

## Running in forest areas – an analysis of activities undertaken by State Forests

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**Abstract.** A growing need to lead a healthy lifestyle and to spend more time in nature causes an increased pressure on forests, which renders their social functions more and more important. In order to meet people's expectations, the State Forests undertake several actions to make forests more available to the public including the organization of running events in forests and the development of a network of recreational and running paths. In order to describe these actions, an online survey was conducted among the workers of forest districts. Additional data such as information published on the State Forests' website, Facebook and runners' blogs, was included in the analysis as well. 283 forest districts participated in the electronic survey. The results indicate that the State Forests actively participated in promoting running events in forests totaling 488 running events in 2014 and 779 between January and October 2017, which constitutes an increase by approximately 60%. The average number of running events in the forest districts during the analysed period was 9.5. Most of them took place in forest districts within city agglomerations and in the mountains. The State Forests supported over 20% of running events organised in the areas they administer. They had also started numerous initiatives (such as 'Wolność w naturze', 'Zielony punkt kontrolny' and 'BiegamBoLubię Lasy') that were evaluated positively by their participants (according to Facebook). In conclusion, it is clear that the State Forests do promote recreation in forests and forest education by supporting public events.

**Keywords:** recreation, running events, running paths, social (non-productive) functions of forest, the State Forests in Poland

### 1. Introduction

The use of forest space has changed throughout the last centuries. Productive function has dominated until the 19<sup>th</sup> century, whereas nowadays, non-productive functions play greater role, that is, social function (Paschalis-Jakubowicz 2005). Social function is a notion that includes issues connected, among others, with people's health protection (Novak et al. 2014), management of degraded area (Pal-mąka 2010), education (Ludwiczak et al. 2012), leisure and recreation (Roovers et al. 2002; Gundersen, Frivold 2008; Gołos 2013). From the point of view of society, which is a beneficiary of forest management, social function is more important than productive, landscape-forming and climate function but less important than ecological function (Janusz, Piszczek 2008; Gołos 2013). One of man's basic needs is contact with nature, as Gołos (2013) claimed. Forest is a place where this need can be realised. Mandziuk and Janecz-

ko (2009) indicated that factors like increase of life standard, increase of ecological awareness and need for rest makes forests an object of touristic interest.

Current research on recreational function of forest show that people spending time in forest, as active rest tend to choose walks, cycling or picking berries and mushrooms. Less popular form of activity is running. Results of Janeczko and Woźnicka's (2008) research indicates that running as a form of leisure in urban forests of Warsaw is chosen by around 7% of the respondents. A small group of respondents (2.3%) decides to run on the area of Forest Promotional Complex Lasy Beskidu Śląskiego (Janusz, Piszczek 2008). Sławska and Sławski (2009) on the other hand, while an examination the opinions of the inhabitants of the Rogów commune determined that running and cycling is chosen by 18% of respondents. On the base of annual traffic monitoring, Ar-nberger (2006) indicated that running is the least popular form of spending time actively in the urban and suburban

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forests of Austria. Running on those areas is chosen by respectively 16% and 3% of respondents. Similar results on the basis of survey were obtained by Roovers et al. (2002). According to the authors, generally running as a form of activity in urban forests is chosen by 16% of respondents, whereas this percentage differs in individual age groups. In the age group up to 35 years, running as a form of activity in forests was chosen by 26.7%, 44.2% in the age group 36 to 45 years, 20.9% in the age group 40 to 60 years and over 60 years, only 8.1%. Therefore, the selection of running as a form of spending time in forests depends on the place of residence (urban – rural area) and on the age of respondents.

Results of research conducted in March 2015 by the Institute for Market and Social research – IBRIS with Polish Athletic Association – PZLA (IBRIS 2015) show how popular running, as a form of activity, is among society in general. According to this research, almost 22% of society spend their time running actively. Amongst the people running were 20.8% of women and 23.1% of men. Few years earlier, running as a form of activity was chosen by around 10% of society. There is a visible increase of interest in this form of activity. Information presented by Waśkowski (2014) indicates that both number of running events and number of contestants is increasing. According to the author, the increase in running events reached even 20–25% on a yearly basis and the number of contestants of 12 biggest runs on 10 kilometres distance, half-marathon and marathon in Poland increased in 2011–2013 respectively: from 9,992 to 57,632, from 18,863 to 32,325 and 18,502 to 31,332.

Taking the above data into consideration, it is visible that running is more popular. If around 15–20% respondents have declared running as a form of active time-spending in forests and general number of runners is increasing, it can also be assumed that the pressure on forest ecosystems will be larger. The State Forests realize the social function of forests by introducing projects such as ‘Wolność w naturze’ and ‘Zielony Punkt Kontrolny’, by organising runs and issuing permits on setting the routes of runs that are organised by other subjects in the forest area. The State Forests also develop network of running and cycling routes and paths for pedestrians. So far, only a few studies, such as Janeczko et al. (2017), presented research on the subject matter. In this study, the following goals were assumed:

Recognition of actions undertaken by the State Forests in the field of making forest available for society to run in;

Recognition of runners’ opinion on the subject of running events organised by the State Forests;

Verification whether the variable that determines the number of organised running events is a location towards the agglomeration and the Forest Promotional Complexes.

## 2. Methodology and data

The information was collected from a survey that was sent by electronic post and from Facebook and blogs. On 22<sup>nd</sup> September 2017, a request was sent to 430 Forest districts with a request to give information on:

- the number of running events organised in years 2014–2017 by forest district and other subjects on the area of forest districts’ management and with its permission
- the number of running events financed or co-financed by the forest district in years 2014–2017 including providing gadgets, gifts and organizational support
- the number of running routes marked out on the area of forest district’s management

Information was also analysed on the subject of the two projects ‘Wolność jest w naturze’ and ‘Zielony Punkt Kontrolny’ realised by or with the participation on the State Forests. It allowed for supplementation of information received from the forest districts. Moreover, on Facebook, which is a public social portal, information regarding the contestants was searched for on the subject of running events organised by the State Forests.

In the research, the authors also used the spatial data concerning the Forest Promotional Complexes (FPC) and location of agglomerations presented in Swianiewicz and Klimska (2005) study. Forest districts were assigned to the agglomeration if at least 20% of their area was situated within the agglomeration reach. Jointly, 83 forest districts were located within the agglomeration borders, out of which 50 responded to the survey. In 18 cases, the forest districts were located both in the reach of agglomeration and the Forest Promotional Complex.

## 3. Results

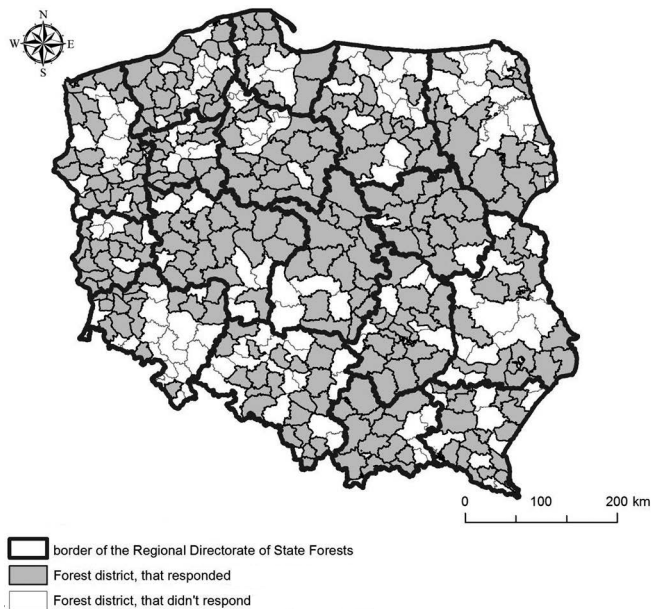
Two hundred and eighty-three forest districts answered subject questions that stated 65.8% of all the districts. Spatial distribution of forest districts that answered the questions is showed on Figure 1.

Number of runs on the area managed by the State Forests is increasing systematically. In 2014, 488 running events were organised, and in 2017 (from January 1st to October 31st) – 779. Therefore, the number of running events has increased by almost 60%. Jointly, in the analysed period, 2,729 runs were organised (Table 1).

Average number of running events in years 2014–2017 in forest districts amounted to 9.5. In this period, in 56 forest districts (19.7% respondents), no running events were organised. In 5 forest districts, the number of running events amounted more than 50. Those districts were: Gdańsk (152), Katowice (100), Jabłonna (70), Lubliniec (64) and Łopuchówko (62). Jointly, the biggest number of running

events in the years 2014–2017 took place in the forest districts located near the large cities (Warsaw, Gdańsk, Poznań, Cracow, Katowice) and on mountain areas which, due to landform features, were a place of organization of more popular mountain runs (Figure 2).

Average number of running events in 2014–2017 in forest districts located in the area of agglomerations was higher by



**Figure 1.** Distribution of forest districts that responded to a request for information

6.7 than in the forest districts outside the agglomerations. The most running events were organised in the following agglomerations: Warsaw (43.8 running events/forest district), Gdańsk (38.9), Poznań (29), Cracow (19.5) and Katowice (19). The least running events were organised in Białystok (2) and Olsztyn (2.5). The differentiation in the number of running events inside the agglomeration is also visible. For instance, in the forest districts located in the Gdańsk agglomeration, the least running events were organised in Kartuzy forest district (4) and the most in Gdańsk forest district (152).

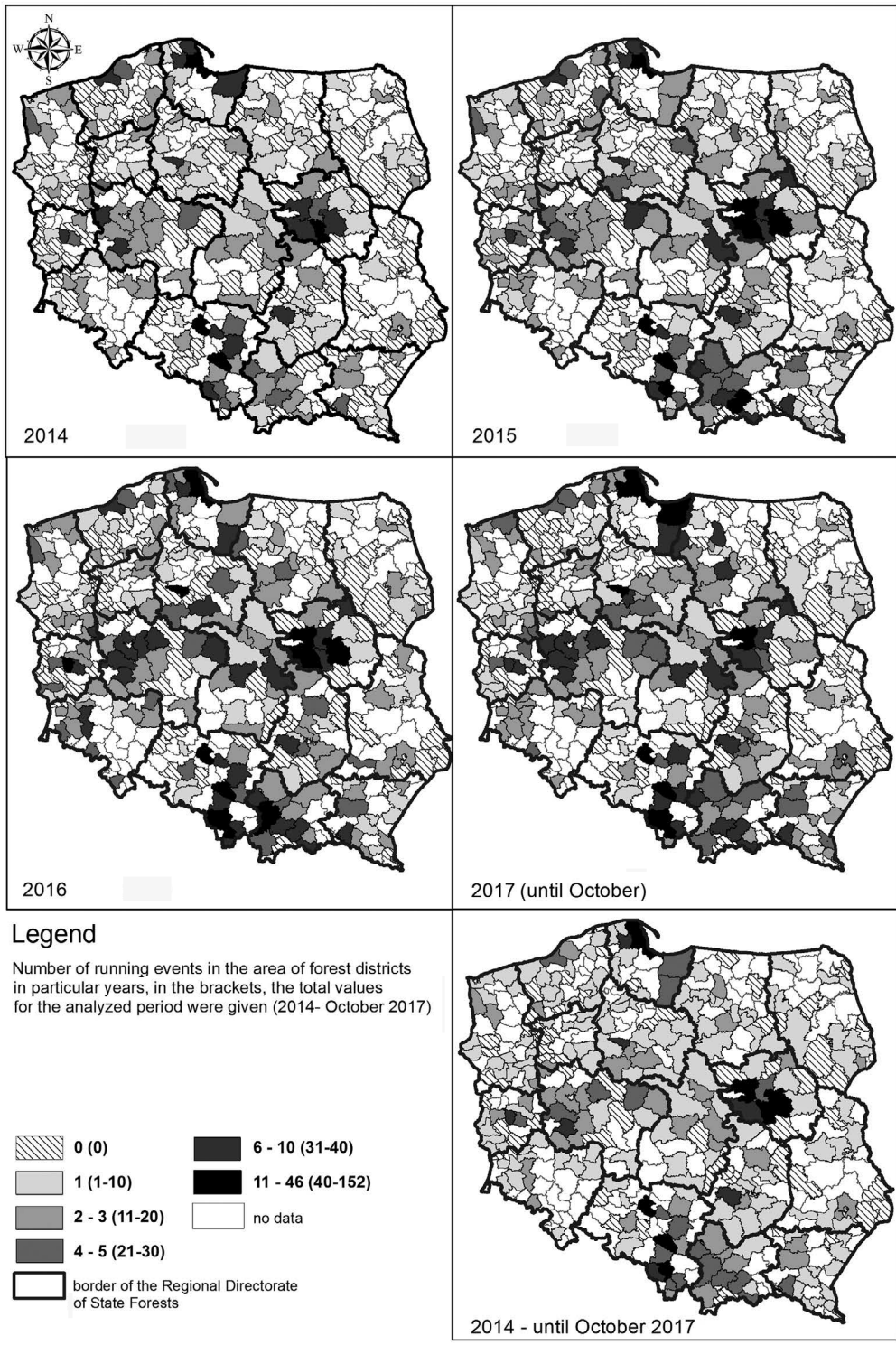
In the forest districts located on the borders of the Forest Promotional Complexes, the average number of running events amounted to 10.5, whereas in the remaining ones, it was 9.4. In the analysed period, the average number of running events amounted to 33.4, both in the forest districts located in the area of Forest Promotional Complexes and agglomerations.

There is also a diversification of average number of running events in the years 2014–2017 in the forest districts of individual Regional Directorate of the State Forest (RDSF). The highest averages were noted in RDSF in Gdańsk (26.5), RDSF in Warsaw (21.6) and RDSF in Katowice, whereas the lowest in RDSF in Białystok (2.7) and RDSF in Piła (3.1) (Figure 3).

Running the events that took place in the area of the State Forests management were addressed to the participants of all ages and all degrees of running abilities. Running events for children were organised as independent sport event. For instance: cross-country runs and runs accompanying runs for adults. The length of running routes for children was

**Table 1.** List of running events organized on the territory of State Forests, including division into forest district located in agglomeration and Promotional Forest Complexes

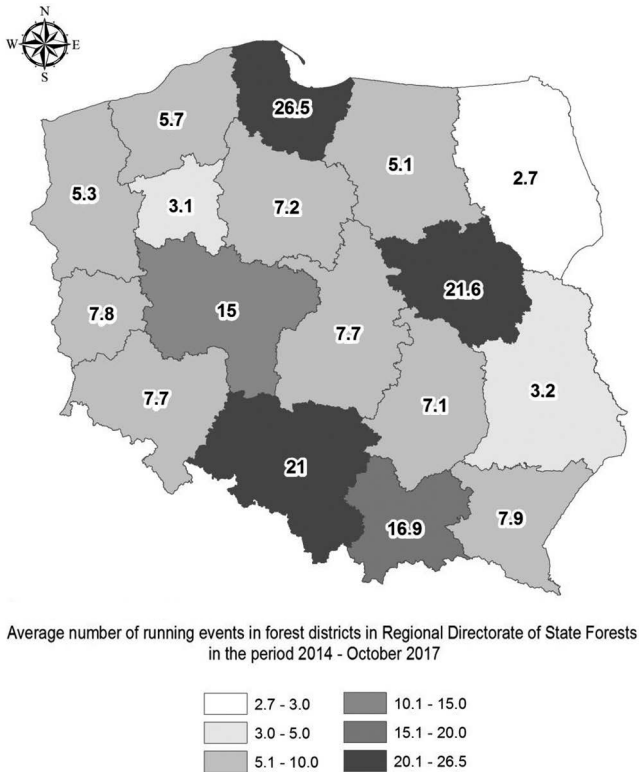
Characteristic of running events	Year				Total (January 2014 – October 2017)
	2014	2015	2016	until October)	
Total numbers of running events	488	633	829	779	2 729
Average number of running events in forest districts located in the agglomeration	2.8	3.4	4.4	3.8	14.4
Average number of running events in forest districts outside the agglomeration	1.3	1.8	2.3	2.3	7.7
Average number of running events in forest districts located in Promotional Forest Complexes	2.2	2.5	2.9	2.9	10.5
Average number of running events in forest districts outside Promotional Forest Complexes	1.5	2.2	3	2.7	9.4



**Figure 2.** Number of running events in the area of forest districts in particular years, in the brackets, the total values for the analyzed period were given (January 2014 – October 2017)

diversified and depended on the age group and amounted around 200 m for children under 6 years, and for older children from 400 m to around 1000 m. Adults were competing

on distances from 2 km to over 100 km. The ultramarathons (runs on distance > 45 km) took place mainly in the mountain forest districts. ‘Bieg Rzeźnika’ can be



**Figure 3.** Average number of running events in forest districts in Regional Directorate of State Forests in the period January 2014 – October 2017

an example of the run with a running route set in the area of Baligród, Cisna and Komańcza forest districts, which signed a special agreement in order to organize this event. Running events organised in the area of the State Forests had mainly a cameral character. The number of participants was very diversified and ranged between 200–400 people. The biggest running events attracted over 1,000 people. The influence on the number of participants, beside budget, had the capacity of routes, paths and forest roads. Many running events were cyclical and were organised once a year (for instance ‘Bieg Rzeźnika’) or a couple times a year (for instance ‘Biegam-BoLubię Lasy’ in Chojnów Forest district). In Chrzanów forest district, a trail of free, every-week runs on 5km distance was marked out, called as parkrun. Until the end of 2017, 154 editions of this event took place. Due to its specific character (it is organised by volunteers within parkrun Poland association’s activity), different than typical running event, the author decided to treat all the editions as one event.

Over 20% of running events organised in the area of the State Forests was supported financially or materially by forest districts. Forest districts funded the prizes and cups for the participants, were handing over materials of advertising

character or seedlings from nurseries located in its area. Moreover, the forest districts’ employees took active part in marking out and securing the routes and organising educational and promotional activities during running events. In the analysed period, jointly over 40% of forest districts that took part in the research, supported the organization of running events (Table 1). Almost 1/5<sup>th</sup> of them (19.9%) financed or co-financed runs each year, 7.5% during three years, 7.1% during two years, while 8.2% once.

In 67 forest districts, 115 running routes were jointly marked out, including 25 routes as part of action ‘Wolność w naturze’. Moreover, 65 routes were marked out for orienteering. The lengths of running routes ranges from 1 km to 15 km. Route marking is not standardised. The fullest marking of routes includes: colour marking, directional plates and signs informing about the distance covered from the beginning of the route. Moreover, the course of many routes was described in detail on websites. Route description, besides their detailed course, allows for getting acquainted with information on valuable positions of the protected plants, protected areas or tourist infrastructure facilities. In this way, the educational aspect for society is also realised. Innovative, on a Polish and Europe scale, project of marking out running routes was invented in the Świeradów forest districts. On its areas, the so-called run tracks were also marked out. Run trucks were led through roads and forest paths. Their course in many places covers specially marked cycling routes, called as single tracks. In order to use the routes in a convenient way, the forest district has decided to mount forest boom barriers that cover only half of the road width to freely pass it while running/cycling but to makes it impossible for a car to get through.

The routes, in case of organization of running events on forest areas, were marked out depending on different needs with active participation of forest employees in order to make the course of routes attractive in visual context and at the same time not to influence negatively on valuable in terms of environment, fragments of forest. Routes of cyclical runs were often repeated in the following editions, and the organizers decided to mark them out permanently in the area. Such marked out routes were created, such as in Lubliniec forest district, to organize runs ‘Nóż Komandosa’ and ‘Maraton Komandosa’.

Hitherto the three largest projects of the State Forests that realised the idea of making the forest available for society in terms of running purposes were ‘Wolność jest w naturze’, action ‘BiegamBoLubię Lasy’ and ‘Zielony Punkt Kontrolny’ (routes for orienteering). In 2014, on the 25th anniversary of the free Sejm elections, the State Forests and

**Table 2.** List of running events funded or co-funded by the State Forests

Characteristic of running events	Year				Total (January 2014 – October 2017)
	2014	2015	2016	2017 until October	
Total numbers of running events	488	633	829	779	2729
Number of running events financed or co-financed by forest district	123	146	167	175	611
The percentage of running events funded or co-financed by forest district in relation to all runs [%]	25.2	23.1	20.1	22.5	22.4
The percentage of forest districts that financed or co-financed running events [%]	24.7	29.3	33.9	33.9	42.7

the Ministry of Environment marked out 25 running paths, called as the Paths of Freedom with lengths ranging from 3 to 12 km in the area of 25 forest districts in 17 Regional Directorates of State Forests. On the occasion of paths opening, numerous running events were organised in which a few hundred people took part and a part of those events were even continued in the following years. Intensity of use of the areas in which the paths were marked out increased. An example of that is the Path of Freedom in Głogów Małopolski Forest district. Based on the registered routes of the GPS users of Strava portal, a density map was created, which shows this process in the years 2014 and 2015 (Figure 4).

Among the forest districts that answered to the questions, in 5 of these the runs ‘BiegamBoLubię Lasy’ were organised. This initiative was very popular among the runners. Its purpose was to encourage people to use the routes available in the forest areas. A confirmation of its popularity are grades and opinions from Facebook on the event organised in the Chojnów forest district. Action profile on Facebook was observed, at the end of 2017, by 3,298 users and was graded on average by 47 votes on 5.0 (maximum evaluation). For comparison, one of the oldest street half-marathons in Poland- Wiązownia Half-Marathon observed 1,050 persons. Participants of action emphasised the wonderful atmosphere during the run, good organization and the possibility to commune with nature at different seasons. Due to a limited capacity of routes in each run, limits of participants had to be implemented – in 2017 it was 400 persons. Google Trends Tool shows that keyword ‘BiegamBoLubię Lasy’ was searched for by the Google browser users in two weeks before and two weeks after the organised run. It was called as cyclical interest that is connected to a specific event. On figure 5 on Y axis, value 100 denotes the highest popularity of keyword in the analysed period, value 0 means that the popularity of keyword amounted less than 1% of the highest value.

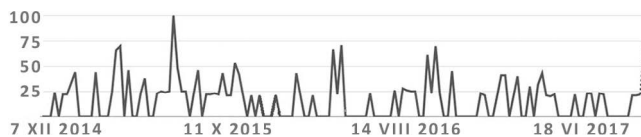
An action directed at runners of orienteering was the conception of ‘Zielony Punkt Kontrolny’, presented in 2011 by Polish Foresters’ Orienteering Committee. This conception assumed setting up inter alia in forest areas permanent control points, which would allow for runs anytime. So far, in the area managed by the State Forests, 56 projects of Green Control Points were created in area of 34 Forest districts. Routes for Orienteering are characterised by different distance and number of points that should be found. Depending on their level of running abilities, runners may choose suitable routes for themselves.

#### 4. Discussion

Research shows that the State Forests are also making forest areas available for society through organization running events and by allowing for their organization by other subjects according to the Law of Forests, article 29, para 4 of 28 September 1991 (Law on Forests 1991). It should be emphasised that all the actions connected with the running events’ organization are being held with respect to the rules of nature protection and the events’ organizers are obliged to clear the running routes within the specified period of time. The results show, that the most running events are organised within urban agglomerations, that is, places of highest concentration of people. The State Forests, by making forest areas accessible for running events’ organization, realize the non-productive functions of forests, including recreational and leisure, which are two dominant functions within agglomeration area (Jaszczak 2008). Diversification of runs occurs both between agglomerations and within them. Influence on that fact may have such factors as: demography and spatial location of forest areas. According to the report on profile of polish runner, almost 70% of the runners have a university degree and average gross income per one family



**Figure 4.** Use of Ścieżka Wolności in Głogów Małopolski Forest District in 2014 (upper image) and 2015 (lower image). The more intense gray color and the greater width of the line means greater traffic (source: strava.com)



**Figure 5.** Popularity of the passwords 'BiegamBoLubię Lasy' (grey color) in the Google Trends online tool (source: Google Trends)

member amounts to over two thousand PLN. Taking social disproportions between individual areas in Poland into consideration, it seems that the social factor may influence not only an interest in running as a form of activity but also on the number of running events (Waśkowski, 2014).

Relatively many running events also take place in the mountain Forest districts. According to Dzięgiel and Tomanek (2014), the popularity and demand for this type of events

results from the so called running tourism. It is understood as a travel in time and space and conditioned at the same time by will for engaging physical activity or direct observation of competition (Gaworecki 2000). Popularity and number of running events in mountains can be an effect of attractiveness of the given place and its assets (for instance landform), which distinguish this area among different facilities (Nowak, Chalimoniuk-Nowak 2015; Zawadzki 2015). Participants of mountain runs, which took place inter alia on areas of the State Forests, claimed that running in natural environment, on soft surface, possibility of admiring landscapes and flora and fauna, is the heart of their interest in mountain runs (Dzięgiel, Tomanek 2014).

The number of running events in the area of the State Forests is not high. However, the respondents pointed that the runners also use other elements of infrastructure such as: walking and cycling routes and forest paths and roads. Intensity of use of running routes before and after implementing appropriate marking can be examined with the use of GPS data (Figure 5). Example presented in this research shows that building new elements of infrastructure leads not only to directing traffic to the marked-out routes but also to an increase in the traffic intensity. When managing forest areas, causing the so called 'upgrading spiral' should be avoided. It means that building elements of infrastructure may cause excessive increase in tourist traffic and therefore force building of new devices (Gundersen, Vistad 2016).

Contact with nature lowers the level of stress – the theory of psychophysical reduction of stress (Ulrich 1984), allows for distancing from family and professional life – the theory of attention regeneration (Kaplan 1995), influences positively on psyche (Jaszczak 2008) and on concentration improvement (Tomalak 2006). Theories mentioned above and increase in level of life, need for regeneration, more interest in running and popularization of healthy lifestyle makes forest a place of tourist interest. Advantages of contact with nature are also noticed by the runners who describe their experience from trainings in forest as follows: 'there are no words, to express what your eyes will see, when you decide to take a run in the forest. Landscape constantly changes, greenery will soothe you, amaze and calm down' (Szczypczyńska 2015), 'by running in forest we commune with nature, from which we are usually separated' (Jasiński 2017), 'paths, blueberries on twigs, routes going up and down (...) rich diversity of the nature which should be used for regaining balance of the mind' (Qviström 2016). Besides positive psychological, cognitive and landscape experience, running in nature brings training benefits 'training is more effective, diversified area is more challenging than the straight one, (...) what results in unconscious training of running strength, especially in winter' and lowers the risk

of contusion. ‘Not all people do realize that running on litter amortizes better our steps. Training on asphalt overload our ponds much faster’ (Bednarczyk 2015). On the basis of the above opinions, it is visible that running in forest brings many benefits and it seems that it will be more and more popular. That is why the State Forests should include making forest available for society in their actions, not only for pedestrians and cyclists, but also for runners.

Organization or co-organization of running events by the State Forest, and also openness to such type of events realised by private subjects, improve the State Forests’ image. Running events are an opportunity to promote the State Forests as an organizational unit that meets the needs of society in terms of rest and recreation. It is also an opportunity to educate the people about tasks performed by foresters. Inseparably with every mass event, including running events, a concept of promotion is connected, which is one of the so-called marketing mix elements (Dzięgiel 2014). Among numerous tools of promotion mentioned, Internet is most often used for promotion of runs on forest areas. As the study data from Facebook website (number of likes and opinions of users) show that runs organised by the State Forests are very popular among runners and are highly rated in terms of organization and education offer. The State Forests promote running on forest areas as one of the activities through campaign ‘train in forest’. Information on advantages of running in forest and running events and numerous advice can be found on the Forest districts’ websites and on the Website of General Directorate of State Forests. Moreover, regularly, articles on running in forests can be found in the ‘Echa Leśna’ magazine. These are also the elements of marketing that change the perception of State Forests as an institution, which is responsible not only for managing forestry but also for many additional activities, including making forest available for society.

## 5. Conclusions

1. The number of running events in forest areas continues to increase. Diversification of number of runs in individual forest districts results inter alia from their location (agglomeration, Forest Promotional Complex, mountain area), attractiveness of given area and demography.

2. As an answer to the growing interest of society in running events, the State Forests are actively involved in popularization of this form of activity, such as by building running routes, organization of running events or giving access to forest area to another subject to organize runs and so on.

3. Information posted on public social websites may be a tool for evaluation of running events organised by the State Forests.

4. Making forest available for society by organising running events positively influences the State Forests’ image in society.

5. The State Forests also conduct educational activities among the events’ participants, especially among children and teenagers, by realising running events and building infrastructure.

6. There is a need for determining the demand and preferences of runners towards parameters of running routes, such as length, altitude diversification on route, characteristics of ground, marking and availability of parking lots and so on.

## Conflict of interest

The author declares lack of potential conflicts.

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