Dobrynia in the Eastern Beskid, and Siemianowice Śląskie in Upper Silesia (Szczepański et al. 2015a).

Biology and ecology

It feeds on *Scorzonera humilis* L. and *Arctium* L. (Burakowski et al. 1991). A species considered characteristic of xerothermic habitats, now in some expansion, and also found in sites with ruderal vegetation, railroad embankments, and meadows.

***Prasocuris junci* (Brahm, 1790)** (Fig. 610)

Fig. 610. *Prasocuris junci* (Brahm, 1790) (Chrysomelidae) (photo M. Sowiński)

Material examined (Fig. 608)

Original data: Knyszyn Forest District, Krzemianka Reserve (53.28201, 23.11361, FE40), 13.05.2021 – 1 ex., leg. & det. C. Greń.

Distribution

The species occurs from Spain to the Caucasus and the European part of Russia, also noted in Fennoscandia in the north. In Asia, it is reported from Turkey and Azerbaijan. In Poland, the beetle is infrequently found, recorded mainly in older reports summarized by Burakowski et al. (1990b) and Borowiec (1992). More recent reports are from the Bug River valley between Włodawa and Kodeń (Podlasie) (Ścibior 2010; Ścibior et al. 2014).

Biology and ecology

Host plants of this beetle include *Veronica anagallis* L., *V. beccabunga* L. (Burakowski et al. 1990b), and other species of *Veronica* L., as well as *Ranunculus peltatus* Schrank (Plant parasites of Europe 2020b). It lives on marsh and riparian vegetation in wetlands.

Cryptocephalus nitidulus Fabricius, 1787 (Fig. 611)

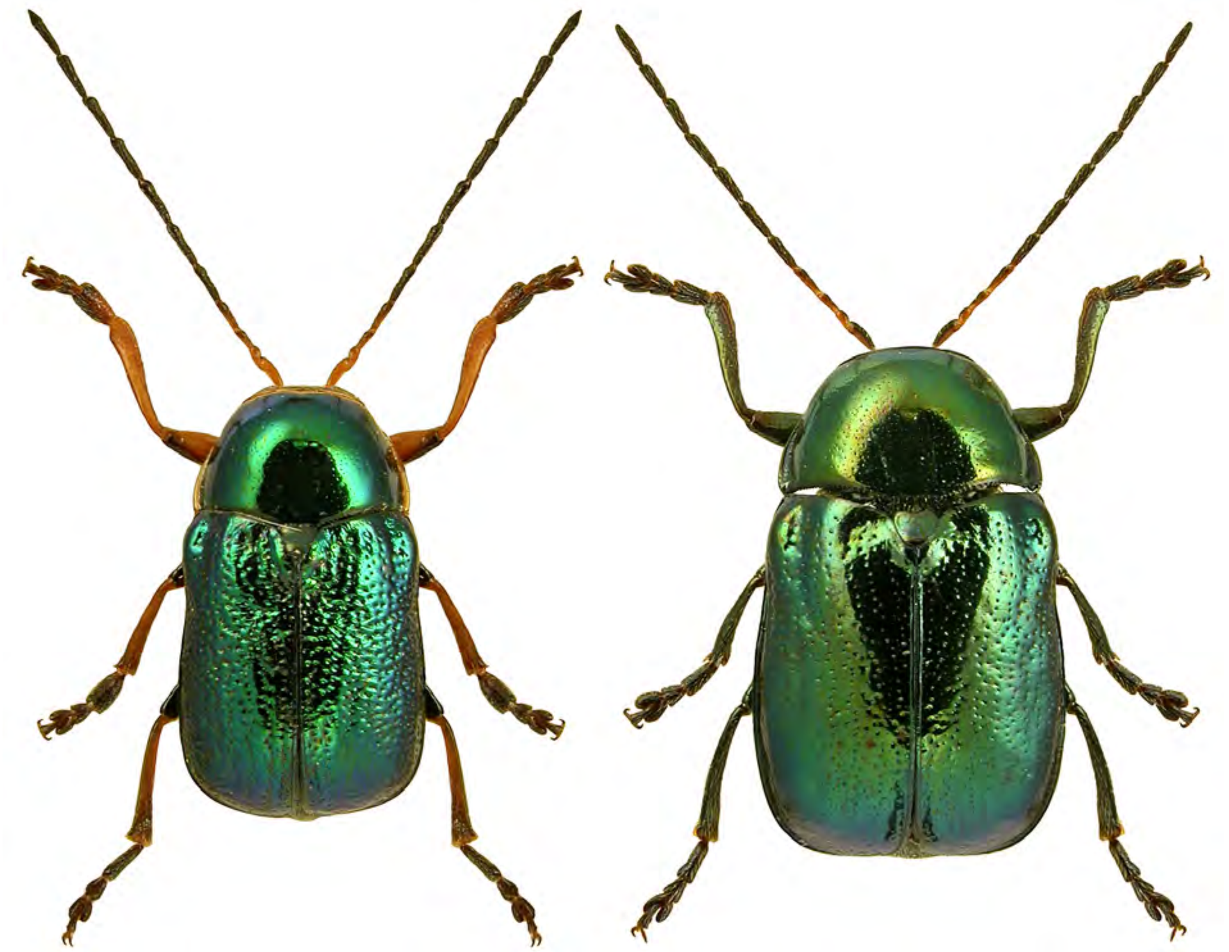


Fig. 611. ***Cryptocephalus nitidulus*** **Fabricius, 1787 (Chrysomelidae)** (photo L. Borowiec)

Material examined (Fig. 608)

Original data: Czarna Białostocka Forest District, Budzisk Reserve (FE50), 11.06.1995 – 1 ex., leg. A. Lasoń, det. M. Przewoźny.

Data from the literature: it is also reported from Budzisk Reserve (FE50) by Marczak et al. (2023c).

Distribution

A species with a wide geographic range, it is found from Spain to Japan and the Kuril Islands, also recorded in the north in Fennoscandia (Borowski 2020b). In Poland, it is known from a small number of localities, with most reports based on records from the last century. These data were summarized in the works of Burakowski et al. (1990b) and Borowiec (1992). More recent data is from the Pieniny Mountains, provided by Ścibior (2012).

Biology and ecology

Caught on birch *Betula* L., willow *Salix* L., hawthorn *Crataegus* L., and hazel *Corylus* L. Found from May to August on forest edges, clearcuts, and the edges of mid-forest roads (Burakowski et al. 1990b). Research by Piper & Compton (2010) suggests that the migratory capacity of this species is low.

Notes

Listed as DD (data deficient) in the *Red List of Beetles (Coleoptera) of the Silesian Province* (Greń et al. 2012).

Cryptocephalus nitidus (Linnaeus, 1758) (Fig. 612)

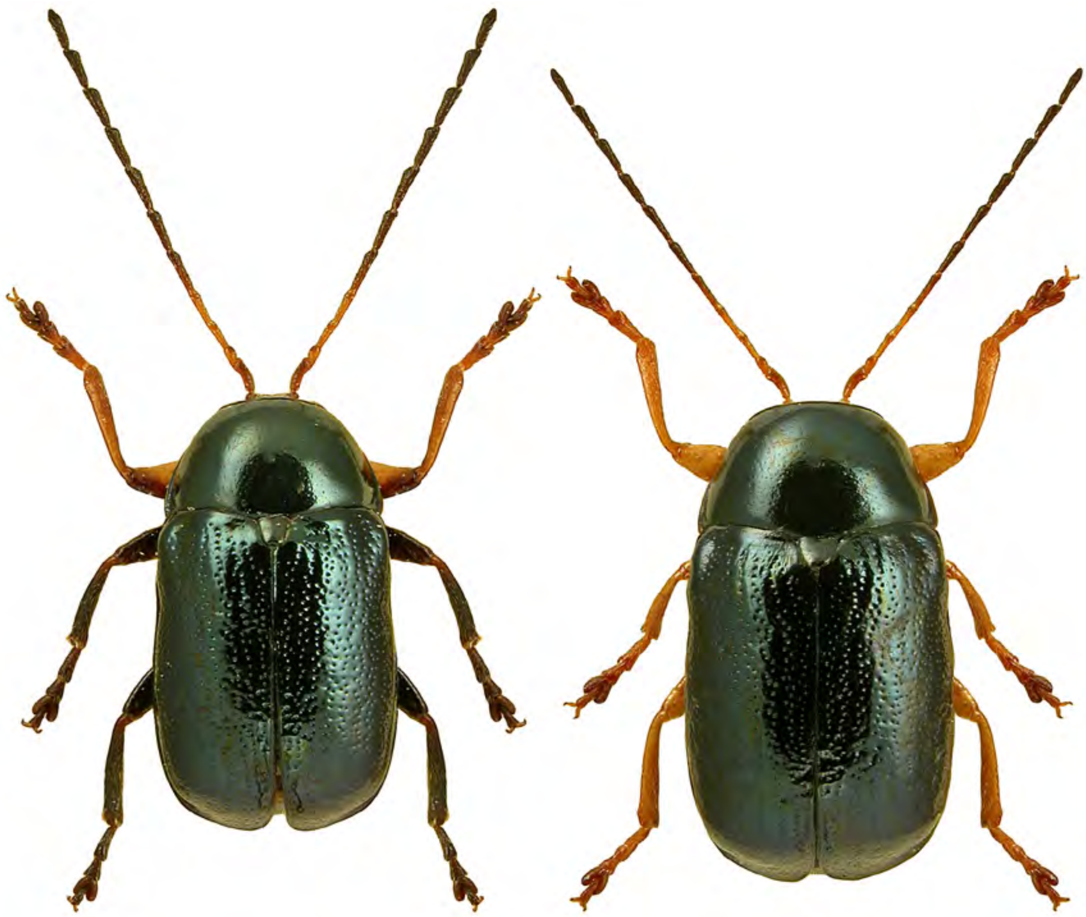


Fig. 612. ***Cryptocephalus nitidus*** **(Linnaeus, 1758) (Chrysomelidae)** (photo L. Borowiec)

Material examined (Fig. 613)

Original data: Supraśl Forest District, Stare Biele Reserve (53.23477, 23.52447, FE60), 3.06-9.07.2020 – 1 ex., green Lindgren funnel trap, leg. J.M. Gutowski, det. T. Gazurek.

Data from the literature: this species was also caught in August 1985 in Kopna Góra (FE60) (Kubisz & Pawłowski 1995).

Distribution

It inhabits almost all of Europe, including its northern part, reaching southern Siberia in the east (Borowski 2020b). So far, it has not been reported only from the south of Eastern European countries – Greece, Albania, and the European part of Turkey. In Poland, the beetle is rarely and sporadically found, although known from many reports, but most dating from the last century. These data were summarized in the works of Burakowski et al. (1990b) and Borowiec (1992). More recent information is from Białowieża Forest (Sprick & Floren 2007), Kolonia Wola Wereszczyńska in the Lublin Upland (Ścibior & Pietrykowska-Tudruj 2008), Poznań (Przewoźny 2013), the village of Grabin in the Wielkopolska-Kujawy Lowland (Ruta et al. 2016), and Gdynia (Konopko et al. 2017).

Biology and ecology

Known food plants, among others, include *Salix caprea* L., oak *Quercus* L., birch *Betula* L., hawthorn *Crataegus* L., and hazel *Corylus* L.. Hawthorn leaves seem to be preferred (Warchałowski 1991). Found from May to August mainly along forest edges and mid-forest roads, in clearcuts, often near water (Burakowski et al. 1990b).

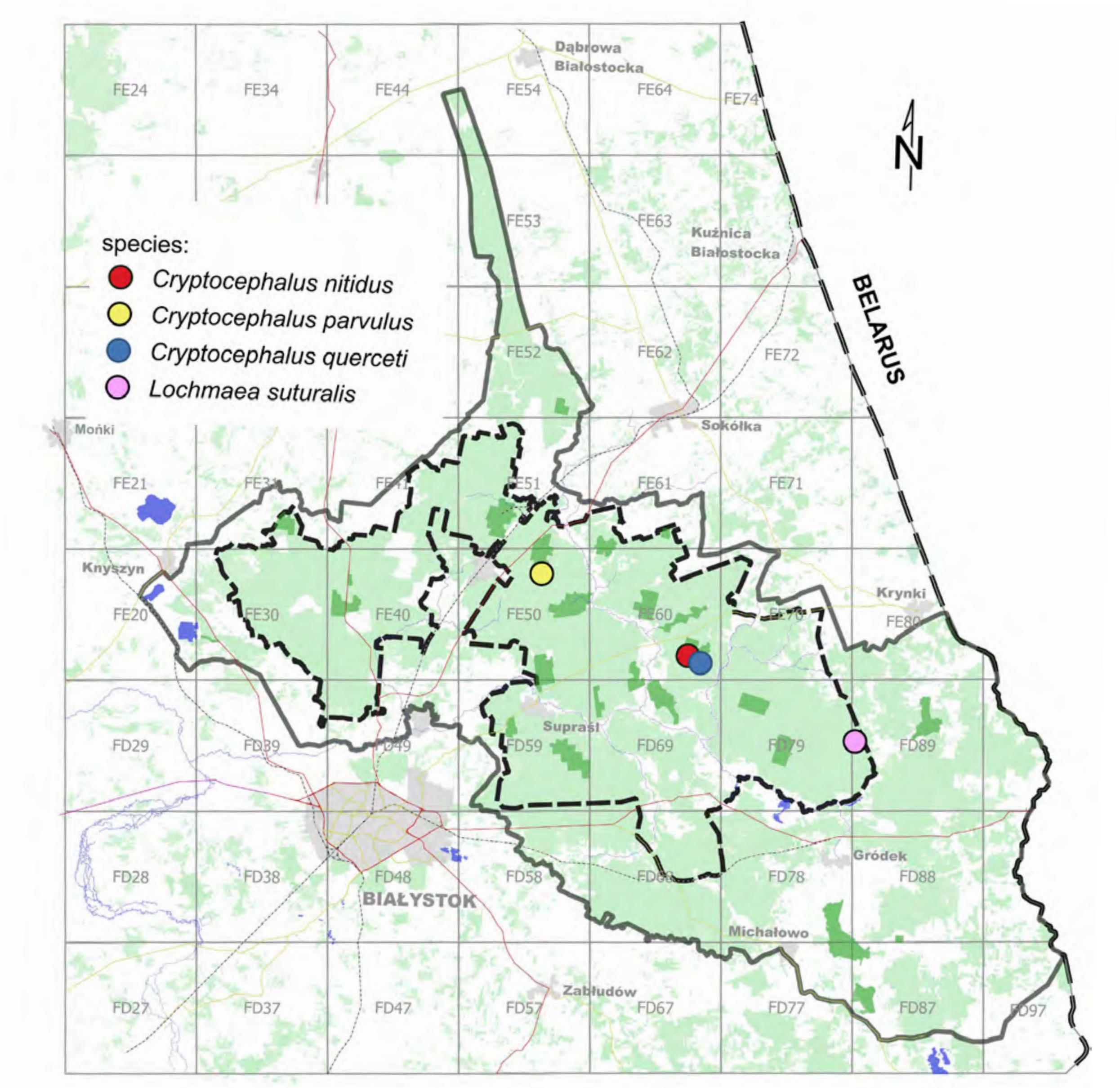


Fig. 613. Localities of *Cryptocephalus nitidus*, *C. parvulus*, *C. querceti*, and *Lochmaea suturalis* (Chrysomelidae) in Knyszyńska Forest

Cryptocephalus parvulus Müller, 1776 (Fig. 614)

Material examined (Fig. 613)

Original data: Czarna Białostocka Forest District, Taboły Reserve (53.29899, 23.34623, FE50), 4.06-9.07.2020 – 1 ex., green Lindgren funnel trap, leg. J.M. Gutowski, det. T. Gazurek.

Distribution

A species with a wide geographic range, occurring from Spain to Japan, and also recorded in Fennoscandia in the north (Warchałowski 1991; Borowski 2020b). In Poland, it is known from a small number of localities, with most reports based on records from the last century. These data were summarized in the works of Burakowski et al. (1990b) and Borowiec (1992). Contemporary reports are from Białowieża Forest (Borowski 2001; Gutowski et al. 2020b), the Świętokrzyskie Mountains (Byk 2007), Pisz Forest (Gutowski et al. 2010b), and Polesie National Park (Ścibior & Petrykowska-Tudruj 2010).

Fig. 614. *Cryptocephalus parvulus* Müller, 1776 (Chrysomelidae) (photo T. Mokrzycki)

Biology and ecology

Species from the genera *Quercus* L. oak, *Salix* L. willow, *Betula* L. birch, and *Corylus* L. hazel have been reported as host plants (Warchałowski 1991). It is found in young trees in clearcuts, forest edges, and mid-forest roads. Adults appear in spring and live until August (Burakowski et al. 1990b).

Cryptocephalus querceti Suffrian, 1848 (Fig. 615)

Material examined (Fig. 613)

Data from the literature: Kopna Góra ad Supraśl (FE60), August 1985 (Kubisz & Pawłowski 1995).

Distribution

A species with an insufficiently known distribution; recorded from western France and northern Italy to western Greece, to the north through Bulgaria, Romania, and Poland, reaching southern Fennoscandia. Outside its contiguous range, it occurs insularly in England, the Iberian Peninsula, and southern Italy (Warchałowski 1991). It is rarely and sporadically found in Poland, with almost all localities dating back to the last century (Burakowski et al. 1990b). More recent information is provided by Sprick & Floren (2007) from Białowieża Forest, and by Marczak et al. (2012) from Kampinos National Park.

Biology and ecology

Found from May to July on oak *Quercus* spp. and birch *Betula* spp. (Burakowski et al. 1990b).

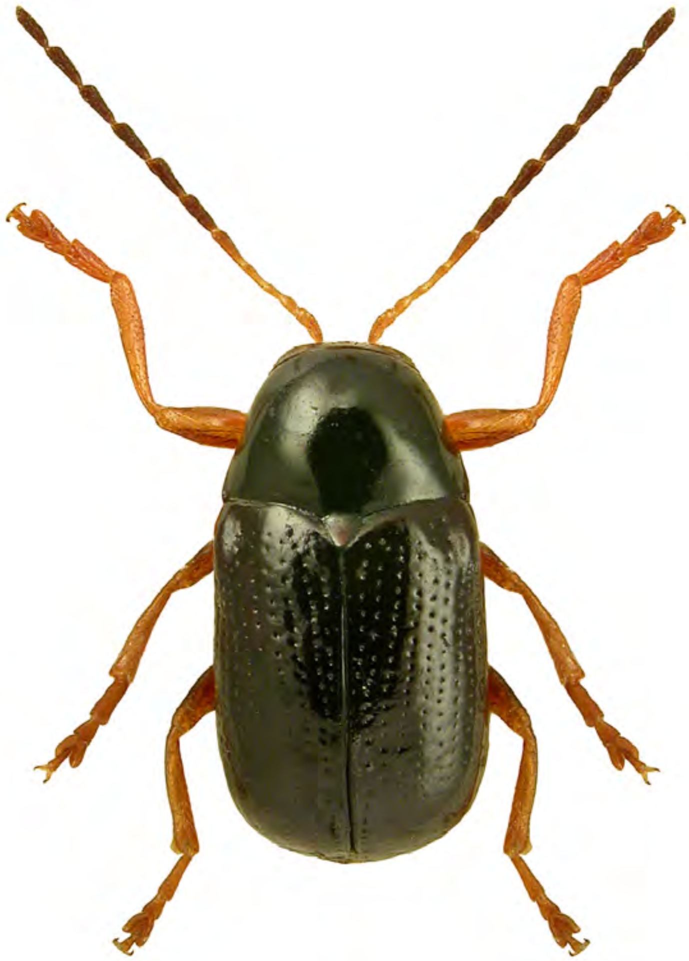


Fig. 615. ***Cryptocephalus querceti*** **Suffrian, 1848 (Chrysomelidae)** (photo L. Borowiec)

Lochmaea suturalis (Thomson, 1866) (Fig. 616)

Material examined (Fig. 613)

Data from the literature: Krynki Forest District, Leszczany Forest Subdistrict, compartment 493 (53.17652, 23.69685, FD89), 21.05.2021 – 1 ex., leg. J.M. Gutowski, det. T. Gazurek.

Distribution

The species is distributed throughout Europe except in its southernmost and northern parts (Borowski 2020b). In Poland, it is known from a small number of scattered localities in different parts of the country, mostly reports from the last century summarized by Burakowski et al. (1991) and Borowiec (1992). A small number of more current information comes from the Janów Forests (Ścibior 2003), Białowieża Forest, Tuchola Forest (Gutowski et al. 2006), and Gdynia (Konopko et al. 2017).

Biology and ecology

The host plant of this species is the common heather *Calluna vulgaris* L. Its development takes one year, the imago overwinters (Plant parasites of Europe). The beetles are active from April to September (Bukejs 2009).

Notes

The species has been used as a biological agent to control heather that was introduced to New Zealand and is posing a threat to its native flora (Syrnett et al. 2000).

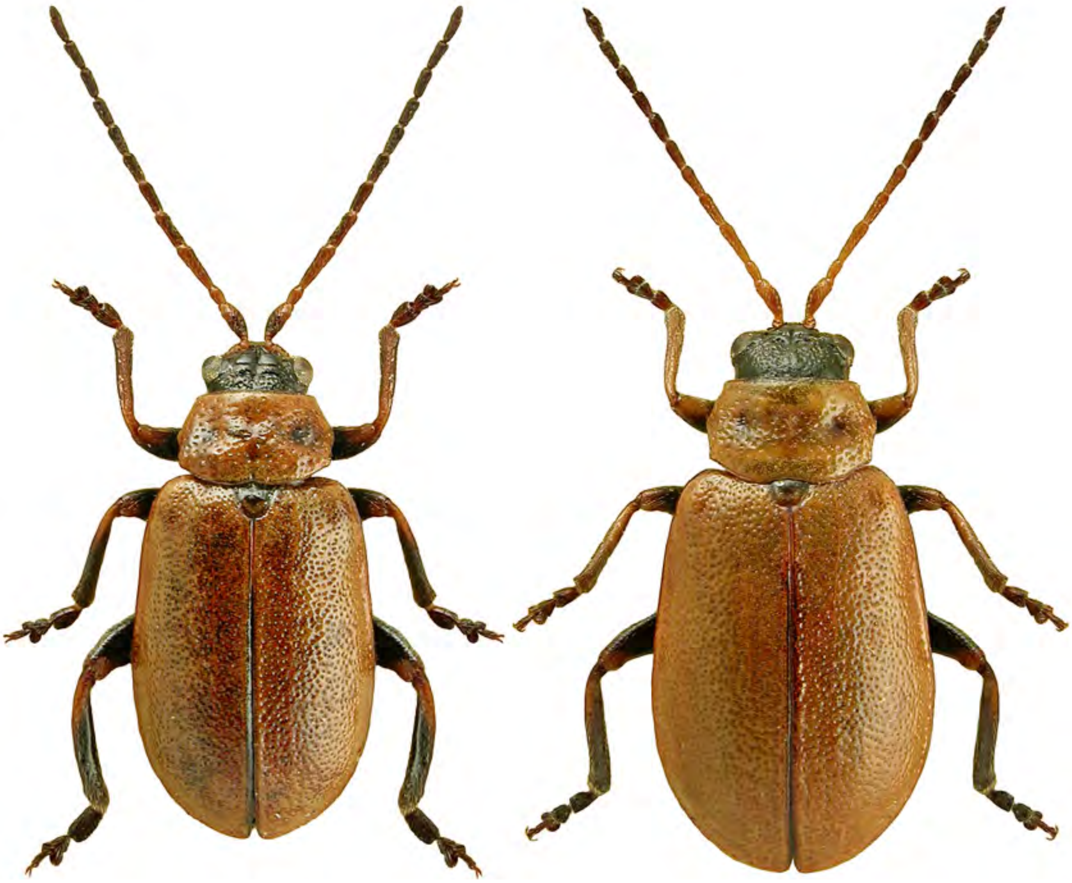


Fig. 616. *Lochmaea suturalis* (Thomson, 1866) (Chrysomelidae) (photo L. Borowiec)

4.3. Beetle species removed from the list of those inhabiting Knyszyńska Forest

In reviewing publications and databases, attention was drawn to species whose occurrence in KF is questionable for various reasons. These species were removed from the list of those occurring in the study area with the reasons provided, as follows:

- *Anomala vitis* (Fabricius, 1775) (Scarabaeidae). Reported by Roubal (1910). It mainly occurs in south-eastern Europe, reaching Slovakia to the north, hence the occurrence in Poland is doubtful (Burakowski et al. 1983). However, taking into account climatic changes, the appearance of *Anomala vitis* in Poland should not be ruled out.
- *Isomira murina* (Linnaeus, 1758) (Tenebrionidae). Reported in KF by Iwan et al. (2010, 2012). According to Szawaryn (2020), all specimens confirmed by Polish authors actually belong to the species *I. thoracica* (Fabricius, 1792).
- *Ceutorhynchus sareptanus* (Schultze, 1897) (Curculionidae). Reported by Wiliński (1959) – data are based on a misidentification. *C. sareptanus* is a species known only from Azerbaijan and the vicinity of the Saratov region in Russia (Colonnelli 2013). It has probably been confused with another representative of the blue-colored elytra group, such as *C. chalybaeus* (Germar, 1824), from which it differs in the details of the morphology of the elytra relief.
- *Rhinoncus castor* (Fabricius, 1792) (Curculionidae) – an unfortunate taxonomic confusion in the nomenclature made the name *R. castor* (F.) a synonym, while the correct name for this *taxon*, in accordance with the rules of the Code of Zoological Nomenclature, is *R. pericarpius* (Linnaeus, 1758). Since this name (*R. pericarpius*) was previously a valid name for another species in this genus, it was replaced by the

oldest synonym, finally obtaining the name *R. leucostigma* (Marsham, 1802). This matter has been thoroughly clarified by Huang Colonnelli (2014) and included and commented on in the recent census of the weevils of Poland (Wanat & Mokrzycki 2018).

4.4. The beetles of Knyszyńska Forest Landscape Park

Knyszyńska Forest Landscape Park, as mentioned at the beginning of the study, occupies only part of KF. The Park's area of 728.6 km^2 (excluding the buffer zone) is about 41.2% of the area adopted in this study (see Chapter 2). However, the territory of the Landscape Park is the most valuable part of KF. The best preserved forests and the largest share of old-growth stands, often with a character close to natural, are located here. The Landscape Park contains 20 of the 25 nature reserves located in the study area (Table 1, Fig. 1). The area of the five reserves that are outside the Park (Gorbacz, Jezioro Wiejki, Nietupa, Rabinówka, Starodrzew Szyndzielski) account for 24.3% of the area of all reserves. This represents a significant number, but most of these localities protect non-forested areas (waters, bogs, marshes), having inherently poorer fauna than the forests. There were 1,858 species of beetles found in Knyszyńska Forest Landscape Park, accounting for 89.4% of all those recorded in Knyszyńska Forest. The two species new to Poland [*Atheta sodermani* (Figs. 234, 235) and *Podagrica menetriesi* (Figs. 603, 605)] were found in Knyszyńska Forest Landscape Park. The Park is home to most of the rare species of Coleoptera found in KF. Protected, "Nature 2000" species, wilderness relicts, and those on red lists also have their habitats here, for example, *Ilybius wasastjernae* (Figs. 57, 58) (Dytiscidae), *Agrilus pseudocyaneus* (Figs. 90, 91) (Buprestidae), *Aulonothroscus laticollis* (Figs. 102, 103) (Throscidae), *Lopheros lineatus* (Figs. 159, 160) (Lycidae), *Oxyporus mannerheimii* (Figs. 250, 251) (Staphylinidae), *Nacerdes carniolica* (Figs. 316, 320) (Oedemeridae), and *Stictoleptura variicornis* (Figs. 570, 575) (Cerambycidae).

There are also species among the aforementioned categories that have so far been found only outside Knyszyńska Forest Landscape Park. These include: *Deronectes latus* (Figs. 47, 51) (Dytiscidae), *Broscus cephalotes* (Figs. 65, 66) (Carabidae), *Dromaeolus barnabita* (Figs. 106, 107) (Eucnemidae), *Malthinus frontalis* (Figs. 166, 168) (Cantharidae), *Hydrophilus piceus* (Figs. 178, 179), *Laccobius sinuatus* (Figs. 179, 183) (Hydrophilidae), *Psammodius asper* (Figs. 198, 199) (Scarabaeidae), *Hydraena pulchella* (Figs. 216, 217) (Hydraenidae), *Sciodrepoides alpestris* (Figs. 222, 223) (Leiodidae), *Dermestoides sanguinicollis* (Figs. 276, 277) (Cleridae), *Anthocomus fasciatus* (Figs. 291, 292), *Dasytes virens* (Figs. 292, 294) (Melyridae), *Microplontus millefolii* (Figs. 482, 483), *Lixus cylindrus* (Figs. 492, 494) (Curculionidae). There is a high probability that most of these species, with more intensive research, will be eventually discovered to also occur in the Park.

4.5. The state of knowledge about the beetles in the nature reserves of Knyszyńska Forest

Twenty-five nature reserves are located within the territory of KF, covering a total area of 5,171.79 hectares (Table 1, Fig. 1). The largest number of reserves is located in the Supraśl Forest District – 11, followed by the forest districts of Czarna Białostocka – 4, Knyszyn and Waliły – 3 each, Dojlidy, Krynki, and Żednia – 2 each. Budzisk and Las Cieliczański reserves are located along the borders of two, adjacent forest districts. Beetles have been found in each of the reserves, although their number varies greatly from site to site. The largest number of species was found in Budzisk Reserve – 602. Many were also found in the reserves of Góra Pieszczana (363), Krzemianka (362), Jesionowe Góry (336), Las Cieliczański (300), and Krzemienne Góry (271). Jałówka (249) and Stare Biele (231) reserves were also quite rich in beetle species. By far, the most species-poor reserves were Jezioro Wiejki (3), Gorbacz (4), and Rabinówka (34) (Fig. 617). This large variation in the number of Coleoptera species is not only due to the actual richness or paucity of a particular reserve, but also, to a large extent, the extent of knowledge about a particular site. Some reserves have not been given much attention due to the lack of time. Those sites still requiring further study include, in particular, Jezioro Wiejki, Gorbacz, and Rabinówka. In addition, forests account for a small share of these three reserves, and the areas having largest number of species are associated with forests. A total of 1,356 species were recorded in the reserves, accounting for 65.3% of all those found in KF.

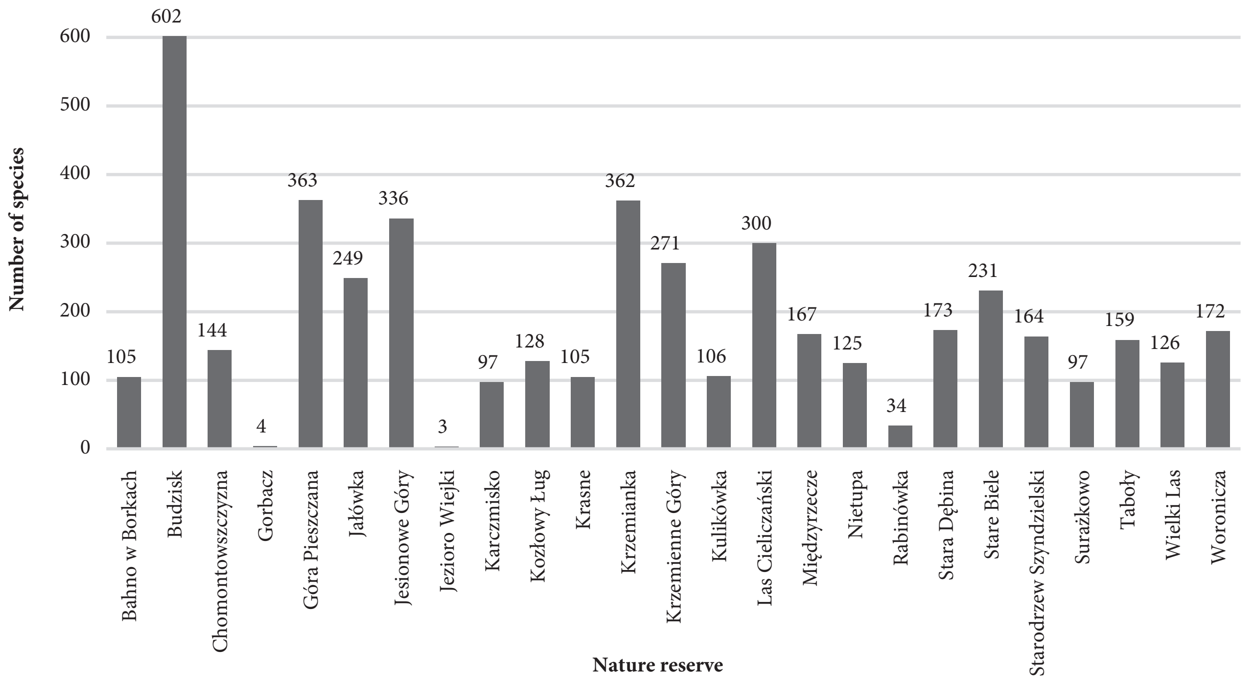


Fig. 617. The number of beetle species (Coleoptera) in the nature reserves in Knyszyńska Forest

The most valuable beetle fauna can be observed in the oldest KF reserve – Budzisk. Found here were such faunal rarities as *Agrilus pseudocyaneus* (Fig. 90) (Buprestidae); *Aulonothroscus laticollis* (Fig. 102) (Throscidae); *Microrhagus emyi* (Fig. 118) (Eucnemidae); *Lopheros lineatus* (Fig. 160) (Lycidae); *Episernus tatarinovae* (Fig. 281) (Ptinidae); *Nacerdes carniolica* (Fig. 320) (Oedemeridae); *Cyrtoclytus capra* (Fig. 512), *Evodinus borealis* (Fig. 540), and *Stictoleptura variicornis* (Fig. 575) (Cerambycidae) (Table 2).

Among the very rare species recorded in Krzemianka Reserve were: *Hydroporus brevis* (Fig. 53) (Dytiscidae); *Trixagus leseigneuri* (Fig. 104), *T. meybohmi* (Fig. 105) (Throscidae); *Bibloplectus spinosus* (Fig. 255) (Staphylinidae); and *Physoronia wajdelota* (Fig. 454) (Nitidulidae) (Table 2).

Góra Pieszczana Reserve owes its richness – 363 confirmed species – mainly to the intensity of the surveys. This site, which is not particularly distinguished by its state of preservation and habitat diversity, has been studied much longer than a number of others. Budzisk, Jesionowe Góry, and Krzemianka Reserves have also received a greater amount of attention. Here, too, very interesting species have been found, including *Rhysodes sulcatus* (Fig. 63) (Carabidae), *Pteryx splendens* (Fig. 214) (Ptiliidae), *Oxypoda recondita* (Fig. 241) (Staphylinidae), *Orthoperus nikitskyi* (Fig. 403) (Corylophidae), and *Physoronia wajdelota* (Fig. 454) (Nitidulidae) (Table 2).

Jesionowe Góry Reserve has very valuable fauna, where real faunal rarities have been discovered, including *Ilybius wasastjernae* (Fig. 57) (Dytiscidae), *Microrhagus emyi* (Fig. 118) (Eucnemidae), *Oxyporus mannerheimii* (Fig. 251) (Staphylinidae), and *Evodinus borealis* (Fig. 540) (Cerambycidae) (Table 2).

Las Cieliczański is a large forest reserve, diversified in terms of habitat, so it has many species of beetles, including very rare ones, such as *Trixagus leseigneuri* (Fig. 104) (Throscidae); *Aspidiophorus lareyniei* (Fig. 426) (Sphindidae); *Glischrochilus tremulae* (Fig. 440), and *Astylogethes subrugosus* (Fig. 450) (Nitidulidae) (Table 2).

Very interesting species were also found in Jałówka Reserve: *Pseudanostirus globicollis* (Fig. 156) (Elateridae), *Orthocis juglandis* (Fig. 337) (Ciidae), and *Evodinus borealis* (Fig. 540) (Cerambycidae). *Glischrochilus tremulae* (Fig. 440) (Nitidulidae) was found in Krzemienne Góry Reserve, *Bibloplectus spinosus* (Fig. 255) (Staphylinidae), *Leptura thoracica* (Fig. 550) (Cerambycidae) in Stare Biele Reserve, and *Aspidiophorus lareyniei* (Fig. 426) (Sphindidae) in Stara Dębina Reserve (Table 2).

Nature reserves are true refugia of the most valuable Coleoptera fauna in KF, which is evidenced by the number of species recorded there and the occurrence of the most interesting ones – protected, relict, and red-listed. One should still take into account the fact that knowledge of the beetle fauna of these reserves is incomplete and very diverse. In the course of further research, we expect to discover many more coleopteran species. Nevertheless, there are also many valuable habitats outside the reserves where rare species are found. Two species new to Poland were found in non-reserve areas: *Atheta sodermani* – Staphylinidae (Fig. 235) and *Podagrica menetriesi* – Chrysomelidae (Fig. 605). Other examples of species known only from areas outside the reserves are: *Carabus menetriesi* (Fig. 68) (Carabidae); *Contacyphon punctipennis* (Fig. 79), *Elodes tricuspis* (Fig. 82) (Scirtidae); *Osmoderma barnabita* (Fig. 201) (Scarabaeidae); *Plataraea dubiosa* (Fig. 244) (Staphylinidae); *Mycetochara roubali* (Fig. 359) (Tenebrionidae); *Corticaria lateritia* (Fig. 387), *C. pineti* (Fig. 388) (Latridiidae); *Cryptophagus obsoletus* (Fig. 462) (Cryptophagidae); *Lixus cylindrus* (Fig. 494) (Curculionidae) (Table 2).

4.6. The beetles of selected habitats in Knyszyńska Forest

Three main types of habitats can be distinguished in KF: forest, open land, and water. Forest environments, of course, dominate, and are differentiated into a number of types depending on the fertility and moisture content of the soil, as well as the species composition and age of the stands. The largest number of beetle species are associated with forests, where saproxylic species primarily live. Of those listed, 841 species were classified in this group (Tables 2, 4). The predominant number of species represent the rove beetles (Staphylinidae) – 138 species, longhorn beetles (Cerambycidae) – 96, and weevils (Curculionidae, mainly Scolytinae – bark beetles) – 91. The most valuable beetle assemblages can be found in well-preserved old-growth forests. There, wilderness relicts are most common, that is, those species needing thick deadwood, in the full range of its decomposition stages and forms, for their survival and continuous presence. They have survived since the time when most of Europe's land was covered with forests, before humans began to intensively transform it into farmland, meadows, and pastures, and to develop it. 36 such forest relicts have been distinguished in KF beetle fauna, of which 11 species are counted as relicts *sensu stricto* (Eckelt et al. 2018): *Rhysodes sulcatus* (Fig. 63) (Carabidae); *Otho sphondyloides* (Fig. 123) (Eucnemidae); *Platylomalus complanatus* (Fig. 175) (Histeridae); *Peltis grossa* (Fig. 285) (Peltidae); *Boros schneideri* (Fig. 321) (Boridae); *Phryganophilus auritus* (Fig. 331) (Melandryidae); *Dolichocis laricinus* (Fig. 334) (Ciidae); *Corticeus suturalis* (Fig. 374) (Tenebrionidae); *Cucujus haematodes* (Fig. 467) (Cucujidae); *Evodinus borealis* (Fig. 540), and *Leptura thoracica* (Fig. 550) (Cerambycidae) (Table 2). The relicts *sensu lato* also contain very rare species, found in only a few localities in Poland, such as *Lopheros lineatus* (Fig. 259) (Lycidae) and *Stictoleptura variicornis* (Fig. 575) (Cerambycidae), which are still currently known only from Białowieża Forest, as well as *Corticaria lateritia* (Fig. 387) (Latridiidae) found only in Jegiel Reserve near Łochów and in Białowieża Forest.

In addition to saproxylic beetles, forests are home to other dendrophilous species that are not associated with deadwood, but feed on the leaves (needles) or inflorescences and fruits of trees and shrubs. Many forest species are associated with the undergrowth and soil.

Clear differences can be observed in the composition of beetle groups found in coniferous and deciduous stands. In the former, which dominate the Forest, we find, for example, *Acanthocinus aedilis* (Cerambycidae) developing in the stumps of pines, the male of which has antennae which can be almost 4 times longer than its body (Fig. 618). Also common is *Spondylis buprestoides* – which has very strong mandibles, an unusual representative of longhorn beetles due to its appearance (Figs. 579, 619). The predatory ant beetle *Thanasimus formicarius* (Fig. 620) can be spotted in spruce or pine wood piles. *Anthaxia quadripunctata* is common here as a larva, feeding on dying or dead coniferous trees, while as an imago it feeds on the pollen of yellow flowers (Fig. 621). There are also several hundred other species, including some that are rare in Poland, such as *Acmaeops septentrionis* (Fig. 531), *Callidium coriaceum* (Fig. 507), *Etorophus pubescens* (Fig. 539), *Lepturobosca virens* (Fig. 552) (Cerambycidae), *Dolichocis laricinus* (Fig. 334) (Ciidae); *Polygraphus subopacus* (Fig. 498) (Curculionidae); *Elateroides flabellicornis* (Fig. 297) (Lymexylidae); *Doydirhynchus austriacus* (Fig. 470) (Nemonychidae); *Epuraea deubeli* (Fig. 445) (Nitidulidae); *Anogcodes rufiventris* (Fig. 317), *Nacerdes carniolica* (Fig. 320) (Oedemeridae); *Episernus tatarinovae* (Fig. 281) (Ptinidae); and *Corticeus longulus* (Fig. 371) (Tenebrionidae).

Fig. 618. ***Acanthocinus aedilis*** **(Linnaeus, 1758) (Cerambycidae) – male antennae can be up to four times as long as his body** (photo M. Miłkowski)

Fig. 619. ***Spondylis buprestoides*** **(Linnaeus, 1758), from the longhorn beetles family, has very strong mandibles** (photo M.W. Kozłowski)

Fig. 620. *Thanasimus formicarius* (Linnaeus, 1758) (Cleridae) – predator of Scolytinae (photo K. Sobański)

More species were recorded in deciduous stands, among them such faunal rarities as: *Agrilus auricollis* (Fig. 85), *A. pseudocyaneus* (Fig. 90) (Buprestidae); *Dromaeolus barnabita* (Fig. 106), *Microrhagus emyi* (Fig. 118), *Otho sphondyloides* (Fig. 123), *Rhacopus sahlbergi* (Fig. 126) (Eucnemidae); *Ampedus cinnaberinus* (Fig. 134), *A. hjorti* (Fig. 138), *Pseudanostirus globicollis* (Fig. 156) (Elateridae); *Erotides cosnardi* (Fig. 158), *Lopheros lineatus* (Fig. 160) (Lycidae); *Abraeus parvulus* (Fig. 172) (Histeridae); *Ceruchus chrysomelinus* (Fig. 184) (Lucanidae); *Osmoderma barnabita* (Figs. 201, 203) (Scarabaeidae); *Cyphea curtula* (Fig. 239), *Phloeonomus minimus* (Fig. 249) (Staphylinidae); *Ptinus schlerethi* (Fig. 283) (Ptinidae); *Nemozoma caucasicum* (Fig. 288) (Trogossitidae); *Dermestoides sanguinicollis* (Fig. 295) (Cleridae); *Mordellaria aurofasciata* (Fig. 304) (Mordellidae); *Scraptia testacea* (Fig. 314) (Scraptiidae); *Melandrya caraboides* (Fig. 329), *Phryganophilus auritus* (Fig. 331) (Melandryidae); *Orthocis juglandis* (Fig. 337) (Ciidae); *Mycetochara roubali* (Fig. 359), *Platydema dejeanii* (Fig. 360) (Tenebrionidae); *Triplax scutellaris* (Fig. 421) (Erotylidae); *Glischrochilus tremulae* (Fig. 440) (Nitidulidae); *Choragus sheppardi* (Fig. 474) (Anthribidae); *Cyrtoclytus capra* (Fig. 512), *Leioderes kollari* (Fig. 514), *Obrium cantharinum* (Fig. 520), *Anoplodera rufipes* (Fig. 534), *Leptura thoracica* (Fig. 550), *Nivellia sanguinosa* (Fig. 554), *Rhagium sycophanta* (Fig. 563), *Stenocorus meridianus* (Fig. 569) *Aegomorphus clavipes* (Fig. 584), *Leiopus punctulatus* (Fig. 586), *Oberea pupillata* (Fig. 595), and *Saperda similis* (Fig. 600) (Cerambycidae).

Many beetle species reside in the soil during their individual development (from egg to adult). These include epigeal species, that is, those living on the soil surface, such as in the leaf litter. Among them are both open-land and forest species. A total of 688 species of beetles have been recorded in KF that are associated with soil either during their entire life or at some specific developmental stage. The largest number of such species is in the rove beetle family (Staphylinidae) – 237, followed by ground beetles (Carabidae) – 149, and weevils (Curculionidae) – 120 (Table 4). All or most of the soil species are also found in the following families: Bolboceratidae, Byrrhidae, Elateridae, Geotrupidae, Meloidae, Phalacridae, Ptiliidae, Scarabaeidae, and Trogidae. Soil species of interest due to their morphology (appearance), biology or rarity include *Calosoma inquisitor* (Fig. 628), *Carabus coriaceus* (Fig. 622) (Carabidae), *Cicindela hybrida* (Fig. 623) (Cicindelidae), *Ctenicera pectinicornis* (Fig. 624), *Selatosomus cruciatus* (Elateridae), *Dascillus cervinus* (Dascillidae), *Trox sabulosus* (Trogidae), *Odonteus armiger* (Bolboceratidae), *Geotrupes spiniger* (Geotrupidae), *Copris lunaris* (Fig. 208), *Oxythyrea funesta* (Fig. 625), *Trichius fasciatus* (Fig. 626) (Scarabaeidae), *Emus hirtus*, *Oxyporus maxillosus* (Staphylinidae), *Notoxus monoceros* (Anthicidae), *Meloe proscarabaeus* (Fig. 627) (Meloidae), *Curculio glandium* (Curculionidae), and *Pseudovadonia livida bicarinata* (Cerambycidae).

Fig. 621. *Anthaxia quadripunctata* (Linnaeus, 1758) (Buprestidae) – the most common representative of the jewel beetles in Knyszyńska Forest (photo J. Kupryjanowicz)

Table 4. The number of beetle species from individual ecological groups in Knyszyńska Forest [S – saproxylic species, G – soil and epigeic, H – hydrophilic (aquatic and semiaquatic), M – mycetophilic, X – xerothermophilic, Sn – synanthropic, A – anthophilous, K – coprophilic, N – necrophilic, Mr – myrmecophilic, P – pyrophilic, Nd – nidicolous]. Some species were included into several groups at the same time

Family	Ecological group											
	S	G	H	M	X	Sn	A	K	N	Mr	P	Nd
Aderidae	5			5								
Anthicidae		1										
Anthribidae	8			8							4	
Attelabidae		15										
Bolboceratidae		1		1								
Boridae	1										1	
Bostrichidae	3										1	
Bothrideridae	1											
Brentidae		6	3		2							
Buprestidae	35				2		3				12	
Byrrhidae		7										
Byturidae							2					
Cantharidae	7	24	2				24					
Carabidae	22	149	44		1	1					5	
Cerambycidae	96	4		4	3	1	39			1	15	
Cerylonidae	5			5							1	
Chrysomelidae		7	21		4	3	2			1		
Cicindelidae		3										
Ciidae	29			29								
Clambidae	1			1								
Cleridae	5								1		1	
Coccinellidae	10		4	3	2							
Colonidae		3		3								
Corylophidae	7	1		6							1	
Cryptophagidae	7			33		2					1	1
Cucujidae	2										1	
Curculionidae	91	120	13	10	4	1					27	
Dascillidae		1										
Dermestidae	10	1				10	9		16			6
Dryopidae			2									
Dytiscidae			66									
Elateridae	26	26	1	1	1		9				4	
Elmidae			3									
Endomychidae	3			4								
Erotylidae	7			7							2	
Eucinetidae		1		1								
Eucnemidae	15			15							1	

Family	Ecological group											
	S	**G**	**H**	**M**	**X**	**Sn**	**A**	**K**	**N**	**Mr**	**P**	**Nd**
Geotrupidae		4		1				4				
Gyrinidae			3									
Haliplidae			5									
Helophoridae			10									
Heteroceridae			2									
Histeridae	23	1		3				11	10	2	2	11
Hydraenidae			9									
Hydrochidae			2									
Hydrophilidae		9	27					13	2			
Kateretidae			2		1		7					
Laemophloeidae	5					1						
Lampyridae												
Latridiidae	26	2	1	30		6	1				7	1
Leiodidae	18	14		24					9			9
Lophocateridae	1											
Lucanidae	5											
Lycidae	6											
Lymexylidae	3			2							2	
Megalopodidae		1										
Melandryidae	17			17							4	
Meloidae		2										
Melyridae	8		1		1		7				1	
Monotomidae	9	1		7		1				2	2	
Mordellidae	10			10	2		12				1	
Mycetophagidae	12	1		13		1					1	
Nemonychidae		2										
Nitidulidae	40			11	3		22		3	1	9	1
Nosodendridae	1											
Noteridae			2									
Oedemeridae	6						8					
Peltidae	2			2							1	
Phalacridae	2	5		2	3		6					
Ptiliidae	6	10	3	5				4	4	2		
Ptinidae	33			10		3		1	5			5
Pyrochroidae	2						2				2	
Pythidae	1										1	
Rhadalidae	2											
Ripiphoridae	1											
Salpingidae	5										1	
Scarabaeidae	8	20				1	8	30		1		

Family	Ecological group											
	S	**G**	**H**	**M**	**X**	**Sn**	**A**	**K**	**N**	**Mr**	**P**	**Nd**
Scirtidae	1		14									
Scraptiidae	7			7			5					
Silvanidae	5		1	3							1	
Sphaeritidae	1			1								
Sphindidae	3			3								
Staphylinidae	138	237	87	81	1	11	5	42	35	24	12	13
Tenebrionidae	25	7		15	2	4	1				1	
Tetratomidae	4			4								
Throscidae	2			5								
Thymalidae	1			1								
Trogidae		2							2			
Trogossitidae	2											
Zopheridae	4			1							2	
Total	**841**	**688**	**328**	**394**	**32**	**46**	**174**	**105**	**88**	**34**	**127**	**47**

Fig. 622. *Carabus coriaceus* LINNAEUS, 1758 (Carabidae) – the largest representative of ground beetles in Polish fauna (photo J. Kupryjanowicz)

Fig. 623. ***Cicindela hybrida*** **Linnaeus, 1758 (Cicindelidae) – occurs in dry, exposed, sandy areas** (photo J. Kupryjanowicz)

Fig. 624. ***Ctenicera pectinicornis*** **(Linnaeus, 1758) (Elateridae)** (photo J. Kupryjanowicz)

Fig. 625. ***Oxythyrea funesta*** **(Poda von Neuhaus, 1761) (Scarabaeidae)** (photo J.M. Gutowski)

Fig. 626. ***Trichodes apiarius*** **(Linnaeus, 1758) (Cleridae)** (photo K. Sobański)

Fig. 627. ***Meloe proscarabaeus*** **Linnaeus, 1758 (Meloidae) – an early spring, showy, flightless beetle** (photo J. Kupryjanowicz)

Fig. 628. ***Calosoma inquisitor*** **(Linnaeus, 1758) (Carabidae) – legally protected (partial protection) representative of ground beetles** (photo P. Niemiec)

Dry, sunny sites (xerothermic grasslands, psammophilous grasslands), of which there are few in KF, are often home to specific beetle species that prefer this type of environment –xerothermophilic species. Such habitats can be found on the slopes of abandoned sand (gravel) pits, railroad and road embankments, or on the natural south or southwest slopes of hills. In order for xerothermophilic species to live there, the habitat must be open or semi-open. Representatives of this group are found in the families of Brentidae, Buprestidae, Carabidae, Cerambycidae, Chrysomelidae, Coccinellidae, Curculionidae, Elateridae, Kateretidae, Melyridae, Mordellidae, Nitidulidae, Phalacridae, Staphylinidae, and Tenebrionidae. There is a relatively large proportion of rare species in this group, including: *Trachys fragariae* (Fig. 93), *T. troglodytes* (Fig. 95) (Buprestidae), *Mordellaria aurofasciata* (Fig. 304) (Mordellidae), *Lagria atripes* (Fig. 353) (Tenebrionidae), *Scymnus schmidti* (Fig. 414) (Coccinellidae), *Mesotrichapion punctirostre* (Fig. 480) (Brentidae), *Agapanthia intermedia* (Fig. 585) (Cerambycidae), *Psylliodes chalcomera* (Fig. 606), *Bruchus brachialis* (Fig. 607), and *Cassida panzeri* (Fig. 609) (Chrysomelidae). A total of 32 xerothermophilic species have been recorded in KF area (Tables 2, 4).

Mycetophilic species are those whose biology is associated with fungi, less frequently with lichens and slime molds. Among them are beetles (larvae and/or imagines) that feed on fungal mycelium or fruiting bodies, but also those that reside in this habitat while feeding on a different substrate. In some cases, we do not know the diet of such species, but we observe a clear preference for this habitat during their development. A total of 394 mycetophilic species have been found in KF area. The largest number of such species is found among the Staphylinidae – 81, followed by the Cryptophagidae – 33, Latridiidae – 30, and the Ciidae – 29 (Table 4). There are also a large number of such species in the following families (subfamilies): Cerylonidae, Corylophidae, Endomychidae, Erotylidae, Leiodidae, Melandryidae, Monotomidae, Mycetophagidae, Nitidulidae, Ptinidae, Scolytinae, Sphindidae, Tenebrionidae, Tetratomidae, Throscidae (Tables 2, 4). Mycetophilic species can occur in both open and semi-open areas, but are most often found in the forest. They prefer moist, shaded environments. Some of the most interesting of this group include: *Eucinetus haemorrhoidalis* (Fig. 83) (Eucinetidae), *Oxypoda recondita* (Fig. 241), *Scaphisoma balcanicum* (Fig. 258) (Staphylinidae), *Peltis grossa* (Fig. 285) (Peltidae), *Orchesia luteipalpis* (Fig. 330) (Melandryidae), *Dolichocis laricinus* (Fig. 334) (Ciidae), *Platydema dejeanii* (Fig. 360) (Tenebrionidae), *Corticaria lateritia* (Fig. 387) (Latridiidae), *Leiestes seminiger* (Fig. 404) (Endomychidae), *Tritoma subbasalis* (Fig. 424) (Erotylidae), *Aspidiphorus lareyniei* (Fig. 426) (Sphindidae), *Triphyllus bicolor* (Fig. 352) (Mycetophagidae), *Physoronia wajdelota* (Fig. 454) (Nitidulidae), *Atomaria zetterstedti* (Fig. 458), *Cryptophagus parallelus* (Fig. 463) (Cryptophagidae), *Choragus sheppardi* (Fig. 474) (Anthribidae). The most spectacular species among the mycetophilic beetles is the very rare *Oxyporus mannerheimii* (Fig. 251) (Staphylinidae), which is protected by Polish law and the European Union Habitat Directive.

A specific habitat for many species of Coleoptera is animal fecal droppings, usually of mammals, rarely of birds. The largest number of coprophilic species is found in the family of Staphylinidae – 42, and Scarabaeidae – 30. Coprophilic species are also found in the following families: Geotrupidae, Histeridae, Hydrophilidae, Ptiliidae, and Ptinidae. In particular, many species and individuals can be found in the large volume feces of cows, bison, and horses. A total of 105 species of coprophilic beetles have been recorded in KF area (Tables 2, 4). One of the most common coprophilic forest species is *Anoplotrupes stercorosus* (Fig. 629) (Geotrupidae). It is replaced in agricultural areas by the, slightly larger *Geotrupes stercorarius* (Geotrupidae). A striking species, and one that is quite rare, is *Copris lunaris* (Fig. 208) (Scarabaeidae). Rare coprophilic species include *Aphodius foetidus* (Fig. 192), *Limarus zenkeri* (Fig. 194), *Onthophagus illyricus* (Fig. 210) (Scarabaeidae), *Atheta sodermani* (Fig. 235), *Baeocrara variolosa* (Fig. 211), *Emus hirtus* (Fig. 630) (Staphylinidae), and *Ptiliolum schwarzi* (Fig. 215) (Ptiliidae).

Fig. 629. ***Anoplotrupes stercorosus*** **(Hartmann in Scriba, 1791) (Geotrupidae) is the most common coprophilous forest species in Knyszyńska Forest** (photo P. Niemiec)

Fig. 630. ***Emus hirtus*** **(Linnaeus, 1758) (Staphylinidae)** (photo L. Borowiec)

Necrophilic species are another ecological group of beetles. The largest number of such species has been recorded in the family of Staphylinidae – 35, followed by Dermestidae – 16, and Histeridae – 10. They can also be found, among others, in the family of Cleridae, Hydrophilidae, Leiodidae, Nitidulidae, Ptiliidae, Ptinidae, and Trogidae. Species in this group are sometimes coprophiles. The showiest – large and brightly colored – can be found among the carrion beetle subfamily of Silphinae (Staphylinidae), which until recently was treated as a separate family – Silphidae. Examples include *Nicrophorus vespilloides* (Fig. 631) and *Oiceoptoma thoracicum* (Fig. 632) (Staphylinidae), which are common in KF. They play an important role in the ecosystem by utilizing (eating and burying) carrion in the environment (forest, field, meadow, etc.). Rare species in this group include *Baeocrara variolosa* (Fig. 211), *Ptiliolum schwarzi* (Fig. 215) (Ptiliidae), *Necrodes littoralis* (Fig. 229), *Atheta sodermani* (Fig. 235) (Staphylinidae), *Ctesias serra* (Fig. 272), *Globicornis emarginata* (Fig. 275) (Dermestidae), and *Emus hirtus* (Fig. 630) (Staphylinidae). In total, 88 necrophilic species were found in KF (Tables 2, 4).

Fig. 631. *Nicrophorus vespilloides* (Herbst, 1783) (Staphylinidae) – scavenger, common in Knyszyńska Forest (photo J. Kupryjanowicz)

There is a certain, not very large group of species that live in anthills (myrmecophilic species). Such species can be found, among others, in the Histeridae family, Monotomidae, Nitidulidae, Ptiliidae, Scarabaeidae, and Staphylinidae. The largest number of myrmecophilic species (24) is found in the Staphylinidae family (Tables 2, 4). Species of interest include: *Myrmetes paykulli* (Fig. 174) (Histeridae), *Ptenidium longicorne* (Fig. 213) (Ptiliidae), *Scydmoraphes minutus* (Fig. 267) (Staphylinidae), and *Monotoma conicicollis* (Fig. 428) (Monotomidae). Very surprising is the coexistence of the huge larvae of *Protaetia cuprea metallica* (Fig. 633) (Scarabaeidae) with small ants. A total of 34 species of myrmecophilic beetles have been found in KF (Tables 2, 4).

Fig. 632. *Oiceoptoma thoracicum* (Linnaeus, 1758) (Staphylinidae) – imagines and larvae of this species are necrophilic (photo J. Kupryjanowicz)

Fig. 633. *Protaetia cuprea metallica* (Herbst, 1782) (Scarabaeidae) a myrmecophilous species (as a larva) and anthophilous (as an imago) (photo J. Kupryjanowicz)

A peculiar group of beetles are those living in mammal burrows or in bird nests – nidicolous species. They are found in eight families: Cryptophagidae, Dermestidae, Histeridae, Latridiidae, Leiodidae, Nitidulidae, Ptinidae, and Staphylinidae. The following are noteworthy due to their rarity: *Atomaria morio* (Fig. 456), *Sciodrepoides alpestris* (Fig. 222) (Leiodidae), and *Ptinus schlerethi* (Fig. 283) (Ptinidae). Only 47 species from this ecological group have been recorded in KF (Tables 2, 4).

The adult forms of a large group of species visit the flowers of herbaceous plants as well as those of trees and shrubs (anthophilic species), where they seek food in the form of pollen (most often), nectar, or corolla petals. Such species can be found in the family Buprestidae, Byturidae, Cantharidae, Cerambycidae, Coccinellidae, Dermestidae, Elateridae, Kateretidae, Melyridae, Mordellidae, Nitidulidae, Oedemeridae, Phalacridae, Pyrochroidae, Scarabaeidae, Scraptiidae, Staphylinidae, and Tenebrionidae. Several examples of such species are present here. One of the most common is *Coccinella septempunctata* (Fig. 634), which in recent years has been increasingly replaced by an invasive species – the Asian ladybird beetle *Harmonia axyridis* (Fig. 635).

Fig. 634. *Coccinella septempunctata* Linnaeus, 1758 (Coccinellidae) it is known as a predator of aphids (photo J.M. Gutowski)

Fig. 635. *Harmonia axyridis* (Pallas, 1773) (Coccinellidae) – invasive species (photo J. Kupryjanowicz)

Anthaxia quadripunctata (Fig. 621) (Buprestidae) can be observed in forests, especially in spruce trees, feeding on the pollen of flowers with yellow blooms. The imagines of *Aromia moschata* (Figs. 503, 636) appear in places where willows grow, also benefitting from floral food. Rare anthophilic species from the longhorn beetle family include *Anoplodera sexguttata* (Fig. 535), *Cyrtoclytus capra* (Fig. 512), *Evodinus borealis* (Fig. 540), *Lepturobosca virens* (Fig. 552), and *Stictoleptura variicornis* (Fig. 575). One representative of anthophilic beetles from the Kateretidae family is *Kateretes pusillus* (Fig. 436), while among the sap beetles are numerous representatives of the subfamily Meligethinae, such as *Meligethes flavimanus* (Fig. 451). The group of anthophilic species also includes, among others, *Tropinota hirta* (Fig. 637) (Scarabaeidae), *Anogcodes rufiventris* (Fig. 317) (Oedemeridae), and *Globicornis corticalis* (Fig. 274) (Dermestidae). In late summer, numerous specimens of a representative of the Cantharidae – *Rhagonycha fulva* (Fig. 638) – can be observed on flowers of the celery family (Apiaceae). It is believed that the appearance of this species indicates the imminent arrival of phenological autumn. *Anthophagus angusticollis* (Fig. 639) (Staphylinidae) can also be found on flowers, which is quite unusual for rove beetles. Records of 174 anthophilic beetle species have been reported from KF (Tables 2, 4).

The Knyszyńska Forest hosts beetle species that live in man-made (synanthropic) habitats – in houses, barns, cellars, livestock sheds, and similar objects. Some of these species are also capable of living in natural environments; however, most live exclusively in synanthropic habitats. Some of them are alien species, including invasive ones. Synanthropic species represent the following families: Carabidae, Cerambycidae, Chrysomelidae, Cryptophagidae, Dermestidae, Laemophloeidae, Latridiidae, Monotomidae, Mycetophagidae, Ptinidae, Scarabaeidae, Staphylinidae, and Tenebrionidae. They include the European house borer *Hylotrupes bajulus* (Fig. 513), a representative of Cerambycidae that develops in the wood of coniferous trees in man-made structures. This species is decreasing in frequency and abundance due to the replacement of wooden buildings with masonry, and because construction wood is increasingly being treated (impregnation). The European house borer is also occasionally found in the wild, where it lives in the trunks of dead standing trees.

Fig. 636. ***Aromia moschata*** **(Linnaeus, 1758) (Cerambycidae) eagerly feeds on flower pollen** (photo T. Mokrzycki)

Fig. 637. ***Tropinota hirta*** **(Poda von Neuhaus, 1761) (Scarabaeidae)** (photo J. Kupryjanowicz)

Fig. 638. *Rhagonycha fulva* (Scopoli, 1763) (Cantharidae) (photo M. Miłkowski)

Fig. 639. *Anthophagus angusticollis* (Mannerheim, 1830) (Staphylinidae) – one of the few representatives of the rove beetles visiting flowers (photo L. Borowiec)

Quite a few synanthropic species can be found in the skin beetle family, among them the varied carpet beetle *Anthrenus verbasci* (Fig. 640) (Dermestidae), whose larvae feed on keratin-rich dry animal materials. This species is considered a pest of zoological collections, leather, wool, hair, horn, and products made from these materials, as well as silk, silkworm cocoons, bone, and animal glue (Burakowski et al. 1986a). Synanthropic species also include a number of individuals of the Latridiidae family, including *Corticaria fulva*, which is rare in Poland (Fig. 384). A very impressive representative of this group is the European rhinoceros beetle *Oryctes nasicornis* (Fig. 207) (Scarabaeidae). Adult beetles reach 3–4 cm in length, and males have a large horn on their heads. The larvae of this species develop in piles of sawdust, compost or other plant waste, which are usually stored within human habitats, but sometimes also in the forest. It is very rare to observe the development of this species in the woodrot of thick, decaying trees in natural habitats. The yellow mealworm beetle *Tenebrio molitor* (Fig. 641) (Tenebrionidae), commonly known because it is often found in our homes, especially in the countryside, sometimes feeds in clusters on old stocks of flour, bran, bread, and other items made of grain (Burakowski et al. 1987). A total of 46 synanthropic species have been recorded in KF (Tables 2, 4).

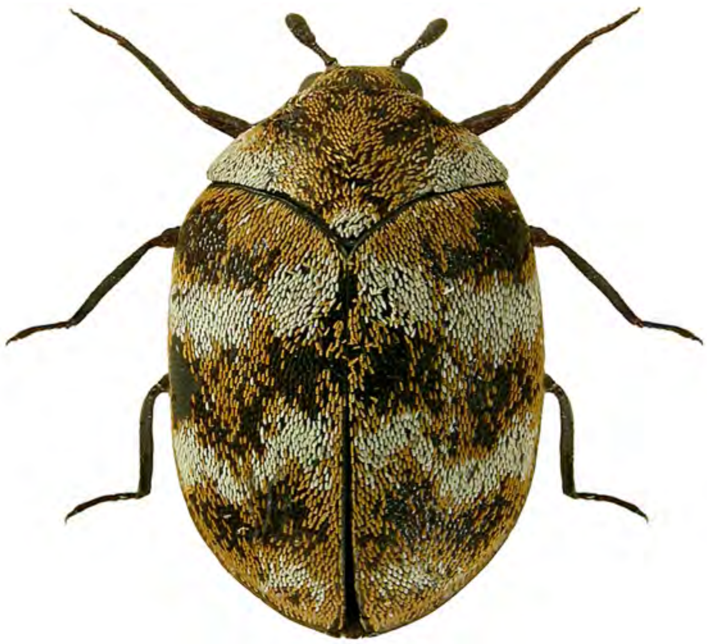


Fig. 640. *Anthrenus verbasci* (Linnaeus, 1767) (Dermestidae) – a synanthropic and necrophilous representative of the skin beetles (photo L. Borowiec)

A sizable group of KF beetle species inhabits areas that have been burned. These are species – mostly saproxylic – that clearly benefit from the presence of fires occurring in the forest. 127 species of pyrophilic beetles were identified (Table 4), including one species of obligate pyrophile – the scarce fungus weevil *Platyrhinus resinosus* (Fig. 642) (Anthribidae) (Table 2).

Species classified as obligate pyrophiles are those that absolutely need the existence of fire in the environment for their development. The others – facultative pyrophiles – can also develop in other habitats, but the presence of fire in the forest clearly favors them. Among these facultative pyrophiles are the following rare species: *Curtimorda maculosa* (Fig. 301) (Mordellidae), *Boros schneideri* (Fig. 322) (Boridae), *Epuraea thoracica* (Fig. 449) (Nitidulidae), *Caenoscelis ferruginea* (Fig. 459) (Cryptophagidae), *Cucujus cinnaberinus* (Fig. 464) (Cucujidae), *Crypturgus subcribrosus* (Fig. 495) (Curculionidae), *Acmaeops septentrionis* (Fig. 531), and *Aegomorphus clavipes* (Fig. 584) (Cerambycidae).

Fig. 641. *Tenebrio molitor* Linnaeus, 1758 (Tenebrionidae) (photo L. Borowiec)

Freshwater ecosystems, which provide habitat for many different groups of organisms, are usually divided into two basic types: standing water ecosystems (pools, ponds, lakes) and running water ecosystems (fast-flowing streams, brooks, rivers). The types of aquatic ecosystems defined in this way offer the organisms inhabiting them quite specific living conditions, which translates into considerable species distinctiveness of the water beetle associations inhabiting them. The vast majority of species prefer still waters, providing more stable and predictable living conditions. In flowing waters, on the other hand, the habitat is constantly, uninterruptedly changing, and staying in place requires additional adaptations to counteract being carried away by the water current.

In the past, the entire area of KF was within the range of the Warta Glaciation, and is therefore characterized by an almost complete absence of lakes, but at the same time with the presence of periglacially transformed glacial forms and the occurrence of extensive marshy depressions (Richling 2021). This is closely associated with the number of wetlands and bogs found here. The degree of peat formation in KF is about 10% of the area, with low peat deposits definitely dominating, and transitional and raised peat bogs being much rarer (Okruszko 1995). Particularly noteworthy is the almost complete absence of natural, larger bodies of standing water, and the only types of such water bodies are oxbow lakes and small ponds in swampy river valleys. Former lakes have already succumbed to sediment filling and overgrowth, with peat bogs or swamps usually taking their place. Beavers are immensely important in enriching the spectrum of the water bodies inhabited by beetles. The floodplains they create are a veritable mosaic of exceptionally diverse habitats, in addition to being extremely dynamic in terms of their duration and occupied area.

A total of 137 species of aquatic beetles (hydrobionts) have been identified from the area of KF, accounting for 37.5% of the total number of species from this particular ecological group found in Poland, whereas 328 species were identified as hydrophilic beetles (aquatic and arboreal) (Tables 2, 4).

Fig. 642. *Platyrhinus resinosus* (Scopoli, 1763) (Anthribidae) – obligatory pyrophilic (photo L. Borowiec)

A group of rheophiles (species preferring flowing water) was found in KF rivers and other watercourses, accounting for slightly more than 8% of the total number of recorded aquatic beetle species. Their presence testifies to the good state of preservation of lotic ecosystems (the ecosystem of flowing freshwater – rivers and streams) and the purity of the water they contain. They are represented by widely distributed and relatively common species throughout the country: *Gyrinus aeratus* (Gyrinidae), *Haliplus fluviatilis* (Haliplidae), *Deronectes latus*, *Ilybius fuliginosus*, *Laccophilus hyalinus* (Dytiscidae), *Laccobius striatulus* (Hydrophilidae), *Elmis aenea*, *E. maugetii*, *Oulimnius tuberculatus* (Elmidae), *Hydraena riparia* (Hydraenidae), and *Platambus maculatus* (Fig. 643) (Dytiscidae) – considered an umbrella species for flowing waters (Czachorowski et al. 2000).

Particularly noteworthy is the finding of a large population of a crenophile (species preferring springs and initial sections of rivers) – *Agabus guttatus* (Dytiscidae), in the headwaters of the Krzemianka River.

Among the species of aquatic beetles associated with standing water, the group of tyrphobionts (species living in bog waters with low pH and numerous humic compounds), tyrphophiles (species preferring bogs), and acidophiles (species inhabiting mainly acidic water) is numerous: *Noterus crassicornis* (Noteridae), *Acilius canaliculatus*, *Agabus affinis*, *A. congener*, *A. sturmii*, *Hydroporus angustatus*, *H. brevis* (Fig. 53), *H. fuscipennis, H. glabriusculus* (Fig. 56), *H . erythrocephalus*, *H. incognitus*, *H. melanarius*, *H. memnonius*, *H. neglectus*, *H. nigrita*, *H. obscurus*, *H. rufifrons*, *H. striola*, *H. tristis*, *H. umbrosus*, *Ilybius guttiger*, *I. wasastjernae* (Fig. 57), *Clemnius decoratus*, *Laccornis oblongus* (Fig. 60), *Colymbetes paykulli* (Dytiscidae), *Gyrinus natator* (Gyrinidae), *Helophorus flavipes*, *H. strigifrons, H. tuberculatus* (Helophoridae), *Hydrochus brevis* (Hydrochidae), *Anacaena lutescens*, *Enochrus affinis*, *E. coarctatus*, *E. ochropterus*, *Hydrobius rottenbergii*, *H. subrotundus* (Hydrophilidae), and *Limnebius parvulus* (Hydraenidae) (Tables 2, 4).

The species richness of beetles living in peatland waters testifies to the good preservation of bog and swamp habitats in KF. In light of observed climatic changes, the area of the Forest, together with its specific microhabitats, such as pits with micro-ponds, emerges as a refugium for boreal or otherwise northern species. It is the forests and swamp forests, as well as all bog habitats, that account for the species richness of KF water beetles.

Fig. 643. *Platambus maculatus* (Linnaeus, 1758) (Dytiscidae) (photo L. Borowiec)

A numerous group of species among the aquatic beetles found in KF are eurytopes (species tolerant of a very wide variety of ecological factors and preferring waters with varying degrees of eutrophication). The large number of eurytopic species may indicate a certain degree of degradation of the aquatic habitats due to human activities.

The high forest of KF cover clearly affects the species composition of beetles inhabiting its aquatic habitats, and, as expected, a more numerous occurrence of beetles associated with the waters of forested areas is found here.

The presence of two boreal-range species, very rare not only in Poland, but also in Central Europe – *Hydroporus brevis* Sahlberg (Fig. 53) and *Ilybius wasastjernae* (Sahlberg) (Fig. 57) (Dytiscidae) – testifies to the similarity of KF's climatic and habitat conditions to boreal coniferous forests.

The lowland nature of KF leads us to believe that we cannot expect to find here many species associated with fast-flowing rivers and streams of a mountainous character, especially from the Hydraenidae or Elmidae families.

4.7. Characteristics of Knyszyńska Forest beetles in relation to the coleopteran fauna of Poland

Few forest complexes (including national parks) have had their beetle populations comprehensively studied. About 3,250 beetle species have been reported from the neighboring and, at the same time, best-studied Białowieża Forest (Gutowski & Jaroszewicz 2001, 2004; Biggs et al. 2004; Tończyk & Gusta 2016; Greń et al. 2017; Plewa et al. 2019, 2020; Gutowski et al. 2020b; Walesiak et al. 2021; Schwerk 2023). A comprehensive study was also made of Ojców National Park, listing more than 1,762 species (Pawłowski et al. 1994; Kubisz & Pawłowski 1998; Kubisz et al. 2021), Babia Góra National Park – 1,691 species (Szafraniec et al. 2021), Kampinos National Park, from which about 1,870 species were recorded (Marczak 2020), Świętokrzyski National Park – about 2,300 species (Buchholz et al. 2021; Lubecki et al. 2023), and the Bieszczady Mountains – about 2,000 species (Pawłowski et al. 2000). Outside the national parks, Suwalki Landscape Park was also inventoried, with 1,072 species found (Gutowski et al. 2020a; Ceryngier et al. 2022), and 658 species were reported from the area of the planned Turnicki National Park (Buchholz &

Melke 2018). Outside typically forested areas, the coleopteran fauna of Piła has been identified – about 1,200 species were found within the administrative boundaries of this city (Ruta et al. 2020).

The order Coleoptera (beetles) is represented in the national fauna by the species of three suborders: Adephaga (predatory beetles), Myxophaga (trophic intermediate), and Polyphaga (polyphagous). To date, representatives of 90 beetle families belonging to predatory and polyphagous beetles have been identified as present in KF area (Tables 2, 3). The only domestic representative of the suborder Myxophaga, belonging to the family Sphaeriusidae, has not yet been found, although it probably occurs in the study area, as it has been collected both in the Masurian Lakes District (Burakowski et al. 1976) and in neighboring Białowieża Forest (Majewski 2001; Greń et al. 2017).

The suborder Adephaga is represented in KF by six families, of which the ground beetle family (Carabidae) is the most abundant in species. 158 species of Carabidae, or slightly more than 30% of the national fauna, were reported from KF area (Table 3). The second in terms of species caught was the family of Dytiscidae. Here, 66 species were caught, accounting for more than 45% of all species known from Poland. Few representatives of Gyrinidae were caught in KF area – 3 species (about 23% of the national fauna) or the Haliplidae – 5 species (just over 26% of the national fauna). In addition, three representatives of Cicindelidae and two representatives of Noteridae are known from KF. The species found for Cicindelidae and Noteridae comprise the total set of such species in Poland's fauna. The only European as well as Polish representative of the Hygrobiidae family, *Hygrobia hermanni* (Fabricius, 1775) was not recorded in the study area.

The Polyphaga suborder contains more than 90% of our beetle species. Domestic beetles are concentrated in seven series, containing 22 superfamilies and 101 families. Of this group, KF contains representatives of 84 families, or just over 83% of all polyphagous beetle families in the country. Among the numerous beetle families found in the study area, nine contain all the species that occur in Poland. These include families that usually have 1–3 species present on a national or even European scale. These are: Boridae, Byturidae, Dascillidae, Lymexylidae, Nosodendridae, Peltidae, Sphaeritidae, Sphindidae, and Thymalidae.

It is difficult to say unequivocally which of the other families have been identified well or poorly in terms of the presence of their species. However, if one were to take the subjective measure of 50% of known species in our country for each family as the threshold that divides families that are well recognized in a given area from those that are insufficiently recognized, the situation would be as follows:

- Well-recognized families, that is, ≥50% of national fauna species recorded in KF

Representatives of twenty-six families were found in KF, whose threshold ranged from 50% to more than 92% of nationally known species. The best-recognized group of beetles seems to be the hairy fungus beetle family (Mycetophagidae). Thirteen of 14 species known from Poland were found in KF. In addition to the hairy fungus beetles, good numbers of species representing the Cerylonidae, Lucanidae, and Aderidae were captured. The listed families have few species, and in addition, almost all their representatives inhabit forests. The group of well-recognized families with numerous representatives from the national fauna were represented by sap beetles (Nitidulidae) – 53.1% and longhorn beetles (Cerambycidae) – 51.3% (Table 3).

- Insufficiently recognized families, that is, <50% of species of the national fauna

This group included 49 families, almost double the number of well-recognized families. Threshold values ranged between 8.3% (Clambidae) and 49.6% (Brentidae). Among the better-recognized families in this group, in addition to Brentidae, were: Tenebrionidae – 46.2%, Scraptiidae – 43.8%, Latridiidae – 42.9%, Histeridae – 42.7%, Buprestidae – 42.2%, Oedemeridae – 40.9%, Scarabaeidae – 40.8%, Cucujidae and Trogossitidae – 40% each. The most poorly recognized beetle families found in KF include the Clambidae mentioned above, as well as: Anthicidae – 11.1%, Bothrideridae – 14.3%, Colonidae – 15.8%, Dryopidae, Elmidae, Heteroceridae, and Mayflies (Meloidae) – 16.7% each, as well as featherwing beetles (Ptiliidae) – 17.7% (Table 3).

Representatives of seventeen families of omnivorous beetles have not been caught in KF area so far. These families are: Derodontidae, Psephenidae, Limnichidae, Cerophytidae, Georyssidae, Spercheidae, Glaresidae, Ochodaeidae, Agyrtidae, Biphyllidae, Phloiophilidae, Mycteridae, Prostomidae, Teredidae, Alexiidae, Phloeostichidae, and Orsodacnidae. Most of the families listed here are very species-poor. This does not mean, of course, that representatives of the listed families are not present in the study area. Yet to be found are representatives of Derodontidae, Psephenidae, Limnichidae, Georyssidae, Spercheidae, Ochodaeidae, Agyrtidae, Biphyllidae, Phloiophilidae, Prostomidae, Teredidae, Alexiidae, Phloeostichidae, and Orsodacnidae. Most of the representatives of the fourteen families mentioned above have suitable microhabitats in KF for life as adults and larval development. Moreover, possible geographic barriers are not an obstacle here, as most of them are widely distributed, not only in Poland, but also in Europe. Representatives of such families as Cerophytidae, Glaresidae, and Mycteridae are species that inhabit mainly southern Europe and have been identified in Poland only from single, often historical localities in the southern and southwestern parts of the country.

In summary, 2,075 species of beetles have been reported from KF area to date (Table 2). This represents just over 34% of all domestic species of this group of insects. This result is impressive, and the diversity of beetle representatives found here is enormous. The achieved result can be compared with the recent large study of the beetles of Świętokrzyski National Park (ŚNP) (Buchholz et al. 2021; Lubecki et al. 2023). That site, like KF, can be considered a forest site, except that it is characterized by a much more varied mosaic of forest and non-forest habitats. Elevations reaching over 600 meters above sea level and the occurrence of beech and fir as the primary forest-forming species are important elements of ŚNP. After analyzing the historical literature and trapping beetles for many years in various ways, the authors of the monograph on the ŚNP beetles confirmed the presence of 2,300 species belonging to 92 families. Thus, the result of KF study is very close to the one achieved in the ŚNP. Such a comparison only emphasizes the natural value of KF site, putting it almost on a par with Świętokrzyski National Park, and probably with many other protected sites in Poland. Admittedly, it does not match Białowieża Forest, where about 1,200 more species are known, but this may be partly due to the different degree of study of the two sites – much lower in the case of KF.

4.8. The challenges of protecting the species richness of the beetles in Knyszyńska Forest

As mentioned earlier, Knyszyńska Forest contains beetles protected by Polish law (14 species), red-listed and relict species in addition to common species (Table 5). 240 species are classified as rare, and seven of them are listed in the *Polish Red Book of Animals. Invertebrates* (Głowaciński & Nowacki 2004). The species mentioned above, as well as a number of others, are threatened by the loss of habitats suitable for their life and development. These habitats are most often destroyed or altered – in the case of saproxylic species – by activities conducted as part of planned forest management. Beetles from this group are among the most valuable of those found in the studied natural site. On the other hand, the execution of cuts in stands and the formation of sunny clearings are beneficial for species living in open areas. However, there are fewer faunally valuable species associated with such a habitat in KF than those living in semi-natural, old-growth forests. Protection for species preferring open areas is mostly provided by existing reserves. If sites of those valuable species are found in managed forests, it would be necessary to ensure proper conditions for maintaining their populations (in the case of "Nature 2000" and protected species, this is even a legal obligation). When proceeding with thinning, it would be necessary to leave inhabited trees (lying, standing), and in the case of planning cuts – also groups of trees surrounding the site, in order to provide these valuable beetle species with the proper microclimate. Sites of particularly valuable species, especially their clusters, could be protected as xylobiont refuges, as is practiced in some regional directorates of State Forests in Poland.

The coleopteran fauna is best protected by the reserves (there are 25 of them) existing in KF. They cover a total area of 51.7 km^2, which is about 2.9% of the study area (Table 1, Fig. 1). This area is too small in relation to the needs of nature protection, as it is assumed that protected areas in the form of reserves, especially within a landscape park, should occupy a minimum of 5–10% of the area (Gutowski & Miłkowski 2008).

It would be worth enlarging Stara Dębina Reserve to include the well-preserved forests with old oaks and pines adjacent to it from the west. These neighboring stands, such as those in compartments 24 and 25, contain oaks reaching an age of almost 200 years, and pines that are well over 100 years of age.

A shortage of deadwood is noted in some parts of KF outside the reserves. In view of the above, general recommendations can be formulated, whose implementation will promote the preservation of biodiversity and may provide suitable conditions for the existence of faunally valuable beetle species, including those mentioned above. To achieve this, it would be necessary to:

- enlarge existing nature reserves, or establish new ones, so that their total area reaches 5–10% of KF,
- gradually increase the amount of deadwood in commercial forests, especially in the sections with age classes of IV and older, to at least 10 m^3/ha,
- improve the quality of deadwood, i.e., first of all, ensure that it contains the proportion of all species present in the stand and the presence of standing dead trees and thick lying logs in all stages of decomposition,
- rebuild ecological corridors between actual and potential habitats of valuable saproxylic species inside Knyszyńska Forest Landscape Park, and strive to achieve ecological connectivity with areas outside the area in question,
- continue the study of the beetles (Coleoptera) in Knyszyńska Forest Landscape Park, because the state of knowledge about this area is uneven, and some habitats are insufficiently studied; good information determines effective protection.

Table 5. The number of rare and protected species of Knyszyńska Forest by individual beetle families

Family	**Species**						
	Rare	**New for Podlasie Region**	**Red List (PL)**	**Red Book (PL)**	**Protected in Poland**	**European Red List of Saproxylic Beetles**	**Primeval forest relicts** (according to Eckelt 2017)
Dytiscidae	8		4				
Carabidae	2	6	11	1	6	1	1
Scirtidae	3	1					
Eucinetidae	1						
Byrrhidae		1					
Buprestidae	9	20	2	1			1
Throscidae	3	3	1	1			
Eucnemidae	6		4			15	3
Elateridae	5	3	7			20	4
Lycidae	2		1				1
Cantharidae	8	2	1				
Histeridae	3	5	2				2
Hydrophilidae	2		2				
Lucanidae	1		2		1	5	1
Scarabaeidae	7	1	5	1	1	4	1
Ptiliidae	4	3	1				
Hydraenidae	1						
Colonidae	3	2					
Leiodidae	5	5	3				
Staphylininae	26	32	9		1		
Dermestidae		2					
Bostrichidae	3	2				1	
Ptinidae	3	5	2				
Peltidae			1			2	1

Family	Species						
	Rare	**New for Podlasie Region**	**Red List (PL)**	**Red Book (PL)**	**Protected in Poland**	**European Red List of Saproxylic Beetles**	**Primeval forest relicts** (according to Eckelt 2017)
Lophocateridae						1	1
Trogossitidae	1					2	
Thymalidae							
Melyridae	3						
Cleridae			1	1			1
Lymexylidae	1						
Ripiphoridae	1		1				
Mordellidae	4	1	2				
Aderidae	4						
Scraptiidae	2	2					
Oedemeridae	1					5	
Boridae	1		1	1	1	1	1
Pythidae						1	
Salpingidae	1						
Meloidae		1					
Melandryidae	5		1				1
Ciidae	4		2				1
Mycetophagidae	1		1			10	3
Tenebrionidae	6		2			19	3
Zopheridae							1
Bothrideridae			1				
Cerylonidae		1					
Latridiidae	5	7					2
Corylophidae	2	2					
Endomychidae			1				1
Coccinellidae	7	4					
Erotylidae	1					7	1
Sphindidae	1						
Monotomidae	4	1	1				1
Kateretidae	2						
Nitidulidae	15						
Cryptophagidae	6	6					
Silvanidae		1					
Cucujidae	1		2		2	2	1
Phalacridae		1					
Laemophloeidae	1	1					
Nemonychidae	1						
Anthribidae	2						
Attelabidae	1	1					

Family	Species						
	Rare	New for Podlasie Region	Red List (PL)	Red Book (PL)	Protected in Poland	European Red List of Saproxylic Beetles	**Primeval forest relicts** (according to Eckelt 2017)
Brentidae	3	1					
Curculionidae	11	9	7	1			
Cerambycidae	24		6		2	70	4
Megalopodidae							
Chrysomelidae	12	25	2				
Total	**240**	**157**	**90**	**7**	**14**	**166**	**37**

In the case of planned outer corridors, attention should be paid to strengthening the ecological connectivity with Białowieża Forest – for beetles associated with forests. A much greater challenge is to add such an ecological corridor for forest species to the north of KF, in order to achieve connectivity with Biebrza National Park (Trzyrzeczki Wilderness), and further through the Biebrza Valley with Augustów Forest. Considerable gaps still exist in the vicinity of Dąbrowa Białostocka in this corridor of KF forests at their northernmost boundary.

Aquatic species (Dytiscidae, Hydrophilidae, and others) may be threatened by water pollution and the disappearance (drying up) of some water bodies. Potential threats to aquatic coleopteran fauna in KF arise from various changes in the agricultural landscape (land reclamation, regulation of watercourses, filling in of ponds and small marshes), changes in the way farming is conducted (intensification of crops, increase in the level of chemical use and fertilization with artificial fertilizers), and water pollution from sewage. Particularly in the case of illegal sewage discharges, entire watercourses or reservoirs can be completely poisoned, causing irreversible changes in the aquatic environment in a short period of time. However, the above threats to aquatic beetles do not appear to be significant, as most of KF area is made up of forests, within which aquatic habitats are least exposed to anthropogenic threats.

The most valuable of the species found in KF area are those that are only located here in Poland – *Atheta sodermani* (Staphylinidae) (Fig. 235) and *Podagrica menetriesi* (Chrysomelidae) (Fig. 605), recorded for the first time in this monograph. The latter is a thermophilic, southern species, associated with *Althea* and hollyhocks, which is expanding its range as a result of climate warming. Perhaps in the near future, more of its localities in Poland will be found. Other species worthy of special note are very rare, found at most in 1–2 current localities in Poland, occurring in specific, unique habitats, e.g., *Hydroporus brevis* (Fig. 53), *Ilybius wasastjernae* (Dytiscidae) (Fig. 57); *Agrilus pseudocyaneus* (Buprestidae) (Fig. 90); *Aulonothroscus laticollis* (Throscidae) (Fig. 102); *Microrhagus emyi* (Eucnemidae) (Fig. 118); *Pseudanostirus globicollis* (Elateridae) (Fig. 156); *Lopheros lineatus* (Lycidae) (Fig. 160); *Pteryx splendens* (Ptiliidae) (Fig. 214); *Bibloplectus spinosus* (Fig. 255), *Oxyporus mannerheimii* (Staphylinidae) (Fig. 251); *Episernus tatarinovae* (Ptinidae) (Fig. 281); *Nacerdes carniolica* (Oedemeridae) (Fig. 320); *Orthoperus nikitskyi* (Corylophidae) (Fig. 403); *Aspidiphorus lareyniei* (Sphindidae) (Fig. 426); *Astylogethes subrugosus* (Fig. 450); *Glischrochilus tremulae* (Nitidulidae) (Fig. 440); *Cryptophagus obsoletus* (Cryptophagidae) (Fig. 462); and *Stictoleptura variicornis* (Cerambycidae) (Fig. 575).

The conservation of beetles by preserving their habitats can be regarded as a protective measure for other groups of invertebrates found at a given locality.

The state of nature in KF area requires constant monitoring to immediately counteract adverse changes and, if possible, prevent the depletion of its biodiversity.

5. Summary

The purpose of this work was to collect, verify, organize, and make available all information, both published and original, about the beetles of Knyszyńska Forest (KF). The monograph presents faunal and ecological data, as well as the issue of the conservation of this group of insects in the studied area.

The adopted study site covers a fairly compact forest complex with an area of 1,767 km^2, located in northeastern Poland. It contains 25 nature reserves and Knyszyńska Forest Landscape Park (Fig. 1). A Special Conservation Area "Ostoja Knyszyńska" (PLH 200006) was established here as part of the Nature 2000 network.

Field surveys were conducted between 1979 and 2023. Various areas of KF were explored (Fig. 1), using, among other things, a variety of traps, using an entomological sweep net, a hydrobiological net, shaking beetles off of vegetation onto an entomological umbrella, direct trapping by spotting ("looking for the target species"), searching potential saproxylic beetle larval galleries, cultivating collected, inhabited host material (cambio- and xylophaga), attracting to artificial light. The monograph also reports on beetle specimens deposited in the collections of various institutions and individuals, as well as information from unpublished reports, disseminated research reports, engineering and master's theses. Publications with information on the beetles of the area were also analyzed.

So far, 2,075 species of beetles belonging to 90 families have been found in KF area (Table 2). Among them are two species new to the fauna of Poland: *Atheta sodermani* Bernhauer, 1931 (Staphylinidae) (Figs. 234, 235) and *Podagrica menetriesi* (Faldermann, 1837) (Chrysomelidae) (Figs. 603, 605). In addition, 156 species were newly recorded for Podlasie and 863 had not been previously reported from KF. Among the species found in the territory of KF, the largest number represented the rove beetles (Staphylinidae) – 348 species, weevils, including bark beetles (Curculionidae) – 292, ground beetles (Carabidae) – 158, leaf beetles (Chrysomelidae) – 138, longhorn beetles (Cerambycidae) – 101, sap beetles (Nitidulidae) – 67, and predaceous diving beetles (Dytiscidae) – 66 (Table 3).

Among the listed beetles, many rare species were found that deserve special attention. These include Nature 2000 species, such as: *Rhysodes sulcatus*, *Boros schneideri*, *Cucujus cinnaberinus*, *Osmoderma barnabita*, and *Oxyporus mannerheimii*. These listed species, plus *Cucujus haematodes*, are also under strict legal protection in Poland. Partially protected are: *Carabus convexus*, *C. coriaceus*, *C. glabratus*, *C. menetriesi*, *Calosoma inquisitor*, *Leptura thoracica*, *Stictoleptura variicornis*, and *Ceruchus chrysomelinus*.

Among the 2,075 species of beetles found in KF, 90 are on the *Red List of Threatened and Endangered Animals in Poland* (Pawłowski et al. 2002). There is also a large group of species (166) included in the *European Red List of Saproxylic Beetles* (Cálix et al. 2018), as well as in the list of relict saproxylic beetles of Central Europe (37) (Eckelt et al. 2018) (Table 5).

This monograph discusses 403 species in detail: "Nature 2000" species, relict species, red-listed species, and rare species in our country. The localities of these species within KF are presented on maps. Photographs of the described species are also included, in some cases photographs of their habitats are also presented.

Beetles occurring in Knyszyńska Forest Landscape Park, which covers about 41.2% of the study area, were characterized. The territory of the Landscape Park is the most valuable part of KF. This Park includes 20 of the 25 nature reserves located in the study area (Table 1, Fig. 1). There were 1,858 species of beetles found in the Park, accounting for 89.4% of all those recorded in KF. The two species new to the fauna of Poland were found in Knyszyńska Forest Landscape Park. The Park is also home to most of the rare species of Coleoptera recorded in KF. Protected species, "Nature 2000" species, relicts of primeval forests, and those on red lists are also located here, such as *Ilybius wasastjernae*, *Agrilus pseudocyaneus*,

Aulonothroscus laticollis, *Lopheros lineatus*, *Oxyporus mannerheimii*, *Nacerdes carniolica*, or *Stictoleptura variicornis*.

The status of knowledge about beetle populations in the 25 KF nature reserves was analyzed. The reserves cover a total area of 51.7 km^2, which is about 2.9% of the study area (Table 1, Fig. 1). The highest number of species was recorded in Budzisk Reserve – 602, followed by Góra Pieszczana – 363, Krzemianka – 362, Jesionowe Góry – 336, Las Cieliczański – 300, and Krzemienne Góry – 271. By far, the reserves with the fewest recorded species were Rabinówka – 34, Gorbacz – 4, and Jezioro Wiejki – 3 (Fig. 617). This huge disparity is not only due to the actual species richness in individual reserves, but is primarily the result of insufficient survey data from the sites. A total of 1,356 species were recorded in the reserves, accounting for 65.3% of all species found in KF.

The most valuable set of species can be observed in the oldest KF reserve – Budzisk. Among the faunal rarities found here are: *Agrilus pseudocyaneus* (Buprestidae); *Aulonothroscus laticollis* (Throscidae); *Microrhagus emyi* (Eucnemidae); *Lopheros lineatus* (Lycidae); *Episernus tatarinovae* (Ptinidae); *Nacerdes carniolica* (Oedemeridae); *Cyrtoclytus capra*, *Evodinus borealis*, and *Stictoleptura variicornis* (Cerambycidae) (Table 2). Very valuable species were also recorded in Jesionowe Góry, Krzemianka, Las Cieliczański, Góra Pieszczana, Jałówka, Krzemienne Góry, Stare Biele, and Stara Dębina reserves (Table 2).

The nature reserves are true refugia of the most valuable coleopteran fauna in the territory of KF, as evidenced by the number of species recorded there and the occurrence of the most interesting ones – protected, relict and red-listed species. There are also many valuable habitats with rare species outside the reserves. Two species new to Poland were found in areas not protected as reserves. The following species, for example, are only known from areas outside reserves: *Carabus menetriesi* (Carabidae), *Contacyphon punctipennis*, *Elodes tricuspis* (Scirtidae), *Osmoderma barnabita* (Scarabaeidae), *Plataraea dubiosa* (Staphylinidae), *Mycetochara roubali* (Tenebrionidae), *Corticaria lateritia*, *C. pineti* (Latridiidae), *Cryptophagus obsoletus* (Cryptophagidae), and *Lixus cylindrus* (Curculionidae) (Table 2).

The recorded beetles were characterized in terms of preferred habitats. The KF is dominated by forests, with which most species are associated. Among them, the most important group are the saproxylic beetles, which include 841 species (Tables 2, 4). Representatives of rove beetles (Staphylinidae) predominate – 138 species, followed by longhorn beetles (Cerambycidae) – 96, and weevils (Curculionidae, mainly bark beetles Scolytinae) – 91. The most valuable beetle associations can be found in well-preserved old-growth forests. Wilderness relicts are most common there – those species whose life cycle requires the continuous presence of thick deadwood in the full range of its decomposition stages and forms. The recorded KF beetle fauna distinguishes 36 such primeval relicts, of which 11 species are classified as relict *sensu stricto* (Eckelt et al. 2018): *Rhysodes sulcatus* (Carabidae); *Otho sphondyloides* (Eucnemidae); *Platylomalus complanatus* (Histeridae); *Peltis grossa* (Peltidae); *Boros schneideri* (Boridae); *Phryganophilus auritus* (Melandryidae); *Dolichocis laricinus* (Ciidae); *Corticeus suturalis* (Tenebrionidae); *Cucujus haematodes* (Cucujidae); *Evodinus borealis*, and *Leptura thoracica* (Cerambycidae) (Table 2). In addition to saproxylic beetles, forests are home to other dendrophilous species that are not associated with deadwood, but feed on the leaves (needles) or inflorescences and fruits of trees and shrubs. Many forest species are associated with the undergrowth and soil. The monograph also discusses differences in the species composition of beetles living in coniferous and deciduous stands.

The beetle fauna residing permanently or periodically in the soil during their development (from egg to adult form) was analyzed. A total of 688 such beetle species was recorded in KF. The largest number is in the Staphylinidae – 237, followed by Carabidae – 149, and Curculionidae – 120 (Table 4). The KF fauna include families whose species, in their entirety or majority, associate their development with soil: Bolboceratidae, Byrrhidae, Elateridae, Geotrupidae, Meloidae, Phalacridae, Ptiliidae, Scarabaeidae, and Trogidae. Soil species of interest due to their morphology (appearance), biology or rarity include: *Calosoma inquisitor*, *Carabus coriaceus*, *Cicindela hybrida*, *Ctenicera pectinicornis*, *Dascillus cervinus*, *Trox sabulosus*, *Odonteus armiger*, *Geotrupes spiniger*, *Copris lunaris*, *Oxythyrea funesta*, *Emus hirtus*, *Oxyporus maxillosus*, *Trichius fasciatus*, and *Meloe proscarabaeus*.

Xerothermophilic species (32) can be found in the families Brentidae, Buprestidae, Carabidae, Cerambycidae, Chrysomelidae, Coccinellidae, Curculionidae, Elateridae, Kateretidae, Melyridae, Mordellidae, Nitidulidae, Phalacridae, Staphylinidae, and Tenebrionidae. This group contains a relatively large proportion of rare species, including: *Trachys fragariae*, *T. troglodytes*, *Mordellaria aurofasciata*, *Lagria atripes*, *Scymnus schmidti*, *Mesotrichapion punctirostre*, *Agapanthia intermedia*, *Psylliodes chalcomera*, *Bruchus brachialis*, and *Cassida panzeri* (Table 2, 4).

There were 394 mycetophilic species found in KF area. The largest number of such species represents the Staphylinidae – 81, followed by the Cryptophagidae – 33, Latridiidae – 30, and the Ciidae – 29 (Table 4). A large number of species from this group are also in the following families (subfamilies): Cerylonidae, Corylophidae, Curculionidae: Scolytinae, Endomychidae, Erotylidae, Leiodidae, Melandryidae, Monotomidae, Mycetophagidae, Nitidulidae, Ptinidae, Sphindidae, Tenebrionidae, Tetratomidae, and Throscidae (Tables 2, 4). Due to their rarity, some of the most interesting include: *Eucinetus haemorrhoidalis*, *Oxypoda recondita*, *Scaphisoma balcanicum*, *Peltis grossa* transom, *Orchesia luteipalpis*, *Dolichocis laricinus*, *Platydema dejeanii*, *Corticaria lateritia*, *Leiestes seminiger*, *Tritoma subbasalis*, *Aspidiphorus lareyniei*, *Triphyllus bicolor*, *Physoronia wajdelota*, *Atomaria zetterstedti*, *Cryptophagus parallelus*, and *Choragus sheppardi*. The most spectacular species among the mycetophilic beetles is the very rare *Oxyporus mannerheimii*, which is protected by Polish law and the Habitat Directive of the European Union (Table 2, Fig. 251).

Coprophilic species from the following families occur: Geotrupidae, Scarabaeidae, Staphylinidae, Histeridae, Hydrophilidae, Ptiliidae, and Ptinidae. The largest number of coprophilic species was found in the Staphylinidae – 42 and Scarabaeidae – 30. 105 species of coprophilic beetles were recorded in KF area (Tables 2, 4). One of the most common forest coprophilic species is *Anoplotrupes stercorosus*. A striking species, yet quite rare, is *Copris lunaris*. Other rare coprophilic species include: *Aphodius foetidus*, *Atheta sodermani*, *Baeocrara variolosa*, *Emus hirtus*, *Limarus zenkeri*, *Onthophagus illyricus*, and *Ptiliolum schwarzi* (Table 2).

The largest number of necrophilic species was recorded from the Staphylinidae – 35, followed by Dermestidae – 16 and Hysteridae – 10. Necrophilic species can also be found, among others, from the families of Cleridae, Hydrophilidae, Leiodidae, Nitidulidae, Ptiliidae, Ptinidae, and Trogidae. They play an important role in the ecosystem by disposing of (consuming and burying) carrion found in the environment (forest, fields, meadows, etc.). Rare species in this group include *Baeocrara variolosa*, *Ptiliolum schwarzi*, *Necrodes littoralis*, *Atheta sodermani*, *Ctesias serra*, *Globicornis emarginata*, and *Emus hirtus*. 88 necrophilic species are found in KF (Tables 2, 4).

Species living in anthills (myrmecophilic) are also present, among others, from the families Histeridae, Monotomidae, Nitidulidae, Ptiliidae, Scarabaeidae, and Staphylinidae. The largest number of myrmecophilic species recorded in KF (24) is in the last family mentioned (Table 4). Species of interest include: *Myrmetes paykulli*, *Ptenidium longicorne*, *Scydmoraphes minutus*, and *Monotoma conicicollis*. Thirty-four species of myrmecophilic beetles are found in KF (Tables 2, 4).

We also recorded species living in mammal burrows or in bird nests – nidicolous species – from eight families: Cryptophagidae, Dermestidae, Histeridae, Latridiidae, Leiodidae, Nitidulidae, Ptinidae, and Staphylinidae. Noteworthy, due to their rarity, are the following: *Atomaria morio*, *Sciodrepoides alpestris*, and *Ptinus schlerethi*. Forty-seven species of this ecological group are reported from KF (Tables 2, 4).

Flower-visiting (anthophilic) species, which seek food in the form of pollen (most often), nectar or corolla petals, were found from the families Buprestidae, Byturidae, Cantharidae, Cerambycidae, Coccinellidae, Dermestidae, Elateridae, Kateretidae, Melyridae, Mordellidae, Nitidulidae, Oedemeridae, Phalacridae, Pyrochroidae, Scarabaeidae, Scraptiidae, Staphylinidae, and Tenebrionidae. Rare anthophilic species include: *Globicornis corticalis*, *Anogcodes rufiventris*, *Kateretes pusillus*, *Anoplodera sexguttata*, *Cyrtoclytus capra*, *Evodinus borealis*, *Lepturobosca virens*, and *Stictoleptura variicornis*. 174 species of anthophilic beetles are listed as inhabiting KF (Tables 2, 4).

Synanthropic species (associated with the human environment) were from the following families: Carabidae, Cerambycidae, Chrysomelidae, Cryptophagidae, Dermestidae, Laemophloeidae, Latridiidae, Monotomidae, Mycetophagidae, Ptinidae, Scarabaeidae, Staphylinidae, and Tenebrionidae. 46 synanthropic species are recorded in KF (Tables 2, 4).

There are species in KF that clearly benefit from the presence of fires – pyrophilic beetles. 127 species of this group were identified (Table 4), including one species of obligate pyrophile – *Platyrhinus resinosus* (Table 2). Among the facultative pyrophiles are rare species such as: *Curtimorda maculosa*, *Boros* *schneideri*, *Epuraea thoracica*, *Caenoscelis ferruginea*, *Cucujus cinnaberinus*, *Crypturgus subcribrosus*, *Acmaeops septentrionis*, and *Aegomorphus clavipes*.

A total of 137 species of aquatic beetles (hydrobionts) have been recorded from KF area, accounting for 37.5% of the total number of taxa from this ecological group found in Poland, whereas 328 species were found from the group of hydrophilic beetles (aquatic and arboreal) (Tables 2, 4).

A group of rheophiles, associated with flowing water, was found in rivers and other watercourses of KF, accounting for slightly more than 8% of the total number of recorded aquatic beetle species. Particularly noteworthy is the finding of a large population of a crenophile (species associated with springs) – *Agabus guttatus* – in the headwaters of the Krzemianka River. Among the aquatic beetles associated with standing water, the group associated with the acidic habitats of bogs (tyrphobionts, tyrphophiles, and acidophiles) is numerous and includes: *Hydroporus brevis*, *H. glabriusculus*, *Ilybius wasastjernae*, and *Laccornis oblongus* (Table 2, 4).

The species richness of aquatic beetles living in peatland waters testifies to the good preservation of the bog and swamp habitats of KF. The large forest cover of KF clearly affects the species composition of beetles inhabiting the aquatic habitats found there. In light of observed climatic changes, the area of the Forest, together with specific microhabitats, such as pits with micro-ponds, emerges as a refugium for northern species. The presence of two boreal-range species, very rare in Central Europe: *Hydroporus brevis* and *Ilybius wasastjernae*, testifies to the similarity of KF's climatic and habitat conditions to boreal coniferous forests.

The coleopteran fauna of KF was compared with other natural sites in Poland, and the degree of knowledge was assessed of beetles as a whole and of individual taxonomic and ecological groups. From the neighboring, and at the same time best-studied, Białowieża Forest, about 3,250 species of beetles have been listed (Gutowski & Jaroszewicz 2001, 2004; Biggs et al. 2004; Tończyk & Gusta 2016; Greń et al. 2017; Plewa et al. 2019, 2020; Gutowski et al. 2020b; Walesiak et al. 2021; Schwerk 2023). A similar number of species to those in KF has been reported from Świętokrzyski National Park – about 2,300 species (Buchholz et al. 2021; Lubecki et al. 2023), while 1,072 species were recorded in Suwałki Landscape Park (Gutowski et al. 2020a; Ceryngier et al. 2022).

Among the numerous beetle families found in the study area, ten families are represented by all of their species recorded in Poland. These include families that usually include 1–3 species nationwide: Boridae, Byturidae, Dascillidae, Lymexylidae, Nosodendridae, Noteridae, Peltidae, Sphaeritidae, Sphindidae, and Thymalidae.

Families considered to have been well-recognized are those whose number of recorded species in KF represent ≥50% of the national fauna. These include representatives of twenty-six families. The most well-recognized is the hairy fungus beetle family (Mycetophagidae) – 92.9%. A high degree of identification was also recorded for the Cerylonidae – 83.3%, Lucanidae – 71.4%, and Aderidae – 71.4%. In the group of well-recognized families, with numerous representatives in the national fauna, were the sap beetles (Nitidulidae) – 53.1% and longhorn beetles (Cerambycidae) – 51.3% (Table 3).

The group of insufficiently recognized families contained 49 families. The threshold values ranged between 8.3% (Clambidae) to 49.6% (Brentidae). Among the better-recognized families in this group, in addition to the Brentidae, were: Tenebrionidae – 46.2%, Scraptiidae – 43.8%, Latridiidae – 42.9%, Hysteridae – 42.7%, Buprestidae – 42.2%, Oedemeridae – 40.9%, Scarabaeidae – 40.8%, Cucujidae and Trogossitidae – 40% each. The least recognized beetle families found in KF include the Clambidae mentioned above, as well as: Anthicidae – 11.1%, Bothrideridae – 14.3%, Colonidae – 15.8%, Dryopidae, Elmidae, Heteroceridae and Meloidae – 16.7% each, as well as the Ptiliidae – 17.7% (Table 3).

The authors were unable to capture representatives of nineteen beetle families known in Poland from KF area. Those waiting to be found represent the Agyrtidae, Alexiidae, Biphyllidae, Derodontidae, Georyssidae, Hygrobiidae, Limnichidae, Ochodaeidae, Orsodacnidae, Phloeostichidae, Phloiophilidae, Prostomidae, Psephenidae, Spercheidae, Sphaeriusidae, and Teredidae families.

In summary, 2,075 beetle species have been reported from KF area to date (Table 2). This represents just over 34% of all species of this group of insects found in Poland. This is a value close to the result achieved in Świętokrzyski National Park, which underscores the high conservation value of the site in question. Admittedly, it does not match Białowieża Forest, where about 1,200 more species are known, but this may be partly due to the lower intensity of research conducted in KF compared to Białowieża Forest.

The paper also discusses the problems of protecting the species richness of KF beetles in different ecological groups and habitats. The authors recommend: (1) enlarging existing nature reserves or establish new ones, so that their total area reaches 5–10% of KF, (2) gradually increasing the amount of deadwood in managed forests, especially in sections with trees in the IV and older age classes to at least 10 m^3/ha, (3) improving the quality of deadwood, i.e., ensuring the proportion of all species present in the stand and the presence of standing dead trees and thick lying logs in all stages of decomposition, (4) rebuilding ecological corridors between actual and potential habitats of valuable saproxylic species within KF, and striving to achieve ecological connectivity with areas outside the Forest, (5) continuing the study of KF beetles, because the state of knowledge of its area is uneven, and some habitats have been insufficiently studied; good knowledge is a prerequisite for effective protection.

The most valuable of the species found in KF area are those that have their only location in Poland right here – *Atheta sodermani* (Staphylinidae) and *Podagrica menetriesi* (Chrysomelidae), recorded for the first time in this monograph. Other species worthy of special note are very rare ones, occurring at most in 1–2 current localities in Poland, in specific, unique habitats. These include: *Agrilus pseudocyaneus* (Buprestidae), *Stictoleptura variicornis* (Cerambycidae), *Orthoperus nikitskyi* (Corylophidae), *Cryptophagus obsoletus* (Cryptophagidae), *Hydroporus brevis*, *Ilybius wasastjernae* (Dytiscidae), *Pseudanostirus globicollis* (Elateridae), *Microrhagus emyi* (Eucnemidae), *Lopheros lineatus* (Lycidae), *Astylogethes subrugosus*, *Glischrochilus tremulae* (Nitidulidae), *Nacerdes carniolica* (Oedemeridae), *Pteryx splendens* (Ptiliidae), *Episernus tatarinovae* (Ptinidae), *Aspidiphorus lareyniei* (Sphindidae), *Bibloplectus spinosus*, *Oxyporus mannerheimii* (Staphylinidae), and *Aulonothroscus laticollis* (Throscidae).

The conservation of beetles by preserving their habitats can be regarded as a protective measure for other groups of invertebrates found at a given site.

6. References

Aleksandrowicz O.R. 2004. Biegaczowate (Carabidae). [In:] Bogdanowicz W., Chudzicka E., Pilipiuk I., Skibińska E. (eds.): Fauna Polski – charakterystyka i wykaz gatunków. T. 1. Muzeum i Instytut Zoologii PAN, Warszawa, 28-42 pp.

Aleksandrowicz O. 2009. Zmiany składu gatunkowego i struktury ekologicznej zgrupowań chrząszczy epigeicznych brzegów rzek Kwacza i Słupia pod wpływem zabiegów renaturalizacyjnych. [In:] Obolewski K. (ed.): Krótkoterminowe ekologiczne efekty renaturalizacji niewielkich rzek nizinnych na przykładzie rzeki Kwaczy. Park Krajobrazowy "Dolina Słupi", Akademia Pomorska w Słupsku, Słupsk, 239-262 pp.

Aleksandrowicz O., Pakuła P., Mazur M. 2008. Biegaczowate (Coleoptera: Carabidae) w uprawie pszenicy w okolicy Lęborka. Słupskie Prace Biologiczne, 5: 15-25.

Alekseev V. 2020. Interesting observations of beetles (Coleoptera) from Kaliningradskaya Oblast during 2018-2019, with supplementary pre-2018 data. Euroasian Entomological Journal, 19(1): 18-30.

Alonso-Zarazaga M.A. 2011. Attelabidae. [In:] Löbl I., Smetana A. (eds.): Catalogue of Palaearctic Coleoptera. Curculionoidea I. Vol. 7. Apollo Books, 129-141.

Alonso-Zarazaga M.A., Barrios H., Borovec R., Bouchard P., Caldara R., Colonnelli E., Gültekin L., Hlaváč P., Korotyaev B., Lyal C.H.C., Machado A., Meregalli M., Pierotti H., Ren L., Sánchez-Ruiz M., Sforzi A., Silfverberg H., Skuhrovec J., Trýzna M., Velázquez de Castro A.J., Yunakov N.N. 2023. Cooperative Catalogue of Palaearctic Coleoptera Curculionoidea. 2nd Ed. Monografías electrónicas SEA: 14, 729 pp.

Andersen J., Olberg S., Haugen L. 2000. Saproxylic beetles (Coleoptera) of Troms and western Finnmark, northern Norway with exceptional distribution in Fennoscandia. Norwegian Journal of Entomology, 47: 29-40.

Anonim 2016. Back to Poland 26-30 May 2016. Latissimus, 38: 2-4.

Assing V. 2020. On the taxonomy and zoogeography of some West Palaearctic *Cypha* species (Coleoptera: Staphylinidae: Aleocharinae). Acta Musei Moraviae, Scientiae biologicae, 105(1): 11-26.

Assing V., Schülke M. 2006. Supplemente zur mitteleuropäischen Staphylinidenfauna (Coleoptera, Staphylinidae). III. Entomologische Blätter, 102: 1-78.

Assing V., Schülke M. 2011. Freude-Harde-Lohse-Klausnitzer – Die Käfer Mitteleuropas. Band 4. Staphylinidae I. Zweite neubearbeitete Auflage. Heidelberg: Spektrum Akademischer Verlag, I-XII, 1-560.

Audisio P. 1993. Coleoptera Nitidulidae – Kateretidae. Fauna D`Italia. Edizioni Calderini, Bologna, 971 pp.

Audisio P., Brustel H., Carpaneto G.M., Coletti G., Mancini E., Piattella E., Trizzino M., Dutto M., Antonini G., De Biase A. 2007. Updating the taxonomy and distribution of the European *Osmoderma*, and strategies for their conservation (Coleoptera, Scarabaeidae, Cetoniinae). Fragmenta Entomologica, 39(2): 273-290.

Audisio P., Brustel H., Carpaneto G.M., Coletti G., Mancini E., Tbizzino M., Antonini G., De Biase A. 2009. Data on molecular taxonomy and genetic diversification of the European Hermit beetles, a species complex of endangered insects (Coleoptera: Scarabaeidae, Cetoniinae, *Osmoderma*). Journal of Zoological Systematics and Evolutionary Research, 47(1): 88-95.

Banaszak J., Buszko J., Czachorowski S., Czechowska W., Hebda G., Liana A., Pawłowski J.S., Szeptycki A., Trojan P., Węgierek P. 2004. Przegląd badań inwentaryzacyjnych nad owadami w parkach narodowych Polski. [In:] Parki narodowe i rezerwaty przyrody w Polsce jako naturalne ostoje europejskiej fauny owadów. Wiadomości Entomologiczne, 23(Supl. 2): 5-56.

Barcley M. 2020. Family Rhipiphoridae Laporte, 1840. [In:] Iwan D., Löbl I. (eds.): Catalogue of Palaearctic Coleoptera, Vol. 5. Tenebrionoidea. Revised and updated second edition. Brill, Leiden – Boston, 59-66.

Bartolozzi L., Sprecher-Uebersax E., Bezděk A. 2016. Lucanidae. [In:] Löbl I., Löbl D. (eds.): Catalogue of Palaearctic Coleoptera. Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea and Byrrhoidea. Vol. 3. Revised and Updated Edition. Brill, Leiden – Boston, 58-84 pp.
Bense U. 1995. Longhorn beetles. Illustrated key to the Cerambycidae and Vesperidae of Europe. Margraf Verlag, Veikersheim, 512 pp.
Bercio H., Folwaczny B. 1979. Verzeichnis der Käfer Preussens. Verlag Parzeller & Co., Fulda, 369 pp.
Besuchet C. 1974. 24. Familie: Pselaphidae. [In:] Freude H., Harde K.W., Lohse G. A. (eds.): Die Käfer Mitteleuropas. Bd. 5. Staphylinidae II (Hypocyphtinae und Aleocharinae), Pselaphidae. Goecke & Evers, Krefeld, 305-362 pp.
Bezděk A. 2016. Cetoniinae. [In:] Löbl I., Löbl D. (eds.): Catalogue of Palaearctic Coleoptera. Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea and Byrrhoidea. Volume 3. Revised and Updated Edition. Brill, Leiden – Boston, 367-412 pp.
Bidas M. 1997. Bogatkowate (Coleoptera: Buprestidae) nowe dla Gór Świętokrzyskich. Wiadomości Entomologiczne, 16(2): 120.
Bidas M. 1998. Żukowate (Coleoptera: Scarabaeidae) nowe dla Gór Świętokrzyskich. Wiadomości Entomologiczne, 16(3-4): 231.
Bidas M. 2002. Kózkowate (Cerambycidae, Coleoptera) Gór Świętokrzyskich. Rocznik Świętokrzyski, Ser. B – Nauki Przyrodnicze, 28(28): 19-38.
Bidas M. 2004. Interesujące gatunki żuków koprofagicznych (Coleoptera: Scarabaeoidea) na Wyżynie Małopolskiej. Wiadomości Entomologiczne, 23(4): 245-246.
Bidas M. 2005. Nowe stanowiska interesujących Cerambycidae (Coleoptera) w Górach Świętokrzyskich. Wiadomości Entomologiczne, 24(1): 53-54.
Bidas M. 2012. Rzadkie chrząszcze (Coleoptera) Góry Rzepki w Górach Świętokrzyskich. Naturalia, 1: 133-135.
Bidas M. 2015a. Gatunki z rodzaju *Agrilus* (Coleoptera: Buprestidae) nowe dla Gór Świętokrzyskich. Wiadomosci Entomologiczne, 34(4): 70-71.
Bidas M. 2015b. Interesujące Cerambycidae (Coleoptera) w Górach Świętokrzyskich i uwagi o ich bionomii. Wiadomości Entomologiczne, 34(4): 73-74.
Bidas M., Buchholz L. 2007. Interesujące chrząszcze (Coleoptera) stwierdzone w Górach Świętokrzyskich. Wiadomości Entomologiczne, 26(4): 289-291.
Bielawski R. 1971. Biedronki (Coleoptera, Coccinellidae) Bieszczadów. Fragmenta faunistica, 17: 273-296.
Bielawski R. 1978. Biedronki (Coleoptera, Coccinellidae) Pienin. Fragmenta faunistica, 22: 337-357.
Bieńko W., Kirpsza L., Mokrzycki T. 2017. Nowe stanowiska *Quedius dilatatus* (Fabricius, 1787) (Coleoptera: Staphylinidae) w Polsce i uwagi o jego biologii. Wiadomości Entomologiczne, 36(3): 137-144.
Biesiadka E. 1973. Chrząszcze wodne (Coleoptera) torfowisk wysokich Karkonoszy i Gór Izerskich. Przegląd Zoologiczny, 17: 441-445.
Biesiadka E. 1991. Środowiskowe rozmieszczenie chrząszczy (Coleoptera) wodnych w Karkonoszach. Geoekologiczne problemy Karkonoszy. Materiały z sesji naukowej w Karpaczu 11-136 X 1991: 263-273.
Biggs J., Bilton D., Williams P., Nicolet P., Briggs L., Eeles B., Whitfield M. 2004. Temporary ponds of eastern Poland: an initial assessment of their importance for nature conservation. Archives des Sciences, 57: 73-84.
Bilton D.T. 1992. Genetic population structure of the Postglacial relict diving beetle *Hydroporus glabriusculus* Aubé (Coleoptera: Dytiscidae). Heredity, 69: 503-511. DOI: https://doi.org/10.1038/hdy.1992.165
Bílý S. 2002. Summary of the bionomy of the Buprestid beetles of Central Europe (Coleoptera: Buprestidae). Acta Entomologica Musei Nationalis Pragae, Suppl. 10: 104 pp. + 16 plates.
Biondi M. *Podagrica menetriesi* (Faldermann, 1837). Accessed through: Fauna Europaea. http://www.faunaeur.org/full_results.php?id=242794 (access: 25.07.2023)
Biwo T. 2022. Nowe stanowiska zgniotka cynobrowego *Cucujus cinnaberinus* (Scopoli, 1763) (Coleoptera: Cucujidae) na Górnym Śląsku. Fragmenta Naturae, 55: 23-29.
Bocák L. 2007. Family Omalisidae Lacordaire, 1857. [In:] Löbl I., Smetana A. (eds.): Catalogue of the Palaearctic Coleoptera, Vol. 4. Apollo Books, Stenstrup, 210-211.
Bohdan A. 2008. Drastyczny eksperyment profesora Sokołowskiego. Dzikie Życie, 7, 8: 20-21.
Bohdan A. 2009. Minister Środowiska: Dęby wrócą do rezerwatu. Dzikie Życie, 2008/2009, 12, 1: 12-13.

Bohdan A. 2022. Nowe stanowiska podlegających ochronie chrząszczy saproksylicznych w Puszczy Knyszyńskiej. Fundacja Dzika Polska. [mscr.]

Bohdan A., Bartos W., Smolej A. 2021. Pierwsze stwierdzenie *Rhysodes sulcatus* (Fabricius, 1787) w Puszczy Augutowskiej oraz *Boros schneideri* (Panzer, 1796) w Puszczy Rominckiej. Wiadomości Entomologiczne, 40(3); online 9N: 3-4

Bohdan A., Świerżewski G. 2016. Nowe stwierdzenia podlegających ochronie chrząszczy saproksylicznych w Puszczy Knyszyńskiej. Raport Stowarzyszenia Pracownia na rzecz Wszystkich Istot, Oddział Podlaski, Białystok, 19 pp. [mscr.]

Bohdan A., Wieniecki J. 2022. Pachnica próchniczka – *Osmoderma barnabita* w Puszczy Knyszyńskiej. Opis stwierdzonych stanowisk, zagrożenia, propozycje celów działań ochronnych oraz działań ochronnych. Fundacja Dzika Polska, 44 pp. [mscr.]

Bonnaci T., Biscaccianti A. B., Siclari A., Carlomagno F., Bonelli D., Mendicino F., Plewa R., Jaworski T., Pezzi M. 2022. Presence of the endangered saproxylic species *Cucujus haematodes* (Coleoptera: Cucujidae) in Aspromonte National Park (Southern Italy). The European Zoological Journal, 89(1): 122-129.

Borowiec L. 1990. New records of Polish Staphylinidae (Coleoptera). Polskie Pismo Entomologiczne, 59: 817-820.

Borowiec L. 1991a. Nowe i rzadkie dla Polski gatunki chrząszczy (Coleoptera). Wiadomości Entomologiczne, 10(4): 197-205.

Borowiec L. 1991b. Nowe stanowiska polskich Paederinae (Coleoptera, Staphylinidae), II. Wiadomości Entomologiczne, 10(4): 253-254.

Borowiec L. 1992. The leaf-beetles in the collection of Wojciech Mączyński (1860-1911) (Coleoptera: Chrysomelidae). Annals of the Upper Silesian Museum in Bytom, Entomology, 3: 3-29.

Borowiec L. 1993. Nowe stanowiska trzech rzadkich gatunków chrząszczy (Coleoptera) z Sudetów Wschodnich. Wiadomości Entomologiczne, 12(3): 227.

Borowiec L. 1995. Strąkowce (Coleoptera, Bruchidae) nowe i rzadkie dla fauny Polski. Wiadomości Entomologiczne, 1994, 13(4): 257-258.

Borowiec L. 1996. Mordellidae miastkowate (Insecta: Coleoptera). Fauna Polski – Fauna Poloniae, 18: 1-191.

Borowiec L. 2000. Nowe stanowiska kilku chrząszczy z rodzin Bruchidae i Chrysomelidae (Coleoptera: Chrysomeloidea) w Polsce. Wiadomości Entomologiczne, 1999, 18(4): 251-252.

Borowiec L. 2001. Leiodidae. [In:] Gutowski J.M., Jaroszewicz B. (eds.): Katalog fauny Puszczy Białowieskiej. Instytut Badawczy Leśnictwa, Warszawa, 403 pp.

Borowiec L. 2003. Nowe stanowiska gatunków z rodzaju *Cassida* L. (Coleoptera: Chrysomelidae). Wiadomości Entomologiczne, 22(1): 62-63.

Borowiec L., Kania J. 1994. Uwagi o niektórych krajowych gatunkach chrząszczy (Coleoptera). Wiadomości Entomologiczne, 13(4): 217-225.

Borowiec L., Kania J., Wanat M. 1992. Chrząszcze (Coleoptera) nowe dla Puszczy Białowieskiej. Wiadomości Entomologiczne, 11(3): 133-141.

Borowiec L., Kilian A. 1998. Revision of Polish species of the genus *Agathidium* Panzer, 1797 (Coleoptera: Leiodidae). Polskie Pismo Entomologiczne, 67: 65-102.

Borowiec L., Kubisz D. 1999. A faunistic review of Polish Mordellidae (Coleoptera: Tenebrionoidea). Polskie Pismo Entomologiczne, 68(3): 283-317.

Borowiec L., Ścibior R., Kubisz D. 2011. Critical check-list of the Polish Chrysomeloidea, excluding Cerambycidae (Coleoptera: Phytophaga). Genus, 22(4): 579-608.

Borowski J. 2001. Próba waloryzacji lasów Puszczy Białowieskiej na podstawie chrząszczy (Coleoptera) związanych z nadrzewnymi grzybami. [In:] Szujecki A. (ed.): Próba szacunkowej waloryzacji lasów Puszczy Białowieskiej metodą zooindykacyjną. Wydawnictwo SGGW, Warszawa, 287-317 pp.

Borowski J. 2006. Chrząszcze (Coleoptera) grzybów nadrzewnych – studium waloryzacyjne. Wydawnictwo SGGW, Warszawa, 92 pp.

Borowski J. 2007a. Waloryzacja drzewostanów Gór Świętokrzyskich przy wykorzystaniu mycetobiontycznych chrząszczy grzybów nadrzewnych. [In:] Borowski J., Mazur S. (eds.): Waloryzacja ekosystemów leśnych Gór Świętokrzyskich metodą zooindykacyjną. Wydawnictwo SGGW, Warszawa, 119-147 pp.

Borowski J. 2007b. Chrząszcze Insecta, Coleoptera – jako wskaźniki naturalności drzewostanów. Studia i Materiały Centrum Edukacji Przyrodniczo-Leśnej, 9, 2-3(16): 510-518.

Borowski J. 2016. Beetles (Coleoptera) of the Rogów region. Part VIII – jewel beetles (Buprestidae). World Scientific News, 40: 211-222.

Borowski J., Byk A., Byk S. 2004. Interesujące chrząszcze (Coleoptera) odłowione w okolicach Młynar (Pojezierze Mazurskie). Wiadomości Entomologiczne, 23(2): 116-117.

Borowski J., Byk A., Królik R. 2000. Nowe dane o rozmieszczeniu *Agrilus auricollis* Kiesenwetter, 1857 (Coleoptera: Buprestidae) w Polsce. Wiadomości Entomologiczne, 19(2): 121.

Borowski J., Byk A., Łęgowski D. 2005. Interesujące chrząszcze (Coleoptera) odłowione w Starej Brdzie Pilskiej na Pojezierzu Pomorskim. Wiadomości Entomologiczne, 24(1): 43-44.

Borowski J., Byk A., Mazur S., Mokrzycki T., Rutkiewicz A. 2013. Waloryzacja ekosystemów leśnych Leśnego Kompleksu Promocyjnego "Lasy Spalsko-Rogowskie" w oparciu o mycetobiontyczne chrząszcze grzybów nadrzewnych. Studia i Materiały CEPL w Rogowie, 2(35): 175-196.

Borowski J., Gazurek T. 2023. *Cryptophagus nitidulus* L. Miller, 1858 i *C. obsoletus* Reitter, 1879 – nowe gatunki zatęchlakowatych w faunie Polski (Coleoptera, Cryptophagidae). Biuletyn Częstochowskiego Koła Entomologicznego, 21(3): 16-18.

Borowski J., Kieszek C. 1999. Ciekawsze chrząszcze (Coleoptera) odłowione w rezerwacie dębowym "Zimna Woda" w Rogowie. Wiadomości Entomologiczne, 18(2): 125-126.

Borowski J., Marczak D., Kwiatkowski A. 2020. Nowe stanowisko *Episernus tatarinovae* Toskina & Nikitsky, 2003 w Polsce (Coleoptera: Ptinidae, Ernobiinae). Wiadomości Entomologiczne, 39(4); online 17N: 5-6.

Borowski J., Piętka J., Byk A. 2010. *Euplectus infirmus* Raffray, 1910 (Coleoptera: Staphylinidae) i *Corticaria pineti* Lohse, 1960 (Coleoptera: Latridiidae) – dwa chrząszcze nowe dla polskiej fauny. Wiadomości Entomologiczne, 29(3): 210-211.

Borowski J., Sławski M. 2016. Beetles (Coleoptera) of the Rogów region. Part VI – longhorn beetles (Cerambycidae). World Scientific News, 36: 73-95.

Borowski T. 2020a. World Inventory of Beetles of the Family Chrysomelidae (Coleoptera). Part 1: Eastern Europe and Northern Asia. Check List from 1768 to 2004. World News of Natural Sciences, 29(1): 1-74.

Borowski T. 2020b. World Inventory of Beetles of the Family Chrysomelidae (Coleoptera). Part 2: Eastern Europe and Northern Asia. Check List from 1768 to 2004. World News of Natural Sciences, 29(2): 75-150.

Borowski Z., Rykowski K., Gil W., Dobrowolska D., Wójcicki A. 2016. Sprawozdanie końcowe pt.: Leśne Powierzchnie Referencyjne jako element trwałego, zrównoważonego i wielofunkcyjnego leśnictwa w Leśnych Kompleksach Promocyjnych. Etap I. Zakład Ekologii Lasu, Instytut Badawczy Leśnictwa, Sękocin Stary, 171 pp. [mscr.]

Borusiewicz A., Kapuściński S. 1950. Materiały do znajomości rozsiedlenia w lasach polskich rodzaju biegacz – *Carabus* Lin. (Carabidae, Coleoptera). Prace Rolniczo-Leśne PAU, 54: 1-33.

Boukal D.S., Boukal M., Fikáček M., Hájek J., Klečka J., Skalický S., Šťasný J., Trávníček D. 2007. Catalogue of water beetles of the Czech Republic. Klapalekiana, 43 (Suppl.): 1-289.

Bubienko K., Ciepielewska D. 2010. Ladybirds (Coleoptera, Coccinellidae) on the beaches of Gdańsk. Aphids and Other Hemipterous Insects, 16: 119-125.

Buchholz L. 2008. Sprężyki (Coleoptera: Elateridae, Eucnemidae, Throscidae) rezerwatu leśno-stepowego "Bielinek" nad Odrą – charakterystyka i geneza fauny. Wiadomości Entomologiczne, 27(4): 195-258.

Buchholz L., Burakowski B. 1992. Weryfikacja danych o występowaniu oraz nowe stanowiska *Pseudanostirus globicollis* (Germ.) (Coleoptera, Elateridae) w Polsce. Wiadomości Entomologiczne, 11(2): 121-122.

Buchholz L., Komosiński K., Melke A., Michalski R., Szymczuk R., Koba L., Sienkiewicz P. 2011. Nowe dane o występowaniu *Rhysodes sulcatus* (Fabr.) (Coleoptera: Rhysodidae) na terenie Nadleśnictwa Bircza w południowo-wschodniej Polsce. Wiadomości Entomologiczne, 30(3): 179-181.

Buchholz L., Komosiński K., Melke A., Sikora-Marzec P. 2021. Chrząszcze (Coleoptera) Świętokrzyskiego Parku Narodowego. Wiadomości Entomologiczne, 40(Supplement): 1-273.

Buchholz L., Kuberski Ł., Michalski R., Melke A., Olbrycht T. 2013. Chrząszcze Coleoptera z załącznika II Dyrektywy Siedliskowej na obszarze projektowanego Turnickiego Parku Narodowego i w jego okolicach. Roczniki Bieszczadzkie, 21: 297-317.

Buchholz L., Melke A. 2018. 4.6 Owady – chrząszcze – Coleoptera. [In:] Boćkowski M.D. (eds.): Projektowany Turnicki Park Narodowy. Stan walorów przyrodniczych – 35 lat od pierwszego projektu parku narodowego na Pogórzu Karpackim. Wydawnictwo Fundacja Dziedzictwo Przyrodnicze, Nowosiółki Dydyńskie, 314-377 pp.

Buchholz L., Olbrycht T., Melke A. 2012. Występowanie *Boros schneideri* (Panzer, 1796) (Coleoptera: Boridae) w południowo-wschodniej Polsce. Wiadomości Entomologiczne, 31(3): 207-209.

Buchholz L., Ossowska M. 1998. Nowe dane o występowaniu czterech mało znanych gatunków z rodziny sprężykowatych (Coleoptera: Elateridae), w niektórych rejonach Europy Środkowej. Wiadomości Entomologiczne, 17(1): 21-36.

Buczyńska E., Buczyński P. 2019. Survival under anthropogenic impact: the response of dragonflies (Odonata), beetles (Coleoptera) and caddisflies (Trichoptera) to environmental disturbances in a two-way industrial canal system (central Poland). PeerJ, 6:e6215.: 1-31 DOI: https://doi.org/10.7717/peerj.6215.

Buczyński P., Przewoźny M. 2006. Stan poznania chrząszczy wodnych (Coleoptera: Adephaga, Hydrophiloidea, Byrrhoidea) Polski środkowo-wschodniej. Wiadomości Entomologiczne, 25(3): 133-155.

Buczyński P., Przewoźny M. 2008. Interesujące gatunki flisakowatych i pływakowatych (Coleoptera: Haliplidae, Dytiscidae) stwierdzone w okolicach Chełma (Polska wschodnia). Wiadomości Entomologiczne, 27(3): 163-164.

Buczyński P., Przewoźny M. 2010. Aquatic beetles (Coleoptera) of carbonate habitats in the vicinity of Chełm (eastern Poland). Annales Universitatis Mariae Curie-Skłodowska, sec. C, 65(1): 77-105.

Buczyński P., Przewoźny M., Angus R., Bameul F., Bilton D., Buczyńska E., Foster G., Foster S.L., Geijer J., Gerend R., Gosik R., Hendrich L., Herbig C., Köhler J., Nilsson A.N., Scheers K., Smith M., Tarkowski A., Turner C., Watson W.R.C. 2019. Beetles (Coleoptera) of wetlands and other aquatic habitats in the Polish part of the Polesie region found during the Balfour-Browne Club Meeting. Rocznik Muzeum Górnośląskiego w Bytomiu, Przyroda, 25(on line 001): 1-28.

Buczyński P., Przewoźny M., Pakulnicka J., Buczyńska E., Dawidowicz Ł., Wagner E. 2014. Materials to the knowledge of beetles (Coleoptera) of aquatic habitats in the Suwalski Landscape Park. Annales Universitatis Mariae Curie-Skłodowska, sec. C, 69(1): 7-27.

Buczyński P., Zawal A., Lechowski L., Stryjecki R., Pietrzak L., Buczyńska E. 2012. Bezkręgowce wodne. (pp. 140-153) [In:] Herbich J., Herbich M. (eds.): Przyroda rezerwatu Białogóra. Fundacja Rozwoju Uniwersytetu Gdańskiego, Gdańsk.

Bukejs A. 2009. Review of leaf-beetles subfamily Galerucinae (Coleoptera: Chrysomelidae) of the Latvian fauna. Acta Biologica Universitatis Daugavpiliensis, 9(2): 197-220.

Bunalski M. 1992. New data on the distribution of *Trox* (Fabr.) species (Coleoptera, Trogidae) in Poland. Wiadomości Entomologiczne, 11(1): 13-16.

Bunalski M. 1995. Rodzaj *Hoplia* Illiger, 1803 (Coleoptera, Melolonthidae) w Polsce. Wiadomości Entomologiczne, 14(1): 31-37.

Bunalski M. 1996. Żuki koprofagiczne (Coleoptera, Scarabaeoidea) okolic Szamotuł. Cz. I. Analiza faunistyczna. Wiadomości Entomologiczne, 15(3): 139-146.

Bunalski M. 1998. Żuki koprofagiczne (Coleoptera: Scarabaeoidea) pastwiska w Uhańce koło Dorohuska. Wiadomości Entomologiczne, 17(2): 122.

Bunalski M. 1999. Die Blatthornkäfer Mitteleuropas – Coleoptera, Scarabaeoidea. Bestimmung – Verbreitung – Ökologie. Fr. Slamka Edit., Bratislava, 80 pp.

Bunalski M. 2003. Chrząszcze z nadrodziny żuków (Coleoptera: Scarabaeoidea) rezerwatu leśno-stepowego "Bielinek" nad Odrą oraz jego okolic. Rocznik Naukowy Polskiego Towarzystwa Ochrony Przyrody "Salamandra", 7: 123-132.

Bunalski M. 2006. Żuki (Coleoptera: Scarabaeoidea) wschodnich rubieży Polski. Studium faunistyczno-ekologiczne części północnej i środkowej. Rozprawy Naukowe Akademii Rolniczej im. Augusta Cieszkowskiego w Poznaniu, 376: 1-133.

Bunalski M., Konwerski S., Przewoźny M. 2020. Materiały do poznania rozmieszczenia chrząszczy (Coleoptera) Zachodniej Polski. Część 22. Cerambycidae: Cerambycinae. Wiadomości Entomologiczne, 39(2)(online 9A): 13-22.

Bunalski M., Konwerski S., Przewoźny M. 2021. Materiały do poznania rozmieszczenia chrząszczy (Coleoptera) Zachodniej Polski. Część 23. Cerambycidae: Lamiinae. Wiadomości Entomologiczne, 40(1) (online 4A): 30-39.

Bunalski M., Konwerski S., Przewoźny M. 2022. Materiały do poznania rozmieszczenia chrząszczy (Coleoptera) Zachodniej Polski. Część 24. Cerambycidae: Lepturinae. Wiadomości Entomologiczne, 41(4) (online 18A): 7-17.

Bunalski M., Konwerski S., Przewoźny M., Ruta R. 2018. Materiały do poznania rozmieszczenia chrząszczy (Coleoptera) Zachodniej Polski. Część 12. Scarabaeidae, Aphodiinae: *Esymus*, *Euorodalus*, *Eupleurus*, *Limarus*, *Liothorax*. Wiadomości Entomologiczne, 37(1): 23-31.

Bunalski M., Konwerski S., Ruta R., Wąsala R. 2019. Materiały do poznania rozmieszczenia chrząszczy (Coleoptera) Zachodniej Polski. Część 18. Scarabaeidae: Scarabaeinae i Aphodiinae – uzupełnienia. Wiadomości Entomologiczne, 38(2): 78-86.

Bunalski M., Szwałko P. 1990. Nowe stanowiska rzadkich chrząszczy z podrodziny Aphodiinae (Coleoptera, Scarabaeidae) w Polsce. Wiadomości Entomologiczne, 9(1-2): 7-111.

Burakowski B. 1962. Biologia oraz opis larwy *Ampedus elegantulus* (Schönh.) (Coleoptera, Elateridae). Fragmenta Faunistica, 10(5): 47-62.

Burakowski B. 1975. Description of larva and pupa of *Rhysodes sulcatus* (F.) (Coleoptera, Rhysodidae) and notes on the bionomics of this species. Annales Zoologici, 32: 271-287.

Burakowski B. 1991. *Eucinetus hopffgarteni* Reitter, 1885 (Coleoptera, Eucinetidae) – nowy dla fauny Polski przedstawiciel chrząszczy oraz uwagi o europejskich gatunkach z rodzaju *Eucinetus* Germ. Wiadomości Entomologiczne, 10(3): 147-151.

Burakowski B. 2000. Redescription of *Aulonothroscus laticollis* (Rybiński, 1897) (Coleoptera: Throscidae). Annales Zoologici, 50(1): 27-34.

Burakowski B. 2003a. Karmazynkowate – Lycidae, Świetlikowate – Lampyridae. Klucze do oznaczania owadów Polski, cz. XIX, z. 29-30. Warszawa, 40 pp.

Burakowski B. 2003b. Ślimacznikowate – Drilidae, Rozgniotkowate – Omalisidae. Klucze do oznaczania owadów Polski, cz. XIX, z. 32-33. Warszawa, 16 pp.

Burakowski B., Buchholz L. 1991. Review of the european species of the genus *Hylis* Gozis (Coleoptera, Eucnemidae) with description of new species. Annals of the Upper Silesian Museum in Bytom, Entomology, 2: 103-125.

Burakowski B., Mroczkowski M., Stefańska J. 1973. Chrząszcze Coleoptera, Biegaczowate – Carabidae, część 1. Katalog Fauny Polski, Część XXIII, tom 2, PWN, Warszawa, 232 pp.

Burakowski B., Mroczkowski M., Stefańska J. 1974. Chrząszcze Coleoptera, Biegaczowate – Carabidae, część 2. Katalog Fauny Polski, Część XXIII, tom 3, PWN, Warszawa, 431 pp.

Burakowski B., Mroczkowski M., Stefańska J. 1976. Chrząszcze Coleoptera, Adephaga prócz Carabidae, Myxophaga, Polyphaga: Hydrophiloidea. Katalog Fauny Polski, Część XXIII, tom 4, PWN, Warszawa, 308 pp.

Burakowski B., Mroczkowski M., Stefańska J. 1978. Chrząszcze Coleoptera, Histeroidea i Staphylinoidea prócz Staphylinidae. Katalog Fauny Polski, Część XXIII, tom 5, PWN, Warszawa, 356 pp.

Burakowski B., Mroczkowski M., Stefańska J. 1979. Chrząszcze Coleoptera, Kusakowate – Staphylinidae, część 1. Katalog Fauny Polski, Część XXIII, tom 6, PWN, Warszawa, 311 pp.

Burakowski B., Mroczkowski M., Stefańska J. 1980. Chrząszcze Coleoptera, Kusakowate – Staphylinidae, część 2. Katalog Fauny Polski, Część XXIII, tom 7, PWN, Warszawa, 273 pp.

Burakowski B., Mroczkowski M., Stefańska J. 1981. Chrząszcze Coleoptera, Kusakowate – Staphylinidae, część 3: Aleocharinae. Katalog Fauny Polski, Część XXIII, tom 8, PWN, Warszawa, 331 pp.

Burakowski B., Mroczkowski M., Stefańska J. 1983. Chrząszcze Coleoptera, Scarabaeoidea, Dascilloidea, Byrrhoidea i Parnoidea. Katalog Fauny Polski, Część XXIII, tom 9, PWN, Warszawa, 295 pp.

Burakowski B., Mroczkowski M., Stefańska J. 1985. Chrząszcze Coleoptera, Buprestoidea, Elateroidea i Cantharoidea. Katalog Fauny Polski, Część XXIII, tom 10, PWN, Warszawa, 401 pp.

Burakowski B., Mroczkowski M., Stefańska J. 1986a. Chrząszcze, Coleoptera, Dermestoidea, Bostrichoidea, Cleroidea i Lymexyloidea. Katalog Fauny Polski, Część XXIII, tom 11, PWN, Warszawa, 243 pp.

Burakowski B., Mroczkowski M., Stefańska J. 1986b. Chrząszcze Coleoptera, Cucujoidea, część 1. Katalog Fauny Polski, Część XXIII, tom 12, PWN, Warszawa, 266 pp.

Burakowski B., Mroczkowski M., Stefańska J. 1986c. Chrząszcze Coleoptera, Cucujoidea, część 2. Katalog Fauny Polski, Część XXIII, tom 13, PWN, Warszawa, 278 pp.

Burakowski B., Mroczkowski M., Stefańska J. 1987. Chrząszcze Coleoptera – Cucujoidea, część 3. Katalog Fauny Polski, Część XXIII, tom 14, PWN, Warszawa, 309 pp.
Burakowski B., Mroczkowski M., Stefańska J. 1990a. Chrząszcze Coleoptera, Cerambycidae i Bruchidae. Katalog Fauny Polski, Część XXIII, tom 15, PWN, Warszawa, 312 pp.
Burakowski B., Mroczkowski M., Stefańska J. 1990b. Chrząszcze Coleoptera, Stonkowate – Chrysomelidae, cz 1. Katalog Fauny Polski, Część XXIII, tom 16, PWN, Warszawa, 279 pp.
Burakowski B., Mroczkowski M., Stefańska J. 1991. Chrząszcze Coleoptera, Stonkowate – Chrysomelidae, cz 2. Katalog Fauny Polski, Część XXIII, tom 17, PWN, Warszawa, 228 pp.
Burakowski B., Mroczkowski M., Stefańska J. 1992. Chrząszcze Coleoptera, Ryjkowcowate prócz ryjkowców – Curculionoidea prócz Curculionidae. Katalog Fauny Polski, Część XXIII, tom 18, MiIZ PAN, Warszawa, 324 pp.
Burakowski B., Mroczkowski M., Stefańska J. 1993. Chrząszcze Coleoptera, Ryjkowce – Curculionidae, cz. 1. Katalog Fauny Polski, Część XXIII, tom 19, MiIZ PAN, Warszawa, 324 pp.
Burakowski B., Mroczkowski M., Stefańska J. 1995. Chrząszcze Coleoptera, Ryjkowce – Curculionidae, cz. 2. Katalog Fauny Polski, Część XXIII, tom 20, MiIZ PAN, Warszawa, 310 pp.
Burakowski B., Mroczkowski M., Stefańska J. 1997. Chrząszcze Coleoptera. Ryjkowce – Curculionidae, część 3. Katalog fauny Polski, Część 23, tom 21, 307 pp.
Burakowski B., Mroczkowski M., Stefańska J. 2000. Chrząszcze Coleoptera. Uzupełnienia tomów 2-21. Katalog Fauny Polski, Część XXIII, tom 22, 252 pp.
Burakowski B., Ślipiński A. 1987. A new species of *Protosphindus* (Coleoptera: Sphindidae) from Chile with notes and descriptions of immature stages of related forms. Estratto dagli Annali del Museo Civico de Storia Naturale di Genova, 86: 605-625.
Bury J., Mazepa J., Niemiec P. 2021. Nowe stanowiska zagłębka bruzdkowanego *Rhysodes sulcatus* (Fabricius, 1787) (Coleoptera: Rhysodidae) w Lasach Murckowskich (Górny Śląsk)– charakterystyka siedlisk i zagrożenia. Rocznik Muzeum Górnośląskiego w Bytomiu. Przyroda, 27(online 002): 1-15.
Bussler H. 2009. Adephage Wasserkäfer im ”Haspelmoor” bei Fürstenfeldbruck 1958 bis 2004 (Coleoptera: Haliplidae, Noteridae, Dytiscidae). Nachrichtenblatt der Bayerischen Entomologen, 58(1/2): 7-18.
Byk A. 2000. Nowe stanowiska niektórych krajowych gatunków chrząszczy z rodziny Scarabaeidae (Coleoptera: Scarabaeidae laparosticti). Wiadomości Entomologiczne, 19(2): 119-120.
Byk A. 2001a. Interesujące chrząszcze (Coleoptera) odłowione w okolicach Hrubieszowa. Wiadomości Entomologiczne, 2000, 19(3-4): 195.
Byk A. 2001b. Próba waloryzacji drzewostanów starszych klas wieku Puszczy Białowieskiej na podstawie struktury zgrupowań chrząszczy (Coleoptera) związanych z rozkładającym się drewnem pni martwych drzew stojących i dziupli. [In:] Szujecki A. (ed.): Próba szacunkowej waloryzacji lasów Puszczy Białowieskiej metodą zooindykacyjną. Wydawnictwo SGGW, Warszawa, 333-367 pp.
Byk A. 2007. Waloryzacja lasów Gór Świętokrzyskich na podstawie struktury zgrupowań chrząszczy saproksylicznych. [In:] Borowski J., Mazur S. (eds.): Waloryzacja ekosystemów leśnych Gór Świętokrzyskich metodą zooindykacyjną. Wydawnictwo SGGW, Warszawa, 57-118 pp.
Byk A. 2012. Abundance and composition of coprophagous Scarabaeidae (Coleoptera: Scarabaeoidea) in the developmental cycle of pine stands in Człuchów Forest (NW Poland). Baltic Journal of Coleopterology, 12(2): 127-144.
Byk A., Bidas M., Gazurek T., Kwiatkowski A., Marczak D., Minkina Ł., Mroczyński R., Pepłowska-Marczak D., Stanković S.S., Žikić V., Tylkowski S. 2023. New data on the occurrence of scarabaeoid beetles (Coleoptera: Scarabaeoidea) in Serbia. Diversity, 15(264): 1-29.
Byk A., Borowski J., Buchholz L. 2004. Nowe stanowiska niektórych, krajowych gatunków chrząszczy z rodziny goleńczykowatych (Coleoptera: Eucnemidae). Wiadomości Entomologiczne, 23(1): 57-580.
Byk A., Borowski J., Mazur S., Mokrzycki T., Rutkiewicz A. 2013. Waloryzacja lasów Leśnego Kompleksu Promocyjnego ”Lasy Spalsko-Rogowskie” na podstawie struktury zgrupowań chrząszczy saproksylicznych. Studia i Materiały Centrum Edukacji Przyrodniczo-Leśnej, R. 15, 35(2): 82-128.
Byk A., Byk S. 2004. Chrząszcze saproksylofilne próchnowisk rezerwatu ”Dęby w Krukach Pasłęckich”. Parki Narodowe i Rezerwaty Przyrody, 23(4): 555-580.

Byk A., Cieślak R., Piskorek W. 2020. Persistent isolated population of *Onthophagus grossepunctatus* Reitter, 1905 (Coleoptera: Scarabaeidae) near Kazimierz Dolny (Poland). Baltic Journal of Coleopterology, 20(1): 101-108.

Byk A., Doktór D. 2011. Pachnica i jej ochrona. Biblioteczka leśniczego, 320: 1-15.

Byk A., Mokrzycki T., Perliński S., Rutkiewicz A. 2006. Saproxylic beetles – in the monitoring of anthropogenic transformations of Białowieża Primeval Forest. [In:] Szujecki A. (ed.): Zooindication-based monitoring of anthropogenic transformations in the Białowieża Primeval Forest. Warszawa Agricultural University Press, Warszawa, 325-397 pp.

Cai C., Tihelka E., Giacomelli M., Lawrence J.F., Ślipiński A., Kundrata R., Yamamoto S., Thayer M.K., Newton A.F., Leschen R.A.B., Gimmel M.L., Lü L., Engel M.S., Bouchard P., Huang D., Pisani D., Donoghue P.C.J. 2022. Integrated phylogenomics and fossil data illuminate the evolution of beetles. Royal Society Open Science, 9: 211771. DOI: https://doi.org/10.1098/rsos.211771

Caldara R. 2008. Revisione delle specie paleartiche del genere *Gymnetron* (Insecta, Coleoptera: Curculionidae). Aldrovandia, 4: 27-103.

Cálix M., Alexander K.N.A., Nieto A., Dodelin B., Soldati F., Telnov D., Vazquez-Albalate X., Aleksandrowicz O., Audisio P., Istrate P., Jansson N., Legakis A., Liberto A., Makris C., Merkl O., Mugerwa Pettersson R., Schlaghamersky J., Bologna M.A., Brustel H., Buse J., Novák V., Purchart L. 2018. European Red List of Saproxylic Beetles. Brussels, Belgium: IUCN. https://www.iucnredlist.org/resources/calix2018 (dostęp: 5.02.2024)

Capecki Z. 1980. Występowanie ścig – *Tetropium* Kirby (Cerambycidae, Coleoptera) i ich pasożytów w Polsce. Sylwan, 123(12): 47-58.

Ceryngier P., Czaja M., Romanowski J. 2022. Nowe dane o biedronkowatych (Coleoptera: Coccinellidae) Suwalskiego Parku Krajobrazowego i innych obszarów w północno-wschodniej Polsce. Wiadomości Entomologiczne, 41(1); online 1A: 1-10.

Ceryngier P., Marczak D. 2016. Różnorodność i stan poznania chrząszczy (Insecta: Coleoptera) Kampinoskiego Parku Narodowego i jego otuliny. [In:] Romanowski J., Dzwonkowska D. (eds.): Przyroda Kampinoskiego Parku Narodowego. Wydawnictwo Naukowe Uniwersytetu Kardynała Stefana Wyszyńskiego, Warszawa, 61-112 pp.

Chachuła P., Melke A., Ruta A., Szołtys H. 2021. Myxomycete-Coleoptera associations in the Polish Carpathians. Journal of Natural History, 55(27-28): 1749-1768.

Cherepanov A.I. 1983. Usachi Severnoj Azii (Lamiinae: Dorcadionini – Apomecynini). Izd. "Nauka", Sibirskoe Otdelenie, Novosibirsk, 223 pp.

Chmielewski W. 2015. Zamieranie modrzewia w północno-wschodniej Polsce. Las Polski, 10: 16-17.

Chobotow J. 1995. Uwagi o występowaniu omomiłków (Cantharidae, Coleoptera) na Podlasiu. Wiadomości Entomologiczne, 14(1): 57-58.

Chobotow J. 2002. The soldier beetles (Cantharidae, Coleoptera) of central-eastern Poland. Evaluation of threats and changes in the fauna. Annales UMCS Lublin, sec. C, 62: 1-22.

Chrul Z., Karpiński L., Szczepański W.T. 2013. Nowe stanowiska *Acmaeops septentrionis* (C.G. Thomson, 1866) na Górnym Śląsku (Coleoptera: Cerambycidae). Acta Entomologica Silesiana, 21: 76-77.

Chudzicka E., Skibińska E. 2003. Różnorodność gatunkowa – zwierzęta. [In:] Andrzejewski R., Weigle A. (eds.): Różnorodność biologiczna Polski. Narodowa Fundacja Ochrony Środowiska, Warszawa, 93-138.

Cieślak R. 2017. Nowe stanowisko *Cucujus haematodes* (Erichson, 1845) (Colepotera: Cucujidae) w Polsce. Wiadomości Entomologiczne, 36(2): 125.

Cieśliński S. 1995. Porosty Puszczy Knyszyńskiej. [In:] Czerwiński A. (ed.): Puszcza Knyszyńska, Supraśl, 173-202 pp.

Clayhills T., Audisio P., Cline A.R., Mancini E., Trizzino M., Sabatelli S. 2016. Unraveling cryptic species diversity in an aposematic sap beetle genus (Coleoptera: Nitidulidae: Cryptarchinae) from northern Europe. Insect Systematics & Evolution, 47(2): 131-148.

Cmoluch Z. 1979. Chrząszcze – Coleoptera. Rhinomaceridae, Attelabidae. Klucze do Oznaczania Owadów Polski, cz. XIX, z. 96-97, PWN, Warszawa-Wrocław, 60 pp.

Colonnelli E. 2013. Ceutorhynchinae, pp. 176-214. [In:] Lobl I., Smetana A. (eds.): Catalogue of Palaearctic Coleoptera, Volume 8. Curculionoidea II. Brill. Leiden, Boston.

Crowson R.A. 1986. The biology of the Coleoptera. Academic Press, London, XII + 802 pp.
Cuccodoro G. 2007. Lymexylidae. [In:] Löbl I., Smetana A. (eds.): Catalogue of Palaearctic Coleoptera, Vol. 4. Stenstrup: Apollo Books, 935 pp.
Cuppen J.G.M., Cuppen H.P.J.J. 1983. Distribution and ecology *of Agabus striolatus* (Gyllenhal) in the Netherlands (Coleoptera: Dytiscidae). Entomologische Berichten, 43: 105-108.
Cuppen J.G.M., Dettner K. 1987. The Larvae of the Predaceous Water Beetle *Laccornis oblongus* (Stephens) (Coleoptera: Dytiscidae) with Notes on Ecology and Distribution. Aquatic Insects, 9(4): 211-220.
Czachorowski S., Buczyński P., Walczak U., Pakulnicka J. 2000. Gatunki osłonowe (parasolowe) w ochronie owadów. Przegląd Przyrodniczy, 11(2-3): 139-148.
Czechowski W. 1979. *Trechus austriacus* Dej. (Coleoptera, Carabidae) w Warszawie. Przegląd Zoologiczny, 23: 151-153.
Czerwiński A. 1995. Puszcza Knyszyńska. Monografia przyrodnicza. Zespół Parków Krajobrazowych w Supraślu, Supraśl.
Danilevsky M.L. 2014. Longicorn beetles (Coleoptera, Cerambycidae) of Russia and adjacent countries. Part 1. HSC, Moscow, 522 pp.
Danilevsky M.L. (eds.) 2020. Catalogue of Palaearctic Coleoptera. Vol. 6: Chrysomeloidea I (Vesperidae, Distenidae, Cerambycidae). Updated and Revised Second Edition. Brill, Leiden – Boston: XXVII + 712 pp.
Dellacasa M., Dellacasa G., Král D., Bezděk A. 2016. Aphodiini. [In:] Löbl I., Löbl D. (eds.): Catalogue of Palaearctic Coleoptera. Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea and Byrrhoidea. Volume 3. Revised and Updated Edition. Brill, Leiden – Boston, 98-155 pp.
Derunkov A., Melke A. 2001. Familia (rodzina): Staphylinidae bez Micropeplinae i Pselaphinae. [In:] Gutowski J.M., Jaroszewicz B. (eds.): Katalog fauny Puszczy Białowieskiej. Instytut Badawczy Leśnictwa, Warszawa, 133-147 pp.
Dettner K. 1974. *Agabus wasatjernae* Sahlb., ein für Südwestdeutschland neuer Dytiscide im Naturschutzgebiet Waldmoor-Torfstich (Kreis Calw). Veröffentlichungen der Landesstelle für Naturschutz und Landschaftspflege Baden-Württemberg, 42: 52-55.
Dominik J. 1972. Wyniki 20-letnich obserwacji nad uszkadzaniem przez owady niektórych gatunków drzew iglastych obcego pochodzenia w Lasach Doświadczalnych SGGW w Rogowie. Sylwan, 8: 11-18.
Dominik J., Starzyk J.R. 2004. Owady uszkadzające drewno. PWRiL, Warszawa, 550 pp. + 200 figs.
Dvořák L. 2010. Notes on soldier beetles (Coleoptera: Cantharidae) of montane forest in southern part of the Bohemian Forest, Czech Republic. Silva Gebreta, 16(1): 37-31.
Eckelt A., Müller J., Bense U., Brustel H., Bussler H., Chittaro Y., Čížek L., Frei A., Holzer E., Kadej M., Kahlen M., Köhler F., Möller G., Mühle H., Sanchez A., Schaffrath U., Schmidl J., Smolis, A., Szallies A., Németh T., Wurst C., Thorn S., Haubo R., Christensen B., Seibold S. 2018. "Primeval forest relict beetles" of Central Europe: a set of 168 umbrella species for the protection of primeval forest remnants. Journal of Insect Conservation, 22: 15-28.
Eckelt A., Paull W., Straka U. 2014. Viel gesucht und oft gefunden: Der scharlachkäfer *Cucujus cinnaberinus* (Scopoli, 1763) und seine aktuelle verbreitung in Österreich. Wissenschaftliches Jahrbuch der Tiroler Landesmuseen, 7: 145-159.
Esser J., Mainda T. 2016. Der Scharlachrote Plattkäfer *Cucujus cinnaberinus* (Scopoli, 1763) in Brandenburg. Naturschutz und landschaftspflege in Brandenburg, 25(1-2): 18-23.
Evans A.V., Bellamy C.L. 2000. An Inordinate Fondness for Beetles. University of California Press, New York, Berkeley, Los Angeles, London, 210 pp.
Farkač J., Král D., Škorpík M. (eds.) 2005. Červený seznam ohrožených druhù České republiky. Bezobratlí. Red list of threatened species in the Czech Republic. Invertebrates. Agentura ochrany přírody a krajiny ČR, Praha, 760 pp.
Fikáček M., Angus R.B., Gentili E., Jia F., Minoshima Y.N., Prokin A., Przewoźny M., Löbl I., Löbl D. (eds.) 2015. Catalogue of Palaearctic Coleoptera. Volume 2. Revised and Updated Edition. Brill, Leiden, Boston, 1702 pp.
Fornal A., Jaskulska B. 1987. The possibility of increasing the effectiveness of cathes in traps with aggregation pheromone for *Trypodendron lineatum*. [In:] Dominik J. (ed.): IVth Symposium on the Protection of Forest Ecosystems. The role of cambio- and xylophagous insects in forest ecosystems, Rogów 25-26

November 1986. Warszawa Agricultural University, Department of Forest Protection and Ecology, Wydawnictwo SGGW-AR, 87-94 pp.

Fornal A., Jaskulska B., Kolk A. 1986. Ocena efektywności odłowów drwalnika paskowanego (*Trypodendron lineatum* Ol.) do pułapek z syntetycznym feromonem agregacyjnym. Sylwan, 130(6): 41-52.

Forrester J.A., McHugh J.V. 2010. Sphindidae Jacquelin du Val, 1861. [In:] Leschen R.A.B., Beutel R.G., Lawrence J.F. (eds.): Coleoptera, beetles. Vol. 2: Morphology and systematics (Elateroidea, Bostrichiformia, Cucujiformia partim). [In:] Kristensen N.P., Beutel R.G. (eds.): Handbook of zoology. A natural history of the phyla of the animal kingdom. Volume IV. Arthropoda: Insecta. Part 38. Walter de Gruyter, Berlin – New York, 300-306 pp.

Foster G.N. 1982. Notes on rare Dytiscidae in Norfolk. Trans. Transactions of the Norfolk and Norwich Naturalists' Society, 26: 3-10.

Foster G.N. 2010. A review of the scarce and threatened Coleoptera of Great Britain Part (3): Water beetles of Great Britain. Species Status 1. Joint Nature Conservation Committee, Peterborough, 143 pp.

Foster G.N., Nelson B.H., Connor Á. 2009. Ireland Red List No. 1 – Water beetles. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland: 1-64.

Fuchs L., Callot H., Godinat G., Brustel H. 2014. *Cucujus cinnaberinus* (Scopoli, 1763), nouvelle espèce pour la faune de France (Coleoptera: Cucujidae). L'Entomologiste, 70: 213-221.

Galewski K., Tranda E. 1978. Chrząszcze (Coleoptera) Rodziny: Pływakowate (Dytiscidae), Flisakowate (Haliplidae), Mokrzelicowate (Hygrobiidae), Krętakowate (Gyrinidae). [In:] Fauna Słodkowodna Polski, 10, Warszawa, 396 pp.

Gawroński R., Oleksa A. 2005. First record of *Bibloplectus spinosus* Raffray, 1914 (Coleoptera: Staphylinidae: Pselaphinae) from Poland. Baltic Journal of Coleopterology, 5(2): 133-134.

Gawroński R., Oleksa A. 2007. Nowe stanowiska rzadkich i zagrożonych chrząszczy (Coleoptera) z północnej Polski. Wiadomości Entomologiczne, 26(1): 5-14.

Gawroński R., Oleksa A. 2009. Materiały do znajomości Scydmaeninae (Coleoptera: Staphylinidae) Pojezierza Mazurskiego. Wiadomości Entomologiczne, 28(3): 149-161.

Gerhardt J. 1870. Die Wasserkäferfauna der wiessen Wiese im Riesengebirge. Berliner Entomologische Zeitschrift, 13: 259-261.

Gerhardt J. 1888. Sammelbericht pro 1887. Deutsche Entomologische Zeitschrift, 32(2): 356-360.

Gerhardt J. 1894a. Neuheiten der Schlesischen Koleopternfauna von 1893. Deutsche Entomologische Zeitschrift, 1894: 333-335.

Gerhardt J. 1894b. Neuheiten der Schlesischen Koleopternfauna aus dem Jahre 1893. Zeitschrift für Entomologie, Breslau, N.F., 19: 1-4.

Gerhardt J. 1897. Der Wasserwald bei Kaltwasser Kreis Lüben. Eine coleopterologische Skizze. [In:] "Fest-Schrift zur Feier des fünfzigjährigen Bestehens des Vereins für schlesische Insectenkunde in Breslau". 1847-1897. Breslau: 25-31.

Gerhardt J. 1910. Verzeichnis der Käfer Schlesiens preussischen und österreichischen Anteils, geordnet nach dem Catalogus coleopterorum Europae vom Jahre 1906. Dritte, neubearbeitete Auflage, Berlin, XVI + 431 pp.

Głowaciński Z., Nowacki J. (eds.) 2004. Polska Czerwona Księga Zwierząt. Bezkręgowce. Instytut Ochrony Przyrody PAN, Kraków, 447 pp.

Głowacka B., Skrzecz I., Bystrowski C., Sierpińska A., Sowińska A., Rosa-Gruszecka A., Plewa R., Łukaszewicz J., Szmidla H., Krajewski S., Pudełko M., Sierpiński A., Janiszewski W., Lissy M., Smyklińska D. 2017. Sprawozdanie końcowe pt. Ocena skuteczności w ochronie lasu środków ochrony roślin dopuszczonych do obrotu i stosowania na podstawie przepisów rozporządzenia Parlamentu Europejskiego i Rady (WE) nr 1107/2009. Zakład Ochrony Lasu, Zakład Ekologii Lasu, Zakład Hodowli Lasu i Genetyki Drzew Leśnych. Instytut Badawczy Leśnictwa, Sękocin Stary, 144 pp. [mscr.]

Gosik R., Łętowski J. 2003. Ryjkowcowate (Coleoptera, Curculionoidea: Rhinomaceridae, Attelabidae, Apionidae, Curculionidae) Białej Góry k. Tomaszowa Lubelskiego. Parki Narodowe i Rezerwaty Przyrody, 22: 247-266.

Gotwald A. 1968. Fauna ryjkowcowatych (Curculionidae, Col.) niektórych parków narodowych i rezerwatów. Prace Instytutu Badawczego Leśnictwa, 363: 3-72.

Górski P., Tatur-Dytkowski J. 2015. Longhorn beetles (Coleoptera: Cerambycidae) of central Mazovia, Poland. Baltic Journal of Coleopterology, 15(2): 107-127.

Górz A. 2019. Dung Beetles of the Polish Carpathians. Uniwersytet Pedagogiczny w Krakowie, Kraków, 134 pp.

Greń C. 2009. Chrząszcze z rodziny Noteridae i Dytiscidae (Coleoptera) w zbiorach Muzeum Górnośląskiego w Bytomiu. Acta Entomologica Silesiana, 17: 53-76.

Greń C., Królik R., Szołtys H. 2012. Czerwona lista chrząszczy (Coleoptera) województwa śląskiego. [In:] Parusel J. B. (ed.): Strategia ochrony przyrody województwa śląskiego do roku 2030. Raport o stanie przyrody województwa śląskiego 4. Raporty Opinie 6. Centrum Dziedzictwa Przyrody Górnego Śląska, Katowice, 37-70 pp.

Greń C., Lubecki K., Przewoźny M. 2017. Materiały do poznania chrząszczy wodnych (Coleoptera: Adephaga, Hydrophiloidea, Byrrhoidea, Myxophaga) Puszczy Białowieskiej. Acta Entomologica Silesiana, 25(online 010): 1-13.

Greń C., Lubecki K., Sućko K. 2022a. Chrząszcze wodne (Coleoptera: Hydradephaga, Hydrophiloidea, Hydraenidae, Dryopoidea) Puszczy Knyszyńskiej. Rocznik Muzeum Górnośląskiego w Bytomiu. Przyroda, 28(online 012): 1-35.

Greń C., Ruta R., Lubecki K., Przewoźny M., Sienkiewicz P. 2022b. *Ilybius wasastjernae* (Sahlberg, 1824) in Poland – a relict species of Dytiscidae (Coleoptera) with unique habitat preferences. Wiadomości Entomologiczne, 41(1); online 5A: 32-39.

Greń C., Szołtys H., Grzywocz J. 2016. Chrząszcze (Coleoptera) Śląska Dolnego i Górnego – dotychczasowy stan poznania oraz nowe dane faunistyczne: pływakowate (Dytiscidae). Rocznik Muzeum Górnośląskiego w Bytomiu, Przyroda, 22(online 003): 1-39.

Greń C., Szołtys H., Grzywocz J., Królik R. 2013. Chrząszcze (Coleoptera) Śląska Dolnego i Górnego – dotychczasowy stan poznania oraz nowe dane faunistyczne: biedronkowate (Coccinellidae). Acta Entomologica Silesiana, 21: 31-52.

Greń C., Wąsiński M. 2009. Nowe dla Podlasia gatunki bogatków (Coleoptera: Buprestidae). Acta Entomologica Silesiana, 17: 79-80.

Grodzki W. 2020. On the vertical distribution of *Ips duplicatus*, *I. cembrae* and some bark- and longhorn beetles (Col.: Curculionidae, Scolytinae; Col.: Cerambycidae) in the Tatra National Park in Poland. Folia Forestalia Polonica, Series A, 62(2): 68-77.

Grzywocz J. 2022. *Scraptia testacea* Allen, 1940 (Coleoptera: Scraptiidae: Scraptiinae) – nowy gatunek chrząszcza w koleopterofaunie Polski. Acta Entomologica Silesiana, 30: 1-3.

Gutowski J.M. 1983. The pupa of *Callidium coriaceum* (Payk.) (Coleoptera, Cerambycidae). Polskie Pismo Entomologiczne, 53(3): 301-305.

Gutowski J.M. 1988. Studies on morphology, biology, ecology and distribution of *Leioderus kollari* Redtb. (Coleoptera, Cerambycidae). Polskie Pismo Entomologiczne, 58(2): 309-357.

Gutowski J.M. 1992. Bogatkowate (Coleoptera: Buprestidae) Roztocza. Fragmenta Faunistica, 35: 385-396.

Gutowski J.M. 1993. *Agrilus bialowiezaensis* sp. n. from Poland (Coleoptera: Buprestidae). Genus, 4(4): 295-302.

Gutowski J.M. 1995. Kózkowate (Coleoptera: Cerambycidae) wschodniej części Polski. Prace Instytutu Badawczego Leśnictwa, 811: 3-190.

Gutowski J.M. 2001. Rodzina (Family) Rhysodiidae. [In:] Gutowski J., Jaroszewicz B. (eds.): Katalog fauny Puszczy Białowieskiej. Instytut Badawczy Leśnictwa, Warszawa, 119 p.

Gutowski J.M. 2006. Saproksyliczne chrząszcze. Kosmos, 55(1): 53-73.

Gutowski J.M. 2010. Nowe i interesujące gatunki bogatkowatych (Coleoptera: Buprestidae) w faunie Puszczy Białowieskiej. Wiadomości Entomologiczne, 29(3): 212-214.

Gutowski J.M., Buchholz L., Kubisz D., Ossowska M., Sućko K. 2006. Chrząszcze saproksyliczne jako wskaźnik odkształceń ekosystemów leśnych borów sosnowych. Leśne Prace Badawcze, 4: 101-144.

Gutowski J.M., Hilszczański J., Kubisz D., Kurzawa J., Miłkowski M., Mokrzycki T., Plewa R., Przewoźny M., Wełnicki M. 2010a. Distribution and host plants of *Leiopus nebulosus* (L.) and *L. linnei* Wallin, Nylander et Kvamme (Coleoptera: Cerambycidae) in Poland and neighboring countries. Polish Journal of Entomology, 79(3): 277-282.

Gutowski J.M., Hołowiński M., Piotrowski W., Rozwałka R. 1999. Nowe i rzadkie gatunki kózkowatych (Coleoptera: Cerambycidae) na Roztoczu, Wyżynie Lubelskiej i Podlasiu. Wiadomości Entomologicze, 18(1): 11-22.

Gutowski J.M., Jaroszewicz B. (eds.) 2001. Katalog fauny Puszczy Białowieskiej. Instytut Badawczy Leśnictwa, Warszawa, 403 pp.
Gutowski J.M., Jaroszewicz B. 2004. Puszcza Białowieska jako ostoja europejskiej fauny owadów. Wiadomości Entomologiczne, 23, supl. 2: 67-87.
Gutowski J.M., Karaś M. 1991. *Evodinus borealis* (Gyllenhal, 1827) (Coleoptera, Cerambycidae) w Polsce. Wiadomości Entomologiczne, 10(4): 221-226.
Gutowski J.M., Królik R. 1996. A review of the morphology, distribution and biology of Palaearctic species of the genus *Phaenops* Dej. (Coleoptera: Buprestidae). Crystal, Ser. Zoologica, 3: 3-88.
Gutowski J.M., Królik R., Ługowoj J., Sućko K., Sweeney J. 2019. Nowe dane o występowaniu bogatkowatych (Coleoptera: Buprestidae) na terenie Puszczy Białowieskiej. Leśne Prace Badawcze, 80(2): 167-176.
Gutowski J.M., Królik R., Partyka M. 1992. Studia nad biologią, występowaniem i znaczeniem gospodarczym w Polsce bogatków z rodzaju *Phaenops* Dejean (Coleoptera: Buprestidae). Prace Instytutu Badawczego Leśnictwa, 736: 3-79.
Gutowski J.M., Kubisz D. 1995. Entomofauna drzewostanów pohuraganowych w Puszczy Białowieskiej. Prace Instytutu Badawczego Leśnictwa, Seria A, 788: 91-129.
Gutowski J.M., Kubisz D., Sućko K. 2012a. *Nacerdes carniolica* (Gistel, 1834) (Coleoptera: Oedemeridae) – nowy chrząszcz dla polskiej fauny. Wiadomości Entomologiczne, 31(4): 267-273.
Gutowski J.M., Kubisz D., Sućko K., Borowski J., Byk A., Królik R., Lasoń A., Mazur M.A., Melke A., Mokrzycki T., Plewa R. 2022a. Interesujące gatunki chrząszczy (Coleoptera) z Puszczy Piskiej. Polish Journal of Forestry, 21(4): 301-321.
Gutowski J.M., Kubisz D., Sućko K., Komosiński K., Mazur M.A., Pacuk B., Greń C. 2020a. Chrząszcze (Coleoptera) Suwalskiego Parku Krajobrazowego. Monografia. Instytut Badawczy Leśnictwa, Sękocin Stary, 391 pp.
Gutowski J.M., Kubisz D., Sućko K., Zub K. 2010b. Sukcesja saproksylicznych chrząszczy (Coleoptera) na powierzchniach pohuraganowych w drzewostanach sosnowych Puszczy Piskiej. Leśne Prace Badawcze, 71(3): 279-298 + aneks.
Gutowski J.M., Ługowoj J. 2000. Buprestidae (Coleoptera) of the Białowieża Primeval Forest. Polskie Pismo Entomologiczne, 69(3): 279-318.
Gutowski J.M., Ługowoj J., Maciejewski K.H. 1994. *Leptura thoracica* Creutzer, 1799 (Coleoptera: Cerambycidae) w Polsce. Wiadomości Entomologiczne, 13(3): 157-165.
Gutowski J.M., Miłkowski M. 2008. Bogatkowate (Coleoptera: Buprestidae) Puszczy Kozienickiej. Parki Narodowe i Rezerwaty Przyrody, 27(2): 49-85.
Gutowski J.M., Miłkowski M. 2020. Buprestidae (Coleoptera) obszaru Nature 2000 ”Dolina Zwoleńki” (PLH140006). Przegląd Przyrodniczy, 31(2): 118-139.
Gutowski J.M., Pawlaczyk P., Bobiec A., Ciach M., Kujawa A., Zub K. 2022b. Drugie życie drzewa. Wydanie II, uzupełnione i poprawione. Fundacja WWF Polska, Warszawa, 343 pp.
Gutowski J.M., Piotrowski W., Rozwałka R. 2012b. Kózkowate (Coleoptera: Cerambycidae) Poleskiego Parku Narodowego. Parki Narodowe i Rezerwaty Przyrody, 31(3): 31-50.
Gutowski J.M., Ruta R. 2004. Waloryzacja przyrodnicza gminy Tuczno (Pojezierze Zachodniopomorskie) w oparciu o wyniki wstępnych badań nad chrząszczami (Insecta: Coleoptera). Nowy Pamiętnik Fizjograficzny, 3(1-2): 27-60.
Gutowski J.M., Sućko K. 2015. Ponurek Schneidera *Boros schneideri* (Panzer, 1796) (Coleoptera: Boridae) w Puszczy Augustowskiej. Wiadomości Entomologiczne, 34(2): 66-68.
Gutowski J.M., Sućko K., Borowski J., Kubisz D., Mazur M.A., Melke A., Mokrzycki T., Plewa R., Żmihorski M. 2020b. Post-fire beetle succession in a biodiversity hotspot: Białowieża Primeval Forest. Forest Ecology and Management, 461: 1-9.
Gutowski J.M., Sućko K., Zub K., Bohdan A. 2014. Habitat Preferences of *Boros schneideri* (Coleoptera: Boridae) in the Natural Tree Stands of Białowieża Forest. Journal of Insect Science, 14(276): 1-6.
Gutowski J.M., Zieliński S., Biwo T. 2011. Longhorn beetles (Coleoptera: Cerambycidae) of Romincka Forest. Nature Journal, 44: 145-171.
Gutowski J.M., Zięba P., Cieślak R. 2012c. Borodziej próchnik *Ergates faber* (Linnaeus, 1767) (Coleoptera: Cerambycidae) we wschodniej Polsce. Wiadomości Entomologiczne, 31(4): 289-291.

Haitlinger R. 1985. Roztocze (Acari: Podapolipidae, Parasitidae, Eviphididae, Macrochelidae, Ascidae) nowe lub rzadkie dla fauny Polski, zebrane z chrząszczy (Coleoptera) i gryzoni (Rodentia). Polskie Pismo Entomologiczne, 55: 611-614.
Haitlinger R. 1988. Mites (Acari) occurring in Poland on beetles of the genus *Carabus* Linnaeus 1758 (Insecta, Coleoptera, Carabidae). Wiadomości Parazytologiczne, 34(3): 329-46.
Haitlinger R. 1990. Mites (Acari) occurring on *Geotrupes vernalis* (L. 1758) (Insecta, Scarabaeidae) in Poland. Wiadomości Parazytologiczne, 36: 137-143.
Haitlinger R. 1993. Mites (Acari) occurring on *Geotrupes spiniger* Marsh. and *G. stercorarius* (L.) (Insecta, Scarabaeidae) in Poland. Wiadomości Parazytologiczne, 39: 415-424.
Haitlinger R. 1999. Mites (Acari) occurring on *Geotrupes stercorosus*, *G. mutator* and *Typhoeus typhoeus* (Coleoptera: Scarabaeidae) in Poland. Polish Journal of Entomology, 68: 319-336.
Haitlinger R. 2001. *Parasitus geotrupidis* Makarova, 1996 (Mesostigmata: Parasitidae) i *Podothrombium roari* Haitlinger, 2000 (Prostigmata: Trombidiidae) dwa gatunki roztoczy (Acari) nowe dla fauny Polski. Przegląd Zoologiczny, 45(1-2): 83-85.
Haitlinger R. 2002. Mites (Acari) associated with Cetoniinae and Trichiinae (Insecta: Coleoptera: Scarabaeidae) in Poland. [In:] Ignatowicz S. (ed.): Postępy Polskiej Akarologii, SGGW, 63-73 pp.
Haitlinger R. 2004. Mites (Acari) occurring on some Coleoptera (Insecta) in Poland. Polskie Pismo Entomologiczne, 73: 3-24.
Hansen M. 1998. Hydraenidae (Coleoptera). World Catalogue of Insects, 1: 1-168.
Hansen M. 2004. Hydrophiloidea. [In:] Löbl I., Smetana A. (eds.): Catalogue of Palaearctic Coleoptera. Volume 2. Hydrophiloidea-Histeroidea-Staphylinoidea. Apollo Books, Stenstrup, 36-68 pp.
Hebauer F. 1975. *Agabus striolatus* Gyll. – erstmals in Süddeutschland nachgewiesen! (Coleoptera, Dytiscidae). Nachrichtenblatt der Bayerischen Entomologen, 24(3): 53-55.
Hilszczański J. 2006. *Nemosoma caucasicum* Ménétriés, 1832 (Coleoptera: Trogossitidae) – new beetle to the Polish fauna. Wiadomości Entomologiczne, 25(1): 29-32.
Hilszczański J. 2008. Kora zamarłych świerków jako miejsce zimowania owadzich drapieżników związanych z kambio- i ksylofagami. Leśne Prace Badawcze, 69(1): 15-19.
Hilszczański J., Plewa R. 2009. Kózkowate (Coleoptera, Cerambycidae) koron drzew w dąbrowach krotoszyńskich na podstawie odłowów do pułapek Moericke'go. Leśne Prace Badawcze, 70(4): 395-401.
Hilszczański J., Plewa R., Jaworski T., Sierpiński A. 2015. *Microrhagus pyrenaeus* Bonvouloir, 1872 – a false click beetle new for the fauna of Poland with faunistic and ecological data on Eucnemidae (Coleoptera, Elateroidea). Spixiana, 38(1): 77-84.
Hilszczański J., Plewa R., Jaworski T., Tarwacki G. 2020. Potwierdzenie występowania *Lepturalia nigripes* (De Geer, 1775) (Coleoptera: Cerambycidae) w Polsce. Wiadomości Entomologiczne, 39(4); online 21A: 18-20.
Hippa H., Koponen S., Laine T. 1978. On the feeding biology of *Coccinella hieroglyphica* (Coleoptera: Coccinellidae). Annales Universitatis Turkuensis Series A II Biologica Geographica Geologica, 60: 18-20.
Hippa H., Koponen S., Roine R. 1984. Larval growth of *Coccinella hieroglyphica* (Col., Coccinellidae) fed on aphids and preimaginal stages of *Galerucella sagittariae* (Col., Chrysomelidae). Reports from the Kevo Subarctic Research Station, 19: 67-70.
Hofmański D., Karg J. 2011. Kózkowate (Coleoptera: Cerambycidae) Parku Krajobrazowego im. Gen. Dezyderego Chłapowskiego. Parki Narodowe i Rezerwaty Przyrody, 30(3-4): 71-80.
Holly M. 2016. Rzadko spotykane oraz nowe dla fauny Bieszczadów gatunki chrząszczy (Coleoptera) stwierdzone w Bieszczadzkim Parku Narodowym i otulinie w latach 2012-2015. Roczniki Bieszczadzkie, 24: 199-213.
Holly M. 2017. Zagłębek bruzdkowany *Rhysodes sulcatus* (Fabricius, 1787) (Coleoptera – Rhysodidae) wykazany ze Wschodniobeskidzkiego Obszaru Chronionego Krajobrazu. Roczniki Bieszczadzkie, 25: 419-422.
Horák J., Mertlik J., Chobot K., Kubáň V. 2009. Distribution of a rare saproxylic beetle *Cucujus haematodes* (Coleoptera: Cucujidae) in the Czech Republic with notes to the occurrence in central Europe. Klapalekiana, 45: 191-197.
Horák J., Vávrová E., Chobot K. 2010. Habitat preferences influencing populations, distribution and conservation of the endangered saproxylic beetle *Cucujus cinnaberinus* (Coleoptera: Cucujidae) at the landscape level. European Journal of Entomology, 107: 81-88.

Horion A. 1935. Nachtrag zu Fauna Germanica Die Käfer des Deutschen Reiches von Edmund Reitter. Krefeld, VIII + 358 pp.

Horion A. 1941. Faunistik der deutschen Käfer. Band I: Adephaga – Caraboidea. Krefeld, 463 pp.

Horion A. 1967. Faunistik der Mitteleuropäischen Käfer. Band XI: Staphylinidae. 3. Teil: Habrocerinae bis Aleocharinae (Ohne Subtribus Athetae). Überlingen-Bodensee, XXIV + 419 pp.

Huang J., Colonnelli E. 2014. On the true identity of *Curculio pericarpius* Linnaeus, 1758 (Coleoptera: Curculionidae). Fragmenta Entomologica, 46(1-2): 117-120.

Huruk S. 2006. Porównanie struktur zgrupowań biegaczowatych (Coleoptera: Carabidae) łąk kośnych oraz przylegających do nich pól uprawnych. [In:] Biegaczowate (Coleoptera: Carabidae) środowisk antropogenicznych. Wiadomości Entomologiczne, 25(Supl. 1): 9-32.

Irurzun R. 2014. Una nueva localidad de *A. laticollis* (Rybinski) en Europa Occidental (Coleoptera: Throscidae). Arquivos Entomolóxicos, 12: 99-102.

Iwan D., Kubisz D., Mazur M.A. 2010. The occurrence of Tenebrionidae (Coleoptera) in Poland based on the largest national museum collections. Fragmenta Faunistica, 54(1): 1-95.

Iwan D., Kubisz D., Tykarski P. 2012. Coleoptera Poloniae: Tenebrionoidea (Tenebrionidae, Boridae). Critical checklist, distribution in Poland and meta-analysis. University of Warszawa – Faculty of Biology, Natura optima dux Foundation, Warszawa, 480 pp.

Iwan D., Löbl I. 2020. Catalogue of Palaearctic Coleoptera. Tenebrionoidea. Vol. 5, revised and updated second edition. Brill, Leiden, Boston, 945 pp.

Jäch M.A. 2004. Hydraenidae. [In:] Löbl I., Smetana A. (eds.): Catalogue of Palaearctic Coleoptera, 2. Stensrup, 102-122 pp.

Jadwiszczak A. 2001. Coccinellidae. [In:] Gutowski J.M., Jaroszewicz B. (eds.): Katalog fauny Puszczy Białowieskiej. Instytut Badawczy Leśnictwa, Warszawa, 175-176 pp.

Jałoszyński P. 2003. Materiały do poznania Scydmaenidae (Coleoptera: Staphylinoidea) Niziny Wielkopolsko-Kujawskiej. Wiadomości Entomologiczne, 22(1): 13-24.

Jałoszyński P., Konwerski S. 2002. Nowe dane o występowaniu chrząszczy z plemienia Agathidiini (Coleoptera: Leiodidae: Leiodinae) na Nizinie Wielkopolsko-Kujawskiej. Wiadomości Entomologiczne, 21(1): 11-17.

Jałoszyński P., Konwerski S., Majewski T., Miłkowski M., Ruta R., Żuk K. 2005. Nowe stanowiska interesujących przekrasków (Coleoptera: Cleridae) w Polsce. Wiadomości Entomologiczne, 24(4): 219-225.

Jałoszyński P., Wanat M., Kubisz D., Ruta R., Konwerski S. 2013. A synopsis of the family Aderidae in Poland (Coleoptera: Tenebrionoidea). Genus, 24(2): 199-216.

Jałoszyński P., Wanat M., Ruta R., Miłkowski M. 2012. Nowe stanowiska Salpingidae (Insecta: Coleoptera) w Polsce. Wiadomości Entomologiczne, 31(3): 162-170.

Jałoszyński P., Wanat M., Twardy D. 2015. Nowe stanowiska Scydmaeninae (Coleoptera: Staphylinidae) w Polsce. Wiadomości Entomologiczne, 34(4): 20-33.

Jaskuła R., Grabowski M. 2001. Nowe stanowiska kilku interesujących gatunków biegaczowatych (Coleoptera: Carabidae) w Polsce. Wiadomości Entomologiczne, 20(1-2): 91-92.

Jaskuła R., Kowalczyk J.K., Watała C. 2002. Ground beetles (Coleoptera: Carabidae) of Lodz Upland, Central Poland. Baltic Journal of Coleopterology, 2(2): 117-125.

Jaskuła R., Przewoźny M., Melke A., Soszyńska-Maj A. 2010. Chrząszcze (Coleoptera). [In:] Jaskuła R., Tończyk G. (eds.): Owady (Insecta) Parku Krajobrazowego Wzniesień Łódzkich, Łódź, 45-72 pp.

Jaskuła R., Rachalewski M. 2011. Materiały do znajomości biegaczowatych (Coleoptera: Carabidae) dwóch rezerwatów przyrody w zachodniej części Parku Krajobrazowego Puszcza Knyszyńska. [In:] Biegaczowate i inne bezkręgowce w badaniach środowiskowych. 12-te Sympozjum Polskich Karabidologów. Materiały konferencyjne, Olsztyn, 19-22 VI 2011, p. 30.

Jaskuła R., Stępień A. 2012. Ground beetle fauna (Coleoptera: Carabidae) of protected areas in the Łódź Province. Part I. Nature reserves. Fragmenta Faunistica, 55(2): 101-122.

Jaworski T., Plewa R., Tarwacki G., Sućko K., Hilszczański J., Horak J. 2019. Ecologically similar saproxylic beetles depend on diversified deadwood resources: From habitat requirements to management implications. Forest Ecology and Management, 449: 117-462.

Jelínek J. 2014. Sphindidae, Kateretidae, Nitidulidae (Coleoptera). Icones insectorum Europae centralis. Folia Heyrovskyana, 21B: 29 pp.

Jelínek J., Audisio P. 2007. Nitidulidae. [In:] Löbl I., Smetana A. (eds.): Catalogue of Palaearctic Coleoptera, Vol. 4. Apollo Books, Stenstrup, 459-491 pp.

Jendek E., Poláková J. 2014. Host Plants of World *Agrilus* (Coleoptera, Buprestidae). A Critical Review. Springer, Cham-Heidelberg-New York-Dordrecht-London, LXIII+706 pp.

Jędryczkowski W.B., Gutowski J.M. 2014. Biedronkowate (Coleoptera: Coccinellidae) Puszczy Białowieskiej. Wiadomości Entomologiczne, 33(3): 200-213.

Johnson C., Borowiec L., Kania J., Wanat M. 1993. Nowe stanowiska polskich Cryptophagidae (Coleoptera). Wiadomości Entomologiczne, 12(3): 175-186.

Johnson C., Otero J.C., Leschen R.A.B. 2007. Family Cryptophagidae Kirby, 1837. [In:] Löl I., Smetana A. (eds.): Catalogue of Palaearctic Coleoptera. Vol. 4. Elateroidea, Derodontoidea, Bostrichoidea, Lymexyloidea, Cleroidea, Cucujoidea. Apollo Books, Stenstrup, 513-531 pp.

Jordal B.H., Knižek M. 2007. Resurrection of *Crypturgus subcribrosus* Eggers, 1933 stat. n., and its close phylogenetic relationship to Nearctic *Crypturgus* (Coleoptera, Scolytinae). Zootaxa, 1606: 41-50.

Jurewicz M. 2012. Analiza stanu poznania entomofauny Puszczy Knyszyńskiej. Praca Dyplomowa Inżynierska. Politechnika Białostocka, Zamiejscowy Wydział Leśny w Hajnówce, Hajnówka, 125 pp. [mscr.]

Kadej M., Regner J., Skiba A., Świątoniowska K., Zając K., Minkiewicz A., Smolis A. 2023. Uzupełnienia do rozmieszczenia wybranych gatunków chrząszczy (Coleoptera) w południowo-zachodniej Polsce. Przyroda Sudetów, 25: 93-108.

Kadej M., Zając K., Gutowski J.M., Jaworski T., Plewa R., Ruta R., Sikora K., Smolis A., Magoga G., Montagna M., Eckelt A., Birkemoe T., Bonacci T., Brandmayr P., Heibl C., Cizek L., Davenis S. A., Fuchs L., Horak J., Kapla A., Kulijer D., Merkl O., Müller J., Noordijk J., Saluk S., Sverdrup-Thygeson A., Vrezec A., Kajtoch Ł. 2022. Disentangling phylogenetic relations and biogeographic history within the *Cucujus haematodes* species group (Coleoptera: Cucujidae). Molecular Phylogenetics and Evolution, 107527. DOI: https://doi.org/10.1016/j.ympev.2022.107527

Kajtoch Ł., Kolasa M., Kubisz D., Gutowski J.M., Ścibior R., Mazur M.A., Holecová M. 2019. Using host species traits to understand the *Wolbachia* infection distribution across terrestrial beetles. Scientific Reports, 9(847): 1-15.

Kalisiak J. 1996. Kilka danych o występowaniu poświętnikowatych (Scarabaeidae). Biuletyn Entomologiczny, 17(4): 6-7.

Kania J. 2023. Nowe stanowiska kapturnika kapucynka *Bostrichus capucinus* (Linnaeus, 1758) (Bostrichidae: Coleoptera) na Śląsku Dolnym. Przyroda Sudetów, 25: 109-114.

Kapuściński R. 2010. Formy ochrony przyrody – ”od kuchni” (2) Rezerwaty przyrody. Przyroda Polska, 12: 4-5.

Karczmarz K., Sokołowski A. W. 1995. Mchy i wątrobowce Puszczy Knyszyńskiej. [In:] Czerwiński A. (ed.): Puszcza Knyszyńska, Supraśl, 155-171.

Karpiński L., Taszakowski A., Szczepański W.T. 2015. New data on the occurrence of longhorn beetles (Coleoptera: Cerambycidae) in the Eastern Beskid Mountains (Poland). Fragmenta Faunistica, 58(1): 7-16.

Kazantsev S.V., Egorov L.V., Ruchin A.B. 2019. Discovery of *Lopheros lineatus* (Gorham, 1883) (Coleoptera, Lycidae) in Mordovia, Central Russia. Entomological Review, 99(5): 656-659.

Kéler S. 1925. Ein Versuch Anwendung mathematisch-statistischer Methoden auf die entomologische Systematik mit Beschreibung einer neuen Borkenkäferart *Ips feiferi* n. sp. und Bemerkungen über *Ips erosus* Woll. Polskie Pismo Entomologiczne, 4: 149-196.

Kędzior R., Skalski T., Readecki-Pawlik A. 2016. The effect of channel restoration on ground beetle communities in the floodplain of a channelized mountain stream. Periodicum Biologorum, 118(3): 171-184.

Kinel J. 1949. Hydradephaga Polski i sąsiednich krain. Polskie Pismo Entomologiczne, Wrocław, 18: 337-405.

Kirpsza I. 2017. Saproksyliczne chrząszcze (Coleoptera) drzew dziuplastych w Nadleśnictwie Czarna Białostocka. Praca magisterska. Wydział Leśny, Szkoła Główna Gospodarstwa Wiejskiego w Warszawie, 48 pp. [mscr.]

Kisiel A. 2012. Inwentaryzacja entomofauny rezerwatu ”Krzemienne Góry” w Puszczy Knyszyńskiej. Politechnika Białostocka, Praca Dyplomowa Inżynierska. Zamiejscowy Wydział Leśny w Hajnówce, Hajnówka, 36 pp. [mscr.]

Klasiński J. 2015. Użytek ekologiczny ”Zapadliska II” w Poczesnej-Zawodziu. Badania chrząszczy (Coleoptera). Biuletyn Częstochowskiego Koła Entomologicznego, 13(1): 3-7.

Klausnitzer B. 1966. Übersicht über die Nahrung der einheimischen Coccinellidae (Col.). Entomologische Berichte, Berlin, 65: 91-101.

Klausnitzer B. 1996. Die Neue Brehm-Bücherei, Bd. 567. Käfer im und am Wasser. Westarp Wissenschaften, Magdeburg, 200 pp.

Klausnitzer B. 2016. Scirtidae. [In:] Löbl I., Smetana A. (eds.): Catalogue of Palaearctic Coleoptera, Vol. 3 (revised and updated edition). Brill, Leiden – Boston, 412-425 pp.

Klimczuk P., Twerd J. 2000. Motyle dzienne (Papilionoidea i Hesperioidea) Puszczy Knyszyńskiej i okolic Białegostoku. Parki Narodowe i Rezerwaty Przyrody, 19(3): 85-97.

Kniephof J. 1935. *Agabus Wasastjernae* Sahlb. Entomologische Blätter, 31: 77-78.

Knutelski S., Lasoń A. 1995. Materiały do poznania ryjkowców (Coleoptera: Curculionoidea) Podlasia. Annales Universitatis Mariae Curie-Skłodowska, Lublin – Polonia, C, 50(13): 225-242.

Koch K. 1989a. Die Käfer Mitteleuropas. Ökologie. Band 1. Goecke & Evers Verlag, Krefeld, 439 pp.

Koch K. 1989b. Die Käfer Mitteleuropas. Ökologie. Band.2. Goecke & Evers Verlag, Krefeld, 382 pp.

Koehler W., Kolk A. 1969. Sprawozdanie końcowe pt.: Ustalenie pozytywnych i negatywnych aspektów ścinki letniej w drzewostanach sosnowych z punktu widzenia ochrony lasu. Zakład Ochrony Lasu, Instytut Badawczy Leśnictwa, Warszawa, 101 pp. [mscr.]

Kolanko K. 2009. Porosty rezerwatu przyrody ”Starodrzew Szyndzielski” w Parku Krajobrazowym Puszczy Knyszyńskiej (północno-wschodnia Polska). Parki Narodowe i Rezerwaty Przyrody, 28(2): 29-43.

Kolasa M., Kubisz D., Gutowski J.M., Ścibior R., Mazur M. A., Holecová M., Kajtoch Ł. 2018. Infection by Endosymbiotic ”Male-Killing” Bacteria in Coleoptera. Folia Biologica (Kraków), 66(4): 165-177.

Kolibáč J. 2013a. Family Trogossitidae Latreille, 1802. [In:] Löbl I., Smetana A. (eds.): Catalogue of the Palaearctic Coleoptera, Vol. 4. Apollo Books, Stenstrup, 364-366.

Kolibáč J. 2013b. Trogossitidae: A review of the beetle family, with a catalogue and keys. ZooKeys, 366: 1-194.

Kolibáč J., Majer K., Švihla V. 2005. Cleroidea. Beetles of the superfamily Cleroidea in the Czech and Slovak Republics and neighbouring areas. Clarion productions, Praha.

Kolk A., Burzyński J., Rodziewicz A., Sowińska A., Lipiński S., Podgórski J., Janiszewski W. 1990. Sprawozdanie końcowe pt.: Badanie związków biologicznie czynnych (chemicznych informatorów owadów) i możliwości ich wykorzystania w ochronie lasu. Zakład Ochrony Lasu, Instytut Badawczy Leśnictwa, Warszawa, 44 pp. + 57 plates + 6 figs. [mscr.]

Komosiński K., Browarski B., Bujnik B. 2009. Inwentaryzacja entomologiczna. [In:] Studium Techniczno-Ekonomiczno-Środowiskowe. Etap I dla inwestycji polegającej na rozbudowie drogi krajowej nr 16 na odcinku Sorkwity-Mrągowo-Orzysz-Ełk – warianty dodatkowe. 162-172 pp. [mscr.]

Komosiński K., Tatur-Dytkowski J., Ruta R., Miłkowski M., Buchholz L., Greń C., Lubecki K., Pacuk B. 2021. Materiały do znajomości chrząszczy (Insecta: Coleoptera) rezerwatu ”Mazury” w Puszczy Boreckiej. Przegląd Przyrodniczy, 32(3): 19-43.

Konarzewski M., Kupryjanowicz J. 2021. Ścieżkami Puszczy Knyszyńskiej. Wydawnictwo Uniwersytetu w Białymstoku, Białystok, 352 pp.

Konopko D. 2019. Wstępna lista chrząszczy rezerwatu przyrody ”Łęg nad Swelinią” w Trójmiejskim Parku Krajobrazowym. Notatki Entomologiczne, 4(1): 9-18.

Konopko D., Kowalczyk J.K. 2020. Przyczynek do poznania chrząszczy terenów zielonych Osiedla Moniuszki w Gdyni. Notatki Entomologiczne, 5(1): 18-29.

Konopko D., Kowalczyk J. K. 2022. Chrząszcze (Insecta: Coleoptera) zadrzewień śródmiejskich Kamiennej Góry w Gdyni. Przegląd Przyrodniczy, 33(3): 30-43.

Konopko D., Kowalczyk J.K., Komosiński K., Sienkiewicz P., Aleksandrowicz O., Przewoźny M., Konwerski S., Mocarski Z., Lasecki R., Buchholz L. 2017. Materiały do znajomości chrząszczy (Insecta: Coleoptera) Kępy Redłowskiej w Gdyni. Przegląd Przyrodniczy, 28(3): 45-72.

Konstantinov A.S., Baselga A., Grebennikov V.V., Prena J., Lingafelter S.W. 2011. Revision of the Palaearctic *Chaetocnema* species (Coleoptera: Chrysomelidae: Galerucinae: Alticini). Pensoft, Sofia-Moscow, 363 pp.

Konvička O. 2012. Notes on the distribution of beetles of the families Melandryidae and Tetratomidae in the Western Palaearctic region. Klapalekiana, 48: 203-206.

Konwerski S. 1996. Nowe stanowisko *Ampedus tristis* (Linnaeus, 1758) (Coleoptera, Elateridae). Wiadomości Entomologiczne, 15(3): 160.

KONWERSKI S., SIENKIEWICZ P. 2005. Leiodidae (Coleoptera) of the Biedrusko range in Western Poland. [In:] SKŁODOWSKI J., HURUK S., BARŠEVSKIS A., TARASIUK S. (eds.): Protection of Coleoptera in the Baltic Sea Region, Warszawa Agricultural University Press, Warszawa, 129-136 pp.

KORDYLAS A. 1990. Chrząszcze wodne (Coleoptera) lobeliowego jeziora Krzemno. Fragmenta Faunistica, 33(5): 71-81.

KORDYLAS A. 1994. An investigation of the water beetles of Polish springs. Latissimus, 4: 9-11.

KORZENIEWSKI K. 2015. Podkorowe chrząszcze (Coleoptera) wybranych gatunków drzew na terenach zalewowych w nadleśnictwie Supraśl. Praca magisterska. Wydział Leśny, Szkoła Główa Gospodarstwa Wiejskiego w Warszawie, 31 pp. [mscr.]

KOSIBOWICZ M., JACHYM M. 2021. Wynurt lśniący *Ceruchus chrysomelinus* (HOCHENWARTH, 1785) w bieszczadzkich lasach. Wszechświat, 122(1-3): 84-87.

KOVÁŘ I. 2007. Coccinellidae. [In:] LÖBL I., SMETANA A. (eds.): Catalogue of Palaearctic Coleoptera, Vol. 4. Apollo Books, Stenstrup, 568-630 pp.

KOZAKIEWICZ P. 2018. Owadzie sprawy na grządce "trawy". Przyroda Polska, 6: 20-21.

KOZŁOWSKA K. 2017. Chrząszcze (Coleoptera) występujące w budkach lęgowych ptaków w nadleśnictwie Supraśl. Praca inżynierska. Wydział Leśny, Szkoła Główa Gospodarstwa Wiejskiego w Warszawie, 41 pp. [mscr.]

KOZŁOWSKI M.W. 2009. Owady Polski. Chrząszcze. MULTICO Oficyna Wydawnicza, Warszawa, 336 pp.

KRÁL D., BEZDĚK A. 2016. Coprini. [In:] LÖBL I., LÖBL D. (eds.): Catalogue of Palaearctic Coleoptera. Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea and Byrrhoidea. Volume 3. Revised and Updated Edition. Brill, Leiden – Boston, 167-171 pp.

KRELL F.T., BEZDĚK A. 2016. Dynastinae. [In:] LÖBL I., LÖBL D. (eds.): Catalogue of Palaearctic Coleoptera. Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea and Byrrhoidea. Volume 3. Revised and Updated Edition. Brill, Leiden – Boston, 358-367 pp.

KRÓLIK R. 1999. *Rhopalodontus strandi* LOHSE, 1969 i *Cis hanseni* STRAND, 1965 – nowe dla fauny Polski gatunki chrząszczy oraz nowe dane o rozmieszczeniu i ekologii kilkudziesięciu innych gatunków z rodziny Ciidae (Coleoptera). Wiadomości Entomologiczne, 18(2): 69-76.

KRÓLIK R. 2020. Family Ciidae LEACH, 1819. [In:] IWAN D., LÖBL I. (eds.): Catalogue of Palaearctic Coleoptera, Vol. 5. Tenebrionoidea. Revised and updated second edition. Brill, Leiden – Boston, 33-43 pp.

KRÓLIK R., LASOŃ A. 2020. *Aspidiphorus lareyniei* JACQUELIN DU VAL, 1859 (Coleoptera: Sphindidae) – a beetle species new to Greece and Poland. Annals of the Upper Silesian Museum in Bytom, Entomology, 29(online 007): 1-5.

KRÓLIK R., RUTA R., MATUSIAK R. 2005. Nowe stanowiska chrząszczy z rodzaju *Sulcacis* DURY, 1917 (Coleoptera: Ciidae) w Polsce. Wiadomości Entomologiczne, 24(4): 227-233.

KRÓLIK R., RUTA R., WANAT M. 2026 (w przygot.). *Orthocis juglandis* i *Orthocis perrisi*, dwa nowe gatunki w faunie Polski (Coleoptera: Ciidae).

KRÓLIK R., SZOŁTYS H., MELKE A. 2017. Ciidae (Coleoptera) Pogórza Przemyskiego. Rocznik Muzeum Górnośląskiego w Bytomiu. Przyroda, 23(online 006): 1-13.

KUBISZ D. 1994. Materiały do znajomości rozsiedlenia w Polsce niektórych gatunków Nitidulidae (Coleoptera). Acta Entomologica Silesiana, 2: 45.

KUBISZ D. 2001. Familia (rodzina): Ciidae. [In:] GUTOWSKI J.M., JAROSZEWICZ B. (eds.): Katalog fauny Puszczy Białowieskiej. Instytut Badawczy Leśnictwa, Warszawa, 178-179 pp.

KUBISZ D. 2004a. *Oxyporus mannerheimii* (GYLLENHAL, 1827). [In:] ADAMSKI P., BARTEL R., BERESZYŃSKI A., KEPEL A., WITKOWSKI Z. (eds.): Gatunki Zwierząt (z wyjątkiem ptaków). Poradniki ochrony siedlisk i gatunków Nature 2000 – podręcznik metodyczny. Ministerstwo Środowiska, Warszawa, T. 6, 115-117 pp.

KUBISZ D. 2004b. *Boros schneideri* (PANZER, 1796) Ponurek Scheidera. [In:] GŁOWACIŃSKI Z., NOWACKI J. (eds.): Polska czerwona księga zwierząt – Bezkręgowce. Instytut Ochrony Przyrody PAN, Kraków – Poznań, 139-140.

KUBISZ D. 2006. Oedemeridae i Scraptiidae Polski (Coleoptera, Tenebrionoidea). Monografie Faunistyczne, 24. Instytut Systematyki i Ewolucji Zwierząt PAN, Kraków, 165 pp.

KUBISZ D., BUCZYŃSKI P., WOJAS T., MAZUR M.A., BUCHHOLZ L. 2021. Ordo: Coleoptera – chrząszcze, pp. 144-212. [In:] KLASA A. (ed.): Katalog fauny Ojcowskiego Parku Narodowego, tom 1. Wydawnictwa Ojcowskiego Parku Narodowego, Ojców, 363 pp.

Kubisz D., Gawroński R., Gutowski J.M., Wanat M. 2010a. The Mordellidae (Coleoptera: Tenebrionoidea) of north-eastern Poland, a faunistic synopsis. Polish Journal of Entomology, 79(2): 235-251.

Kubisz D., Iwan D., Tykarski P. 2014. Tenebrionoidea: Tetratomidae, Melandryidae, Ripiphoridae, Prostomidae, Oedemeridae, Mycteridae, Pythidae, Aderidae, Scraptiidae. Critical checklist, distribution in Poland and meta-analysis. Coleoptera Poloniae, 2, University of Warszawa – Faculty of Biology, Natura optima dux Foundation, Warszawa, 470 pp.

Kubisz D., Iwan D., Tykarski P. 2015. Tenebrionoidea: Mycetophagidae, Ciidae, Mordellidae, Zopheridae, Meloidae, Pyrochroidae, Salpingidae, Anthicidae. Critical checklist, distribution in Poland and meta-analysis. Coleoptera Poloniae, 3, University of Warszawa – Faculty of Biology, Natura optima dux Foundation, Warszawa, 744 pp.

Kubisz D., Kuśka A., Pawłowski J. S. 1998. Czerwona lista chrząszczy (Coleoptera) Górnego Śląska. [In:] Centrum Dziedzictwa Przyrody Górnego Śląska. Raporty Opinie, Tom 3. Katowice, 8-68 pp.

Kubisz D., Melke A. 1995. Der Erkenntnisszustand über die Kurzflüglerfauna (Coleoptera, Staphylinidae) von Bellinchen an der Oder (Nord-West Polen). Acta Entomologica Silesiana, 3(1-2): 16-26.

Kubisz D., Pawłowski J. 1995. Wstęp do inwentaryzacji chrząszczy Puszczy Knyszyńskiej. [In:] Czerwiński A. (ed.): Puszcza Knyszyńska. Supraśl, 299-311 pp.

Kubisz D., Pawłowski J. 1998. Suplement do znajomości chrząszczy (Coleoptera) Ojcowskiego Parku Narodowego i jego otuliny (w 145 rocznicę rozpoczęcia inwentaryzacji faunistycznej w Ojcowie). Prądnik. Prace Muzeum Szafera, 11-12: 298-323.

Kubisz D., Ruta R., Jałoszyński P., Konwerski S., Królik R. 2010b. A faunistic review of beetle families Tetratomidae and Melandryidae (Coleoptera: Tenebrionoidea) of Poland. Polish Jounal of Entomology, 79: 107-138.

Kubisz D., Szwałko P. 1991. Nowe dla Podlasia i Puszczy Białowieskiej gatunki chrząszczy (Coleoptera). Wiadomości Entomologiczne, 10(1): 5-14.

Kubisz D., Szwałko P. 1994. Chrząszcze (Coleoptera) nowe dla fauny Polski. Wiadomości Entomologiczne, 13(1): 13-19.

Kubisz D., Szwałko P. 1999. Chrząszcze – Coleoptera. Cybocephalidae. Klucze do Oznaczania Owadów Polski, cz. XIX, z. 66. Toruń, 16 pp.

Kujawa A., Gierczyk B., Gryc M., Wołkowycki M. 2019. Grzyby Puszczy Knyszyńskiej. Stowarzyszenie Przyjaciół Puszczy Knyszyńskiej Wielki Las, Park Krajobrazowy Puszczy Knyszyńskiej, Supraśl, 216 pp.

Kuntze R. 1936. Krytyczny przegląd szkodników z rzędu chrząszczy zarejestrowanych w Polsce w latach 1919-1933. Rocznik Ochrony Roślin, 3(2): 1-116.

Kurzawa J., Miłkowski M., Gutowski J.M. 2020. Nowe dane o taksonomii i rozmieszczeniu *Tetrops gilvipes* ssp. *adlbaueri* Lazarev, 2012 oraz *Tetrops praeustus* (Linnaeus, 1758) (Coleoptera: Cerambycidae). Rocznik Muzeum Górnośląskiego w Bytomiu, Przyroda, 26(online 013): 1-20.

Kurzawa J., Szczepański W., Szczepański W.T. 2012. Kózkowate (Coleoptera: Cerambycidae) masywu Chryszczatej w Bieszczadach. Acta Entomologica Silesiana, 20: 55-64.

Kuśka A. 1994. Materiały do znajomości omomiłków Coleoptera, Cantharidae Puszczy Białowieskiej. Parki Narodowe i Rezerwaty Przyrody, 13: 51-55.

Kuśka A. 1995. Omomiłki (Coleoptera, Cantharidae): Cantharinae i Silinae Polski. Monografie Fauny Polski, 21, Kraków, 201 pp. + 207 figs.

Kuśka A., Pawłowski J.S. 1989. Gromada Insecta / Rząd Coleoptera. [In:] Budowa Geologiczna Polski. Tom III Atlas skamieniałości przewodnich i charakterystycznych. Część 3b Kenozoik Czwartorzęd. Warszawa. pp. 120-130, 228-230.

Kwiatkowski A. 2011. Assemblages of carabid beetles (Coleoptera, Carabidae) in humid forest habitats of different stages of succession in the Puszcza Knyszyńska Forest (northeastern Poland). [In:] Kotze D.J., Assmann T., Noordijk J., Turin H., Vermeulen R. (eds.): Carabid beetles as bioindicators: biogeographical, ecological and environmental studies. ZooKeys, 100: 447-459.

Kwiatkowski A. 2020. Czy należy bać się zgniotka. Głos Lasu, 11(596): 28-30.

Kwiatkowski A., Marczak. D. 2020a. *Cucujus cinnaberinus* (Scop.), *Cucujus haematodes* (Erich.) (Coleoptera: Cucujidae) oraz *Boros schneideri* (Panz.) (Coleoptera: Boridae) w Puszczy Knyszyńskiej. Wiadomości Entomologiczne, 39(2): 23-26.

Kwiatkowski A., Marczak D. 2020b. Występowanie rzadkich gatunków chrząszczy saproksylicznych w lasach gospodarczych na przykładzie Puszczy Knyszyńskiej (RDLP w Białymstoku). Fragmenta Floristica et Geobotanica Polonica, 27(1): 55-71.

Kwiatkowski W. 2018. Plan ochrony Parku Krajobrazowego Puszczy Knyszyńskiej. Operat glebowo-siedliskowy. Park Krajobrazowy Puszczy Knyszyńskiej, Supraśl. [mscr.]

Lackner T., Mazur S., Newton A.F. 2015. Family Histeridae Gyllenhal, 1808. [In:] Löbl I., Löbl D. (eds.): Catalogue of Palaearctic Coleoptera. Vol. 2. Hydrophiloidea – Histeroidea – Staphylinoidea. Revised and Updated Edition. Brill – Leiden – Boston, 76-130 pp.

Larson D.J., Alarie Y., Roughley R.E. 2000. Predaceous diving beetles (Coleoptera: Dytiscidae) of the Nearctic Region, with emphasis on the fauna of Canada and Alaska. NRC Research Press, Ottawa, 982 pp.

Lasoń A. 1997. Nowe stanowiska chrząszczy z rodzin Kateretidae i Nitidulidae (Coleoptera) na Podlasiu. Wiadomości Entomologiczne, 16(1): 7-10.

Lasoń A. 1999a. *Carpophilus marginellus* Motschulsky, 1858 i *Meligethes caudatus* Guillebeau, 1897 (Coleoptera: Nitidulidae) – gatunki nowe dla fauny Polski. Wiadomości Entomologiczne, 1998, 17(3-4): 165-168.

Lasoń A. 1999b. Ocena poznania Brachypteridae i Nitidulidae (Coleoptera) Puszczy Białowieskiej. Parki Narodowe i Rezerwaty Przyrody, 18(3): 13-23.

Lasoń A. 1999c. Nowe stanowiska polskich Kateretidae i Nitidulidae (Coleoptera). Wiadomości Entomologiczne, 17(3-4): 157-163.

Lasoń A. 2001. Kateretidae, Nitidulidae. [In:] Gutowski J.M., Jaroszewicz B. (eds.): Katalog fauny Puszczy Białowieskiej. Instytut Badawczy Leśnictwa, Warszawa, 166-168 pp.

Lasoń A. 2003. *Meligethes jelineki* Audisio, 1976 – nowy dla fauny Polski gatunek chrząszcza oraz nowe dane w rozsiedleniu przedstawicieli rodziny Nitidulidae (Coleoptera) na Podlasiu. Wiadomości Entomologiczne, 21(4): 205-212.

Lasoń 2004. *Epuraea* (*Epuraea*) *muehli* Reitter, 1908 i *Meligethes matronalis* Audisio et Spornraft, 1990 – nowe dla Polski gatunki chrząszczy oraz nowe dane o rozmieszczeniu Kateretidae i Nitidulidae (Coleoptera) w Polsce. Wiadomości Entomologiczne, 23(1): 21-28.

Lasoń A. 2023a. *Glischrochilus tremulae* Clayhills, Audisio et Cline, 2016 – nowy gatunek dla fauny Polski oraz podsumowanie stanu wiedzy o rozmieszczeniu na Podlasiu chrząszczy z rodzin Kateretidae i Nitidulidae (Coleoptera). Rocznik Muzeum Górnośląskiego w Bytomiu. Przyroda, 29(online 017): 1-25.

Lasoń A. 2023b. Mapa Bioróżnorodności [online] 2023. Krajowa Sieć Informacji o Bioróżnorodności. https://baza.biomap.pl (access: 31.07.2023)

Lasoń A., Bidas M. 2010. Stan poznania fauny łyszczynek (Coleoptera: Kateretidae, Nitidulidae) Gór Świętokrzyskich. Wiadomości Entomologiczne, 29(4): 263-272.

Lasoń A., Holly M. 2015. *Glischrochilus grandis* Tournier, 1872 – nowy gatunek chrząszcza dla fauny Polski oraz nowe dane o rozsiedleniu przedstawicieli rodzaju *Glischrochilus* Reitter, 1873 (Coleoptera: Nitidulidae: Cryptarchinae). Acta Entomologica Silesiana, 23: 1-4.

Lasoń A., Marczak D. 2016. Materiały do poznania fauny Kampinoskiego Parku Narodowego: Kateretidae, Nitidulidae (Coleoptera: Cucujoidea). Acta Entomologica Silesiana, 24: 1-10.

Lasoń A., Marczak A., Kwiatkowski A. 2023. Łyszczynkowate (Coleoptera: Nitidulidae) rezerwatów Budzisk i Jesionowe Góry w Puszczy Knyszyńskiej. Acta Entomologica Silesiana, 31: (online 007): 1-5.

Lasoń A., Miłkowski M. 2011. Kateretidae i Nitidulidae (Coleoptera) okolic Radomia. Wiadomości Entomologiczne, 30(3): 149-158.

Lasoń A. Miłkowski M. 2022. Nowe i rzadko spotykane gatunki Kateretidae i Nitidulidae (Coleoptera) okolic Radomia. Wiadomości Entomologiczne, 41(3): 14-19.

Lawrence J.F. 1971. Revision of the North American Ciidae (Coleoptera). Bulletin of the Museum of Comparative Zoology, 142: 419-522.

Lawrence J.F. 1973. Host preference in ciid beetles (Coleoptera: Ciidae) inhabiting fruiting bodies of Basidiomycetes in North America, 145(3): 163-212.

Leseigneur L. 2005. Description de *Trixagus meybohmi* n. sp. et note sur la morphologie des *Trixagus* du groupe *carinifrons* (Coleoptera, Throscidae). Bulletin de la Société Entomologique de France, 110: 89-96.

Lipiński S., Bystrowski C., Tarwacki G. 2009. Sprawozdanie końcowe z realizacji projektu badawczego pt. Podatność drzewostanów dębowych wschodniej Polski na gradacje piędzika przedzimka (*Operophtera* *brumata* L.) w zależności od ich struktury gatunkowej, socjalnej oraz wybranych czynników oporu środowiska. Zakład Ochrony Lasu, Instytut Badawczy Leśnictwa, Sękocin Stary, 62 pp. [mscr.]

Löbl I., Löbl D. (eds.) 2015. Catalogue of Palaearctic Coleoptera. Hydrophiloidea-Staphylinoidea. Vol. 2. Revised and updated edition. Brill, Leiden, Boston, XXVI+ 1702 pp.

Löbl I., Smetana A. (eds.) 2003. Catalogue of Palaearctic Coleoptera. Volume 1. Archostemata – Myxophaga – Adephaga. Brill, Leiden Boston, 819 pp.

Löbl I., Smetana A. (eds.) 2007. Catalogue of Palaearctic Coleoptera. Volume 4. Elateroidea – Derodontoidea – Bostrichoidea – Lymexyloidea – Cleroidea – Cucujoidea. Apollo Books, Stenstrup, 935 pp.

Löbl I., Smetana A. (eds.) 2008. Catalogue of Palaearctic Coleoptera. Volume 5. Tenebrionoidea. Apollo Books, Stenstrup, 670 pp.

Löbl I., Smetana A. (eds.) 2010. Catalogue of Palaearctic Coleoptera. Volume 6. Chrysomeloidea. Apollo Books, Stenstrup, 924 pp.

Löbl I., Smetana A. (eds.) 2011. Catalogue of Palaearctic Coleoptera. Volume 7. Curculionoidea I. Apollo Books, Stenstrup, 373 pp.

Löbl I., Smetana A. (eds.) 2013. Catalogue of Palaearctic Coleoptera. Volume 8. Curculionoidea II. Leiden, Brill, 700 pp.

Löbl I., Smetana A. (eds.) 2016. Catalogue of Palaearctic Coleoptera. Volume 3. Revised and Updated Edition. Scarabaeidae, Scirtoidea, Dascilloidea, Buprestoidea and Byrrhoidea. Brill, Leiden – Boston, XXVIII + 983 pp.

Lohse G.A. 1979. Melyridae, Cleridae, Derodontidae, Lymexylonidae, Elateridae, Cerophytidae, Eucnemidae, Throscidae, Dascillidae, Helodidae, Eucinetidae, Dermestidae. [In:] Freude H., Harde K.W., Lohse G.A. (eds.): Die Käfer Mitteleuropas. Band 6. Krefeld. pp. 69-203, 249-264, 304-327.

Lopes-Andrade C., Webster R.P., Webster V.L., Alderson C.A., Hughes C.C., Sweeney J.D. 2016. The Ciidae (Coleoptera) of New Brunswick, Canada: New records and new synonyms. [In:] Webster R.P., Bouchard P., Klimaszewski J. (eds.): The Coleoptera of New Brunswick and Canada: providing baseline biodiversity and natural history data. ZooKeys, 573: 339-366.

Lubecki K., Greń C., Przewoźny M., Bidas M. 2023. Chrząszcze wodne (Coleoptera: Adephaga, Hydrophiloidea, Byrrhoidea) Gór Świętokrzyskich. Natural History Monographs of the Upper Silesian Museum, 2: 1-163.

Łaska G. 2006. Tendencje dynamiczne zbiorowisk zastępczych w Puszczy Knyszyńskiej. Białystok–Poznań: Bogucki Wydawnictwo Naukowe, 500 pp.

Łętowski J., Gosik R. 2002. Ryjkowcowate (Coleoptera, Curculionoidea: Rhinomaceridae, Attelabidae, Apionidae, Curculionidae) projektowanego rezerwatu "Machnowska Góra". Parki Narodowe i Rezerwaty Przyrody, 21(4): 471-484.

Łomnicki M.[A.]. 1913. Wykaz chrząszczów czyli Tęgopokrywych (Coleoptera) ziem polskich. (*Catalogus coleopterorum Poloniae*). Kosmos, Lwów, 38: 21-155.

Łoszewski H. 1984. Naturalne wypływy wód podziemnych dorzecza Supraśli. Nauka i praktyka, OBN, 4.

Łuszczak M.J., Szafraniec S. 2021. Materiały do poznania rozmieszczenia kózkowatych (Coleoptera, Cerambycidae) Beskidu Zachodniego – gatunki nieczęste, częste i pospolite. Wiadomości Entomologiczne, 40(3); online 11A: 16-34.

Maciejewski K.H. 1996. Badania nad chrząszczami (Coleoptera) Puszczy Boreckiej Część III. Nadrodzina żuków (Scarabaeoidea). Wiadomości Entomologiczne, 15(2): 85-88.

Majewski T. 1997. Nowe dane o rozmieszczeniu Latridiidae (Coleoptera) w Polsce. Wiadomości Entomologiczne, 15(4): 227-236.

Majewski T. 2001. Microsporidae. [In:] Gutowski J.M., Jaroszewicz B. (eds.): Katalog fauny Puszczy Białowieskiej. Instytut Badawczy Leśnictwa, Warszawa, 403 pp.

Majewski T. 2004. Wybrane rodziny chrząszczy (Coleoptera), z szerszym opracowaniem rodzin Cryptophagidae i Latridiidae, jako element monitoringu ekologicznego na terenie Puszczy Białowieskiej. Leśne Prace Badawcze, 3: 95-106.

Marczak D. 2010. Stan poznania biedronek (Coleoptera: Coccinellidae) Kampinoskiego Parku Narodowego. Wiadomości Entomologiczne, 29(Supl.): 135-139.

Marczak D. 2020. Chrząszcze saproksyliczne głównych typów siedliskowych Puszczy Kampinoskiej – stadium faunistyczno-ekologiczne. Prace Instytutu Badawczego Leśnictwa. Rozprawy i Monografie. Sękocin Stary, 285 pp.

Marczak D., Hoste-Danyłow A., Pepłowska-Marczak D., Melke A., Pacuk B., Masiarz J. 2012. Nowe stanowiska rzadkich, interesujących i chronionych gatunków chrząszczy (Coleoptera) w faunie Kampinoskiego Parku Narodowego Parki Narodowe i Rezerwaty Przyrody, 31(1): 109-119.

Marczak D., Królik R., Borowski J. 2020a. Materiały do poznania fauny Kampinoskiego Parku Narodowego: bogatkowate (Coleoptera: Buprestidae). Wiadomości Entomologiczne, 39(3); online 13A: 7-16.

Marczak D., Królik R., Kwiatkowski A., Lasoń A. 2020b. *Agrilus pseudocyaneus* Kiesenwetter, 1857 (Coleoptera: Buprestidae) w Puszczy Knyszyńskiej. Wiadomości Entomologiczne, 39(3); online 10N: 1-2.

Marczak D., Kwiatkowski A. 2023. Drugie stwierdzenie rzadkiego gatunku chronionego Dyrektywą Siedliskową – zagłębka bruzdkowanego *Rhysodes sulcatus* (Fabricius, 1787) (Coleoptera: Rhysodidae) w Puszczy Knyszyńskiej. Acta Entomologica Silesiana, 31(online 009): 1-4.

Marczak D., Kwiatkowski A., Melke A. 2023a. Saproksyliczne kusakowate (Coleoptera: Staphylinidae) rezerwatu Budzisk w Puszczy Knyszyńskiej. Acta Scientiarum Polonorum Silvarum Colendarum Ratio et Industria Lignaria, 22(1): 5-15.

Marczak D., Kwiatkowski A., Szawaryn K. 2021. Potwierdzenie występowania *Oxyporus mannerheimii* Gyll., 1827 (Coleoptera: Staphylinidae) w Puszczy Knyszyńskiej. Acta Scientiarum Polonorum Silvarum Colendarum Ratio et Industria Lignaria, 20(3): 179-183.

Marczak D., Lasecki R. 2011. Nowe stanowiska interesujących gatunków chrząszczy (Coleoptera) na Pojezierzu Mazurskim. Wiadomości Entomologiczne, 30(4): 205-210.

Marczak D., Lasoń A., Kwiatkowski A. 2023b. Goleńczykowate (Coleoptera: Eucnemidae) Puszczy Knyszyńskiej. Acta Entomologica Silesiana, 31(online 005): 1-12.

Marczak D., Kwiatkowski A., Lasoń A., Królik R., Borowski J., Mroczyński R. 2023c. Chrząszcze (Insecta: Coleoptera) rezerwatów Budzisk i Jesionowe Góry w Puszczy Knyszyńskiej. Rocznik Muzeum Górnośląskiego w Bytomiu. Przyroda, 29(online 018): 1-21.

Marczak D., Lasoń A., Kwiatkowski A., Szawaryn K. 2023d. Contribution to the knowledge of fauna of Knyszyńska Forest: longhorn beetles (Coleoptera: Cerambycidae). Rocznik Muzeum Górnośląskiego w Bytomiu. Przyroda, 29(online 002): 1-21.

Markiewicz E., Ceryngier P. 2020. *Adalia conglomerata* (Linnaeus, 1758) (Coleoptera: Coccinellidae) w Polsce: nowe dane i analiza dotychczasowych stwierdzeń. Rocznik Muzeum Górnośląskiego w Bytomiu, Przyroda, 26(online 006): 1-8.

Markiewicz E., Żurawlew P., Melke A., Ceryngier P., Ruta R., Przewoźny M. 2020. Biedronkowate (Coleoptera: Coccinellidae) okolic Pleszewa (Nizina Wielkopolsko-Kujawska). Wiadomości Entomologiczne, 41(4); online 19A: 18-27.

Mazur A., Klejdysz T., Dobrowolski M., Konwerski S., Królik R., Łabędzki A., Mazur M.M., Przewoźny M. 2016. Chrząszcze saproksyliczne Karkonoszy. Część I – wykaz gatunków. Acta Scientiarum Polonorum Silvarum Colendarum Ratio et Industria Lignaria, 15(4): 269-295.

Mazur A., Skoczek A. 2007. Rove Beetles (Coleoptera, Staphylinidae) as an element of monitoring of forest ecosystems in the Karkonosze National Park. Part II. The spring season aspekt and concluding remarks. Acta Scientiarium Polonorum, 6(2): 45-63.

Mazur A., Skoczek A., Tkocz D., Urban M. 2008. Chrząszcze kusakowate (Coleoptera, Staphylinidae) w monitoringu ekosystemów leśnych Karkonoskiego Parku Narodowego. [In:] Raj A., Zientarski J. (eds.): Monitoring ekosystemów leśnych w Karkonoskim Parku Narodowym. Karkonoski Park Narodowy, Jelenia Góra, 128-159 pp.

Mazur M. 2001. Ryjkowce kserotermiczne Polski (Coleoptera: Nemonychidae, Attelabidae, Apionidae, Curculionidae). Studium zoogeograficzne. Monografie Fauny Polski, 22: 1-378.

Mazur M. 2004. *Lixus cylindrus* (Fabricius, 1781). Kulczanka plamista. [In:] Głowaciński Z., Nowacki J. (eds.): Polska czerwona księga zwierząt. Bezkręgowce. Instytut Ochrony Przyrody PAN, Kraków, Akademia Rolnicza, Poznań, 162-163 pp.

Mazur M. 2016. Otiorhynchinae (Coleoptera: Curculionidae) Polski. Zróżnicowanie i klasyfikacja zasięgów. Wydawnictwo Naukowe Uniwersytetu Pedagogicznego, Kraków, 1-202.

Mazur M., Kubisz D. 2013. Rozmieszczenie i migracje kserotermicznych chrząszczy (Coleoptera) w dolinie Wisły. Monografie Faunistyczne, 26: 1-250.

Mazur M.A. 2011. Weevils (Coleoptera: Curculionoidea) of the Stobrawski Landscape Park. Polskie Pismo Entomologiczne, 80(2): 321-342.

Mazur S. 1972. Materiały do poznania Sphaeritidae i Histeridae (Coleoptera) Polski. Fragmenta Faunistica, 18: 393-404.

Mazur S. 1973. Chrząszcze – Coleoptera. Sphaeritidae i Gniliki – Histeridae. Klucze do Oznaczania Owadów Polski, cz. XIX, z. 11-12, PWN, Warszawa, 74 pp.

Mazur S., Borowski J., Byk A., Mokrzycki T. 1996. The diversity of the predatory beetles complex living under spruce bark in the Białowieża Primeval Forest. Zeszyty Naukowe SGGW-AR, Leśnictwo, 47: 27-37.

Mazur S., Borowski J., Łęgowski D., Perliński S., Skłodowski J. 2010. Monitoring wybranych grup stawonogów w Kampinoskim Parku Narodowym. Biblioteka KPN. [mscr.]

Mazzei A., Bonnaci T., Contarini E., Zetto T., Brandmayr P. 2011. Rediscovering the umbrella species candidate *Cucujus cinnabarinus* in Southern Italy and notes on bionomy. Italian Journal of Zoology, 78(2): 264-270.

Melke A., Maciejewski K.H. 1999. Badania nad chrząszczami (Coleoptera) Puszczy Boreckiej. Część V. Kusakowate (Staphylinidae). Wiadomości Entomologiczne, 18(3): 143-151.

Mertlik J., Jeniš I. 2013. *Aulonothroscus laticollis* (Coleoptera, Throscidae) – a new species for fauna of the Czech Republic. Elateridarium, 7: 10-20.

Mertlik J., Leseinger L. 2007. The species of the family Throscidae (Coleoptera: Elateroidea) Czech and Slovak Republics. Elateridarium, 1: 1-55.

Michalcewicz J. 2010. Materiał lęgowy kózkowatych (Coleoptera: Cerambycidae) w Tenczyńskim Parku Krajobrazowym na Wyżynie Krakowskiej. Acta Agraria et Silvestria, Series Silvestris, 48: 41-59.

Michalski J., Mazur A. 1999. Korniki. Praktyczny przewodnik dla leśników. Wydawnictwo Świat, Warszawa, 188 pp.

Micun K. 2013. Inwentaryzacja wybranych rodzin chrząszczy (Coleoptera) na terenie Leśnictwa Szyndziel w Nadleśnictwie Czarna Białostocka. Politechnika Białostocka, Praca Dyplomowa Inżynierska. Zamiejscowy Wydział Leśny w Hajnówce, Hajnówka, 36 pp. [mscr.]

Mielewczyk S. 2001. Gyrinidae – Dytiscidae. [In:] Gutowski J.M., Jaroszewicz B. (eds.): Katalog fauny Puszczy Białowieskiej. Instytut Badawczy Leśnictwa, Warszawa, 116-188 pp.

Mielewczyk S. 2003a. Entomofauna (Odonata, Heteroptera, Coleoptera) torfowiska sfagnowego jako końcowego stadium lądowienia zbiornika dystroficznego na przykładzie Niknącej Łąki (Park Narodowy Gór Stołowych). Idee Ekologiczne, 15, Ser. Szkice, 8: 73-76.

Mielewczyk S. 2003b. Materiały do poznania entomofauny (Odonata, Hemiptera: Heteroptera, Coleoptera) torfowiska "Niknące Łąki" w Parku Narodowym Gór Stołowych. Szczeliniec, 7: 59-72.

Miłkowski M. 2020. Nowe stanowiska *Eucinetus haemorrhoidalis* (Germar, 1818) (Coleoptera: Eucinetidae) w okolicach Radomia. Wiadomości Entomologiczne, 39(1): 5-6.

Miłkowski M., Gutowski J.M. 2021. Cerambycidae (Coleoptera) obszaru Nature 2000 "Dolina Zwoleńki" (PLH140006). Przegląd Przyrodniczy, 22(1): 91-113.

Miłkowski M., Gutowski J.M. 2022. Chrząszcze (Coleoptera) związane ze śnieguliczką białą *Symphoricarpos albus* (L.) Blake. Acta Scientiarum Polonorum Silvarum Colendarum Ratio et Industria Lignaria (Polish Journal of Forestry), 21(1): 33-49.

Miłkowski M., Piątek W. 2014. Świerk pospolity *Picea abies* (L.) Karst. – nieznana dotychczas roślina żywicielska larw *Grammoptera ruficornis* (Fabricius, 1781) (Coleoptera: Cerambycidae). Wiadomości Entomologiczne, 33(2): 157.

Miłkowski M., Piątek W., Tatur-Dytkowski J. 2008. Nowe dla Puszczy Kozienickiej i rzadko spotykane gatunki Cerambycidae (Coleoptera). Wiadomości Entomologiczne, 27(1): 17-22.

Miłkowski M., Ruta R. 2008. Skórnikowate (Coleoptera: Dermestidae) okolic Radomia. Wiadomości Entomologiczne, 27(1): 9-15.

Miłkowski M., Ruta R. 2016. Leiodidae (Insecta: Coleoptera) okolic Radomia. Wiadomości Entomologiczne, 35(1): 14-30.

Miłkowski M., Tatur-Dytkowski J., Gutowski J.M., Ruta R., Grzywocz J., Konwerski S., Królik R., Kubisz D., Lasoń A., Melke A., Olbrycht T., Szołtys H., Wanat M. 2019. Trogossitidae, Lophocateridae, Peltidae and Thymalidae (Coleoptera: Cleroidea) of Poland: distribution, biology and conservation. Polish Journal of Entomology, 88(3): 215-274.

Minkina Ł. 2010. Materiały do poznania chrząszczy z nadrodziny Scarabaeoidea występujących w okolicach Częstochowy, w oparciu o zbiory Muzeum Częstochowskiego i prace poprzednich badaczy na terenie Wyżyny Krakowsko–Wieluńskiej. Biuletyn Częstochowskiego Koła Entomologicznego, 9: 5-13.

Mirek Z., Nikel A., Paul W., Wilk Ł. (eds.) 2005. Ostoje roślinne w Polsce. Instytut Botaniki im. W. Szafera Polskiej Akademii Nauk, Kraków, 358 pp.

Mokrzycki T. 2001. Próba waloryzacji starszych drzewostanów Puszczy Białowieskiej metodą zooindykacyjną na przykładzie chrząszczy (Coleoptera) powierzchni pni. [In:] Szujecki A. (ed.): Próba szacunkowej waloryzacji lasów Puszczy Białowieskiej metodą zooindykacyjną. Wydawnictwo SGGW, Warszawa, 267-285 pp.

Mokrzycki T. 2007. Waloryzacja ekosystemów leśnych Gór Świętokrzyskich na podstawie struktury zgrupowań chrząszczy związanych z pniakami. [In:] Borowski J., Mazur S. (eds.): Waloryzacja ekosystemów leśnych Gór Świętokrzyskich metodą zooindykacyjną. Wydawnictwo SGGW, Warszawa, 236 pp.

Mokrzycki T. 2011. Zgrupowania saproksylicznych chrząszczy (Coleoptera) w pniakach wybranych gatunków drzew – studium porównawcze. Rozprawy Naukowe i Monografie. Wydawnictwo SGGW, Warszawa, 135 pp. + 35 figs.

Mokrzycki T. 2019. Chrząszcze (Coleoptera) grądu niskiego rezerwatu Las Natoliński w Warszawie. [In:] 51 Zjazd Polskiego Towarzystwa Entomologicznego oraz IX Ogólnopolska Konferencja Naukowa z cyklu ”Ochrona owadów w Polsce” nt. ”Entomofauna środowisk wilgotnych i wodnych – różnorodność, ochrona i kierunki badań”, Urszulin, 10-13 września 2019 r. Polskie Towarzystwo Entomologiczne, Poznań: 17-18.

Mokrzycki T., Bohdan A., Kowal B., Lasoń A., Sztabkowska I. 2022. Rzadkie i nowe gatunki chrząszczy (Coleoptera) dla Puszczy Knyszyńskiej. Wiadomości Entomologiczne, 41(3); online 16A: 20-25.

Mokrzycki T., Borowski J., Byk A., Rutkiewicz A. 2013. Waloryzacja ekosystemów Leśnego Kompleksu Promocyjnego ”Lasy Spalsko-Rogowskie” na podstawie struktury zgrupowań chrząszczy (Coleoptera) zasiedlających pniaki. Studia i Materiały Centrum Edukacji Przyrodniczo-Leśnej, R. 15, 35(2): 48-81.

Mokrzycki T., Hilszczański J., Borowski J., Cieślak R., Mazur A., Miłkowski M., Szołtys H. 2011. Faunistic review of Polish Platypodinae and Scolytinae (Coleoptera: Curculionidae). Polish Journal of Entomology, 80: 343-364.

Mroczkowski M. 1955. Zbiór chrząszczy Wojciecha Mączyńskiego. Dermestidae (Coleoptera). Polskie Pismo Entomologiczne, 1953, 23: 97-101.

Mroczkowski M. 1975. Dermestidae. Skórnikowate (Insecta: Coleoptera). Fauna Polski, 4: 1-163.

Mroczyński R., Marczak D. 2017. Coprophagous beetles (Coleoptera) found in moose (*Alces alces* L.) feces in Kampinos National Park. World Scientific News, 86(3): 376-381.

Mroczyński R., Marczak D. 2020. Materiały do poznania rozmieszczenia koprofagicznych poświętnikowatych (Coleoptera: Scarabaeidae) wschodniej części Polski. Wiadomości Entomologiczne, 39(4); online 22A: 21-27.

Muona J. 1995. The European *Isorhipis* species (Coleoptera, Eucnemidae). Entomologische Blätter, 91: 159-164.

Muona J. 2002. *Trixagus leseigneuri* n. sp. (Coleoptera, Throscidae). Bulletin de la Société Entomologique de France, 107(2): 187-190.

Myssura M. 2002. Owady minujące rezerwatów ”Puszczy Bieniszewskiej” koło Konina. Badania Fizjograficzne nad Polską Zachodnią, ser. C – Zoologia, 49: 1-118.

Najbar B. 1998. Kózkowate (Coleoptera: Cerambycidae) Ziemi Lubuskiej. Przegląd Przyrodniczy, 9(4): 49-75.

Napiontek M., Szawaryn K. 2017. Potwierdzenie występowania *Cynegetis impunctata* (Linnaeus, 1767) (Coleoptera: Coccinellidae) na Pomorzu. Acta Entomologica Silesiana, 25(online 025): 1-2.

Nedvěd O. 2020. Brouci čeledi slunéčkovití (Coccinellidae) střední Evropy. 2nd edition. Academia, Praha, 303 pp.

Nikitsky N.B. 2016. The narrow-waisted bark beetles (Coleoptera, Salpingidae) and Monotomidae beetles of the genus *Monotoma* Herbst, 1793 of the Moscow region, Russia. Euroasian Entomological Journal, 15(2): 132-138.

Nikitsky N.B., Pollock D.A. 2008. Family Melandryidae Leach, 1815. [In:] Löbl I., Smetana A. (eds.): Catalogue of Palaearctic Coleoptera, Vol. 5: Tenebrionoidea, 64-73 pp.

Nilsson, A.N., Cuppen, J. G. M. 1983. The larva of the predaceous water beetle *Agabus striolatus* (Coleoptera: Dystiscidae). Entomologica Scandinavica*,* 14*:* 316-320.

Nilsson A.N., Hájek J. 2021. Catalogue of Palaearctic Dytiscidae (Coleoptera). Internet version 2021-01-01. http://waterbeetles.eu/documents/PAL_CAT_Dytiscidae_2021.pdf (access: 30.12.2021)

Nilsson A.N., Holmen M. 1995. Fauna Entomologica Scandinavica 32. The aquatic Adephaga (Coleoptera) of Fennoscandia and Denmark. II. Dytiscidae. E. J. Brill, Leiden. New York – Köln, 192 pp.

Nilsson A.N., Persson S. 1989. The distribution of predaceous diving beetles (Coleoptera: Noteridae, Dytiscidae) in Sweden. Entomologica Basiliensia, 13: 59-146.

Nowosad A. 1990. Staphylinidae (Coleoptera) gniazd kreta – *Talpa europaea* L. w Polsce. Seria Zoologia Uniwersytet Adama Mickiewicza, Poznań, 15: 1-254.

Nunberg M. 1929. Rozsiedlenie geograficzne Scolytoidea na ziemiach Polski. Sprawozdanie Komisji Fizjograficznej, 63: 83-123.

Nunberg M. 1981. Chrząszcze – Coleoptera. Korniki – Scolytidae, Wyrynniki – Platypodidae. Klucze do oznaczania owadów Polski, cz. XIX. z. 99-100, PWN, Warszawa, 105 pp. + erratum.

Okruszko H. 1995. Mokradła – ich geneza i znaczenie w krajobrazie Puszczy Knyszyńskiej. [In:] Czerwiński A. (ed.): Puszcza Knyszyńska. Monografia przyrodnicza. Zespół Parków Krajobrazowych, Supraśl, 239-254 pp.

Olbrycht T., Kucharska-Świerszcz M. 2018. Fauna biegaczowatych (Coleoptera, Carabidae) w uprawach rzepaku ozimego (*Brassica napus* L.) południowo-wschodniej Polski. Polish Journal for Sustainable Development, 22(2): 117-124.

Olbrycht T., Szewkiewicz A. 2013. Kózkowate (Coleoptera, Cerambycidae) nowe dla Bieszczadów i Beskidu Niskiego. Roczniki Bieszczadzkie, 21: 373-378.

Olbrycht T., Świerszcz-Kucharska M., Tomasik Ł., Furgoł M., Melke A. 2019. Pierwsze obserwacje zagłębka bruzdkowanego *Rhysodes sulcatus* (Fabricius, 1787) i ponurka Schneidera *Boros schneideri* (Panzer, 1796) w Bieszczadzkim Parku Narodowym. Roczniki Bieszczadzkie, 27: 325-331.

Oleksa A. 2010. Pachnica dębowa – *Osmoderma eremita* (Scopoli, 1763). [In:] Makomaska-Juchiewicz M. (ed.): Monitoring gatunków zwierząt – przewodnik metodyczny, część pierwsza. Biblioteka Monitoringu Środowiska, Warszawa, 90-111 pp.

Pakulnicka J. 1999. Stań badań nad poznaniem chrząszczy wodnych (Coleoptera aquatica) źródeł Polski [In:] Biesiadka E., Czachorowski S. (eds.): Źródła Polski – stań badań, monitoring i ochrona. WSP, Olsztyn, 149-157 pp.

Pakulnicka J., Eyre M., Czachorowski S. 1998. Materiały do znajomości wodnych i związanych z siedliskami wilgotnymi chrząszczy (Coleoptera) okolic Olsztyna. Wiadomości Entomologiczne, 17: 69-74.

Palm T. 1952. Die Holz- und Rinden-Käfer der nordschwedischen Laubbäume. Meddelanden fran Statens Skogsforskingsinstitut, 40(2): 1-241.

Palm T. 1959. Die Holz- und Rinden-Käfer der Süd- und Mittelschwedischen Laubbäume. Opuscula Entomologica, 16(suppl.): 1-374.

Papis M., Mokrzycki T. 2015. Saproxylic beetles (Coleoptera) of the strictly protected area Bukowa Góra in the Roztoczański National Park. Forest Research Papers, 76(3): 229-239.

Park Krajobrazowy Puszczy Knyszyńskiej. 2023. Utworzenie. https://pkpk.wrotapodlasia.pl/pl/o_parku/powolanie.html (access: 13.03.2023).

Parisi F., Platia G., Mancini M., De Cristofaro A. 2020. Confirmation of *Crepidophorus mutilatus* (Rosenhauer, 1847) in Italy (Coleoptera: Elateridae), with notes on its distribution and conservation, The Coleopterists Bulletin, 74(3): 489-494.

Pawłowski J.S. 1975. Trechinae (Coleptera, Carabidae) Polski. Fauna Polski, 4, Państ. Wydaw. Naukowe, Kraków, 210 pp.

Pawłowski J. 2005. The *Carabus menetriesi* Hummel, 1827 (Coleoptera, Carabidae), a postglacial (or glacial and may be preglacial?) relic in Poland and in adiacent countries of the Central and Eastern Europe. Angewandte Carabidologie. Suppl. 4: 97-100.

Pawłowski J. 2008. Reliktowe chrząszcze Coleoptera "Puszczy Karpackiej". Roczniki Bieszczadzkie, 16: 317-324.

Pawłowski J., Kubisz D., Mazur M. 2002. Coleoptera chrząszcze, pp.: 88-110. [In:] Głowaciński Z. (ed.): Czerwona lista zwierząt ginących i zagrożonych. Instytut Ochrony Przyrody PAN, Kraków, 155 pp.

Pawłowski J., Mazur M., Młynarski J. K., Stebnicka Z., Szeptycki A., Szymczakowski W. 1994. Chrząszcze (Coleoptera) Ojcowskiego Parku Narodowego i terenów ościennych. OPN, Muzeum im. prof. Szafera, Ojców, 248 pp.

Pawłowski J., Petryszak B., Kubisz D., Szwałko P. 2000. Chrząszcze (Coleoptera) Bieszczadów. Monografie Bieszczadzkie, 8: 9-143.

Perreau M. 2004. Leiodidae. [In:] Löbl I., Smetana A. (eds.): Catalogue of Palaearctic Coleoptera, Vol. 2. Stenstrup: Apollo Books, 942 pp.

Pietrykowska-Tudruj E., Oder T., Sienkiewicz P. 2006. Materiały do poznania wybranych rodzin chrząszczy (Coleoptera) Łomżyńskiego Parku Krajobrazowego Doliny Narwi. Drozdowskie Zeszyty Przyrodnicze, 3: 37-43.

Pietrykowska-Tudruj E., Stączek Z.Z. 2001. Biedronkowate (Coleoptera: Coccinellidae) Poleskiego Parku Narodowego i okolic. Część I. Parki Narodowe i Rezerwaty Przyrody, 20(1): 55-62.

Piętka J. 2013. Czynna ochrona zagrożonych grzybów nadrzewnych w lasach. Warszawa, Wydawnictwo SGGW, 437, 188 pp., 12 plates.

Plan ochrony rezerwatu przyrody BUDZISK na okres 2012-2031. 2011. Europejskie Centrum Lasów Naturalnych, Instytut Badawczy Leśnictwa, Białowieża, 173 pp. + załączniki (128 pp.) + ryc. [mscr.]

Plan ochrony rezerwatu przyrody JESIONOWE GÓRY na okres 2012-2031. 2011. Europejskie Centrum Lasów Naturalnych, Instytut Badawczy Leśnictwa, Białowieża, 155 pp. + załączniki (114 pp.) + ryc. [mscr.]

Plan ochrony rezerwatu przyrody KRASNE na okres 2012-2031. 2011. Europejskie Centrum Lasów Naturalnych, Instytut Badawczy Leśnictwa, Białowieża, 100 pp. + załączniki (38 pp.) + ryc. [mscr.]

Plan ochrony rezerwatu przyrody KRZEMIENNE GÓRY na okres 2012-2031. 2011. Europejskie Centrum Lasów Naturalnych, Instytut Badawczy Leśnictwa, Białowieża, 80 pp. + załączniki (36 pp.) + ryc. [mscr.]

Plan ochrony rezerwatu przyrody LAS CIELICZAŃSKI na okres 2012-2031. 2011. Europejskie Centrum Lasów Naturalnych, Instytut Badawczy Leśnictwa, Białowieża, 133 pp. + załączniki (96 pp.) + ryc. [mscr.]

Plan ochrony rezerwatu przyrody STARODRZEW SZYNDZIELSKI na okres 2012-2031. 2011. Europejskie Centrum Lasów Naturalnych, Instytut Badawczy Leśnictwa, Białowieża, 103 pp. + załączniki (41 pp.) + ryc. [mscr.]

Plan ochrony rezerwatu przyrody WORONICZA na okres 2012-2031. 2011. Europejskie Centrum Lasów Naturalnych, Instytut Badawczy Leśnictwa, Białowieża, 136 pp. + załączniki (86 pp.) + ryc. [mscr.]

Plant Parasites of Europe 2020a. *Podagrica menetriesi* (Faldermann, 1837). https://bladmineerders.nl/parasites/animalia/arthropoda/insecta/coleoptera/polyphaga/cucujiformia/chrysomeloidea/chrysomelidae/alticinae/podagrica/podagrica-menetriesi/ (access: 26.07.2023)

Plant Parasites of Europe 2020b. *Prasocuris junci* (Brahm, 1790) https://bladmineerders.nl/parasites/animalia/arthropoda/insecta/coleoptera/polyphaga/cucujiformia/chrysomeloidea/chrysomelidae/chrysomelinae/prasocuris/prasocuris-junci/ (access: 26.07.2023)

Plewa R. 2007. Nowe stanowiska chrząszczy z rodziny kózkowatych (Coleoptera: Cerambycidae) w północno-wschodniej Polsce. Wiadomości Entomologiczne, 26(2): 126-127.

Plewa R. 2008. Rozsiedlenie chrząszczy z rodziny kózkowatych (Coleoptera, Cerambycidae) na terenie Rezerwatu "Wysokie Bagno" w Puszczy Białowieskiej. Parki Narodowe i Rezerwatu Przyrody, 27(2): 87-105.

Plewa R. 2010. *Acmaeops septentrionis* (C.G. Thomson, 1866) (Coleoptera: Cerambycidae: Lepturinae) – stan poznania gatunku. Opole Scientific Society Nature Journal, 43: 37-65.

Plewa R. 2023. Materiały do poznania wymiecinkowatych (Coleoptera: Latridiidae) Sobiborskiego Parku Krajobrazowego. Biuletyn Częstochowskiego Koła Naukowego, 21(3): 18-22.

Plewa R., Borowski Z. 2016. Nowe stanowiska interesujących gatunków chrząszczy saproksylicznych (Coleoptera) w wybranych leśnych kompleksach promocyjnych w Polsce. Wiadomości Entomologiczne, 35(1): 5-13.

Plewa R., Hilszczański J., Jaworski T. 2011a. New records of some rare saproxylic beetles (Coleoptera) in Poland. Opole Scientific Society Nature Journal, 44: 120-131.

Plewa R., Hilszczański J., Jaworski T., Sierpiński A. 2014. Nowe i rzadko spotykane chrząszcze (Coleoptera) saproksyliczne wschodniej Polski. Wiadomości Entomologiczne, 33(2): 85-96.

Plewa R., Jaworski T., Hilszczański J. 2021. Nowe stanowiska rzadko spotykanych chrząszczy (Coleoptera) na terenie Biebrzańskiego Parku Narodowego. Acta Entomologica Silesiana, 29(online 002): 1-12.

Plewa R., Jaworski T., Hilszczański J., Horák J. 2017. Investigating the biodiversity of the forest strata: The importance of vertical stratification to the activity and development of saproxylic beetles in managed temperate deciduous forests. Forest Ecology and Management, 402: 186-193.

Plewa R., Jaworski T., Tarwacki G., Sućko K., Konwerski S., Królik R., Lasoń A., Melke A., Przewoźny M., Ruta R., Szołtys H., Dodelin B., Hilszczański J. 2020. New records of beetle species (Coleoptera) from the Polish part of Białowieża Forest with special emphasis on the genus *Episernus* C.G. Thomson, 1863 (Ptinidae) in Central Europe. Polish Journal of Entomology, 89(1): 26-42.

Plewa R., Jaworski T., Tarwacki G., Sućko K., Konwerski S., Królik R., Lasoń A., Melke A., Przewoźny M., Ruta R., Szołtys H., Hilszczański J. 2019. Beetles (Coleoptera) new for the fauna of Białowieża Forest including a species new for Poland. Entomologica Fennica, 30(3): 114-125.

Plewa R., Kolk A., Sukovata L., Jaworski T. 2011b. Nowe stanowiska *Monochamus saltuarius* (Gebler, 1830) (Coleoptera: Cerambycidae) w Polsce. Wiadomości Entomologiczne, 30(4): 267.

Plewa R., Miłkowski M. 2018. Wymiecinkowate (Coleoptera: Latridiidae) Puszczy Kozienickiej i okolic Radomia. Wiadomości Entomologiczne, 37(3): 139-158.

Plewa R., Niemiec P. 2010. Nowe stanowiska *Rhysodes sulcatus* (Fabricius, 1787) (Coloptera: Rhysodidae) w Polsce. Wiadomości Entomologiczne, 29(1): 58-59.

Plewa R., Sikora K., Gutowski J.M., Jaworski T., Tarwacki G., Tkaczyk M., Rossa R., Hilszczański J., Magoga G., Kajtoch Ł. 2018. Morphology, genetics and *Wolbachia* endosymbionts support distinctiveness of *Monochamus sartor sartor* and *M. s. urussovii* (Coleoptera: Cerambycidae). Arthropod Systematics & Phylogeny, 76(1): 123-135.

Plewa R., Sućko K., Gutowski J.M. 2022. Wymiecinkowate (Coleoptera: Latridiidae) Puszczy Białowieskiej. Acta Scientiarum Polonorum Silvarum Colendarum Ratio et Industria Lignaria (Polish Journal of Forestry), 21(4): 281-300.

Pollock D.A., Iwan D. 2020. Family Pythidae Solier, 1834. [In:] Iwan D., Löbl I. (eds.): Catalogue of Palaearctic Coleoptera, Vol. 5. Tenebrionoidea. Revised and updated second edition. Brill, Leiden – Boston, 564-565 pp.

Popławski T. 2010. Biologia rzemlika podobnego *Saperda similis* (Coleoptera, Cerambycidae). Praca inżynierska. Wydział Leśny, Szkoła Główa Gospodarstwa Wiejskiego. Warszawa.

Przewoźny M. 2004. Chrząszcze (Insecta: Coleoptera) okolic Obrzycka w Puszczy Noteckiej. Badania Fizjograficzne nad Polską Zachodnią, ser. C, 50: 57-66.

Przewoźny M. 2007. Chrząszcze (Coleoptera) okolic Jeziora Maltańskiego w Poznaniu. Nowy Pamiętnik Fizjograficzny, 2006, 5(1-2): 29-48.

Przewoźny M. 2011. Rare and interesting beetles (Coleoptera) caught in the Sierakowski Landscape Park. Badania Fizjograficzne, ser. C, Zoologia: 33-45.

Przewoźny M. 2013. Chrząszcze (Coleoptera) okolic Jeziora Maltańskiego w Poznaniu – suplement. Wiadomości Entomologiczne, 32(1): 34-41.

Przewoźny M. 2022. Catalogue of Palaearctic Hydrophiloidea (Coleoptera). Internet version 2022-01-01.

Przewoźny M., Buczyński P., Mielewczyk S. 2006. Chrząszcze wodne (Coleoptera: Adepaha, Hydrophiloidea, Byrrhoidea) doliny Bugu w województwie lubelskim (południowo-wschodnia Polska). Nowy Pamiętnik Fizjograficzny, Warszawa, 4(1-2): 23-54.

Przewoźny M., Kot H. 2014. Chrząszcze wodne rezerwatu Stawy Siedleckie. [In:] Falkowski M., Nowicka-Falkowska K., Omelaniuk M. (eds.): Bogactwo przyrodnicze rezerwatu Stawy Siedleckie – Monografia przyrodnicza. Siedlce, 77-109 pp.

Przewoźny M., Lubecki K. 2006. Nowe stanowiska rzadziej spotykanych przedstawicieli chrząszczy wodnych z rodziny pływakowatych (Coleoptera: Dytiscidae) w Polsce. Wiadomości Entomologiczne, 25(3): 157-163.

Przewoźny M., Lubecki K. 2012. Nowe stanowiska *Hydrophilus (Hydrophilus) piceus* (Linnaeus, 1758) (Coleoptera: Hydrophilidae) na Nizinie Wielkopolsko-Kujawskiej. Wiadomości Entomologiczne, 31(1): 42-43.

Przewoźny M., Lubecki K., Bidas M. 2010. Wstępne dane o chrząszczach wodnych (Coleoptera aquatica) z podrzędu Adephaga Gór Świętokrzyskich. Wiadomości Entomologiczne, 29(supl.): 141-145.

Radziwon Ł. 2012. Inwentaryzacja entomofauny rezerwatu "Starodrzew Szyndzielski" w Puszczy Knyszyńskiej. Praca Inżynierska. Politechnika Białostocka, Zamiejscowy Wydział Leśny w Hajnówce, Hajnówka, 40 pp. [mscr.]

Rakovič M., Král D., Bezděk A. 2016. Psammodiini. [In:] Löbl I., Löbl D. (eds.): Catalogue of Palaearctic Coleoptera. Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea and Byrrhoidea. Volume 3. Revised and Updated Edition. Brill, Leiden – Boston, 158-165 pp.

Renner K., Messutat J. 2007. Untersuchungen zur Käferfauna der Umgebung von Skwierzyna im westlichen Polen (Wielkopolska). Coleo, 8: 1-27.

Ricci C., Ponti L. 2005. Seasonal food of *Ceratomegilla notata* (Coleoptera: Coccinellidae) in mountain environments of Northern Italian Alps. European Journal of Entomology, 102: 527-530.

Richling A. 2021. Charakterystyka prowincji i podprowincji. [In:] Richling A., Solon A., Macias A., Balon J., Borzyszkowski J., Kistowski M. (eds.): Regionalna geografia fizyczna Polski. Generalna Dyrekcja Ochrony Środowiska, Bogucki Wydawnictwo Naukowe, Poznań, 58-65 pp.

Rizun W.B. 1998. Biegaczowate (Coleoptera, Carabidae) Roztocza. Fragmenta Faunistica, 41: 33-47.

Rosa-Gruszecka A., Gange A.C., Harvey D.J., Jaworski T., Hilszczański J., Plewa R., Konwerski S., Hilszczańska D. 2017. Insect-truffle interactions – potential threats to emerging industries? Fungal Ecology, 25: 59-63.

Rossa R. 2015. Pogrzybnica Mannerheima *Oxyporus mannerheimii* Gyllenhal, 1827. [In:] Makomaska-Juchiewicz M., Bonk M. (eds.): Monitoring gatunków zwierząt. Przewodnik metodyczny. Część IV. Biblioteka Monitoringu Środowiska, Warszawa, 146-161 pp.

Rossa R., Wojas T., Michalcewicz J., Przewozny M., Baraniak E., Brzeski M., Grzegorczyk T. 2018. Nowe dane o występowaniu rzadkich i zagrożonych gatunków chrząszczy (Coleoptera) w Puszczy Niepołomickiej koło Krakowa. Wiadomości Entomologiczne, 37(4): 210-229.

Roubal J. 1910. K faune zhestkokrylykh Litvy. Russkoe Entomologicheskoe Obozrenie, S.-Peterburg, 10: 195-204.

Rozporządzenie Ministra Klimatu i Środowiska z dnia 4 lutego 2021 r. w sprawie specjalnego obszaru ochrony siedlisk Ostoja Knyszyńska (PLH200006). Dz.U.2021.473.

Rozporządzenie Ministra Środowiska z dnia 16 grudnia 2016 r. w sprawie ochrony gatunkowej zwierząt. Dziennik Ustaw, Warszawa, dnia 28 grudnia 2016 r., poz. 2183.

Rücker W.H. 2020. Latridiidae und Merophysiidae der West-Paläarktis. 2. Auflage. Germany, Selbstverlag Wolfgang H. Rücker, Neuwied, 748 pp.

Rücker W.H., Borowiec L. 1991. Nowe i rzadkie dla Polski Lathridiidae (Coleoptera). Wiadomości Entomologiczne, 9(3-4): 67-69.

Ruszkowski J.W. 1933. Wyniki badań nad szkodliwą fauną Polski na podstawie materiałów z lat 1919-1930. Rocznik Ochrony Roślin, Warszawa, 1(1-3): 1-567.

Ruta R. 2001. Nowe stanowiska *Gnorimus variabilis* (Linnaeus, 1758) i *Bruchus brachialis* Fahraeus, 1839 (Coleoptera: Cetoniidae, Bruchidae) w Polsce. Wiadomości Entomologiczne, 20(1-2): 91.

Ruta R. 2006. Chrząszcze (Insecta: Coleoptera) kserotermicznych Wzgórz Byszewickich w Dolinie Noteci. Nowy Pamiętnik Fizjograficzny, 5(1-2): 49-106.

Ruta R. 2009. Chrząszcze (Insecta: Coleoptera) Rynny Jezior Kuźnickich ze szczególnym uwzględnieniem rezerwatu "Kuźnik". [In:] Owsianny P.M. (ed.): Rynna Jezior Kuźnickich i rezerwat przyrody "Kuźnik" – Bioróżnorodność, Funkcjonowanie, Ochrona i Edukacja. Muzeum Stanisława Staszica, Piła, 150-177 pp.

Ruta R. (eds.) 2020. Przyroda Piły – geografia, bioróżnorodność, historia. Klub Przyrodników, Piła-Świebodzin, 511 pp.

Ruta R., Buchholz L., Biwo T., Adamski W. 2021. Występowanie zgniotka cynobrowego *Cucujus cinnaberinus* (Coleoptera: Cucujidae) w zachodniej Polsce: czy historia lasu ma znaczenie? Wiadomości Entomologiczne, 40(2); online 7A: 14-30.

Ruta R., Gawroński R., Jałoszyński P., Miłkowski M. 2010. Contribution to the knowledge of Corylophidae (Coleoptera: Cucujoidea) of Poland. Polskie Pismo Entomologiczne, 79: 223-234.

Ruta R., Gruszka W., Rogala S., Żuk K. 2014. Walory przyrodnicze Borów Kujańskich. Przegląd Przyrodniczy, 25(2): 3-75.

Ruta R., Jałoszyński P., Konwerski S. 2004. Nowe stanowiska gnilików (Coleoptera: Histeridae) w Polsce. Cześć 2. Abraeinae i Saprininae. Wiadomości Entomologiczne, 23(2): 81-88.

Ruta R., Jałoszyński P., Konwerski S., Majewski T., Barłożek T. 2009. Biedronkowate (Coleoptera: Coccinellidae) Polski. Część 1. Nowe dane faunistyczne. Wiadomości Entomologiczne, 28(2): 91-112.

Ruta R., Konwerski S., Królik R., Lasoń A. 2006. Nowe stanowiska skórnikowatych (Coleoptera: Dermestidae) w Polsce. Część 2. Megatominae. Wiadomości Entomologiczne, 25(1): 21-28.

Ruta R., Konwerski S., Miłkowski M., Gawroński R., Komosiński K., Melke A., Marczak D. 2012. Nowe stanowiska Mycetophagidae (Coleoptera: Tenebrionoidea)w Polsce. Wiadomości Entomologiczne, 31(4): 274-287.

Ruta R., Lasoń A., Królik R., Grzywocz J., Komosiński K., Marczak D., Greń C., Konwerski S., Łuszczak M., Miłkowski M., Szafraniec S., Szczepański W., Tatur-Dytkowski J., Wanat M. 2026 (in preparation). New data on the distribution of Monotomidae (Insecta: Coleoptera) in Poland. (…)

Ruta R., Melke A. 2002. Chrząszcze (Insecta: Coleoptera) rezerwatu "Kuźnik" koło Piły. Rocznik Naukowy Polskiego Towarzystwa Ochrony Przyrody "Salamandra", 6: 57-101.

Ruta R., Melke A. 2011. Materiały do znajomości chrząszczy (Insecta: Coleoptera) rezerwatu przyrody "Kuźnik" koło Piły. Wiadomości Entomologiczne, 30(2): 84-98.

Ruta R., Melke A., Plewa R. 2022. Potwierdzenie występowania *Aglenus brunneus* (Gyllenhal, 1813) (Coleoptera, Salpingidae) w Polsce. Wiadomości Entomologiczne, 41(2); online 10A: 30-33.

Ruta R., Miłkowski M., Konwerski S., Królik R., Lasoń A. 2020. Nowe stanowiska Cerylonidae (Coleoptera) w Polsce. Wiadomości Entomologiczne, 39(4); online 20A: 5-17.

Ruta R., Orzechowski R., Aleksandrowicz O., Borowski J., Buchholz L., Komosiński K., Lubecki K., Przewoźny M. 2016. Chrząszcze (Insecta: Coleoptera) Gryżyńskiego Parku Krajobrazowego. Przegląd Przyrodniczy, 29(2): 80-97.

Ruta R., Pacuk B., Jałoszyński P. 2011. Nowe stanowiska rzadko spotykanych Dermestidae (Insecta: Coleoptera) w Polsce. Wiadomości Entomologiczne, 30(1): 47-53.

Rutanen I., Wantorp. H.E., Fägeström Ch. 2010. Two Pollen Beetles, *Meligethes subrugosus* (Gyllenhal, 1808) and *Meligethes substrigosus* Erichson, 1845 in Northern Europe. Entomologisk Tidskrift, 131(3): 177-184.

Rutkiewicz A. 1996. Owady drapieżne i niektóre towarzyszące w chodnikach kambiofagów jodły (*Abies alba* Mill.). [In:] Porównanie potencjału regulacyjnego szkodników jodły w różnych rejonach Polski. Katedra Ochrony Lasu i Ekologii SGGW, Fundacja Rozwój SGGW, Warszawa, 21-47 pp.

Rutkiewicz A., Borowski J., Byk A., Mokrzycki T. 2013. Waloryzacja lasów Leśnego Kompleksu Promocyjnego "Lasy Spalsko-Rogowskie" na podstawie zgrupowań chrząszczy saproksylicznych powierzchni pni drzew. Studia i Materiały Centrum Edukacji Przyrodniczo-Leśnej, R. 15, 35(2): 129-159.

Růžička J. 2015. Silphidae Latreille, 1806. [In:] Löbl I., Löbl D. (eds.): Catalogue of Palaearctic Coleoptera. Vol. 2/1. Hydrophiloidea – Staphylinoidea. Revised and updated edition. Vol. 1. Brill, Leiden – Boston, 291-304 pp.

Saalas U. 1917. Die Fichtenkäfer Finnlands. I. Annales Academiae Scientiarum Fennicae, Ser. A, 8: 20 + 547 pp.

Salmonowicz M. 2001. Nowe gatunki chrząszczy kusakowatych (Coleoptera, Staphylinidae) dla Pojezierza Mazurskiego. Drugie Sympozjum Staphylinidae, Poznań – Jeziory 1, 24-26 pp.

Sama G. 2002. Atlas of the Cerambycidae of Europe and the Mediterranean Area. Volume 1: Northern, Western, Central and Eastern Europe, British Isels and Continental Europe from France (excl. Corsica) to Scandinavia and Urals. Nakladatelstvi Kabourek, Zlin, 173 pp + 36 plates.

Savoiskaya G.I. 1983. Kokcinellidy. Izdatelstvo Nauka Kazakhskoi SSR, Alma-Ata, 246 pp.

Schaeflein H. 1979. Beitrag zur Dytiscidenfauna Mitteleuropas (Col.), nebst einigen ökologischen Miszellen. Stuttgarter Beiträge zur Naturkunde, A, 325: 1-20.

Scholz R. 1934. *Hydroporus brevis* R.F. Sahlb. Entomologische Blätter, Krefeld, 30: 220-221.

Schwerk A. 2023. Analiza wyników odłowów chrząszczy biegaczowatych. [In:] Matuszkiewicz J.M., Tabor J. (eds.): Inwentaryzacja wybranych elementów przyrodniczych i kulturowych Puszczy Białowieskiej. Instytut Badawczy Leśnictwa, Sękocin Stary, 665-712 pp.

Sienkiewicz P. 1999. Biegaczowate (Coleoptera: Carabidae) odłowione w pułapki świetlne na terenie Sobiborskiego Parku Krajobrazowego i w okolicy (wschodnia Polska). Wiadomości Entomologiczne, 18(3): 187-188.

Sienkiewicz P. 2012. Zagłębek bruzdkowany *Rhysodes sulcatus* (Fabricius, 1787). [In:] Makomaska-Juchiewicz M., Baran P. (eds.): Monitoring gatunków zwierząt. Przewodnik metodyczny. Część II. GIOŚ, Warszawa, 400-418 pp.

Sienkiewicz P., Konwerski S. 2004. Znaczenie rezerwatu "Krajkowo" koło Poznania dla ochrony chrząszczy (Coleoptera) środowisk dolin rzecznych. Wiadomości Entomologiczne, 23(Supl. 2): 189-191.

Sienkiewicz P., Konwerski S., Przewoźny M. 2009. Nowe dane o występowaniu chrząszczy (Coleoptera) z wybranych rodzin na terenie Rogalińskiego Parku Krajobrazowego. Część I. Biegaczowate (Carabidae). Wiadomości Entomologiczne, 28(4): 219-230.

Sierpiński Z. 1969. Zasiedlenie gleb leśnych Polski przez pędraki niektórych gatunków chrząszczy należących do podrodziny chrabąszczowatych (Melolonthinae). Prace Instytutu Badawczego Leśnictwa, 366: 3-107.

Sikora K., Jaworski T., Plewa R., Sondej I., Sućko K., Szyp-Borowska I., Tereba A., Borowski K., Smyklińska D. 2018. Inwentaryzacja wybranych gatunków saproksylicznych w lasach za pomocą technik molekularnych – nowe możliwości oceny różnorodności biologicznej i stanu siedlisk leśnych. Zakład Ochrony Lasu, Instytut Badawczy Leśnictwa, Sękocin Stary, 59 pp. [mscr.]

Sikora K., Jaworski T., Plewa R., Sućko K. 2021. Inwentaryzacja wybranych gatunków saproksylicznych w lasach za pomocą technik molekularnych – wdrożenie do praktyki leśnej. Zakład Ochrony Lasu, Instytut Badawczy Leśnictwa, Sękocin Stary, 41 pp. [mscr.]

Sikora K., Zając K., Bieniek A., Jaworski T., Kadej M., Plewa R., Gutowski J.M., Ruta R., Smolis A., Eckelt A., Bonacci T., Brandmayr P., Čížek L., Davenis S.A., Fuchs L., Heibl C., Horák J., Kapla A., Kulijer D., Olbrycht T., Merkl O., Miłkowski M., Müller J., Noordijk J., Saluk S., Thomaes A., Vrezec A., Kajtoch Ł. 2023. Phylogeography and distribution modelling reveal the history and future of a saproxylic beetle of European conservation concern. Journal of Biogeography, 50(7): 1299-1314. DOI: https://doi.org/10.1111/jbi.14626

Skłodowski J. 2011. Zagrożenia mezofauny powodowane turystycznym zaśmiecaniem lasów. Sylwan, 155(4): 261-268.

Skłodowski J. 2017. Manual soil preparation and piles of branches can support ground beetles (Coleoptera, Carabidae) better than four different mechanical soil treatments in a clear-cut area of a closed-canopy pine forest in northern Poland. Scandinavian Journal of Forest Research, 32(2): 123-133.

Skrzypczyńska M., Gołąb J., Kosman W. 1991. Owady zasiedlające szyszki jodły pospolitej (*Abies alba* Mill.) na wybranych stanowiskach Beskidu Sądeckiego. Zeszyty Naukowe Akademii Rolniczej im. H. Kołłątaja w Krakowie, Nr 254, Leśnictwo, 20: 459-485.

Słabikowski A. 2006. Dane o występowaniu przedstawicieli Staphylinidae (Coleoptera) na Wyżynie Krakowsko-Wieluńskiej. Biuletyn Częstochowskiego Koła Entomologicznego, 4: 3-7.

Sławska M., Smoleński M. 2003. Skoczogonki (Collembola) i kusakowate (Staphylinidae) torfowisk wysokich. Wydawnictwo SGGW, Warszawa, 93 pp.

Smetana A. 2007. Family Sphindidae. [In:] Löbl I, Smetana A. (eds.): Catalogue of Palaearctic Coleoptera, Vol. 4, Elateroidea, Derodontoidea, Bostrichoidea, Lymexyloidea, Cleroidea, Cucujoidea. Apollo Books, Stenstrup, Denmark, 455 pp.

Smoleński M. 2002. Kusakowate (Coleoptera: Staphylinidae) występujące w żerowiskach kambio- i ksylofagów sosny, świerka i jodły. Wiadomości Entomologiczne, 20(3-4): 115-129.

Smoleński M. 2006. Zooindication-based monitoring of anthropogenic transformations in the Białowieża Primeval Forest. Rove beetles (Staphylinidae). [In:] Szujecki A. (ed.): Zooindication-based monitoring of anthropogenic transformations in the Białowieża Primeval Forest. Warszawa Agricultural University Press, Warszawa, 171-236 pp.

Smoleński M., Szujecki A. 2001. Waloryzacja lasów Puszczy Białowieskiej na podstawie struktury zgrupowań Staphylinidae (Coleoptera). [In:] Szujecki A. (ed.): Próba szacunkowej waloryzacji lasów Puszczy Białowieskiej metodą zooindykacyjną. Wydawnictwo SGGW, Warszawa, 105-176 pp.

Smolis A., Zając K., Świątoniowska K., Kadej M., Kania J., Malkiewicz A., Regner J., Skiba A., Wasylków E., Rumińska A. 2023. Nowe dane o rozsiedleniu interesujących gatunków kózkowatych (Insecta: Coleoptera: Cerambycidae) w Polsce południowo-zachodniej. Przyroda Sudetów, 25: 123-144.

Smreczyński S. jr. 1950. Uwagi o ryjkowcach (Curculionidae, Coleopt.) Polski i krain sąsiednich. Polskie Pismo Entomologiczne, 19(3-4): 149-173.

Sokołowski A.W. 1995. Flora roślin naczyniowych Puszczy Knyszyńskiej. [In:] Czerwiński A. (ed.): Puszcza Knyszyńska, Supraśl, 99-153 pp.

Sokołowski A.W. 2006. Przyroda województwa podlaskiego i jej ochrona. Łomżyńskie Towarzystwa Naukowe im. Wagów, Łomża, 336 pp.

Solon J., Borzyszkowski J., Bidłasik M., Richling A., Badora K., Balon J., Brzezińska-Wójcik T., Chabudziński Ł., Dobrowolski R., Grzegorczyk I., Jodłowski M., Kistowski M., Kot R., Krąż P., Lechnio J., Macias A., Majchrowska A., Malinowska E., Migoń P., Myga-Piątek U., Nita J., Papińska E., Rodzik J., Strzyż M., Terpiłowski S., Ziaja W. 2018. Physico-geographical mesoregions of Poland: Verification and adjustment of boundaries on the basis of contemporary spatial data. Geographia Polonica, 91(2): 143-170.

Speight M.C.D. 1989. Saproxylic invertebrates and their conservation. Nature and Environment Ser. Strasbourg, 42: 1-82.

Spitzenberg D., Sondermann W., Hendrich L., Hess M., Heckes U. 2016. Rote Liste und Gesamtartenliste der wasserbewohnenden Käfer (Coleoptera aquatica) Deutschlands. [In:] Gruttke H., Binot-Hafke M., Balzer S., Becker N., Haupt H., Hofbauer N., Ludwig G., Matzke-Hajek G., Ries M. (eds.): Rote Liste gefährdeter Tiere, Pflanzen und Pilze Deutschlands, Band 4: Wirbellose Tiere (Teil 2). Münster (Landwirtschaftsverlag). Naturschutz und Biologische Vielfalt, 70(4): 207-246.

Sprick P., Floren A. 2007. Canopy leaf beetles and weevils in the Białowieża and Borecka Forests in Poland (Col., Chrysomeloidea, Curculionoidea). Polish Journal of Entomology, 76: 75-100.

Spungis V. 2010. *Cucujus haematodes* – a new species in the fauna of Latvia. Latvijas Entomologs, 49: 35-36.

Stachowiak M. 1998. Wstępna inwentaryzacja chrząszczy Parku Narodowego Bory Tucholskie. [In:] Banaszak J., Tobolski K. (eds.): Park Narodowy Bory Tucholskie. Stan poznania przyrody na tle kompleksu leśnego Bory Tucholskie. Wyższa Szkoła Pedagogiczna w Bydgoszczy, Bydgoszcz, 371-438 pp.

Stachowiak M., Wilcz M. 2001. Biegaczowate (Coleoptera, Carabidae) rezerwatu "Cisy Staropolskie im. Leona Wyczółkowskiego" w Wierzchlesie. [In:] Badania przyrodnicze wybranych typów środowisk wschodniej części Borów Tucholskich". Wyd. FIL, Bydgoszcz, 36-49 pp.

Stachowiak P. 1993. Materiały do poznania rozmieszczenia i znaczenia ryjkowców z rodzaju *Sitona* Germar (Coleoptera, Curculionidae) w Polsce. Polskie Pismo Entomologiczne, 62(1): 25-34.

Stachowiak P. 1999. Obserwacje nad występowaniem w Polsce ryjkowców z rodzaju *Lixus* Fabricius, 1801 (Coleoptera: Curculionidae). Wiadomości Entomologiczne, 1998, 17(3-4): 183-187.

Stachowiak P. 2001. Nowe stanowiska Rhinomaceridae (=Nemonychidae) (Coleoptera) w Polsce. Wiadomości Entomologiczne, 2000, 19(3-4): 190.

Staniec B. 1991. Rzadkie Staphylinidae (Coleoptera) ze wschodniej Polski. Wiadomości Entomologiczne, 10(4): 207-213.

Staniec B. 1992. Steninae (Coleoptera, Staphylinidae) projektowanego Nadwieprzańskiego Parku Krajobrazowego (woj. lubelskie). Annales Universitatis Mariae Curie-Skłodowska, Sectio C, Biologia, 44: 97-110.

Staniec B. 2000. *Carpelimus heidenreichi* Benick, 1934 i *C. similis* (Smetana, 1967) chrząszcze nowe dla fauny Polski oraz występowanie innych gatunków z rodzaju *Carpelimus* Samouelle, 1819 (Coleoptera: Staphylinidae) w środkowo-wschodniej części kraju. Wiadomości Entomologiczne, 19(2): 79-84.

Staniec B. 2003. Nowe stanowiska Pselaphinae (Coleoptera: Staphylinidae) we wschodniej Polsce. Wiadomości Entomologiczne, 21(4): 243-244.

Stankiewicz M. 2013. Występowanie zespołu owadów w drzewostanach świerkowych uszkodzonych przez wiatr na terenie Nadleśnictwa Krynki. Praca magisterska. Wydział Leśny, Szkoła Główa Gospodarstwa Wiejskiego w Warszawie, 58 pp. [mscr.]

Staręga W. 1974. Materiały do znajomości rozmieszczenia pająków (Aranei) w Polsce. Fragmenta Faunistica, 19: 395-420.

Staręga W. 1978. Materiały do znajomości rozmieszczenia pająków (Aranei) w Polsce, III-VII. Fragmenta Faunistica, 23: 259-302.

Staręga W. 1984. Materiały do znajomości rozmieszczenia pająków (Aranei) w Polsce, VIII-IX. Fragmenta Faunistica, 28: 79-136.

Staręga W. 2003. Pająki (Araneae) Puszczy Knyszyńskiej. Nowy Pamiętnik Fizjograficzny, Warszawa, 1: 95-206.

Starzyk J.R. 1971. Sichrawa górska – *Gaurotes virginea* (L.) (Coleoptera, Cerambycidae) wtórny szkodnik świerka pospolitego. Część 1. Morfologia, biologia i ekologia. Acta Agraria et Silvestria, Series Silvestris, 1970, 10(1): 39-96.

Starzyk J.R. 1988. Badania nad bionomią i znaczeniem gospodarczym rzemlika plamistego, *Saperda scalaris* (L.) (Col., Cerambycidae) w Puszczy Niepołomickiej koło Krakowa. Polskie Pismo Entomologiczne, 58: 465-487.

Starzyk J.R. 1999. Rola kózkowatych (Coleoptera: Cerambycidae) w ekosystemach leśnych oraz ich znaczenie gospodarcze. Sylwan, 143(11): 5-21.

Starzyk J.R., Brawer M., Dajek S. 1991. Kózkowate (Coleoptera, Cerambycidae) Gorczańskiego Parku Narodowego. Parki Narodowe i Rezerwaty Przyrody, 10(1-2): 61-78.

Starzyk J.R., Hilszczański J. 1997. Bionomics, ecology, and economic importance of *Monochamus sutor* (L.) (Coleoptera, Cerambycidae) in mountain stands of *Picea abies* (L.) Karst. Scientific Papers of the Agricultural University of Cracow, Forestry, 26: 121-145.

Starzyk J.R., Partyka M. 1993. Study on the morphology, biology and distribution of *Obrium cantharinum* (L.) (Col., Cerambycidae). Journal of Applied Entomology, 116: 333-334.

Stebnicka Z. 1972. Coccinellidae (Coleoptera) okolic Krakowa. Acta Zoologica Cracoviensia, 17(1): 1-36.

Stebnicka Z. 1976. Żukowate – Scarabaeidae. Grupa podrodzin: Scarabaeidae laparosticti. Klucze do oznaczania owadów Polski, cz. XIX, z. 28a, PWN, Warszawa, 139 pp.

Stokland J.N., Siitonen J., Jonsson B.G. 2012. Biodiversity in Dead Wood, Cambridge University Press, Cambridge, 509 pp.

Stüben P.E., Müller G., Müller U., Krátký J., Bayer Ch., Sprick P., Behne L. 2014. Digital-Weevil-Determination for Curculionoidea of the West Palaearctic: Transalpina: Ceutorhynchinae (3. part). (Ceutorhynchini: *Datonychus*, *Ethelcus*, *Glocianus*, *Hadroplontus*, *Microplontus*, *Mogulones*, *Mogulonoides*, *Neoglocianus*, *Oprohinus*, *Parethelcus*, *Prisistus*, *Ranunculiphilus*) – SNUDEBILLER: Studies on taxonomy, biology and ecology of Curculionoidea 15, 1-25 pp.

Sukovata L., Kolk A., Jaworski T., Plewa R., Tomalak M., Filipiak A., Janiszewski W., Kurkowska T., Smyklińska D. 2012. Sprawozdanie końcowe z tematu pt. Żerdzianki występujące w drzewostanach sosnowych jako potencjalne wektory węgorka sosnowca *Bursaphelenchus xylophilus* (Steiner et Buhrer) Nickle oraz opracowanie metod ograniczania ich populacji w przypadku wystąpienia nicienia na terenie Polski. Instytut Badawczy Leśnictwa, Sękocin Stary, 127 pp. [mscr.]

Syrett P., Smith L., Bourner T., Fowler S., Wilcox A. 2000. A European pest to control a New Zealand weed: Investigating the safety of heather beetle, *Lochmaea suturalis* (Coleoptera: Chrysomelidae) for biological control of heather, *Calluna vulgaris*. Bulletin of Entomological Research, 90(2): 169-178.

Szafraniec S. 1998. Nowe dla Babiej Góry gatunki chrząszczy (Coleoptera). II. Wiadomości Entomologiczne, 16(3-4): 135-141.

Szafraniec S. 2015. Materiały do poznania chrząszczy saproksylicznych Gorczańskiego Parku Narodowego. Ochrona Beskidów Zachodnich, 6: 58-69.

Szafraniec S. 2020. Możliwości wykorzystania chrząszczy kózkowatych (Coleoptera, Cerambycidae) w zajęciach edukacyjnych Babiogórskiego Parku Narodowego – waloryzacja gatunków. Wydawnictwo Stowarzyszenie Gmin Babiogórskich, Babiogórski Park Narodowy. Rocznik Babiogórski, 21: 127-138.

Szafraniec S., Chachuła P., Melke A., Ruta R., Szołtys H. 2019. New findings of rare and interesting beetles (Coleoptera) in the Babia Góra National Park. Wiadomości Entomologiczne, 38(4): 212-231.

Szafraniec S., Kubisz D., Melke A. 2021. Przegląd chrząszczy (Coleoptera) masywu Babiej Góry, pp. 163-212. [In:] Celary W., Wołoszyn B.W. (eds.): Fauna masywu Babiej Góry. Bezkręgowce. Babiogórski Park Narodowy & Instytut Systematyki i Ewolucji Zwierząt, Maków Pohalański – Zawoja – Kraków, 416 pp.

Szafraniec S., Łuszczak M., Michalcewicz J., Trzeciak A., Bosak A. 2021. Materiały do poznania rozmieszczenia kózkowatych (Coleoptera: Cerambycidae) Beskidu Zachodniego – gatunki nowe i rzadkie. Wiadomości Entomologiczne, 40(2); online 6A: 11-13.

Szawaryn K. 2020. On the occurrence of *Isomira thoracica* (Fabricius, 1792) in Poland. Wiadomości Entomologiczne, 39(3); online 16A: 31-33.

Szawaryn K., Ceryngier P., Romanowski J. 2018. New data on the distribution of ladybird beetles (Coleoptera: Coccinellidae) in the eastern part of the Baltic Coast region in Poland. Fragmenta Faunistica, 61(1): 39-53.

Szawaryn K., Marczak D., Kwiatkowski A., Lasoń A, Baranowski A., Mroczyński R. 2021. Nowe dane o rozmieszczeniu chrząszczy z nadrodziny Scirtoidea (Coleoptera) w północnej i wschodniej Polsce. Wiadomości Entomologiczne, 40(1): online 1A: 1-7.

Szczepański W., Szczepański W.T. 2019. Nowe stanowiska wybranych gatunków z rodziny kózkowatych (Coleoptera: Cerambycidae) w Polsce południowo-zachodniej. Acta Entomologica Silesiana, 27(online 012): 1-11.

Szczepański W.T., Herczek A. 2019. Kózkowate (Coleoptera: Cerambycidae) wybranych obszarów Nature 2000 w dolinie górnej Odry. Monographs of the Upper Silesian Museum, 11: 1-194.

Szczepański W.T., Taszakowski A., Karpiński L. 2015a. Nowe stanowiska *Cassida panzeri* Weise, 1907 (Coleoptera: Chrysomelidae) w południowej Polsce. Acta Entomologica Silesiana, 23(online 023): 1.

Szczepański W.T., Taszakowski A., Karpiński L., Kubusiak A. 2015b. New data on the distribution of ladybird beetles (Coleoptera: Coccinellidae) of the Eastern Beskid Mts. Nature Journal, 48: 24-33.

Szestowicka B. 2014. Inwentaryzacja wybranych rodzin chrząszczy (Coleoptera) w Leśnictwie Dąbrowa (Nadleśnictwo Czarna Białostocka). Praca Dyplomowa Inżynierska. Politechnika Białostocka, Zamiejscowy Wydział Leśny w Hajnówce, Hajnówka, 65 pp. [mscr.]

Szestowicka B. 2015. Chrząszcze saproksyliczne Obrębu Kumiałka w Nadleśnictwie Czarna Białostocka. Praca magisterska. Wydział Leśny, Szkoła Główa Gospodarstwa Wiejskiego w Warszawie, 43 pp. [mscr.]

Szołtys H., Grzywocz J. 2014. Materiały do poznania entomofauny Polski – Coleoptera. Acta Entomologica Silesiana, 22(online 009): 1-18.

Szujecki A. 1963. Materiały do poznania Staphylinidae (Coleoptera) Polski. II. Fragmenta Faunistica, 11: 31-39.

Szujecki A. 1995. Zgrupowania kusakowatych (Col., Staphylinidae *s. l.*) borów sosnowych świeżych i ich antropogeniczne przeobrażenia. [In:] Szujecki A. (ed.): Antropogeniczne przeobrażenia epigeicznej i glebowej entomofauny borów sosnowych. Fundacja "Rozwój SGGW", Warszawa, 175-249 pp.

Szujecki A. 1996. Kusakowate (Coleoptera, Staphylinidae) Bieszczadów. Fundacja Rozwój SGGW, Warszawa, 224 pp.

Szwałko P. 1995. Chrząszcze żukowate (Coleoptera: Scarabaeoidea) Puszczy Białowieskiej w aspekcie dotychczasowych badań monitoringowych na terenie północno-wschodniej Polski. Prace Instytutu Badawczego Leśnictwa – Seria A, 794: 108-128.

Szyszko J. 1983. State of Carabidae (Coleoptera) fauna in fresh pine forest and tentative valorisation of this environment. Warszaw Agricultutal University Press, Warszawa. 80 pp.

Ścibior R. 2003. Biodiversity of chrysomelisd beetles (Coleoptera, Chrysomelidae) of wet biotopes of the "Lasy Janowskie" Landscape Park. Acta Agrophysica, 1(3): 575-584.

Ścibior R. 2010. Stonkowate (Coleoptera: Chrysomelidae) nowe dla Podlasia. Część II. Wiadomości Entomologiczne, 29(3): 181-192.

Ścibior R., Pietrykowska-Tudruj E. 2008. Interesujące i rzadkie gatunki stonkowatych (Coleoptera: Chrysomelidae) odłowione w Poleskim Parku Narodowym i jego otulinie. Wiadomości Entomologiczne, 27(2): 117-118.

Ścibior R., Pietrykowska-Tudruj E. 2010. Stonkowate (Coleoptera: Chrysomelidae) nowe dla Podlasia. Część I. Wiadomości Entomologiczne, 29(2): 87-106.

Ścibior R., Stryjecki R., Pawlęga K. 2014. Ecological structure of leaf-beetle assemblages (Coleoptera, Chrysomelidae) of the Bug valley plant communities in the Włodawa – Kodeń section. Teka Komisji Ochrony i Kształtowania Środowiska Przyrodniczego. Oddział PAN w Lublinie, 11: 211-228.

Ślipiński A. 2007. Family Bothrideridae Erichson, 1845. [In:] Löbl I., Smetana A. (eds.): Catalogue of the Palaearctic Coleoptera, Vol. 4. Apollo Books, Stenstrup, 548-552 pp.

Ślipiński S.A., Leschen R.A.B., Lawrence J.F. 2011. Order Coleoptera Linnaeus, 1758. [In:] Zhang Z.-Q. (ed.): Animal biodiversity: An outline of higher-level classification and survey of taxonomic richness. Zootaxa, 203-208.

Średziński P. 2022. Puszcza Knyszyńska. Opowieści o lesunach, zwierzętach i królewskim lesie, a także o tajemnicach w głębi lasu skrywanych. Wydawnictwo Paśny Buriat, Kielce, 346 pp.

Tamutis V., Alekseev V. 2020. A survey of Lepturinae Latreille, 1802 (Coleoptera: Cerambycidae) of the south-eastern Baltic region (Lithuania and the Kaliningrad Region). Biologija, 66(4): 169-235.

Tamutis V., Tamutë B., Ferenca R. 2011. A catalogue of Lithuanian beetles (Insecta, Coleoptera). ZooKeys, 121: 1-494.

Tarwacki G. 2011. Charakterystyka zgrupowań biegaczowatych w drzewostanach sosnowych założonych na gruntach porolnych i podatnych na hubę korzeni. [In:] Sierota Z. (ed.): Zmiany w środowisku drzewostanów sosnowych na gruntach porolnych w warunkach przebudowy częściowej oraz obecności grzyba *Phlebiopsis gigantea*. Prace Instytutu Badawczego Leśnictwa, Rozprawy i Monografie, 17: 185-207.

Tarwacki G., Plewa R. 2010. Nowe stanowisko *Odonteus armiger* (Scopoli, 1772) (Coleoptera: Scarabaeidae) w północno-wschodniej Polsce. Wiadomości Entomologiczne, 29(1): 60-61.

Tatur-Dytkowski J. 2017. *Nemozoma caucasicum* Ménétriés, 1832 (Coleoptera: Trogossitidae) w Warszawie oraz uwagi o jego biologii. Wiadomości Entomologiczne, 36(4): 244-245.

Tatur-Dytkowski J., Borowski J., Gutowski J.M., Hołowiński M., Kruszelnicki L., Miłkowski M., Olbrycht T. 2017. Nowe dane o rozsiedleniu *Leioderes kollari* Redtenbacher, 1849 (Coleoptera: Cerambycidae) w Polsce oraz uwagi o biologii gatunku. Wiadomości Entomologiczne, 36(3): 153-161.

Tatur-Dytkowski J., Górski P., Stępień S. 2020. Nowe dane o interesujących kózkowatych Warszawy (Coleoptera: Cerambycidae). Wiadomości Entomologiczne, 39(1): online 3A: 11-16.

Tenenbaum S. 1913. Chrząszcze (Coleoptera) zebrane w Ordynacyi Zamojskiej w gub. Lubelskiej. Pamiętnik Fizjograficzny, 21: 1-72.

Tenenbaum S. 1918. Dodatek do spisu chrząszczy z Ordynacyi Zamojskiej. Pamiętnik Fizyjograficzny, 25: 1-35.

Terlecki K. 2012**.** Inwentaryzacja entomofauny rezerwatu ”Krzemianka” w Puszczy Knyszyńskiej. Praca Dyplomowa Inżynierska. Politechnika Białostocka, Zamiejscowy Wydział Leśny w Hajnówce, Hajnówka, 35 pp. [mscr.]

Thomaes A., Crévecoeur L., Daka G., De Block M., Fievet V., Heyndrickx R., Kariuki K., Lammerant R., Marchand S., Scheers K., Smeekens V., Van De Kerckhove P. 2020. *Cucujus cinnaberinus* (Cucujidae) is rapidly colonising Northern Belgium. Bulletin de la Société royale belge d'Entomologie, 156: 162-172.

Toledo M.E., Carlin A. 2019. Primo ritrovamento in Italia di *Ilybius wasastjernae* (Sahlberg, 1824) (Insecta: Coleoptera: Dytiscidae: Agabinae). Gredleriana, 19: 201-207.

Tomaszewska W.K. 2007. Endomychidae – remaining subfamilies. [In:] Löbl I., Smetana A. (eds.): Catalogue of Palaearctic Coleoptera. Elateroidea, Derodontoidea, Bostrichoidea, Lymexyloidea, Cleroidea, Cucujoidea. Volume 4. Apollo Books, Stenstrup, 559-568 pp.

Tończyk G., Gusta D. 2016. Chrząszcze wodne (Coleoptera aquatica). [In:] Krzyściak-Kosińska R., Wilk-Woźniak E. (eds.): Ekosystemy wodne Białowieskiego Parku Narodowego. Białowieski Park Narodowy, Wydawnictwo Dragon Sp. z o.o., 154-159 pp.

Tończyk G., Jaskuła R., Kalisiak J., Szymański J., Pabis K., Chmara R. 2004. Wybrane grupy owadów Zaborskiego Parku Krajobrazowego. Wstępne wyniki obozu entomologicznego ”Jarcewo 2003”. [In:] Buczyński P., Serafin E., Ptaszyńska A. (eds.): Badania ważek, chrząszczy i chruścików na obszarach chronionych. II Krajowe Sympozjum Odonatologiczne, XXIX Sympozjum Sekcji Koleopterologicznej PTE, III Seminarium Trichopterologiczne. Urszulin, 21-23.05.2004. Streszczenia referatów, komunikatów i posterów. Olsztyn, 37-38 pp.

Twardowska K., Ciepielewska D. 2011. Biedronkowate (Col., Coccinellidae) terenów zielonych Olsztyna. Zeszyty Problemowe Postępów Nauk Rolniczych, 562: 251-260.

Twardy D. 2018. Nowe stwierdzenie *Glischrochilus* (*Librodor*) *grandis* (Tournier, 1872) (Coleoptera: Nitidulidae: Cryptarchinae) w Polsce. Wiadomości Entomologiczne, 37(2): 122-123.

Tykarski P. 2006. Beetles associated with scolytids (Coleoptera, Scolytidae) and the elevational gradient: Diversity and dynamics of the community in the Tatra National Park, Poland. Forest Ecology and Management, 225: 146-159.

Van Meer C. 1998. *Aulonothroscus laticollis* (Rybinski) (Coleoptera, Throscidae), une espece nouvelle pour l'Europe Occidentale. Bulletin de la Société linnéenne de Bordeaux, 26(4): 181-183.

Vít S. 2006. Eucinetidae. [In:] Löbl I., Smetana A. (eds.): Catalogue of Palaearctic Coleoptera, Vol. 3. Stenstrup: Apollo Books, 690 pp.

Vrezec A., Ambrožič Š., Kobler A., Kapla A., de Groot M. 2017. *Cucujus cinnaberinus* (Scopoli, 1763) at its terra typica in Slovenia: historical overview, distribution patterns and habitat selection. Nature Conservation, 19: 191-217.

Walesiak M., Komosiński K., Feldmann B., Thorn S. 2021. *Atheta (Dimetrota) knabli* G. Benick, 1938 (Coleoptera: Staphylinidae) – a new species for the Polish fauna. Fragmenta Faunistica, 64(2): 133-137.

Wanat M. 1991. Uwagi o występowaniu kilku gatunków grzybinków (Coleoptera, Leiodidae, Agathidiini) w Polsce. Przegląd Zoologiczny, 34: 121-123.

Wanat M. 1994. Ryjkowce (Coleoptera: Curculionoidea: Anthribidae, Rhinomaceridae, Rhynchitidae, Attelabidae, Apionidae, Curculionidae) Puszczy Białowieskiej. Polskie Pismo Entomologiczne, 63: 37-112.

Wanat M. 2000. *Rhinoncus smreczynskii* Wagner, 1937 (Coleoptera, Curculionidae, Ceutorhynchinae) – species status revised. Entomologische Blätter, 96: 41-45.

Wanat M. 2003. Uzupełnienia i poprawki do wykazu ryjkowców (Coleoptera: Curculionoidea) Puszczy Białowieskiej. Parki Narodowe i Rezerwaty Przyrody, 22(2): 267-278.

Wanat M. 2005. Ryjkowce (Coleoptera: Curculionoidea bez Scolytinae) Biebrzańskiego Parku Narodowego i jego otuliny. [In:] Dyrcz A., Werpachowski C. (eds.): Przyroda Biebrzańskiego Parku Narodowego. Osowiec Twierdza, 301-324 pp.

Wanat M. 2009. Nowe dane o rozmieszczeniu kilkunastu rzadkich gatunków ryjkowców (Coleoptera: Curculionoidea) w Polsce. Wiadomości Entomologiczne, 28(2): 132-134.

Wanat M. 2023. Mapa Bioróżnorodności [online] 2023. Krajowa Sieć Informacji o Bioróżnorodności. https://baza.biomap.pl (access: 23.05.2023)

Wanat M., Gutowski J.M., Jałoszyński P., Krátký J., Mazur M.A., Szypuła J., Trnka F. 2023. Nowe gatunki ryjkowców (Coleoptera: Curculionoidea) w Kotlinie Biebrzańskiej. Wiadomości Entomologiczne, 42(online8A): 58-64.

Wanat M., Jałoszyński P., Miłkowski M., Ruta R., Sawoniewicz J. 2011. Nowe dane o występowaniu kobielatkowatych (Coleoptera: Anthribidae) w Polsce. Wiadomości Entomologiczne, 30(2): 69-83.

Wanat M., Mokrzycki T. 2018. The checklist of the weevils (Coleoptera: Curculionoidea) of Poland revisited. Annales Zoologici, 68(1): 1-48.

Wanat M., Szypuła J., Stańska M., Hajdamowicz I. 2022. Nowe dane o rozmieszczeniu rzadkich gatunków ryjkowców (Coleoptera: Curculionoidea) w Polsce. Wiadomości Entomologiczne, 41(1): online 2A: 11-20.

Wanat M., Ulanowski K. 2023. Nowe stanowisko *Aspidapion validum* (Germar, 1817) (Coleoptera: Brentidae) w północno-wschodniej Polsce. Acta Entomologica Silesiana, 31(online 010): 1-2.

Warchałowski A. 1991. Chrysomelidae, Stonkowate (Insecta: Coleoptera), Część II (podrodziny: Clythrinae i Cryptocephalinae). Fauna Polski, 13: 1-347.

Wawak Z. 1971. Obserwacje nad występowaniem rzadziej spotykanych owadów uszkadzających igły sosny pospolitej (*Pinus silvestris* L.). Zeszyty Naukowe SGGW, Leśnictwo, Warszawa, 16: 155-161.

Wełnicki M. 2001. Nowe stanowiska rzadkich gatunków Cerambycidae i Buprestidae (Coleoptera) w Polsce. Wiadomości Entomologiczne, 2000, 19(3-4): 193-194.

Węgrzynowicz P. 1999. A revision of the genus *Colydium* Fabricius, 1792 (Coleoptera: Zopheridae: Colydiinae). Annales Zoologici, 493(3): 265-328.

Węgrzynowicz P., Byk A. 2014. *Tritoma subbasalis* (Reitter) (Coleoptera: Erotylidae) in Poland. The Coleopterists Bulletin, 68(3): 619-623.

Wiezik M., Kunca V., Wieziková A. 2015. Mass occurrence of relict beetle species *Endecatomus reticulatus* (Herbst, 1973) and *Leiestes seminiger* (Gyllenhall, 1808) associated with rare saproxylic fungi. Matthias Belivs University Proceedings (Faculty of Natural Sciences UMB), 5(Suppl. 2): 83-91.

Wikipedia 2023a. Rezerwat przyrody Jezioro Wiejki. https://pl.wikipedia.org/wiki/Rezerwat_przyrody_Jezioro_Wiejki (access: 2.05.2023)

Wikipedia 2023b. Rezerwat przyrody Rabinówka. https://pl.wikipedia.org/wiki/Rezerwat_przyrody_Rabinówka (access: 2.05.2023)

Wiliński M. 1959. Rejestracja chorób i szkodników roślin uprawnych w Polsce w 1958 roku. Część II. Biuletyn Kwarantanny i Ochrony Roślin, Warszawa, 3(3/4): 67-125.

Wiśniowski B., Baran J. 2016. *Acmaeops septentrionis* (Thomson, 1866) i *Drypta dentata* (Rossi, 1790) – dwa gatunki chrząszczy (Coleoptera) nowe dla fauny Ojcowskiego Parku Narodowego. Prądnik. Prace i Materiały Muzeum im. prof. Władysława Szafera, 26: 35-40.

Wojas T. 1992. Nowe stanowiska kilku rzadkich gatunków biegaczowatych (Coleoptera, Carabidae) w Polsce. Wiadomości Entomologiczne, 11(3): 142-147.

Wojas T. 1995. Nowe stanowiska biegaczowatych (Coleoptera, Carabidae) w Polsce. Wiadomości Entomologiczne, 14(2): 95-99.

Wojas T. 2017. Nowe stanowiska rzadkich gatunków biedronek (Coleoptera: Coccinellidae) w Polsce. Wiadomości Entomologiczne, 36(3): 179-181.

Wojdyna L. 1981. Występowanie owadów szkodliwych na użytkach rolnych w pobliżu Puszczy Białowieskiej i Knyszyńskiej. [In:] Entomologia a gospodarka narodowa. Państwowe Wydawnictwo naukowe, Warszawa – Wrocław, 167-170 pp.

Wood S.L., Bright D.E. 1992. A Catalog of Scolytidae and Platypodidae (Coleoptera), Part 2: Taxonomic Index A. Great Basin Naturalist Memoirs, 13: 833 pp.

Yu G. 2001. The coccinellids (Coleoptera) predacious on adelgids, with notes on the biocontrol of the hemlock woolly adelgid (Homoptera: Adelgidae). Special Publication of the Japan Coleopterological Society, Osaka, 1: 297-304.

Zagrzywiec G. 2009. Przestrzenne rozmieszczenie kambiofagów na świerku pospolitym *Picea abies* (L.) Karst. w Nadleśnictwie Waliły. Praca magisterska. Wydział Leśny, Szkoła Główa Gospodarstwa Wiejskiego w Warszawie, 53 pp. [mscr.]

Zahradník P. 2007. Dorcatominae. [In:] Löbl I., Löbl D. (eds.): Catalogue of Palaearctic Coleoptera. Elateroidea, Derodontoidea, Bostrichoidea, Lymexyloidea, Cleroidea, Cucujoidea. Volume 4. Apollo Books, Stenstrup, 343-347 pp.

Zając K., Smolis M., Kadej M. 2020. *Trixagus meybohmi* Leseigneur, 2005 (Coleoptera: Throscidae) – nowy gatunek chrząszcza dla fauny Polski. Acta Entomologica Silesiana, 28(online 007): 1-5.

Zalewski M. 2007. Jakość hodowlana dębów w zagrożonych drzewostanach leśnictwa Dąbrowa (Nadleśnictwo Czarna Białostocka). Praca magisterska. Wydział Leśny, Szkoła Główa Gospodarstwa Wiejskiego w Warszawie. [mscr.]

Zarządzenie Regionalnego Dyrektora Ochrony Środowiska w Białymstoku z dnia 13 lipca 2016 roku w sprawie ustanowienia planu ochrony dla rezerwatu przyrody Budzisk. Dziennik Urzędowy Województwa Podlaskiego z dnia 14 lipca 2016, poz. 3024.

Zarzycki K., Mirek Z. 2006. Red list of plants and fungi in Poland. Czerwona lista roślin i grzybów Polski. Wojewoda W., Szeląg Z. (eds.): W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków, 20 pp.

Zaytsev F.A. 1972. Fauna of the USSR. Coleoptera. Families: Amphizoidae, Hygrobiidae, Haliplidae, Dytiscidae, Gyrinidae. Israel Program for Scientific Translations, Jerusalem, 401 pp.

Ziegler H.W., Teunissen A.P.J.A. 1992. *Oenopia impustulata*, a new ladybird for the Netherlands (Coleoptera: Coccinellidae). Entomologische Berichten, Amsterdam, 52(2): 19-21.

Żurawlew P., Melke A. 2018. Kózkowate (Coleoptera: Cerambycidae) powiatu pleszewskiego (Nizina Wielkopolsko-Kujawska). Przegląd Przyrodniczy, 29(2): 80-97.

Websites:

Dasytes virens (Marsham, 1802) in GBIF Secretariat (2022). GBIF Backbone Taxonomy. https://doi.org/10.15468/39omei (access: 07.08.2023)

Rhinoncus smreczynskii Wagner, 1937 in GBIF Secretariat (2022). GBIF Backbone Taxonomy. https://doi.org/10.15468/39omei (access: 07.08.2023)

https://baza.biomap.pl/ (access: 01.08.2023, 07.08.2023)

IBL
95YEARS