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ORIGINAL RESEARCH ARTICLE

# The preferences of visitors to selected forest areas for tourism and recreational purposes

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**Abstract.** Questionnaire surveys were conducted from July 1st to August 15th, 2012 in forests near Gołdap, Białowieża, Pisz, Kraśnik,Warszawa and Zakopane with 335 respondents – 146 residents (43.6%) and 189 tourists (56.4%). The respondents declared that they visit forests throughout the year for various purposes, most often with family or friends and most frequently for the recreational activity of walking. They typically spend about three hours in the forest during a single visit. Respondents perceived the most important functions of the forest as a place where plants and animals live, as well as a place for recreation. In their view, the state budget should be a source of co-financing the recreational management of the forest. On1y a small number of respondents (27.5%) would be willing to allocate a portion of their income for recreational forest management. According to the respondents, the most important elements needed in the forest to improve its quality for tourism are information signs and litter bins. Respondents perceive the greatest threats to the forest from tourism to be vandalism, automobiles driving into the forest and wildlife disturbance, whereas the greatest threats to tourists were reported to be biting and stinging animals (snakes, ticks and mosquitoes) and the possibility of getting lost. Respondents indicated clean air, peace and quiet, as well as the ability to harvest wild fruits, plants and mushrooms as the greatest advantages of using the forest for recreation. A large proportion of respondents admitted that they would like to use the services of professional foresters, especially for nature walks and health related purposes, as well as to educate children and youth about nature and the forest.

**Key words:** recreational function of the forest, survey research, public preferences, contingent valuation method (CVM), willingness to pay – WTP

## 1. Introduction

In today's world, forest management encompasses two areas of activity – economic and social. The most important business activity is the manufacture and sale of wood, whereas in the social sphere, forest management is concerned with the quality and quantity of goods and services for a number of functions that affect the quality of life of people. The most important social function of forests, implemented in particular by the State Forests National Forest Holding, is to make them accessible as areas for the rest and recreation of the population. This feature is unique in comparison with other public services (Gołos, Zając 2011).

The use of goods and services related to the recreational function of forests provides the opportunity to present and critically evaluate the activities of foresters by persons vacationing in forests. Therefore, forest owners and managers should strive to learn what the public expects when preparing forests to fulfil their recreational functions; this should be the basis for preparing forest management plans. The priority of

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foresters' activities in this area should be the protection of the forest environment and maximising the utility of the forest as it affects the level of satisfaction of various groups of recreational users. An important part of the work undertaken should include an assessment of cost effectiveness. Forest management expenditures for recreational purposes, derived mainly from the sale of timber, should be used efficiently and guarantee the sustainability of the forest, especially in areas heavily used by tourists (forests in cities and their immediate surroundings, resorts and spas, and along major transportation routes).

Implementing such an approach is possible after having determined society's preferences with respect to the forest, especially in relation to its natural values and existing tourism infrastructure. Only such knowledge will enable the proper course to be taken in the management of forest areas for recreation and tourism.

The questionnaire survey was conducted from July 1 to August 15, 2012 in the forests of the Gołdap, Białowieża, Pisz, Kraśnik, Warszawa and Zakopane areas.

The aim of the study was to determine the general opinions and preferences of forest visitors on how forests should be managed for recreation and its natural qualities, as well as on preferred ways of spending leisure time. The scope of the issues studied is related to the broadly understood recreational functions of forests, including:

– Managing forests for tourism and recreation,

– Economic issues, i.e. the hypothetical willingness of users to co-finance the recreational functions of the forest,

– Social preferences with respect to the forest's natural qualities (stand structure and its composition),

– Assessment of forest areas as places for recreation.

## 2. Methodology

The study was conducted using a questionnaire that included 25 questions on the topics of interest, including five open-ended questions. The remaining questions were closed-ended, using a multiple choice format. The construction of the questions and the questionnaire itself were tested in pilot studies.

The surveys were conducted in the forests of the selected locations by trained interviewers between the hours of 8:00 a.m. and 8:00 p.m. During the survey interview, respondents were given a card to follow with the questions and multiple choice responses while the interviewer read the questions. This made it easier to obtain a reliable answer. The survey included classification questions on the most important socio-economic characteristics of the respondent.

A purposive sample was taken of study sites and respondents. The study site was chosen to ensure that the survey was able to be conducted due to the presence of respondents in the forest. Interviewers subjectively selected respondents in order to obtain the most extensive and complete information as possible.

To determine readiness to co-finance recreational functions of forests, the Contingent Valuation Method (CVM) was used in the study (Garrod, Willis 1997, Loomis, Gonzalez-Caban 1998), and the survey included a question on willingness to pay (WTP – Willingness To Pay).

In analysing data from the survey, its compliance with the normal distribution was verified using the Shapiro-Wilk test, which indicated the validity of conducting a parametric analysis. In such a case, the ANOVA analysis of variance was used, and as the next step (*post-hoc* test) an analysis was done with the Tukey test (StatSoft 2011). For the analysis of some data (to determine the semantic differential), an additional panel in the Statistica program was used – marketing and market analysis. $Chi^2$ (StatSoft 2011) was used to compare the percentage of each response.

Presenting the significance of differences in this paper shows the strength of respondents' choices to the cafeteria of questions in those categories that are consistent with their opinions and preferences.

## 3. Results

Of the 380 interview surveys conducted, 335 (88.1%) questionnaires were correctly and completely filled out and used in the analysis. Of the respondents, 146 persons (43.6%) resided near the interview site, while 189 (56.4%) were guests in the area, hereinafter referred to as tourists. Persons from cities with a population of up to 100,000 represented the largest group of respondents – 30%. The majority of respondents (56.7%) belonged to the middle-class with a net income of 1200 – 4000 PLN/month/household. The largest social group was represented by persons working in white-collar jobs and trade – 47.6% of respondents.

The frequency distribution of respondents' visits to the forest at different times of the year did not differ significantly, as indicated by the ANOVA variance analysis results (Table 1, Fig. 1). The largest variability in responses on the season of visits was for the category of occasional visits to the forest (34.7±12.0), and the

smallest in the case of daily visits (8.5±2.2). Time (hours) per visit of a resident was less than for a tourist (2.70±0.13 vs. 2.96±0.10), but ANOVA did not confirm the significance of this difference (Table 1).

Forests are most often visited during vacations and weekends (as well as on holidays), much less on weekdays, during a visit to family and friends or while travelling (Fig. 2). The reasons for visiting the forest are differentiated by the time devoted to various tasks and activities there (Table 1). It is most differentiated by family walks and passive recreation, and least by walking a dog (Fig. 3). The results indicate that:

– Respondents devote the most time to passive leisure activities while travelling (the least on weekends and during vacation),

– The longest dog walks occur on weekdays (the shortest when travelling),

– Respondents prefer to spend time picking berries on weekends and while on vacation (most rarely – while travelling),

– Respondents devote the most time to active leisure activities during the weekend or on a weekday (the least time – while travelling),

– A family walk is longest during visits with family and friends, and shortest while travelling,

Respondents perceive the forest as a place to rest with family or friends (54.9% of respondents), less so with other persons, such as during business trips (23.9%). Only 21.2% of respondents said they had visited a forest by themselves. Respondents were accompanied by family members or friends (an average of 3.3 persons) or in the case of business trips and excursions with other persons (an average of 4.4 persons – no difference *post-hoc*). For example, the respondents who spent time in the forest with their family or friends were accompanied by more children than those who visited the forest during business trips (Table 1, 0.71 vs. 0.05, $p<0.001$).

To get to the forest, the group of surveyed residents travelled an average distance of 6.9±1.2 km, while tourists travelled 193.8 km (Table 1, $p<0.001$). The

**Table 1.** Results of ANOVA of responses to specific questions (basis of the post-hoc analysis and verification of the differences between responses)

| Question on: (number of the figure representing the analysed data) | | MS | F | P |
|---|---|---|---|---|
| Frequency of visits to the forest | 1 | 405.2 | 2.306 | 0.106 |
| Time spent in the forest by resident and tourist | | 6196.6 | 2.344 | 0.127 |
| Reasons for visiting the forest | 2 | 76.5 | 6.532 | <0.001 |
| Time spent on various activities | 3 | 30311 | 46.503 | <0.001 |
| Number of accompanying persons | ... | 403.215 | 13.394 | <0.001 |
| Number of accompanying children | ... | 19.224 | 44.961 | <0.001 |
| Average travel distance to the forest of the resident and tourist | 4 | 952436.5 | 46.159 | <0.001 |
| Access to the forest – means of transport | 4 | 107063.4 | 5.188 | <0.001 |
| Functions of the forest | | 28403.1 | 168.023 | <0.001 |
| Factors determining the attractiveness of the forest | 7 | 9153.0 | 77.151 | <0.001 |
| Usefulness of different types of trails | 8 | 84.763 | 196.150 | <0.001 |
| Usefulness of equipment for forest recreation | 9 | 82.650 | 192.50 | <0.001 |
| Usefulness of infrastructure elements | 10 | 85.09 | 242.72 | <0.001 |
| Allowable forms of recreation in the forest | 11 | 145.90 | 657.88 | <0.001 |
| Threats to the forest | 12 | 560.86 | 193.64 | <0.001 |
| Threats to persons using the forest for recreation | 13 | 30.11 | 83.08 | <0.001 |

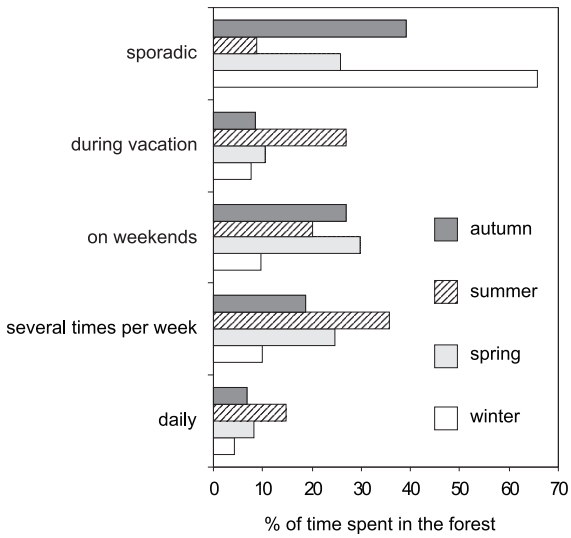


**Figure 1.** Frequency of visits to the forest by season

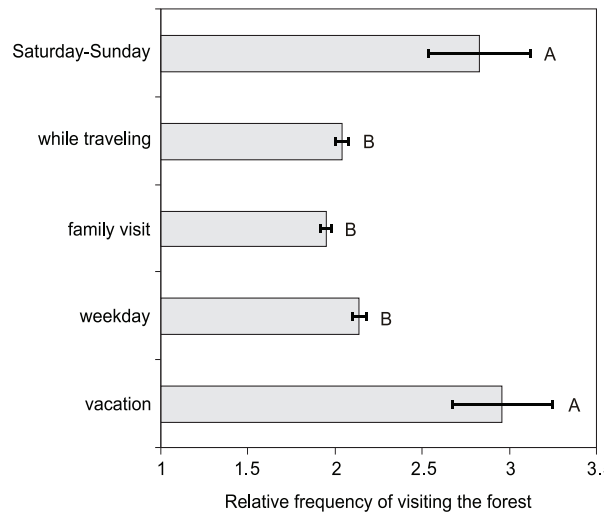


**Figure 2.** Reasons for visiting the forest, the letters A–B designate homogeneous groups at a significance level of $p = 0.01$

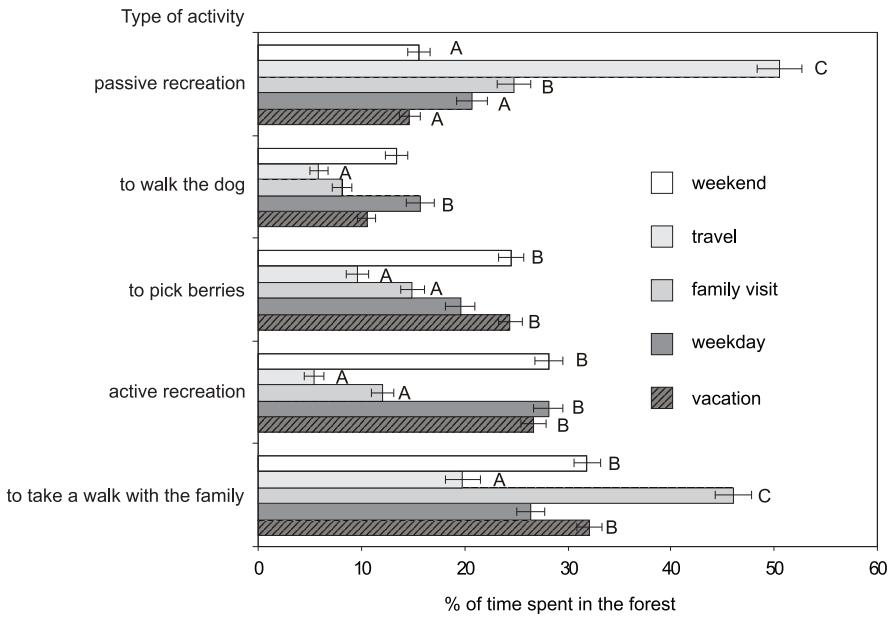


**Figure 3**. Proportion of time spent by respondents in different activities in the forest depending on the reason for the visit. The letters A–C designate homogeneous data sets within each block of histograms at a significance level of $p < 0.01$

means of transportation used to cover the distances – from the smallest to the largest – were: public transportation, walking, bicycle, automobile, bus or train (Fig. 4). The residents surveyed do not use buses or trains to get to the forest. Aside from this, the only other confirmed difference between residents and tourists is distance travelled by automobile (Fig. 4).

In selecting their preferred type of tree stand, respondents slightly more frequently chose coniferous forest (no significance difference). The types of forests chosen decidedly more frequently were those with undergrowth, open forests, old forests, dry forests and those growing more sparsely (Fig. 5).

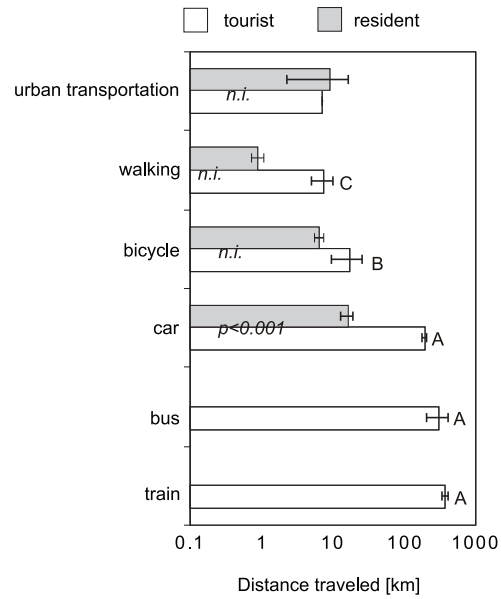


**Figure 4.** Average distance travelled to the forest by residents and tourists. The significance was calculated for each mode of transport for both types of respondents; the letters A–C designate homogeneous groups at a significance level of $p < 0.001$

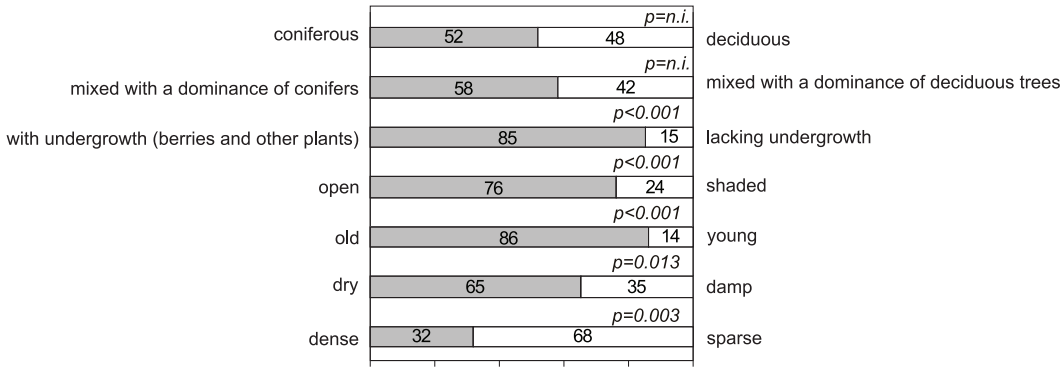


**Figure 5.** Preferred types of tree stands – responses are presented in percentages (values indicated in the bars): *p* – level of significance of the differences calculated due to the variance with the normal distribution achieved with the $Chi^2$ test

Respondents undertook various forms of activities in different parts of the forest. There was a tendency to choose the interior of the forest to pick berries (Fig. 6), and nature was observed in clearings (the possibility of observing deer, many species of birds and meadow flowers). Active recreation, associated with running and bicycling, is decidedly more frequently carried out on paths and trails, while walks were taken along forest edges and on trails. Passive recreation, associated with resting and camping, took place in clearings.

According to respondents, the most important functions of a forest are: a place where animals and plants live (24.98±0.99%), a place of recreation (19.71±0.79%), to protect the air (19.02±0.78%) and to shape the climate (13.19±0.64%). To a lesser degree, respondents listed the protection of water (8.57±0.49%) and soil (7.66±0.43%) as functions of the forest.

In order to intensify the quality and quantity of forests' public functions, forest management must assume certain costs. Respondents indicated that such costs should be borne by: the state budget (32.2% of respondents), funds allocated for environmental protection (31.5%), local government (20.2%) and business (10.7%). Only 1.2% of respondents indicated users.

When answering the question about the WTP for the recreational function of the forest, only 27.5% of the respondents declared a hypothetical amount of WTP>0. However, the amounts differed depending on the chosen level of tourism amenities; for example:

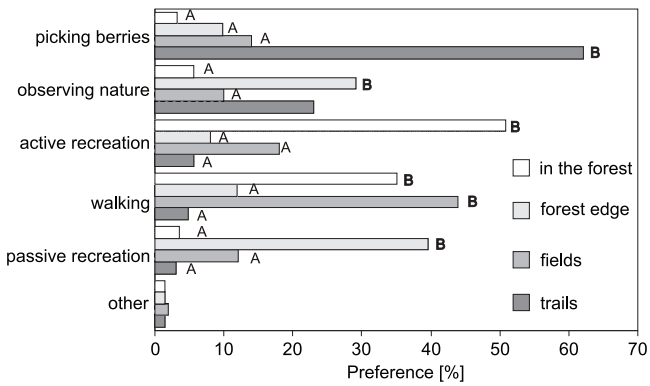


**Figure 6.** Types of activities undertaken by respondents in the forest depending on location – responses are presented in percentages, the letters A–B designate homogeneous groups determined by the Chi$^2$ test at a significance level of $p < 0.001$

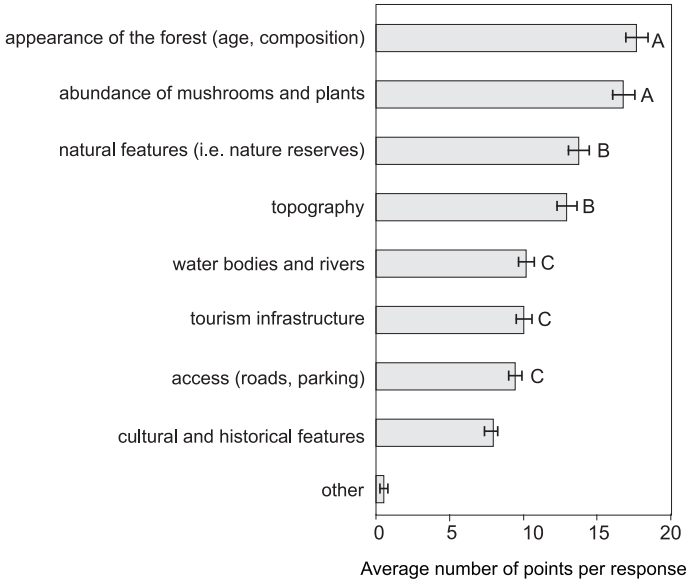


**Figure 7.** Factors deciding on the attractiveness of forest areas for tourism; the letters A–C designate homogeneous groups at a significance level of $p = 0.006$

– 25% of respondents who chose an accessible forest (with a paved access road) and fully developed tourism amenities, declared an amount of 10.5±3.3 PLN/month/person and 42.5±27.5 PLN/month/family,

– 41.9% of respondents who chose an accessible forest with some tourism amenities (only a roofed shelter) would be willing to spend 16.9±5.1 PLN/month/person and 21.5±5.6 PLN/month/family.

– 31.6% of respondents who chose an accessible forest with no tourism amenities declared an amount of 16.1±6.7 PLN/month/person and 35.3±8.6 PLN/month/family.

The responses of the remaining group of respondents (1.5%) who preferred no forest accessibility and undeveloped amenities were not calculated due to the small sample size.

According to respondents, the attractiveness of a forest to tourists is affected by its appearance and the presence of many species of mushrooms and plants, as well as its natural features and topography (Fig. 7). Reservoirs and rivers, which can be used in summer for swimming, were in last place, together with tourism infrastructure, accessibility, cultural and historical attractions.

A *post-hoc* analysis of the selection of different types of trails by respondents identified two sets of trails of varying usefulness. Respondents declared the most useful trails to be those for walking, hiking and bicycling, while the least useful were deemed to be nature trails, trails with exercise equipment, horseback riding and motocross paths (Fig. 7).

The amenities along a trail are also important. Respondents believed that the most desirable

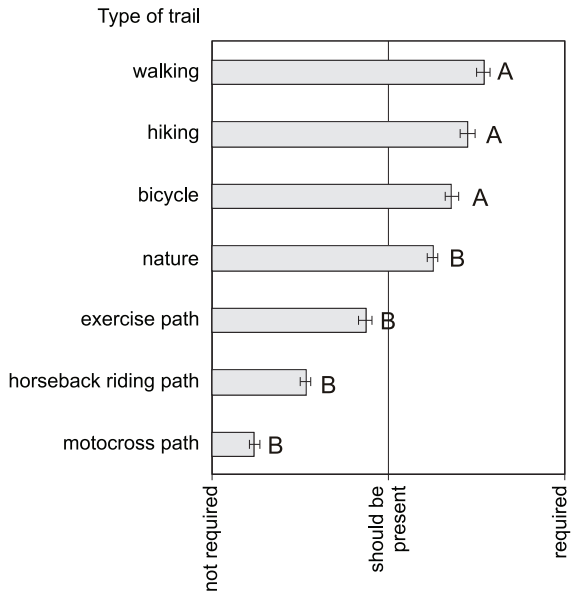


**Figure 8.** Usefulness of trails and various types of paths, the letters A–C designate homogeneous groups at a significance level of $p \leq 0.009$

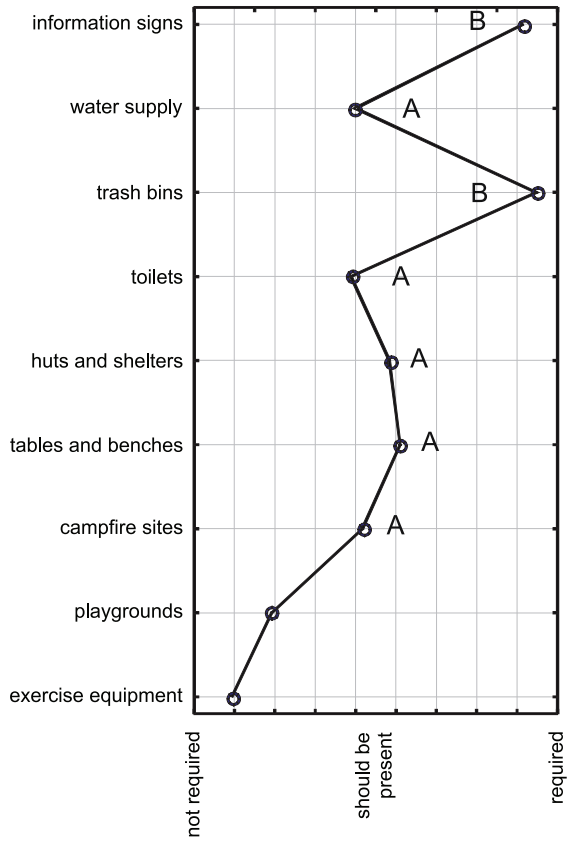


**Figure 9.** The semantic differential of the usefulness of certain equipment for recreation in the forest, the letters A–B designate homogeneous groups at a significance level of $p \leq 0.007$

amenities are information signs and trash bins, and the least desirable - exercise equipment and children's playgrounds (Fig. 9). A water supply, toilets, huts and roofed shelters, tables and benches and campfire sites are the group of amenities which respondents agree "should be" present.

In response to the question about infrastructure, most respondents stated that what is most needed are: information signs in the area, parking lots, rest areas and scenic viewpoints, while the least needed were deemed: paintball fields, ropes courses and playgrounds, which is interesting, as it suggests a lack of interest among respondents in new types of recreational infrastructure in forests (Fig. 10).

Respondents consider the most appropriate forms of recreation in the forest to be: walking and running, bicycling and wildlife observation, whereas the following activities should not be allowed in forests: motor vehicle rallies, mass events and family gatherings linked to campfires or grilling food (Fig. 11). This selection indicates an individualised approach of the respondents to spending leisure time in the forest.

Respondents considered the greatest threats to the forests from tourism to be: vandalism, driving automobiles in the forest and wildlife disturbance, whereas the least threat was from littering and fire (Fig. 12).

The next question dealt with threats to tourists while in the forest. It turned out that the threat of being bitten by snakes, ticks and mosquitoes was assessed at a similar level as the possibility of getting lost in the woods and

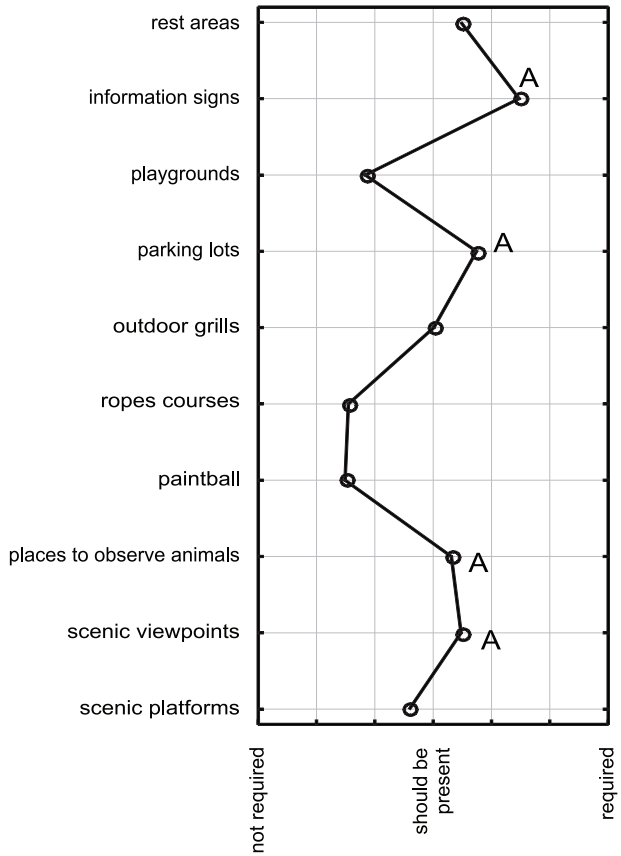


**Figure 10.** The semantic differential of the usefulness of certain infrastructure features for recreation in the forest, the letter A designates a homogeneous group at a significance level of $p \leq 0.040$

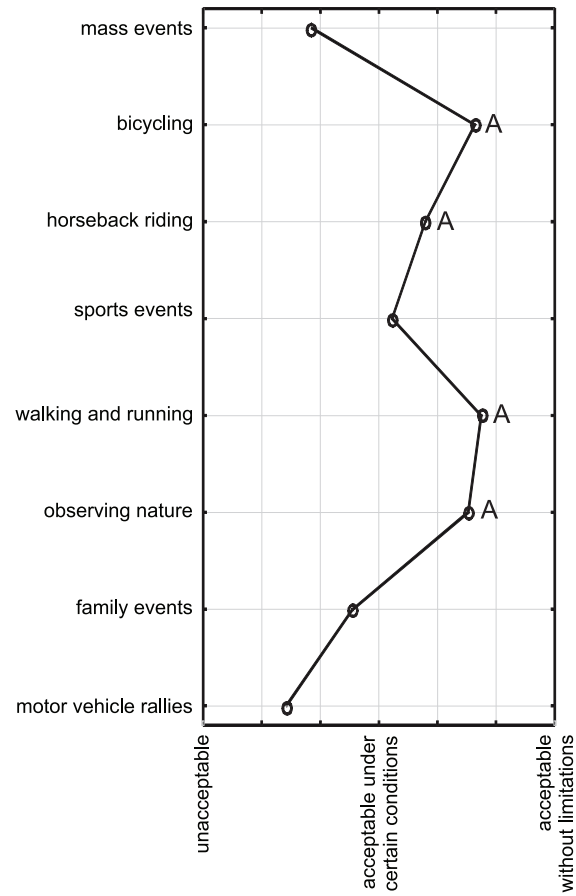


**Figure 11.** The semantic differential of acceptable forms of recreation in the forest according to respondents, the letter A designates a homogeneous group at a significance level of $p < 0.001$

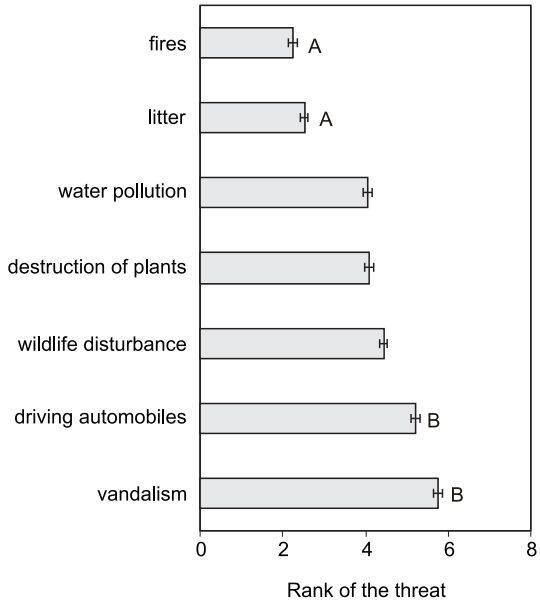


**Figure 12.** Threats to the forest in increasing order of importance according to respondents, the letters A and B designate homogeneous groups at a significance level of $p < 0.001$

being bitten by stray dogs. The least likely risk factors indicated by respondents were other tourists, forestry work, thefts and robberies (Fig. 13).

One of the questions dealt with the willingness of respondents to use the services of forest tourism operators. A total of 195 persons (58.2%) declared a readiness to do so. This group of respondents (who could choose three of the eight proposed responses) most often chose the trip to observe nature. Health related activities were in second place, while the organisation of educational activities for children and youth was ranked third. Respondents expressed great interest in the possibility of participating in trips at night to the forest, as well as in ordinary walks there (Table 2).

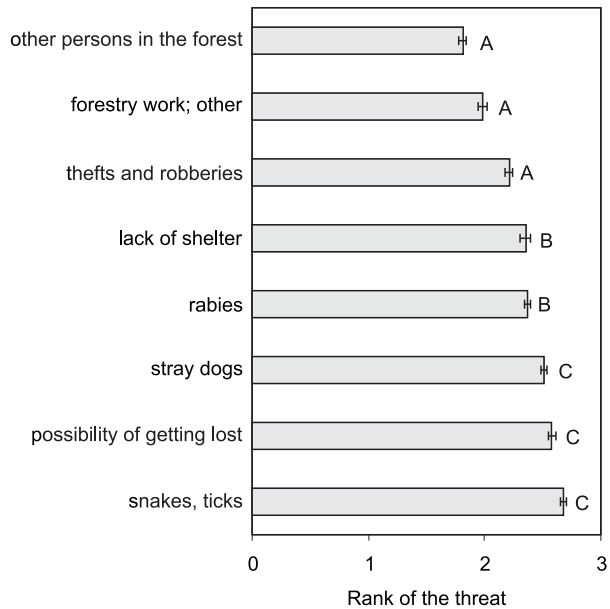


**Figure 13.** Threats to persons spending leisure time in the forest, the letters A–C designate homogeneous groups at a significance level of $p = 0.007$

**Table 2.** Tourism services in forests that respondents would use

| Type of service | Rank of interest for a given service | | |
|---|---|---|---|
| | 1 [%] | 2 [%] | 3 [%] |
| Bird and animal observation | 36.77 | 23.31 | 5.00 |
| Health spa (assisted treatment of ailments) | 27.94 | 5.26 | 1.67 |
| Group trips | 8.09 | 9.77 | 5.00 |
| Lodging and meals | 8.09 | 6.77 | 2.50. |
| Nature education for children and youth | 8.09 | 18.05 | 32.50 |
| Night trips (i.e. to red deer rutting areas) | 5.15 | 22.56 | 19.17 |
| Trips to the forest | 3.68 | 3.01 | 26.67 |
| Hunting | 2.21 | 11.28 | 6.67 |
| Orienteering and survival camps | - | - | 0.83 |

## 4. Discussion and summary

These results are similar in many areas with the published findings of social preference studies describing the expectations of tourists on managing and making forests more accessible, which have been conducted to date by Janusz and Piszczek (2008), Janeczko (2009, 2008), Janeczko and Woźnicka (2009), Kikulski (2009a, b) and Gołos (2013a, b; 2011). However, in a few places they also provide new knowledge about the broadly understood social preferences for the recreational management of forests.

The forest provides multiple opportunities for leisure time use. In the present study, respondents declared that they undertake various forms of activities during visits to the forest ranging from passive recreation to walking and more active pursuits. For comparison, Kikulski (2009) reported that the preferred form of spending leisure time by persons in the Iława and Dąbrowa State Forests was picking mushrooms (71%) and walking (67%). Berry picking (32%), bicycling (30%), swimming (25%) and nature observation (23%) were much less popular. The studies of Górecka (2009) and Eriksson et al. (2012) whose purpose was to determine user preferences of urban forests found, among other things, that the most preferred forms of recreation were walking and bicycling. Similar results were obtained in the urban forests of Warszawa, where 41% of respondents preferred walking, including walking the dog (8%) and bicycling (22%) (Janeczko, Woźnicka 2009). According to Sławski and Sławska (2009), the inhabitants of the Rogów community stated that they usually go to the forest to walk or to take trips with children (52% and 49% response rate). Much less popular forms of recreation were sports, such as running in the forest, or bicycle riding. According Sławski and Sławska (2009), this type of activity was declared by only 18% of respondents.

The distance residents travelled to get to the forest (6.9±1.2 km) in the present study differs from the distance reported by the respondents using the forests surrounding Warszawa (Gołos, Zając 2011). The results obtained confirm, however, that the majority of residents seeking to spend their leisure time in forests, especially after work, do not travel farther than 15 km. However, in order to get to the forest, tourists travel an average of 193.8 km, which is related to the need for a radical change of surroundings (Urry 2007).

Responses about the preferred type of forest were somewhat contradictory. Respondents preferred coniferous over deciduous forests and mixed coniferous over mixed deciduous forests, but these differences were not statistically significant. This contradicts a strong preference for open and sparsely growing forests, and this is usually how the pine forests grow in Poland. These responses suggest that "sparse" pine forests will be selected as new places to spend leisure time. In a similar study, respondents from many forested areas throughout Poland stated a preference for mixed forests (Gołos 2011).

Tourists visiting forests clearly preferred to be in naturally looking woods or even virgin forests, which is consistent with the research of Janusz and Piszczek (2008). Kikulski (2009) showed that a large proportion of persons (34%) prefer to visit undeveloped areas, with no tourism or recreational facilities. The results of Woźnicka and Janeczko (2009) show different preferences with 26% of respondents spending their leisure time in areas that were developed with recreational facilities, and only 6% of respondents preferring to visit areas devoid of amenities. An interesting result on this aspect of forests was obtained by Gołos (2013b) in a study of the residents of Silesia and Podlasie, in which 2% of the respondents preferred to spend leisure time in developed areas, while 15% of those surveyed in areas that were wild and inaccessible.

The preferences of respondents relating to the most important functions of the forest obtained in the present study are similar to those from previous Forest Research Institute studies (Gołos 2010). Respondents stated that the most important function of the forest was as a home to plants and animal life (29.5±1.0% of respondents), which is similar to research results from the Warszawa Forests (30.4%) and the Krościenko Forest District (26.8%). In earlier studies, respondents most often placed clean air protection in first place, and then the forest's function as a living habitat and recreational area. In the present study, the order was reversed – this time, the recreational function was ranked second (19.7±0.8%) with a score similar to the result for protecting air quality (19.0±0.8%).

In the present study, the highest average WTP value declared by the respondents to visit an accessible and fully developed forest was 42.5±27.5 PLN/month/family, whereas for an accessible and partly developed forest, this average was 16.9±5.1 PLN/month/person. Studies conducted in 2000–2009 using comparable methodology (with purposive and random representative samples) by Gołos (2013b) obtained a WTP amount from 41 PLN to 150 PLN per year/household. It is also

difficult to compare the WTP values obtained in 2005 by Bartczak et al. (2008) in studies of a nationwide sample. The values obtained ranged from 2.54 to 27.51 PLN/ person per visit, depending on the method of valuation used.

Respondents of the present study stressed the importance of cleanliness and order in the forest. Such expectations are confirmed by studies carried out in December 2009 by Hyży (2011), in which a clean forest was rated 8.8 (on a scale of 010 of importance), trash bins 8.7 and a sense of safety 8.4. In the studies cited, respondents rated natural features, the quality of the natural environment and safety – all rated 4.4 on a 5-point scale – among the factors influencing the quality of leisure time spent in the forest. According to a survey conducted by the Public Opinion Research Centre (CBOS) commissioned by the Institute for Sustainable Development (InE), 63% of respondents choose a particular location because of its beauty and natural features, whereas half of respondents are motivated by peace and quiet (Stanaszek, Tędziagolska 2011). Similar declarations prevailed in the study conducted by Sławski and Sławska (2009) among the residents of Rogów (Łódź Voivodeship), of which 60% declared that they choose to spend leisure time in the forest because they value contact with nature, as well as peace and quiet. In addition, clean air (53% response rate) is also a very important feature of forest areas for the respondents of Rogów.

The results of our study indicate that the possibility of getting lost, due to the lack of clear signage, was second in the ranking of threats to tourists in the forest, while threats from other people – theft and robbery – were placed sixth.

In the ranking of threats to the forest from tourists, littering was placed sixth, after vandalism, driving motor vehicles in the forest, disturbing animals, destroying plants and polluting water. In the comparative research by Janeczko and Woźnicka (2009), respondents reported the following as the main factors negatively impacting leisure time spent in Warszawa urban forests: littering (31% of respondents), damaged recreational amenities, such as broken benches, overturned trash bins, etc. (19%), noise (17%), the large number of other people present (15%), too few recreational amenities in the area (10% of respondents), incorrect or illegible trail markers (5%) and constraints due to various prohibitions and regulations (4% of respondents).

In the present study, respondents declared that trash bins, information signs, tables and benches, huts, shelters and campfire sites are most needed for recreation in forested areas, while the least needed are children's playgrounds and exercise equipment. The importance placed on information signs contradicts the common opinion that there are already too many signs in the forest. In Kikulski's studies (2009, 2008), respondents most often listed trash bins, benches and toilets, as well as information signs and shelters, as most needed in recreational areas. Similar results were obtained by Gołos (2013b) who found that forest users indicated that the existing infrastructure needed to be supplemented by an increase in the number of benches, trash bins, toilets and shelters. Respondents in the Janeczko and Woznicki (2009) study assessed the existing recreational infrastructure as insufficient, especially in urban forests. This is only partially supported by the results obtained by Sławski and Sławska (2009) who found that respondents expected marked hiking or bicycle trails (45%) and places to rest in the form of shelters with benches (42%). Some respondents were interested in visiting educational trails (19%), and more than 20% would have liked to have parking lots where their cars could be left. This contradicts the expectations of a large group of respondents (21%) who prefer a forest with no tourism infrastructure.

According to Kikulski (2009), the most desirable amenities listed by respondents were bicycle paths (19.9%), hiking trails (10.4%), beaches and swimming areas (each at 10.1%) and parking lots (8.9%). The present study generally found hiking trails, bicycle paths and nature trails to be cited as the most important. The least required were horseback riding and motocross paths, probably because they are a potential source of conflict among their users.

This study indicates that the most important infrastructure elements are: information signs of the area (a large proportion of respondents feared becoming lost), parking lots, rest areas, scenic viewpoints and animal observation areas. The least needed according to the respondents are ropes courses and paintball fields. The last two mentioned features were most likely rated so low due to a lack of awareness in society about these types of amenities. Unfortunately, analogous information on these infrastructure amenities is not found in the available literature. It is possible, however, that they may become important additions to the infrastructure in the most popularly used forest recreation areas in the near future.

As many as 58.2% of respondents expressed a willingness to use the services of a professional

forest tourism operator. In addition to services related to exploring the forest or providing accommodations, a demand for health related services in the forest was also expressed. According to Ożga et al. (2012), this indicates the possibility that services such as forest tourism operators could be created and provide new jobs in forestry. According to A. Grzywacz (personal communication), the possibility of initiating such activity has not been fully assessed, but there is great potential for its development.

On the basis of these survey responses and the results presented in the discussion, the following summary can be formulated:

– Respondents most frequently visited forests during vacations and weekends.

– Passive recreation most often occurs while travelling, and active recreation takes place on weekends, weekdays and during vacation,

– Tourists do not have a clear preference for coniferous tree stands, but prefer dry forests that are old, open and sparsely growing,

– The choice of forest recreational area is associated with the form of activity undertaken,

– The attractiveness of the forest is determined to the greatest extent by its appearance, species richness of mushrooms and plants, as well as existing nature reserves,

– Respondents reported walking and hiking trails, bicycle paths and nature trails as the most useful amenities for recreation,

– The least useful amenities for recreation, according to the respondents, are horseback riding and motocross paths due to the low number of forest users who are interested in these activities,

– Among the most important infrastructure amenities reported are information signs and trash bins, while the least important are playgrounds and exercise equipment,

– Respondents declared that the most important amenities are information signs, scenic viewpoints and parking lots, while the least needed are ropes courses and paintball fields,

– For a forest partially or fully adapted to accept visitors, a number of respondents declared a hypothetical WTP amount > 0 using the CVM method,

– According to respondents, the least acceptable forms of recreation in the forest are motocross rallies, mass events and family gatherings, probably because of the noise they generate,

– The most important threats to forest users include: stinging and biting animals, the possibility of getting lost and stray dogs,

– Respondents expressed their willingness to use the services of tourism operators in forests, primarily in the organisation of health related activities.

## 5. Conclusions

The results obtained allow the following conclusions to be drawn:

1. Forests are visited most often on days off from work for active leisure activities in accessible forests that provide opportunities to perform the dominant forms of reported activities (walking, bicycling). In addition, tourists are most interested in forests with abundant and diverse undergrowth resources and natural rarities (reserves).

2. Taking walks is the dominant form of activity undertaken by visitors to forests. This fact makes all types of linear tracks one of the major tourism infrastructure amenities, especially well-marked hiking trails outfitted with information signs.

3. Above all, tourists visiting forests value the ability to rest in peace and quiet, and oppose developing forest areas for horseback riding or motocross, as well as using forests to hold mass events or family gatherings.

4. Despite the discomfort that accompanies visits to forests (stinging and biting animals), persons who spend leisure time there declared a WTP for additional costs related to the visit, in addition to travel expenses. They expressed a readiness to co-finance the recreational function of the forest, and additionally, the willingness to use the services of forest tourism operators.

5. Forest tourists are not aware of alternative, modern forms of recreation in the forest. Popularising such recreational activities as bird watching, Nordic walking, ropes courses, field games and orienteering should become an important task of forest education.

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