

Needs of the local population related to development of forests for recreational purposes: example of south-eastern Poland

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ABSTRACT: Independent assessments of the local community's needs for recreational development of forests provide important information for forestry and forest administrations. The study was designed to identify the needs for recreational forest development expressed by residents of a selected European region in which forests constitute a dominating component of landscape and play an important role in the community's life. Additionally, the relationship between these preferences and the place of residence was examined. The author carried out the study in south-eastern Poland. The needs were identified by a survey conducted among 439 adults (≥ 18 years). There are statistically significant differences in the preferences related to recreational forest development depending on the place of residence: the larger the city, the greater the demand for forests adapted to recreational purposes. These are favoured as a destination for leisure by 15% of those living in rural areas, every fifth resident of small towns, 31% and 36% of those inhabiting medium-sized and large cities, respectively. The vast majority of the respondents, 62%, agree that forests designated for leisure should be provided with litter bins. A large group pointed out the need for trails designed for varied purposes – 52% of the respondents in total. The present findings suggest that it is necessary to intensify and diversify works aimed at recreational forest development. Some forests designated for recreation should be developed only discreetly, while those close to large cities should be provided with a wider range of amenities.

Keywords: forest recreation; forest use; Podkarpacie

With the increasing pace of life and greater awareness of health related issues there will be a growing need for places designated for leisure and regeneration. It has been shown that the forest environment has soothing effects in people (PARK et al. 2009), therefore it is becoming a place of choice for spending one's free time. Therefore the recreational use of natural areas is growing worldwide (SMAILES, SMITH 2001; MONZ et al. 2010), and the trend is expected to continue in the future (BELL et al. 2009). It is also known that the growing exploitation of forests for recreational purposes is linked with the increasing risk of environmental degradation. The most frequently reported environmental damage resulting from a recreational use of forests includes soil compaction and trampling of vegetation (SYMMONDS et al. 2000; MARZANO, DANDY 2012). It is possible to reduce such risks either by

limiting the number of visitors (OBUA 1997; MA et al. 2009; MOYLE 2013; DUDEK 2014), or by designating additional forest areas with a dominant recreational function (DESTAN, BEKIROLU 2011) and by adequate forest development for recreational purposes (DUDEK, SZUBART 2013).

Independent assessments of local community's needs for recreational development of forests provide important information for forestry and forest administrations. The analysis of public preferences should enable more effective management of European multifunctional forests taking into account their increasingly appreciated social functions. According to ŠIŠÁK (2011) the analysis of people's preferences is of critical importance for the involvement of local communities in drawing up plans for forest development and it provides support for forest administrations in effective management of the forest.

The study was designed to identify the needs for recreational forest development expressed by residents of a selected European region in which forests constitute a dominating component of landscape and play an important role in the community's life. Additionally, the relationship between these preferences and the place of residence was examined. Because of his good knowledge of the area, the author carried out the study in south-eastern Poland, i.e. the Podkarpackie Province, geographically classified as a part of Subcarpathia.

MATERIAL AND METHODS

The survey was conducted in the Podkarpackie Province, located in south-eastern Poland. The region comprises a part of the eastern and northern Subcarpathia. Subcarpathia is located at the outskirts of the arch delineated by the Western and Eastern Carpathians. The area of the study ranks among the Polish regions with the highest forest coverage. Forests here comprise nearly 680,000 ha, i.e. 38% of the total area, of which mountain forests constitute approx. 35%. In the southern part of the region, the Carpathian Foothills, fir and beech forests dominate, while in the northern part we can mainly encounter pine woods and mixed forests in which *Pinus sylvestris* L. is accompanied by *Fagus sylvatica* L., *Quercus robur* L., *Quercus petraea* Liebl., *Carpinus betulus* L. *Betula pendula* Roth., *Abies alba* Mill., *Picea abies* L. and *Larix decidua* Mill. The Podkarpackie Province has a population of 2.1 million, which gives a rate of 0.32 hectare of forest land per capita, nearly 30% more than the respective rate for Poland, and 7% more than the rate for Europe. Public forests constitute a vast majority, while private forests account for 17.5% of the total forest land in the region. In its southern, mountainous part, in rural areas, employment opportunities mainly available to the local populations are connected with forests. They directly generate employment in forest administration and in companies performing services related to forests, and indirectly in transport and timber processing sectors. The annual net production of timber in the Podkarpackie amounts to approx. 2.4 million cubic metres, i.e. approx. 7% of the total annual production in Poland. At present financial benefits from recreational functions offered by forests are derived by only a very small percentage of the region's local residents, mainly owners of small food outlets located along roads and near forest car parks, owners of stud farms organizing horse rides in forests, approved by competent authorities, enti-

ties organizing paramilitary training camps, picnics and other events held in forest areas.

The survey was conducted in May and June 2015. The total of 584 questionnaires were distributed among randomly selected adult (≥ 18 years) inhabitants of the Podkarpackie Province, living in 8 villages, 6 small towns, 2 medium-sized towns and in Rzeszów, the region's capital. The survey comprised eight thematic questions, and the respondents' particulars. Two of the questions were connected with the purpose of the present study (No. 4 and 8):

Question No. 4. What kind of forest do you tend to choose for recreation? (a) Forest developed for recreational purposes, with designated trails, equipped with recreational amenities (see question 8); (b) Forest with no recreational amenities; (c) It does not matter.

Question No. 8. What are the most important recreational amenities which should be available in a forest designated for leisure (you can choose more than one answer)? (a) Benches; (b) Litter bins; (c) Bonfire/barbeque site; (d) Information boards (e.g. rules of conducts, map of the specific area with its attractions, including natural landmarks); (e) Roofed picnic areas with tables and benches; (f) Delineated walking paths, bike and horse-riding trails; (g) Educational routes; (h) Playgrounds for children; (i) Campsites; (j) Car parks; (k) Others (please, specify).

The vast majority of distributed questionnaires were received back – 439; out of these 424 were completed properly. The survey was conducted in a group consisting of 52% females and 48% males. Respondents from rural areas constituted a majority – 44%. Those from towns with populations up to 50,000 accounted for 26%, residents of Rzeszów (186,000 inhabitants) constituted 23%, and those from towns with population from 50,000 to 100,000 – 7%. In terms of age, all groups were represented more or less proportionally.

The relation between the preferences for recreational forest development and the place of residence was examined with the use of chi-square test. On the other hand, it was assumed that examining the effects of gender or age with respect to these preferences would be of little consequence, since it is difficult to imagine forests designated and developed for recreational purposes separately for men and women, or separately for young people and senior citizens.

RESULTS

The findings show that for the majority of the respondents it does not matter whether or not the forest is developed for recreational purposes – 46.84%

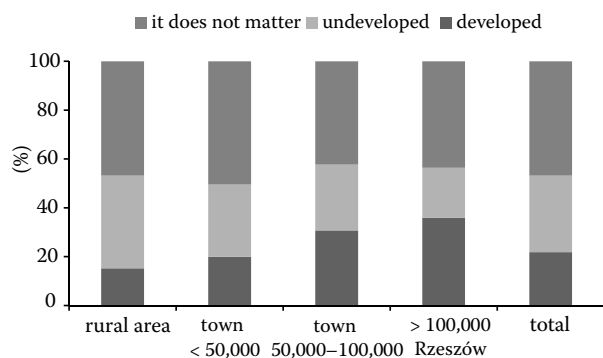


Fig. 1. Preferences of Podkarpackie Province residents related to recreational forest development depending on the place of residence

of the responses. Forest with no recreational amenities is chosen by 31.32% and forest provided with recreational facilities by 21.84% of the participants in the survey (Fig. 1).

The preferences related to recreational development of forests clearly depend on the place of residence (Fig. 1). These differences are statistically significant ($\chi^2 = 17.82$, $df = 6$, $P = 0.01$). An increase in the size of the city coincides with the residents' higher demand for leisure in forests developed for recreational purposes. Forests with recreational facilities are favoured as a destination for leisure by 15% of people living in rural areas. These kinds of forests are also preferred by every fifth resident of small towns (population up to 50,000), as well as 31% of those inhabiting medium-sized towns (50,000–100,000) and 36% of those living in large cities (>100,000, in the Podkarpackie Province the only city is Rzeszów – 186,000 inhabitants).

The vast majority of the respondents, 62%, agree that forests designated for leisure should be provided with litter bins. Participants in the survey

also recognize the importance of providing such forests with benches and information boards, 42% and 41% of the respondents, respectively. A large group pointed out the need to delineate and create trails designed for varied purposes – 52% of the respondents in total. Many residents of the Podkarpackie also express a demand for bonfire sites (35%), roofed picnic areas (28%) and car parks (23%). According to participants in the survey the least important amenities in forests developed for recreational purposes include playgrounds for children and campsites – 9% and 11%, respectively. Other elements of recreational development specified by the respondents included toilets (Table 1).

DISCUSSION AND CONCLUSIONS

For the majority of the Podkarpackie Province residents participating in the survey (47%) it is irrelevant whether or not the forest they choose for leisure has a recreational infrastructure. Yet 31% of the subjects choose an undeveloped forest while nearly 22% of the respondents prefer a forest adapted to recreation. Similar numbers of respondents (34%) from northern Poland (Iława Lake District) tend to relax in forests with no recreational amenities (KIKULSKI 2009). Likewise, every fifth resident of Central Poland (Commune of Rogów) prefers this kind of forest (SŁAWSKI, SŁAWSKA 2009). On the other hand, a survey carried out within the forests of Warsaw has shown that only 6% of the respondents choose forests with no recreational amenities, while 26% prefer developed forests. At the same time a positive opinion with regard to recreational forest development was expressed by 88%

Table 1. Preferences of Podkarpackie Province residents related to visitor facilities/amenities which should be available in forests designated for recreation (in %)

Facilities/Amenities	Respondents	Answers
Benches	41.6	13.7
Litter bins	62.1	20.5
Bonfire/barbeque site	35.0	11.6
Information boards	40.5	13.4
Roofed picnic areas with tables and benches	27.9	9.2
Delineated walking paths, bike and horse-riding trails	32.1	10.6
Educational routes	19.7	6.5
Playgrounds for children	8.7	2.9
Campsites	11.3	3.7
Car parks	23.2	7.7
Other	0.5	0.2

and a negative one by 12% of the participants in the survey (JANECZKO, WOŹNICKA 2009). A study carried out in the Italian Alps has shown that 36% of the respondents prefer forests located far from the trails, which can be interpreted as undeveloped forests, while 50% prefer forests along delineated trails (DE MEO et al. 2015).

The present findings show that the elements of recreational forest development which are in highest demand include litter bins and trails designated for various purposes (Table 1). Likewise, KIKULSKI (2008), JANECZKO and WOŹNICKA (2009), SŁAWSKI and SŁAWSKA (2009), and DE MEO et al. (2015) reported that spatially linear elements were most frequently expected in forests developed for recreation: 38, 58, and 64% of the respondents, respectively, and in the study carried out in the Italian Alps the score was 7.8 out of 10. Importantly, besides the present study, respondents could also choose litter bins in the survey carried out by JANECZKO and WOŹNICKA (2009) – 18% of the responses. In suburban forests near Basel 80% of the respondents picked seating as the most demanded amenity in forests designated for recreation, 60% picked litter bins, over 50% chose fire places, 60% barbecue sites, and 55% picked information boards. Only 1% of the respondents thought there should be no recreational facilities in the suburban forests of Basel; on the other hand, in the forests designed to maintain their natural condition, approx. 10 km from Basel, such a response was provided by 13% of the surveyed visitors (HEGETSCHWEILER et al. 2007). DE MEO et al. (2015) have observed that people tend to agree that recreational facilities should be available in forests, yet at the same time they wish the forests were not frequented by many other visitors so that they could have a greater feeling of naturalness. Similar conclusions may be drawn from a study by JANECZKO and WOŹNICKA (2009), who reported that, according to 15% of the respondents, a large number of visitors was a disturbing factor in the forests of Warsaw, yet at the same time the participants in the survey clearly approved the recreational facilities in the forests (88%).

GOŁOS (2013) estimated that nearly 600,000 residents of Warsaw visit forests at least once a month. Given such demand for leisure, the capital's municipal forests (6,354 ha) are poorly adapted to recreation. The insufficient amenities include 23 km of nature and forest trails, 64 roofed picnic sites, 33 fire places and 13 playgrounds for children (MŁYNARSKI, KALISZEWSKI 2013). A similar opinion was expressed in a survey by visitors to the municipal forests of Warsaw; the recreational

amenities in the capital's forests were assessed as mediocre by 35% and as poor by 33% of the respondents (JANECZKO, WOŹNICKA 2009). Similarly, the forests of the Rzeszów agglomeration, the largest city in the region, have mediocre recreational facilities; in 2008 there were no campsites, fire places or car parks within the forests (WAŻYŃSKI 2011). During the recent seven years the situation has improved, yet the growing recreational needs of the residents of this part of Subcarpathia have not been sufficiently met.

Regardless of the region, the vast majority of people visit forests in order to relax and it does not matter to them whether or not the forest is provided with recreational infrastructure. Nevertheless, a large group of participants in the survey (every fifth in the Podkarpackie Province and 36% in Rzeszów) prefer forests which have been adapted to recreational purposes. Additionally, it is likely that the poor level of recreational facilities in forests may impact the potential preferences of residents and therefore some of them did not select a forest with recreational amenities as a place of their choice for relaxing because in the proximity of their place of residence there may be no such forests. The hypothesis seems to be supported by the findings of the survey conducted in the forests in Warsaw where 26% of the respondents prefer forests developed for recreational purposes and 88% expressed a positive opinion with regard to such adaptation (JANECZKO, WOŹNICKA 2009). Hence, forest administrators have to meet the public's expectations and continue works aimed at adapting selected forest areas to recreation and tourism. The selection of tree stands should be based on objective assessments (Łonkiewicz, GŁUCH 1991; DUDEK 2013) carried out by specialists as well as preferences of the population of a given region. Moreover, some of the forests designated for recreation should only be provided with discreet amenities to improve the safety of forest visitors, e.g. information boards (map of the terrain, exit/entrance GPS coordinates, phone numbers to emergency services and administrator of the area). This is the only way to ensure that forests fulfil a number of functions and that their stability in the landscape is sustained.

Given the above findings it is necessary to intensify and diversify works aimed at recreational forest development in the relevant part of Subcarpathia. Some forests designated for recreation should be adapted only discreetly, while those in the vicinity of large cities should be provided with a wider range of amenities, in compliance with the rules defined by DUDEK and SZUBART (2013). While designing the recreational forest develop-

ment it is necessary to particularly remember the need for spatial linear elements. First of all, it is necessary to utilize the existing forest roads and lines dividing the tree stands, in order to avoid unnecessary fragmentation of forest complexes. According to BALLANTYNE et al. (2014) undeliberately delineated networks of recreational trails may pose a hazard to the stability of forests, in particular urban forests which are visited by large numbers of people. In the locations receiving greater numbers of visitors it is necessary to install covered litter bins, benches and information boards. Selected forests in the Podkarpackie Province, designated as picnic and camping areas, should also be provided with roofed picnic sites as well as delineated and reinforced fire places. On the other hand, in the regions with a high ratio of forest land and large tourist traffic (e.g. in the Bieszczady Mountains) it is necessary to arrange campsites in groves with low density of trees, in forest clearings and meadows. Due to the limited number of campsites with amenities tourists frequently resort to wild camping, and leave litter behind. The database of tourist facilities located within forests containing over 3,000 registered sites (www.czaswlas.pl) shows that in the Podkarpackie Province it is possible to find only 10 camping areas and 6 sites for bonfires. In the database we can select 10 different types of facilities, yet the category of campsite is not there. The same database shows that in the Podkarpackie there are 19 car parks and stopping areas located within forests. It is necessary to increase the number of car park facilities within forests, particularly in the vicinity of tourist attractions located in forest areas and along busy routes. It is also important to delineate car parks within forest complexes most frequently visited by people living in cities located at a distance which makes it impossible to reach the forest on foot or by bike.

The present findings may contain important information for other parts of the Carpathian macro-region, and in particular the region of Subcarpathia (comprising: Austria, Czech Republic, Poland, Ukraine, and Romania).

The study may be replicated in any region of Europe where forest management is based on the model of multifunctional forestry and the findings may be helpful for local forest administration bodies in undertaking adequate operations related to development of forests for recreational purposes. In the future, however, in addition to the public's actual demand, it would be a worthwhile idea to investigate potential demand for forests adapted for recreation.

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