

## Rare species of birds nesting in the area of the Rogów Forest District in the years 1949–2015

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**Abstract.** The aim of the study was to combine and summarize data on rare species of breeding forest birds found in the area of the Experimental Forest District near the Rogów village (Łódź Province). Our study area comprised 230 km<sup>2</sup> of field and forest mosaic, where forests accounted for almost 17% of the area (13 forest complexes of 35 - 1000 ha). The results are based on the authors' own field observations from the years 2000 - 2015 as well as historical data since 1949 including original research papers, diploma theses, unpublished manuscripts, oral information and analyses of museum collections. The following criteria were used to categorise bird species as rare: (1) species that ceased breeding in the area, (2) taxa that were under strict protection and their abundance was no higher than 6 breeding pairs. In overall, 10 species were classified as rare, of which three do not breed in the area any more: grey heron *Ardea cinerea*, osprey *Pandion haliaetus*, European roller *Coracias garrulus*. However, non-breeding individuals of grey heron and osprey are still recorded in the area (the last cases of breeding pairs were recorded in the 1970s and 1961, respectively), while the European roller went extinct. In recent years, the abundance of another three species was probably stable: European honey buzzard *Pernis apivorus*, Eurasian hobby *Falco subbuteo* and nightjar *Caprimulgus europaeus*. Four species started breeding in the last 30 years: black stork *Ciconia nigra*, white-tailed eagle *Haliaeetus albicilla*, common crane *Grus grus*, stock dove *Columba oenas*. The trends in the abundance of the investigated species are similar to those observed in the country in overall.

**Keywords:** central Poland, legal protection, extinction, recolonization

### 1. Introduction and aim of research

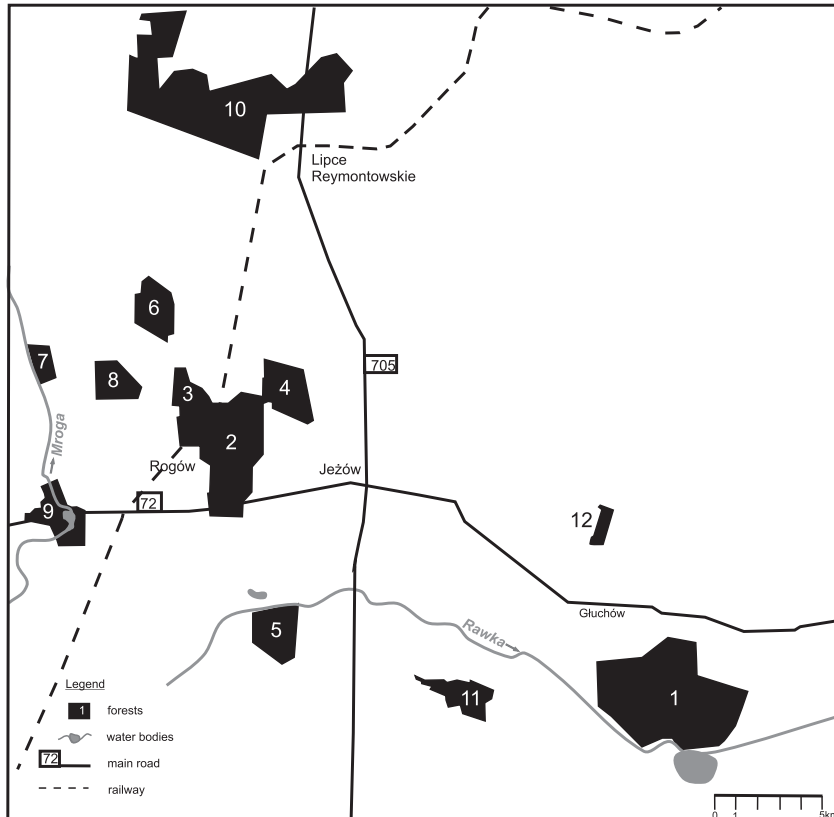
Rogów Forests, through the years, were an object of many ornithological researches, due to its almost 100-year-belonging to the Warsaw Agriculture University (WAU). After II World War, an intensive faunistic trend was noticed, which was connected with creation of scientific collection of Forest and Wood Museum. Within Master theses, realised under supervision of S.Zaborowski and M.Keller, conducted were avifauna inventories of chosen areas (forest complexes: Lipce, Popień, Arboretum, a fishery undertaking near Byliny Stare village). Many years of research also concerned the use of nest-boxes by birds (Zaborowski 1964; Fabrikiewicz 1993; Gryz, Krauze-Gryz 2011). Ecological researches were

conducted at the end of the 70s. They were focused on birds of prey, crows, owls (Goszczyński 1985; Goszczyński et al. 2005; Gryz et al. 2013; Gryz, Krauze-Gryz 2015, 2016) and gallinaceous (Wasilewski 1986a, 1986b; Dudziński 1988a, 1988b). The aim of this elaboration is a summary of knowledge concerning rare breeding species in the area of Rogów forest inspectorate and also an attempt of explanation of observed changes.

### 2. Material and methods

The research was conducted in central Poland in the area of the Agricultural Experimental Station (AES) of WAU near Rogów village (Łódź Province). The area of research

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**Figure 1.** Distribution of the forests and villages in the study area: 1 – Gluchów, 2 – Zimna Woda, Wilczy Dół, 3 – Doliska, 4 – Górki, 5 – Popień, 6 – Zacywilki, 7 – Kołacin, 8 – Jasioń, 9 – Rogów, 10 – Lipce, 11 – Gutkowiec, 12 – Prusy

covered around 230 km<sup>2</sup> of rural-forest mosaic. The forest constituted almost 17% (38 km<sup>2</sup>) of the area (13 complexes of size from 35 to 1000 ha) and belonged mainly to Rogów forest inspectorate. Small areas were administrated by Brzeziny and Skierniewice forest inspectorates (Fig. 1).

Scots pine *Pinus sylvestris* was the main greenwoodogenic species. It dominated with 50% of the area. Main site types were fresh mixed broadleaved forest and fresh broadleaved forest (jointly 83%) (Forest Management Plan of Rogów Forest Inspectorate for the years 2009–2018). The remaining parts of research areas were agricultural areas and two small rivers: Rawka and Mroga. The results were based on own observations made in the years 2000–2015 and historical data from 1949: scientific publication, oral information, analysis of inventory books and museum collections in Rogów (Museum of Forest and Wood) and in Warsaw (Scientific-Educational Collection of Department of Forest Zoology and Wildlife Management of Faculty of Forestry of WAU). To rare birds' category, all species which ceased nesting on the examined area were included. Next, taxa under strict protection (according to the regulation of the Ministry

of Environment from 6.10.2014) were chosen, which estimated count in the area of research did not exceed, in the 21<sup>st</sup> century, 6 pairs. Omitted were species breeding outside the forest areas and those which nesting was doubtful, or there were no sufficient data about their count.

### 3. Results and discussion

#### Grey heron *Ardea cinerea*

The oldest information about colonies of grey heron come from the 50s and 60s of the 20<sup>th</sup> century, when in the area of Gluchów forest district bred over a dozen pairs of this species (Zaborowski S. unpublished). On 18.05.1950, a male specimen for museum collection was obtained. Herons built their nests in mature pine forest stand growing in compartment no. 180 (today's 232). According to Lichord (1971), in the autumn of 1970, 8 pairs set about the reproduction. In the winter of 1970/1971 in the area of the colony a clear cutting was made. In the next breeding season, birds built their nests in comp. 182 (today's 234). The history of heron in the next

breeding seasons is not known. At the beginning of the 80s, birds did not nest in this area. There were also no remains of the colony (Goszczyński J., Keller M. oral inf.). Every year, in the years 2000–2015, the presence of non-breeding birds in the area of forest inspectorate or close to it was noted: Popień reserve, Rogów forest complex, Marianów Rogowski village, ponds in Popień village, area along Rawka and Mroga river. The largest grouping of heron was observed on 7.07.2011 in the area of Byliny Stare village. It amounted 6 individuals. It is hard to define the reasons of heron's disappearance. The negative influence on this species could have had hunting, exterminating by fishing guards (Lichorad 1971) and lack of legal protection of nesting places. The probability of grey heron's return, as a breeding species, to the area of forest inspectorate is small.

### **Black stork *Ciconia nigra***

First documented observations of this species come from 1965 to 1970, when single birds were observed in the area of the Głuchów forest district (comp. 222 and 223) and in ponds of then State Agricultural Enterprise (SAE) Byliny (Lichorad 1971; Rosa W. unpublished). The first brood was noted in 1986 in compartment 225, where storks enlarged hawk's *Accipiter gentilis* previous year's nest (Keller 1989). Birds nested in this region for a decade. In 1996 the nest was destroyed during a storm. Most likely in following season, the birds bred in private forest near Radwanka village (Zaborowski S., unpublished). In the years 1998–2015, the birds nested in the area of the Głuchów forest complex. Until 2011 in its southern part, and during last four seasons, in its northern part. In 2000, in area of forest inspectorate, second couple of the storks was noticed. The birds bred in the area of Lipce forest district (comp. 41a). Due to fall of the nest however, the brood did not end successfully (data from Agricultural Experimental Station in Rogów). Another case of this species' nesting outside Głuchów complex was confirmed in 2010, when a nest was found in the area of the Jasień forest district (Popień forest complex). The storks nested there until 2012. During the last 5 years, single birds were observed four times in the area of Rogów complex. Among 10 known nests, six were built on pines, three on alders *Alnus glutinosa*, one on beech *Fagus sylvatica* and one on oak *Quercus* sp. The effect of breeding was defined in 17 cases. The birds brought out from 1 to 4 juveniles (on average 2,7 per pair with a success). Losses in breeding were stated in five cases (Keller 1989; Goszczyński J., Zaborowski S. unpublished.; Kowalski G., Wawrzyniak P., oral inf., authors' own observations). Recolonization of the research area by black stork is probably connected with the increased count of this species throughout the country (Tomiałojć, Stawarczyk 2003).

### **White-tailed eagle *Haliaeetus albicilla***

Birds of this species were observed in the area of Głuchów and Popień forest parts in the years 2001–2003 (Gryz 2003; Gryz et al. 2007). On the basis of oral information (Kowalski G., Sowik P.), it was established, that the presence of the single white-tailed eagle was noticed in the southern part of Głuchów forest part and on adjacent areas in the years 1998–2000. In the earlier period (since 1945), this species was not noted in Rogów surroundings (Zaborowski S. unpublished., Aulak W. oral inf., Goszczyński J. oral inf., Wasilewski M. oral inf.). In 2001, one specimen was observed (imm.) and in 2002 two birds were noticed (subad.) in compartments 225, 233 and 234. In compartment 236 feathers of white-tailed eagle were found (leg. J. Gryz). In April 2007, a couple (♂ ad. and ♀ imm.) took over an artificial nest built in October of 2006 (Krauze, Gryz 2007). In the spring of 2008 white-tailed eagles, for the first time, bred and brought out one juvenile. Since then, every year the birds bred. In the years 2008 and 2009, on artificial platform, and in 2010 and 2011 in nest built by themselves. In the following years (2012–2013), white-tailed eagles built new nests, all in pine crown's twin stem. In both seasons, broods did not end successfully. In the first case, the birds were disturbed by people, and in the second case (2013), the cause of failure was not defined. In the following year, close to artificial nest, one cub was noticed. In 2015, in the area of Strzelna forest district, a nest was found, in which white-tailed eagles brought out two cubs. At the same time, two adult birds were observed in the area of the Głuchów forest district (distant by around 20 km), however, no chicks were stated there. It can be assumed that those are two separate couples. Average productivity of all known broods amounted 1,2 juv. ( $N=9$ ), and broods finished with a success 1,7 juv. ( $N=6$ ). One of ringed, in the spring of 2012, the cub was photographed on 26.09.2012 in distant by 80 km Zalew Sulejowski (Anderwald D. oral inf.). White-tailed eagles' appearance in Rogów is connected with the increase of this species count throughout the Poland and Europe (Tomiałojć, Stawarczyk 2003; Anderwald et al. 2007). Gradual reconstruction of population is an effect of actions undertaken over 40 years ago. These actions involved elimination from use highly toxic plant protection products (mainly DDT), limitation of shoot-outs for birds of prey (Pielowski 1996; Zawadzka, Lontkowski 1996) and zone protection of nests (e.g. Mizera 2006).

### **Osprey *Pandion haliaetus***

One pair of this species nested in the area of the Głuchów forest complex in the years 1959–61 (Tomiałojć 1990; Mizera, Król 2001; Zaborowski S. unpublished.). In 1950,

two specimens were obtained on this area: ♂ 09.09.1950; ♀ 04.10.1950 (leg. Fabian) (Inventory Book of Museum of Forest and Wood). In 1970, Lichorad (1971) observed a hunting osprey in the area of the SAE Byliny. A presence of migrating birds was recorded in recent decades (18.04-15.05; 20.09.04.10). In the years 2011–2015, 11 observations of flying or hunting ospreys were documented (Kowalski G., Sowik P., Wasilewski M, Lewandowska K., authors' data). According to information collected within the State Environment Monitoring ([www.monitoringptakow.gios.gov.pl/rybolow](http://www.monitoringptakow.gios.gov.pl/rybolow) access since 15.05.2015), in 2014 in the whole Poland nested 30 pairs of this species. However, no breeding pairs were recorded in the central part of the country.

### Honey buzzard *Pernis apivorus*

First acknowledgment comes from 15.09.1953, when one specimen was obtained in Kołacin complex (leg. S. Zaborowski). On 30.06.1964 one male specimen was obtained in the area of Arboretum (leg. J. Tumiłowicz). On this area, one specimen was observed in May of 1981 (Guzik 1983). In the years 1978–93, nesting of honey buzzard was stated i.a. on area of Głuchów complex (Goszczyński 1985; 1997; 2001; unpublished). Inventory of this species was done twice (2001–2003 and 2011–2015). They showed, respectively, 3 and 4 breeding pairs. In the first period, however, Rogów, Prusy, Gutkowice and Lipce complexes were not searched. The last complex was not also covered with intensive monitoring in the years 2011–2015. When taking into consideration methodical challenges in detecting honey buzzard's nests, it cannot be excluded, that the birds nested in the area of Lipce complex. On 29.05.2011, a honey buzzard hit by a car was found near Wągry village. It was ultimately subjected to euthanasia and transferred to Museum of Forest and Wood (Lewandowska K. oral inf.). Among all known nests, three were built on alder, two on pines, and one spruce *Picea abies*, fir *Abies alba* and oak. Current number of this species can be estimated on 4 to 5 pairs. During the last decades, its abundance probably did not change significantly.

### Eurasian hobby *Falco subbuteo*

Historical information about the presence of this species come from the first half of the twentieth century. These are museum exhibit specimens obtained in the area of Zacywilki complex (17.07.1949 ♀ leg. Z. Mozga; 08.06.49 ♂; 27.03.50 ♂ leg. Krygier). Hobby was observed in the area of Lipce complex on 28.08.2969 in current compartment no. 5 (Osiński 1970). It was noticed three times, in the years 1976–77, in the area of Popień complex. During research conducted by Goszczyński (1985, 1997, 2001), in the years

1978–1993, hobbies were recorded i.a. in the area of Zimna Woda and Głuchów complexes. Its abundance however, was not evaluated. Inventory run at the beginning of 21<sup>st</sup> century (Gryz et al. 2006; Krauze, Gryz 2007), revealed the presence of 3–4 couples (the research did not cover Lipce, Rogów, Prusy and Gutkowice complexes). Analogical research conducted in the area of the whole forest inspectorate in the years 2011–2015, revealed the presence of maximum 5 pairs (Gryz 2013; Gryz J., unpublished). Among 20 known broods, 18 hobbies brought out in nests built by ravens *Corvus corax*, in two cases it were nests of buzzards *Buteo buteo*. On the basis of collected information, it can be concluded, that the abundance of this species in the analysed period was stable. When taking into consideration the increase in the count of ravens in the area of forest inspectorate in the last decades (Gryz 2013), the increase in Eurasian hobby density can be expected.

### Common crane *Grus grus*

In the first half of the 90s, the closest confirmed breeding pairs were revealed in the area of Kampinos National Forest (Bobrowicz et al. 2007). During intensive ornithological research in the years 2001–2003 on area of AES Rogów, only the presence of migrating birds was noted. Crane's calls and their occasional presence during breeding period were noted in the years 2008–2009 in the area to the south from Łochów and Byliny Stare village (Sowik P., Kowalski G., oral inf.). Most probably, first brood that cranes brought out was the one in 2011. Four birds were observed at the time (2 ad., 2 juv.) on so-called Pańska Łąka in Głuchów forest complex. Those birds were also often observed on nearby hunting bait stations, where they preyed on corn. In following two seasons, the birds were regularly observed in compartments 231, 240 and 239, where in autumn of 2012 a nest was found. In March of 2012, a second couple of birds was also heard, to the north from comp. 223. However, in the next months, they were not observed. In 2014, the birds brought out a brood (2 juv.) probably in compartment number 238. In breeding season of 2015, the female laid 2 eggs in the area of private forests which are an enclave in the southern part of the Głuchów forest complex (Kowalski G. oral inf.). In the summer, three individuals were observed in this region (2 ad. 1 juv.). Outside the region of the first records, cranes nested also in alder swamp forests near Popień complex. Birds were first observed in March of 2012 around 1 km from mentioned above forest. The breeding was finished successfully (at least 1 juv.). In following season, cranes were heard and observed in the same region, but no presence of juveniles was noted however. It was impossible to find the nest. Only a few feathers of this species were

collected (leg. J. Gryz). In 2014 on fields along Rawka river, two tooting pairs were heard. However, in the summer, only two adult birds with juveniles (2 ind.) were observed. In the spring of 2015, the cranes moved upriver Rawka and probably started breeding in comp. 169. Since 2013 individuals of this species have been observed near the Gutkowice complex (Kowalski G. oral inf., authors' own observations). The number of population in the area of forest inspectorate or on its closest neighbourhood can be estimated on 3–4 couples. In following years, further increase in count of this species can be expected. Probable is also cranes settlement in the area of Rogów complex, where alder swamp forest and flood plain sites occur on area of over 25 hectares. The reasons of recolonisation of forest inspectorate's area by cranes must be sought among factors of over-regional reach. Since dozens of years, the populations of cranes in Poland and Europe strongly increased (Bobrowicz et al. 2007; Sikora et al. 2015), what results also in settling by them also suboptimal sites such as small forest complexes near areas inhabited by people (Tomiałojć, Stawarczyk 2003).

#### **Stock dove *Columba oenas***

According to Stajszczyk and Sikora (2007) in the first half of the 90s the closest breeding sites of this species were found in Spała Forests, around 40 km to the south from Rogów village. First notification of this species in the area of AES comes from 19.4.2011 when one specimen flying out of a hollow in the southern part of Strzelna forest district was observed. Doves occupied a hollow cut out by black woodpecker *Dryocopus martius* in almost 100 years old beech. Under this tree, in June, egg shells of this species were found. In the beginning of 2013, in this region a presence of three specimens was noted. One bird was found also in comp. 128 (Rowiński P. oral inf.). In the following months, however, no sounds of stock doves were heard in the area of forest inspectorate. In 2014, the doves bred in comp. 129. The breeding was probably finished with a success. In autumn of 2013, 15 boxes of D type in the region of birds' place of staying were hung. During control in October of the following year, one nest of the dove was found in one of the boxes. In 2015, no presence of doves was stated in the boxes. Annual control of 5 boxes of D type hung in the area of Górki and Głuchów forest complexes, did not show any presence of the doves. On 07.3.2015 the sounds of stock dove were heard near Zimna Woda reserve (Rowiński P, oral inf.). In May of the same year, at least one hollow was occupied by doves in comp. 160. The birds also bred in comp. 129. In the summer of 2011, one specimen was hunted by hawk nesting in this forest complex (Gryz 2013). In the area of forest inspec-

torate at least 8 areas which are potentially optimum for stock doves (old beech forests with numerous hollows of Black woodpecker) can be found. It can be assumed therefore, that this species will become a permanent element of ornithofauna of Rogów region, and the abundance of this species will increase.

#### **Nightjar *Caprimulgus europaeus***

Zaborowski S. (unpublished), in the years 1970–1990 has defined the status of this species as rarely breeding. Among museum exhibit items, one specimen originated from Arboretum (3.6.1949, leg. M. Stuglik) and the second one from Zimna Woda complex (17.9.1954, leg. S. Zaborowski). Inventories run in the area of Lipce forest district and Arboretum did not show any presence of this species (Osiński 1970; Guzik 1983). The nightjar was observed in Popień complex in the summer of 1976 (Bujalska 1976). In the autumn of 2012 of one specimen in nest-box occupied by tawny owl *Strix aluco* in the area of Popień complex (comp. 168) found were remains. In the same compartment on 14.05.2015 nightjar was noticed by J. Borowski (oral inf.). In the years 2012–15, the birds were heard in the north-east part of Głuchów complex (comp. 405, 406, 407 and 217). During one control, a presence of maximum three males was recorded (no vocal stimulation was used). The birds toot also in the area of Gutkowice complex in comp. 183, 179 and adjacent private forests. In the period from 2013 to 2015, a presence of two males was stated, and in 2014 – a presence of one. In June of 2013, in the area of this complex, a nightjar's nest with carried eggs was found (phot., J. Borowski). The appearance of nightjar near Rogów is limited to prefer by this species areas: extensive cuttings, forest cultures and thickets on coniferous forest site types (Dembowski 2009). Minimum count can be estimated on six couples. Progressing eutrophication of habitats, promoting deciduous species and limiting the size of cuttings can have a negative impact on this species in the future.

#### **European roller *Coracias garrulus***

In Museum of Forest and Wood of WAU, there is located dissected male of European roller, collected on 24.5.1950 in the area of Jasiień complex (leg. Z. Mozga). According to S. Zaborowski (unpublished), those birds nested in the area of Zacywilki, Górki and Głuchów complexes in the 50s. In the first half of the 60s, rollers were found rarely in the area of Arboretum (Zaborowski 1966). Inventories run in the years 1969–1980 in complexes Lipce and Popień and in Arboretum did not show any presence of this species. No information from the 60s and 70s on

European roller's nesting, referring directly to the Rogów Forest Inspectorate, were found. However, when taking into consideration information from the whole region, it can be concluded that this species in Rogów area was common and numerous. General data referring to the former Łódź Province indicate on 'relatively very numerous' nesting of European roller at the end of the 60s (Tomiałojć 1972). A survey conducted in the years 1978–79 in the area of nearby forest districts: Brzeziny, Spała, Opoczno and Piotrków Trybunalski showed density on the level of around 0,2 pairs per km<sup>2</sup> (Tomiałojć 1990). During the last 15 years, no symptoms of this species' presence were visible. Also not known is the exact time of this population's extinction. The history of European roller's extinction on discussed area is probably similar to the situation of this species in whole Poland. The majority of population collapsed in the first half of the 80s from not entirely clarified causes: the use of pesticides which limited the nutritional base, unfavourable situation within birds wintering places and migration routes (Tomiałojć, Stawarczyk 2003). In Rogów surroundings, the longest lasted a population which inhabited Spała Forests. It became extinct at the end of the 20<sup>th</sup> century (<http://www.kraska.eco.pl/rozmieszczenie.htm>, 15.05.2015). In 2014, the number of this species in whole Poland was estimated on around 30 pairs within two populations: Kurpiowska Plain and Podkarpacie (National Environment Monitoring [www.monitoringptakow.gios.gov.pl/kraska](http://www.monitoringptakow.gios.gov.pl/kraska), 15.06.2015). In view of the above facts, it is hard to suppose that European rollers will come back to the forests of Rogów in the nearest decades.

### Conflict of interest

The authors declare lack of potential conflicts.

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### Authors' contribution

J. G. – conducting field research , literature review and revision of museum collections, writing the article; D.K. – conducting field research , adjustment and supplement the text, performance of figures.