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RECREATIONAL ACTIVITIES, PRACTICES AND ATTITUDES OF VISITORS TO THE PROTECTED LANDSCAPE AREAS AS A BASIS FOR RESOLVING CONFLICTS OF RECREATION AND NATURE PROTECTION

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Abstract

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The article presents the views and needs of visitors on a model example of a protected landscape area Moravian Karst. It analyses their view of nature conservation as a factor in the development of tourism and recreation. The results also present the habits and activities of visitors in relation to potential and actual impacts of recreation on protected areas and ecosystems. Methodology of the work is based on a standard questionnaire survey, conducted in the summer and autumn of 2013. Together with the management of the Moravian Karst locations with intense traffic were selected. These locations were then analysed by visible manifestations and impacts of recreational activities on the site.

Keywords: protected landscape area, outdoor recreation, tourism, nature protection, questionnaire survey, visitor impact, management of protected areas, karst, ecosystem services

INTRODUCTION

The issue of assessing the conflicts of recreational activities and nature protection in recent years has been monitored through ongoing thematic studies commissioned by the Ministry of Environment. Also abroad a number of major academic, governmental and intergovernmental institutions are dealing with it. One of the first approaches was the method of The Limits of Acceptable Change (LAC – The Limits of Acceptable Change) developed in the 1980s. It was designed as a comprehensive solution of visitor management in large protected areas (McCool, Cole, 1997). A few years later, the management of the national parks in the USA developed a more comprehensive methodology VIM (The Visitor Impact Management). This approach is more focused on the impacts of visitors' stay in protected areas. (Farrell, Marion, 2002). This approach was followed by method VERP (The Visitor Experience and Resource Protection), which emphasizes the importance of the mission of the National Parks and theirs management's targets (Slezáčková, 2014). Indicators for the effective management of protected areas are dealt with in some international organizations such as IUCN (International Union for Conservation of Nature) or WCPA (World Commission on Protected Areas) (Slezáčková, 2014). Generally these methods are based largely on the physical counting of the passing visitors.

It is necessary to assess the overall condition of the site and the synergy of other factors (e.g. forestry, grazing, long distance transmission of air pollution, etc.). The essential character is also affected by the location – e.g., length, intensity, frequency or reversibility of the observed impacts. Negative impacts of tourism and recreation on the environment are referred to by Pásková (2009) as tourist pollution. They are divided into similar categories: emissions (where the substances or energy from a source of pollution are released to

1, 2: *Impact of geocaching in the area of Jánošíkove diery. NNR Tiesňavy, NP Malá Fatra, Slovakia. These erosion phenomena has been caused by about 500 geocachers since 2011. Photo: J. Schneider*

the environment), erosion, introduction of non-native species to places that are not their original habitat and damage to natural resources and biodiversity (collection of rare and endangered species of plants, animals and minerals) (Pásková, 2009).

The visitor preferences are monitored in many areas. For example, Lawson and Manning (2002) evaluate the reduction of nature protection at the campsite in Denali National Park, focusing on the visitor impact, the state of resources and experiences. Juutinen *et al.* (2011) and Lindberg, Veisten (2012) dealt with similar studies in national parks. They focused on three basic levels – resting places, information boards along the roads (signs) and further analysed the preferences for increased diversity. Similar studies help to understand the preferences of visitors to protected areas, which can be very useful for future management actions. There are, however, also partial changes in the visitors' behaviour, which is partly due to the changes that have occurred in the last decade. These include recycling, which is dependent on the services or devices that were previously available only in cities, but today there are already more widespread in rural areas (Lindberg, Veisten, 2012). Huddart-Kennedy *et al.* (2009) investigated the behaviour of visitors and found more similarities than differences in the behaviour of people in cities and rural areas. But Berenguer, Corraliza, and Martín (2005), who observed the visitors' behaviour in more detail, concluded that rural residents have a more developed sense of moral obligation to care for the environment, and that they behave more responsibly.

MATERIALS AND METHODS

Visitor surveys were conducted during two periods – the main (summer) season and the secondary (autumn). The surveys were conducted in the National Nature Reserve Vývěry Punkvy and National Natural Landmark Rudické propadání based on a preliminary survey of attendance intensity. On the other expert-specified locations, intensively used by tourist, an evaluation was made of the visible impact of recreational activities.

The Area of Interest

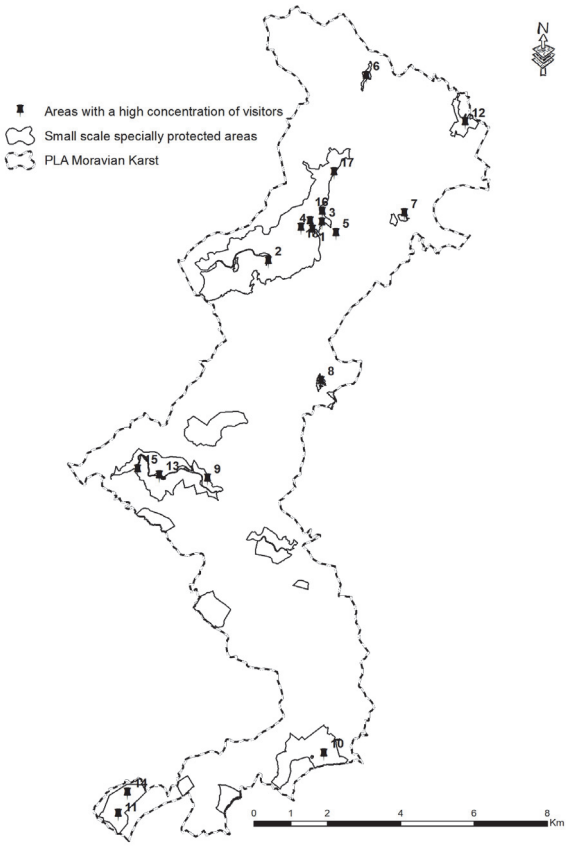
Moravian Karst is located in the South Moravian Region in the north-east of Brno among the municipalities Sloup, Blansko and Jedovnice. It is a part of Drahanská vrchovina Highland in the southeast part of the Česká vysočina and is composed of limestone in an area of 92 km^2. Moravian Karst was declared a protected landscape area in 1956. There are four national nature reserves, two national natural landmarks and 11 nature reserves located in the Moravian Karst. There are not only karst phenomena, but also plant and animal communities, bound to the limestone bedrock.

Finally, it is important to note that Protected Landscape Area Moravian Karst represents a natural recreational area for citizens of the city of Brno, the Moravian metropolis, with nearly 400 thousand residents.

Recreational potential of the cadastres of individual municipalities, evaluated according to a modified methodology of Bína *et al.* (2010), is presented in Fig. 3

The survey, connected with the questionnaire, was concentrated in two locations The first is a national

3: *The recreation potential of municipalities and parts of the cadastral in the territory of Protected Landscape Area Moravian Karst*



4: *Areas with a high concentration of traffic in the PLA Moravian Karst and areas with high attendance burden*
Legend: 1 – Punkevní Caves with its surroundings, 2 – Section from Skalní mlýn to Kateřínská Cave, 3 – Macocha Abyss, the trail to Dolní můstek (Lower Bridge), 4 – trail from Punkevni Caves to the castle ruins Blansek, 5 – trail between Macocha Abbys and Punkevní Caves, 6 – surroundings of Sloupsko–šošůvské Caves, 7 – surroundings of the Balcarka Cave, 8 – trail between the windmill in Rudice and the sagging Rudické propadání, 9 – trail through the valley of Josefský potok (creek), around Býčí skála (The Bull Rock Cave), 10 – Trail through the valley of Říčka and surroundings of the Pekárna Cave, 11 – NNR trail Hádecká planinka (Hadecka plain), 12 – Creek sink Stará and Nová Rasovna, castle ruins Holštejn, 13 –surroundings of the K. H. Mácha monument in Josefské údolí (Josef's valley), 14 – NNR Hádecká planinka (Hadecka plain), 15 – NNR Býčí skála (The Bull Rock Cave), 16 – NNR Vývěry Punkvy, surroundings of the cableway, 17 – Suchý žleb – Koňská jáma Cave, 18 – Pustý and Suchý žleb

nature reserve Vývěry Punkvy, which has an area of 556.5 hectares.

The second investigated area is national natural landmark Rudické propadání with an area of 4.40 hectares, which consists of the closure of the blind valley of Jedovnický potok (stream) a follow-up system of caves southeast of the village Rudice.

The Methodology and Procedure

The target group of the survey were visitors to Protected Landscape Area Moravian Karst The survey was conducted in two terms. The first was in the summer holiday season in the period from 11th to 31st August 2013 (147 respondents). The second survey was carried out from 5th to 28th October 2013 (128 respondents). A questionnaire survey was conducted anonymously. The survey was conducted in the same day and time span. Therefore, the number of respondents in the autumn is about 10% lower.

The objectives of the survey were to find recreational activities, habits and preferences of visitors to PLA Moravian Karst in relation to nature and landscape protection and secondary also regional development. Questions can therefore be divided into three groups:

1) Questions of a general nature – age, sex, education, regional origin.
2) General inquiries in relation to regional development (and indirectly also to nature and landscape protection) – accommodation, length of stay, transportation, preferred destinations and activities, impulse for the visit, orientation in the terrain…
3) Questions with a direct connection to nature and landscape protection – limitations in terms of nature protection, the opinion of the cable car from Punkevní jeskyně to the Macocha Abyss, evaluation of recreational infrastructure and furniture.

List of questions:

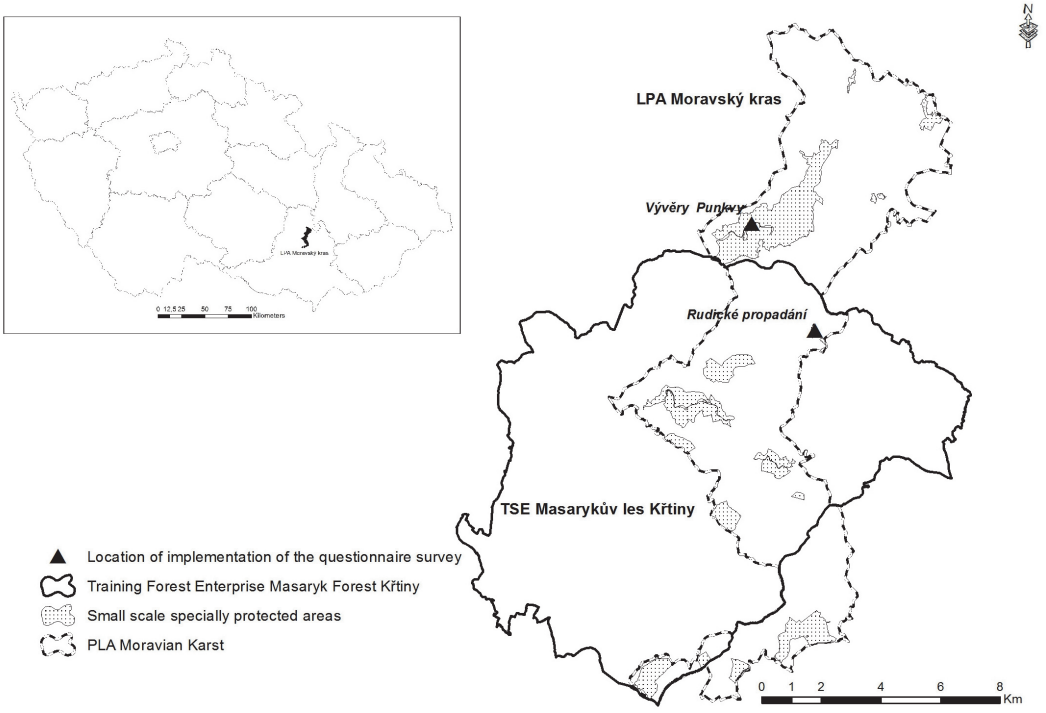
1) Nationality;
2) Where are you from? (Permanent residence);
3) Gender;
4) Age;
5) Education;
6) The reason of visiting PLA (Protected Landscape Area);
7) How did you arrive?;
8) How long are you planning to stay?;
9) Where are you staying?;
10) During my stay I have a meal/snack at …;
11) What made you choose;
12) Have you visited any cultural historical sights during your stay in PLA?;
13) What activities did you do during your stay?;
14) Have you visited any caves? (Which ones?);
15) Were your recreational activities limited by any nataure conservation rules?;
16) What is your opinion on the cableway from Punkevni Caves to Horni Mustek of Macocha Abbys and back?;
17) What is your opinion on infrastructure for your activities?;
18) What kind of souvenirs do you prefer?;
19) What system do you use to orientate in terrain?;
20) Would you like to vist PLA Moravsky Kras again?

This method of obtaining information is a quantitative method of sociological research. In this process of information gathering the interviewed were not influenced by the interviewer. The questionnaire used mostly closed or semi-open questions. Respondents were also able to comment on how the protection of nature limited them and what they lacked in the Moravian Karst in terms of infrastructure. Questions were initially evaluated as absolute frequency, i.e. from the individual forms it was evaluated how many values of the character occurred separately in the first and second survey. Subsequently these absolute frequencies were converted to a percentage to make it clear what proportion the individual values are to the total number of values. In most questions, the sum of the absolute frequencies equals to 147 in the first survey, and 128 in the second, that means one hundred per cent was 147 responses for the first survey and in the second survey it was 128 responses, which are the numbers of survey participants. These were questions number 1, 3, 4, 5, 7, 8, 11, 15, 16, 17, 18, 20.

For questions number: 6, 10, 12, 13, 14, and 19, the sum of the absolute frequency does not equal the number of respondents, but the total number of answers to these questions. It is due to the fact that it was possible to choose more than one answer to these questions.

RESULTS

In the first phase of the research areas were identified with a high concentration of traffic in the PLA Moravian Karst and places burdened with high attendance. Their deployment in the field is presented in Fig. 4. The table shows that heavily visited territories are mainly linked to the caves



5: *PLA Moravian Karst – position in the Czech Republic, the relative position of TFE MF Křtiny to small-scale specially protected areas and location of implementation of the questionnaire survey*

surroundings, which is equipped with sufficient tourist infrastructure and furniture and does not raise the visitors' needs to move and be active outside these treated areas. At the same time it is clear that the ongoing care for these sites contributes to minimizing the impacts. Near the trails connecting tourist hotspots or near inaccessible caves the most common problem is trampling. This causes exposing the root system of trees and possibly spot erosion. Another risk is represented by solitary uncontrolled fire places, which presents a risk of fire.

Intensive recreational use of preferred hiking trails and sites can also result in at first glance non-obvious impacts, primarily affecting the species diversity of ecosystems, including especially protected species of plants and animals. However this must be proved by long-term monitoring and observing the dynamics of the density of individual populations.

Overall, however, it can be stated that the carrying capacity of ecosystems of PLA Moravian Karst is sufficient given the current intensity of recreational traffic. The efficient and effective management of the PLA also contributes to this fact.

Results of the Questionnaire Survey

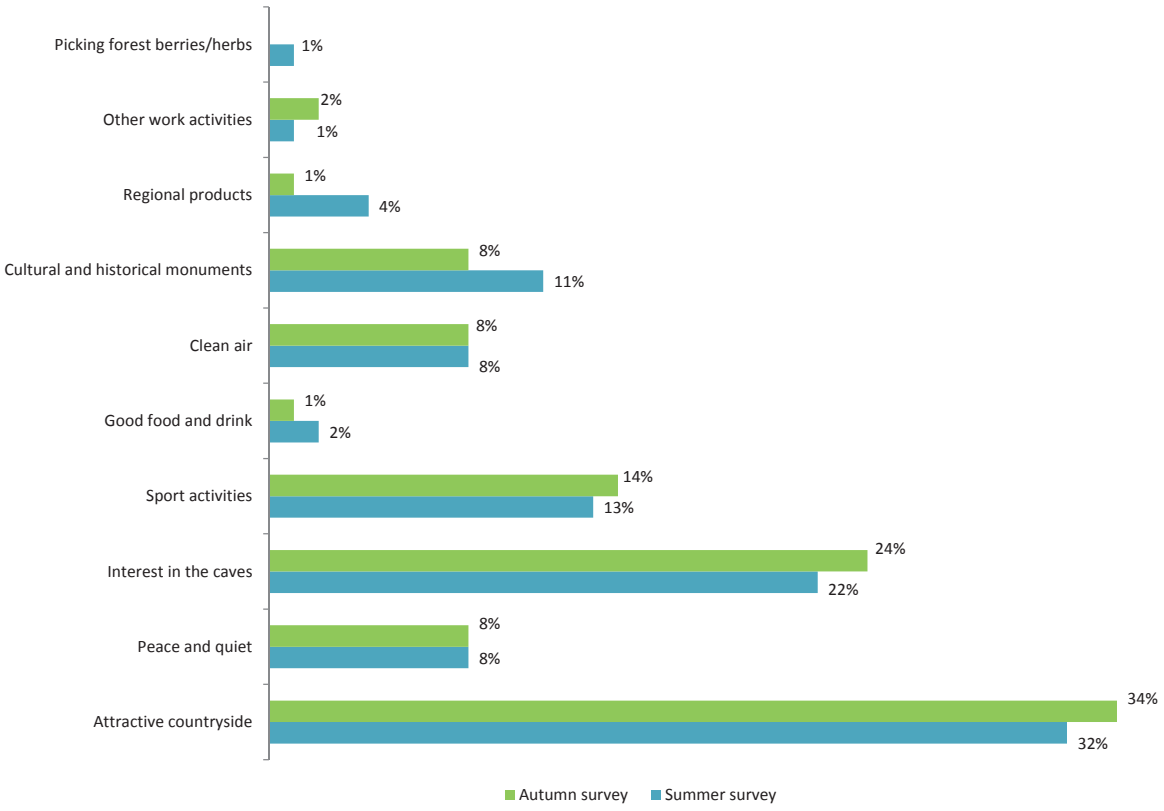
The questionnaire survey at locations nr. 2 – Vývěry Punky and nr. 8 – Rudické propadání brought the following results:

The ratio between men and women interviewed in both surveys was almost balanced. In both surveys there was a predominant percentage of women (52 and 54%). The difference is due to the willingness to answer questions. This does not mean that the visitors were more women than men. Age structure of respondents in both surveys was very similar. In both cases respondents from 26–35 years and 36–45 years prevailed. Education of respondents in both surveys was also very similar. Visitors with secondary education, completed secondary education prevailed and university-educated people followed.

The questionnaire also pointed to the nationality of the respondents. In the summer season, the number of foreign visitors is higher than in the autumn. As well as their diversity is higher in the ummer.

The largest representation in both surveys have the visitors from Slovakia, of which there were ten percent of the total respondents in the summer. In the autumn survey, there were about four percent fewer/less. Visitors from Poland were represented by seven percent of the respondents, and their number also fell to four percent in the second survey. Visitors from other countries – Germany, Austria and Russia were represented mostly individually, i.e. up to 2%.

Further the residence (region) of the Czech respondents was investigated, from which regions they came to the area in question. These were 73% responses in summer and 87% of respondents'



6: *Stated reasons for visiting PLA Moravian Karst*

answers in the autumn survey. In the autumn survey, the proportion of visitors mainly from South Moravian region and neighbouring regions – Zlín and Olomouc Region grew. In the summer, on the contrary, visitors from more distant regions were more numerous. This again corresponds with the period of the holiday season and in total with travel season during the summer months.

In determining the reasons for their visit the survey participants reported most frequently attractive countryside and interest in the caves. Also, in the summer survey there was an increase of interest in cultural and historical monuments, which are frequently visited by foreign tourists and tourists from distant regions. More detailed data are presented in Fig. 6.

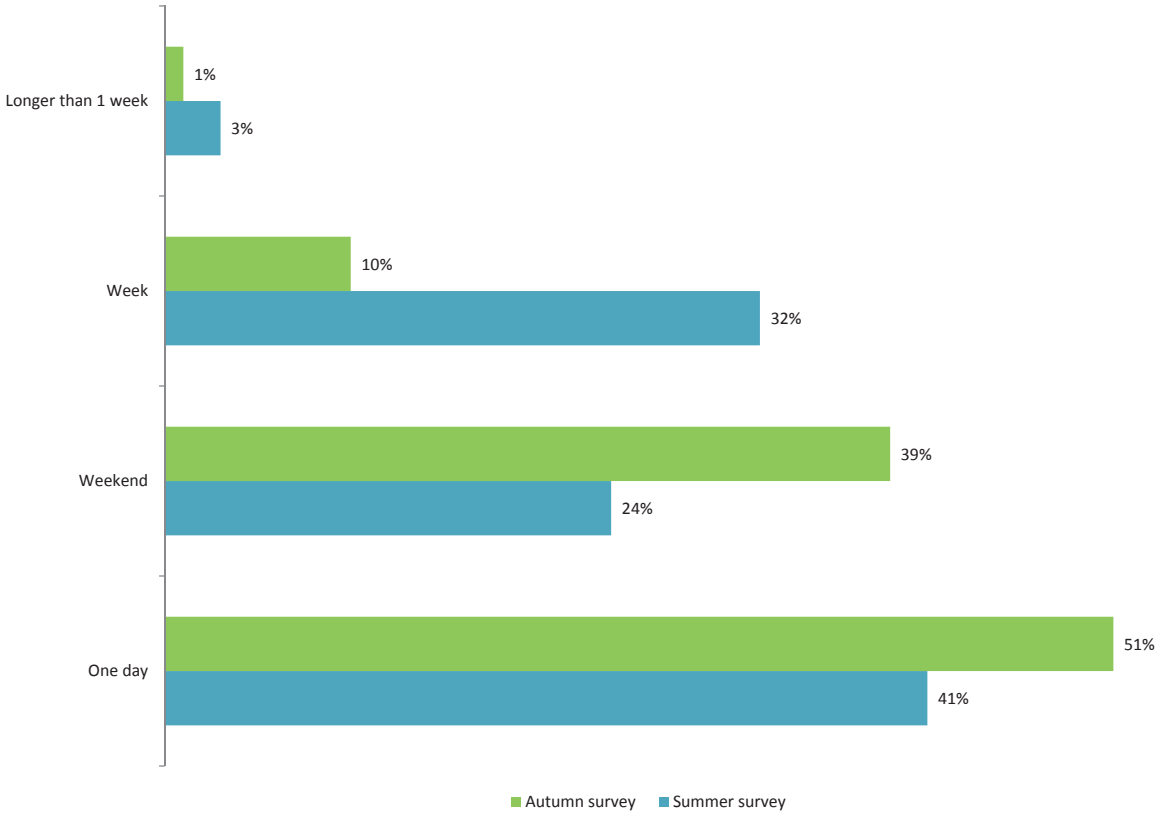
In particular question concerning the visited place the prevailing response was historical monuments (castles, churches, ruins), which were mentioned by 33% in summer and 28% in the autumn survey. Cultural monuments (exhibitions, museums) raise lower interest of tourists overall in both periods, and are not the priority destination in the territory. Their number is low, mostly rather of regional importance, or closely related to the more interesting tourist attractions.

The transport which was most frequently used was the car. In the autumn survey there were more visitors who arrived by bicycle, which can be caused by an increase in tourists from the nearer neighbourhood (Brno, Blansko), who took advantage of the vicinity to the Moravian Karst.

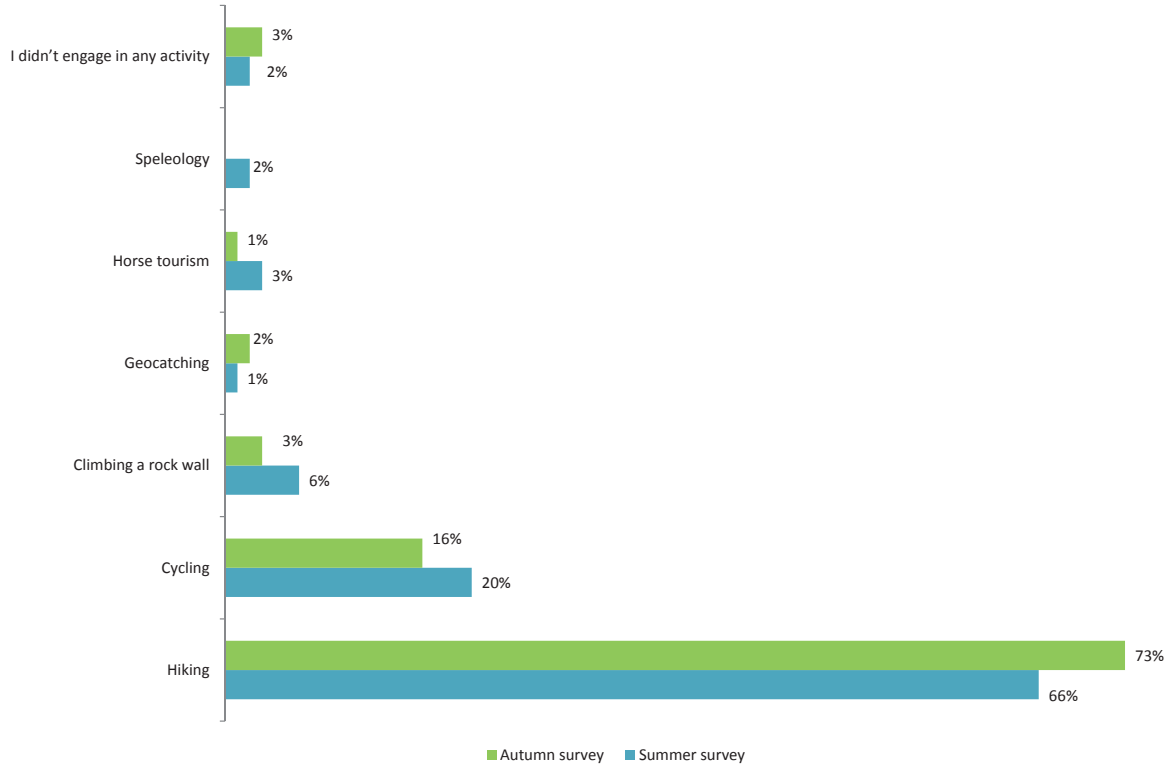
In terms of the length of the visits during the summer survey, the respondents stayed in the Moravian Karst mostly for one day. But they also stayed there for several days. More frequent (32% response) were also weekly stays (5–7 days). Conversely, in the autumn survey there was an increase of visitors for two to three days (weekends). Five-day and longer stays were rather an exception. Autumn trips were mainly (51%) of a one-day character. The length of the visit is shown in Fig. 7.

Other questions focused on the accommodation type of the visitors who have stayed in the area for more than one day. Respondents in both cases use boarding houses most (35 and 40%). In the autumn survey accommodation in camps decreased significantly (3 p.p.), and in the summer survey it was mentioned by fifteen per cent of respondents. Due to the decline of accommodation in camps (due to colder weather at the end of the season), there is a growing proportion of accommodation in hotels, boarding houses and other alternatives.

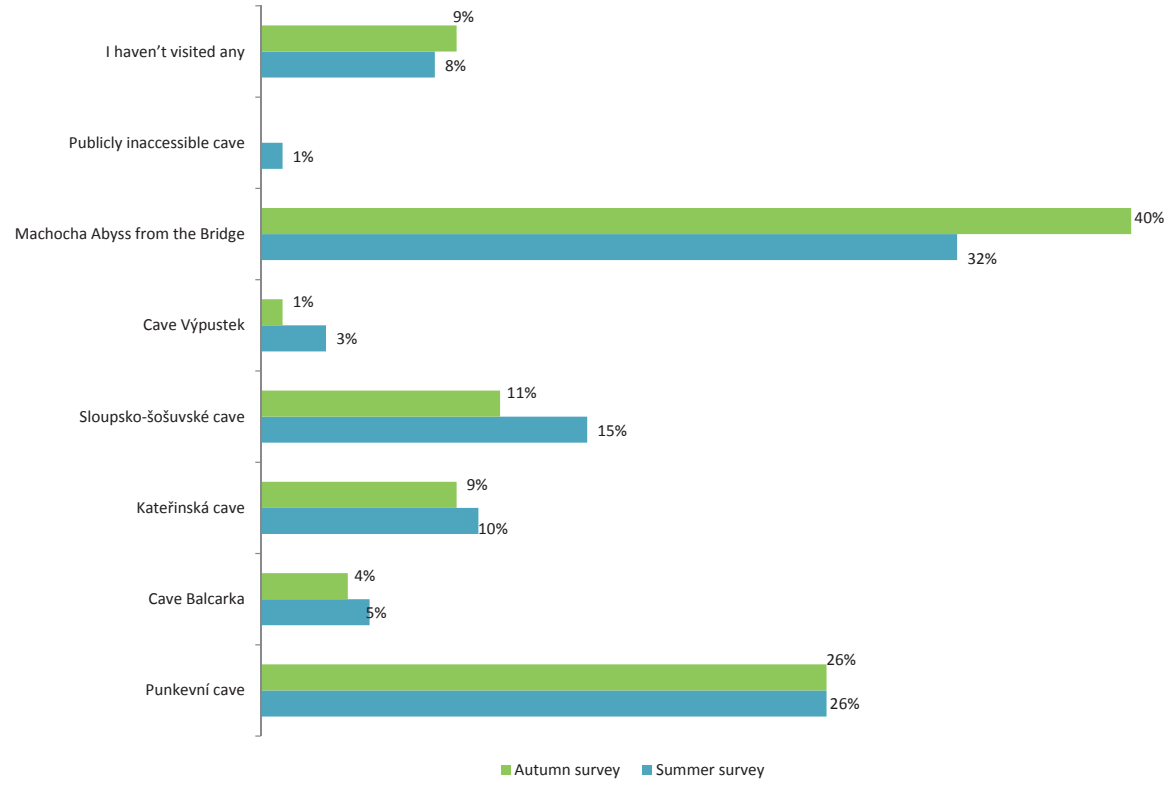
Most often tourists accommodate in some of the villages in the PLA Moravian Karst or in Blansko. If they choose accommodation outside the protected landscape area, it is usually a villages in the surrounding area. Unlike the type of accommodation, its place is not influenced seasonally. An important aspect is virtually a zero frequency of camping in the wild, which is a positive



7: *Length of stay*



8: *Activities for the period of stay*



9: *Visited caves*

finding. It eliminates especially the risk of fire. On the other hand, we can assume an extent greater than the observed one of this type of camping (based on the long-term experience of the authors).

As for the question of catering visitors most frequently used the mobile snack bar. In the second survey there was a seven percent increase in responses of visitors who did not use any option. This may be due to one-day visitors and visitors from the surrounding area who did not need to use forms of public catering.

The incentive to visit the Moravian Karst was given to the highest number of visitors by their friends (41%). In autumn season the general knowledge of the place (from the past, etc…), increased and therefore the recommendation of friends also decreases. This can again be attributed to the increased number of visitors the South Moravian Region (primarily from Brno and surroundings), who visit this site regularly. In both surveys, the Internet as a reason to visit the Moravian Karst has the same representation.

As for the activities that visitors engaged in during their stay, hiking prevailed, often associated with visiting historical and cultural sites, as mentioned above. In the autumn survey, hiking increases by seven percent. There are more tourists who stay for only one day, so due to limited time spent there, there is a smaller diversity of activities that could be done in the area. Although in the second survey the use of bicycles as a means of transport to the area increased, except for these visitors, the number of respondents engaged/involved in cycling wasn't higher than in the summer.

Among the most visited caves were Punkevní jeskyně (26% both in summer and autumn) and the Macocha Abyss from the Bridge (32% in summer). In the autumn, attendance of some caves slightly falls, thus increasing the value for the Macocha Abyss from the Bridge (40%).

When asked whether the visitors were limited in their recreational activities by any conservation measures during the summer survey, eighty percent of visitors said they were not. In the autumn survey, ninety-three percent of visitors were not even aware of a restriction. As for answers 'yes', the respondents had to express how exactly they perceived any possible limitation.

Comments from visitors to restrictive measures could be summed up in these few categories. The situation is further illustrated in Fig. 9.

Visitors perceive as limitations the inability to visit the caves which are, in order to protect nature, not accessible to the general public (26% and 55%). Visitors would like to move beyond the marked trails either on foot or by bicycle (21% and 27%).

Automobile restrictions, visitors were bothered by not being able to get everywhere by a car (11% and 18%). Limitations on collecting berries, which is not permitted throughout the territory (5%). So called limits of visitors due to which they could not visit a cave open to the public (37%).

In the Czech Republic it is generally prohibited, without an issued permit, to drive a car along forest paths. In Moravian Karst there are some now closed but previously used roads, primarily from Hotel Skalní Mlýn to Punkevní jeskyně caves. Traffic restrictions are replaced by electric tourist train.

Another issue was the opinion of cable car from Punkevní jeskyně to Horní Můstek (Upper Bridge) of the gorge, where almost fifty percent of tourists answered that they do not mind the cable car, over thirty percent of visitors view it as a positive aspect. In both surveys over fifteen percent of visitors perceived the cable car as inappropriate in this countryside. It is a pity that there are no data on public attitudes prior to project implementation. The cable car was perceived as a controversial (mostly useless) project. The work, however, is gently nestled into the landscape, minimizing the impact on the environment.

The infrastructure was evaluated as adequate by a majortiy of visitors. Nine per cent in both investigations perceives it as unnecessary. As the third option there was an answer "I lack …", in which the respondents were to specifically express what they lack. Tourists once again expressed that they lack the possibility of moving beyond marked trails, as well as their better, clearer labeling. In the summer survey visitors lacked more parking places and automobile limitations were mentioned again.

In the summer survey the visitors' wish to walk off the trail the largest share and a certain representation (in absolute numbers, there were only two answers) had a requirement for parking spaces. In the autumn survey, visitors expressed themselves more to off-trail travel, better marked trails and automotive limitations.

As for questions on preference of souvenirs, visitors often mentioned that they take home small souvenirs and photos, which are just another alternative that tourists like to bring from the holidays most. An interesting fact is the fourteen percent of visitors who are not interested in the souvenirs at all.

As the most frequently used options for visitor orientation in terrain is a combination of maps, guides and marked trails. And that is even in the case of the second survey, with a slight increase in their own orientation, which is caused by the tourists, who are in the area for the first time and whose number has increased in the autumn survey. It will be interesting to see the evolution of the number of visitors using GPS and its influence on the development of geocaching.

The entire questionnaire was closed by a question concerning the interest to revisit the Moravian Karst, where in both cases, over 90% visitors responded positively. The results of both surveys indicate the attractiveness of a location for repeated trips.

DISCUSSION

The survey was conducted in recreationally important parts of the year – in the main (summer) season and in October, when the attractiveness of the PLA Moravian Karst further increases due

to the colourful forest stands. In the autumn the importance of the area in terms of suburban recreation for the inhabitants of Brno, Blansko, Adamov and other cities increases. The number of respondents is in both cases low, but sufficient to capture the major trends in the recreational activities of visitors. Further data acquisition is in progress in order to provide a statistically representative set of data for stating correlation between the individual categories (e.g. differences between the preferences of recreational activities between suburban vacationers and tourists). The survey was carried out in consultation and expressions of interest from the administration of PLA Moravian Karst. Basically this is a pilot survey, which should be the basis for establishing long-term research of recreational activities, habits and preferences of visitors to PLA Moravian Karst. The questionnaire will also be applicable to other large specially protected areas, not only in the Czech Republic but also, among others in the Slovak Republic (e.g. Malá Fatra NP) and in Poland (e.g. Bialowieza national park). In the Central European area a similar comprehensive survey is still missing.

CONCLUSION

The article describes the protected landscape area Moravian Karst – profile of visitors to the area, which serves as a basis for solving visitor impacts on nature conservation. The research showed that in autumn, the number of foreign tourists decreases in the summer it makes up nearly a third of all visitors. In contrast, in the autumn there is a growing number of tourists from South Moravia, Olomouc and Zlín regions, due to the lower number of visitors from distant parts of the country. The length of stay in the summer and autumn survey differs significantly. In autumn there are the most frequent one day trips, and if tourists stay for several days, then usually only for a weekend. While in summer they are here for a longer period of time. The usual type of accommodation is in hotels and guest houses. In the autumn numbers of accommodated in camps declines. The most common place of accommodation is right in the Protected Landscape Area. Effect of seasonality can be observed in questions on basis of on what the visitors decided to visit PLA Moravian Karst, where in the first survey the most common responses were recommendation of friends and acquaintances. But this in the autumn thanks to a greater number of tourists from neighbouring regions changes. Therefore, the possibility based on the general knowledge of the place (from an earlier time, elementary school, etc.) increases. Due to the short time that the respondents spend in PLA in the autumn, visiting cultural and historical sites falls in the second survey. They also spend their time mostly by hiking, while in summer with longer stays their interest in the cultural, historical monuments and the range of activities increases as well. Visitor survey shows that most tourists do not feel limited by conservation measures. Percentages however show that if they felt the constraints then it was probably/rather in the first survey. This increase is attributed, in particularly by the sold out tickets to Punkevni caves, where many tourists booked entrance in advance, so those who have come around noon without reservation, could no longer get to the caves. Due to the limits no further visits were allowed. At a lower concentration of visitors in autumn this problem has not been reported. According to the survey for the orientation in the terrain mostly marked trails and maps with guides are used. With a higher number of visitors from the immediate neighbourhood, there are more and more of those who know the area so well, that they use only their own (sense of) direction. Most visitors to the area would come back again, which proves that the area has something to offer repeatedly.

Acknowledgement

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