

Exploring Tourist Preferences on the Visitor Management System: the Case Study of Plitvice Lakes National Park

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ABSTRACT

This study aims to develop an online survey on the tourist perception of the visitor management system of the Plitvice Lakes National Park in Croatia. As tourists are particularly sensitive to organisational issues related to the Park management, a bottom-up approach based on visitors' opinions has been applied. First of all, a brief chronology has been reconstructed that retraces the most significant stages of the Park. Subsequently, an online questionnaire was structured on the basis of the current Park Management Plan with a focus on the macro-topics concerning the visitor management system. The survey was distributed using the Google Form application. A total of 214 questionnaires were collected in the period between May and July 2022. The sample was statistically analysed to detect the main habits of the Park users. The Mann-Whitney-Wilcoxon U test and the Kruskal-Wallis test were applied to identify the differences in the priorities attributed by visitors to the various management actions. Among the main findings of the research, the authors identified that national visitors (i.e. Croatian) place a higher priority on the implementation of services and infrastructure than tourists from other countries. In addition, those who have visited the Park on multiple occasions have higher safety expectations than those who have only visited the Park once. This category of visitors also considers it more important to take into account the opinions of visitors. Furthermore, with regard to retail and souvenir shops, tourists are generally inclined to set a lower priority for intervention than that attributed to other management aspects. The results of this study can be of great value to Park managers, who should consider visitors as key stakeholders in the decision-making process that is the foundation for managing this important natural resource.

Keywords: visitor perception; tourist satisfaction; natural resources management; park management; nature-based tourism; national parks; protected areas

INTRODUCTION

In post-modern society, the sustainable tourism sector is one of the key activities to be developed while preserving natural resources for future generations (Sandell 2016). Firstly, tourism is an economic activity and therefore can have an environmental impact (Smolčić Jurdana 2009). This is a key factor that managers need to take into consideration in planning and managing nature-based destinations. In general, a tourist destination is primarily a complex system which incorporates tourist attractions, structures

and accommodation facilities (Radisic and Basan 2007). In fact, there is a strong connection between the provision of infrastructure and services and the tourist development of a given area (Mandić et al. 2018). In this context, the main objective of tourism managers is to satisfy visitors' demands without compromising the integrity of the sites (Mandić 2021, Perera et al. 2015).

Over the past decades, the natural environment has become an increasingly popular tourist destination, especially as regards protected areas (PAs), in general, and national parks (NPs), in particular (Smolčić Jurdana 2009, Lundmark

and Müller 2010, Wolf et al. 2015, McCool et al. 2021). According to the Flash Eurobarometer 499 "Attitudes of Europeans towards tourism" Report (European Commission 2021), in 2020, the natural environment was identified as the main driver - on a par with the cost factor - in the choice of tourist destination for 43% of European travellers. Furthermore, the current scale of tourist flows to nature-based destinations requires an additional effort by managers to minimise the negative impacts of tourism on natural ecosystems (Smolčić Jurdana 2009). These impacts are often related to managing tourism infrastructure and services (McCool et al. 2021), which require special attention. In particular, the management of the PAs is characterised by a trade-off between the objectives of nature conservation and tourism promotion (Mandić 2021).

Taking those considerations into account, the present study focuses on the tourist management system in one of the European PAs most affected by international tourist flows, the Plitvice Lakes National Park (PLNP) in Croatia. A bottom-up approach was applied in this study, which was based on the opinions of visitors, who are seen as the main judges of the quality of the tourist destination (Radisic and Basan 2007). The most relevant management problems for PLNP visitors were identified based on the findings of a previous study (Sergiacomi et al. 2022). In that study, the authors found that visitors are particularly sensitive to both organisational issues related to overcrowding, and to the planning of visits to the PLNP, in order to enjoy the best of its natural beauties. The research questions of this study, are as follows:

- RQ1. What are the management issues related to the visitation system identified as a priority by PLNP tourists?
- RQ2. How does the visitor's perspective coincide with the vision outlined by managers in the current PLNP Management Plan?

In the literature, few recent studies have been conducted on issues strictly related to the management of nature-based destinations directly involving visitors of PAs (Cihar and Stankova 2006, Arnberger et al. 2012, Belkayali and Kesimoğlu 2015, Abdullah et al. 2018). Thus, this research aims to fill this gap by exploring the views and preferences of visitors on some key aspects of PLNP management.

The remainder of the paper is organised into the following sections. The second section provides a literature review of nature-based tourism, in particular the participatory management of these types of tourist destinations. The methodology used is illustrated in the third section. After that, the main findings are presented in the fourth section, while the fifth section discusses the results. Finally, the sixth and final section analyses the limits of the study and provides useful applications and future research.

STATE OF THE ART

Nature-based Tourism

In the literature, there are many different and sometimes conflicting definitions of nature-based tourism. Since nature can assume different meanings for different types of tourists (Lundmark and Müller 2010, Sandell 2016), nature-based tourism is a very wide category. It includes both general visits

to pleasant natural landscapes, and many specific activities that can be enjoyed in nature (e.g. sports; outdoor education; nature conservation). In particular, PAs and nature reserve areas (especially NPs) represent the predominant setting for nature-based tourism activities (Smolčić Jurdana 2009, Kaffashi et al. 2015, Perera et al. 2015, Sandell 2016, Vurnek et al. 2018).

In recent years, demand for nature-based destinations has increased significantly. In fact, trends have shown that this specific segment continues to grow much faster than the development of the tourism sector in general (Smolčić Jurdana 2009, Lundmark and Müller 2010, Kaffashi et al. 2015). This is mostly due to the modern urgency of returning to nature (Stoleriu et al. 2019, Niezgodna and Nowacki 2020). At present, it is widely recognised that this need stems from nature's ability to generate human well-being, both physically and mentally (Wolf et al. 2015, Roberts et al. 2018, Plunz et al. 2019, Niezgodna and Nowacki 2020). As such, this growth requires increased managerial responsibilities and skills on the part of NP administrators, to meet tourists' leisure needs and to ensure the efficient conservation of natural resources (Mandić 2021, Perera et al. 2015).

Moreover, visitor perception of nature-based destinations is strongly influenced by external components. These components are related to tourism management (Stoleriu et al. 2019), such as: good accessibility; proposal of differentiated activities; availability of transport means; security of visits. Therefore, in NPs the development and maintenance of tourism infrastructure is extremely important, both economically and for the conservation of natural ecosystems (Mandić et al. 2018, Mandić 2021). Particularly, in countries where the economy is strongly dependent on tourism, management aspects relating to tourist destinations are of fundamental importance. This is the case in the Republic of Croatia, where PAs are selected as one of the main reasons for visiting the country (Marković et al. 2013, Lončarić et al. 2021).

Thus, in a similar landscape becomes more and more important to provide an exhaustive picture of nature-based tourism. It also becomes important to cover the demand-side and deepen how people perceive their recreational experiences in nature-based destinations (Lundmark and Müller 2010).

Participatory Management of Nature-based Tourist Destinations

The importance of stakeholder involvement in nature-based destination planning and management is generally recognized (Mandić 2019, Pezdevšek Malovrh et al. 2019). In the international literature, many different methods are used to gather stakeholder input (Paletto et al. 2017), including focus groups, interviews and questionnaires. Particular attention is paid to the forest recreation sector. Some explored the aesthetic preferences of users for different types of forest management (Paletto et al. 2018), while others looked at visitor uses and urban forest conditions (Krajter Ostoić et al. 2017, Kičić et al. 2020). Specifically, these latest studies have increased over the course of the spread of the SARS-CoV-2 pandemic (Marin et al. 2021).

Other categories of stakeholders have been extensively involved in surveys on natural sites management, such as: managers (Moreno et al. 2014, Pietilä 2019), staff (Mandić

2021, McCool et al. 2021), or the local population (Héritier 2010, Jones et al. 2015). Conversely, visitors are rarely involved in management surveys. Only a few studies have recently engaged NP users to express their views on purely management aspects. In their research, Cihar and Stankova (2006) interviewed visitors to the Podyji/Thaya River Basin National Park (Czech Republic) and other stakeholder groups (i.e. local residents and representatives of local governments) to obtain their opinions on the management of the nature conservation. However, those authors themselves recognized that tourists have a fairly low knowledge of environmental dynamics and problems. Therefore, they are not the best class of stakeholders to be involved in this aspect of management. In another study conducted in the Gesäuse National Park (Austria), visitors were the subject of a survey aimed at studying the relationship between tourist affinities with NPs and their attitude towards the management of visits with respect to nature conservation (Arnberger et al. 2012). Thereafter, Belkayali and Kesimoğlu (2015) for the Kure Mountains National Park (Turkey) and Abdullah et al. (2018) for the Penang National Park (Malaysia) also engaged visitors and other categories of stakeholders. The goal has always been to analyse the opinion of tourists on the relationship between the management of tourism in parks and environmental issues.

Actually, visitor feedback proved effective in developing good management practices for nature-based destinations. Indeed, they represent the main subjects who perceive the results of a good or poor management of the places. Therefore, comments from visitors may provide important suggestions for improving visitor satisfaction (Kaffashi et al. 2015, Marin et al. 2021). In fact, to take into account the dual purpose of nature conservation and recreation, the tourist point of view is of great importance (Perera et al. 2015).

In addition, the scarcity of visitor satisfaction data makes it a field of investigation to explore further (Mandić 2021). A new hypothesis is to transform the current system of monitoring and managing visitors in the PAs into a “third generation” model (Mandić 2021). From this point of view, visitors will become an opportunity, actively contributing in defining management strategies. Moreover, the use of management strategies that derive from the users themselves, can help them to become aware of the values and limitations of PAs, educating visitors and minimising their potential negative impacts (Kaffashi et al. 2015). Therefore, involving visitors as co-protagonists in the management of nature-based destinations represents a stimulating challenge for the world of research and administration.

MATERIALS AND METHODS

Study Area

The Plitvice Lakes National Park (PLNP) - one of Central Europe's most visited natural sites (McCool et al. 2021) - is located in the mountain hinterland of the Republic of Croatia, in the counties of Ličko-senjska and Karlovačka. The PLNP is part of the Dinaric karst area and is the largest national park in the country with nearly 30,000 hectares of forests, lakes and caves. The aquatic area of the PLNP represents about 1% of the total surface and is the most important attraction

for visitors (Vurnek et al. 2018, Mandić 2021). The remaining 99% of the surface consists mostly of forests and grasslands. Within the boundaries of the PLNP, there are 20 settlements that do not exceed the level of several hundred inhabitants (based on the 2011 Census). Local farms produce cheese, jam, and honey, which are incorporated as traditional products in the PLNP sales system. The surrounding area includes small farms and accommodation facilities.

The PLNP is administered by a Director General and a large staff, who are under the supervision of the Plitvice Lakes National Park Public Institution (PLNPPI). The PLNPPI was established by the Republic of Croatia and falls under the authority of the Ministry of the Environment and Energy (MEE). The PLNP has to comply with two current regulation forms. One is the Physical Planning Act (Official Gazette 153/13), which defines what can be built within the area. The other is the Nature Protection Act (Official Gazette 88/13, 15/18, 14/19, 127/19), which requires the PLNP to prepare and adopt a management plan as a key policy governance document.

Furthermore, the PLNP is the oldest PA in Croatia and has covered many important milestones in the over 70 years of its existence (Figure 1). In fact, shortly after the end of World War II, the Yugoslav government named it NP (8 April 1949). Initially, the PLNP had no real management system, but it was simply served by trails that led tourists to major waterfalls and lakes, and to the canyon area. It was only in the early 1950s that the first accommodations were constructed, including hotels, restaurants and campsites. In 1979, the PLNP was granted UNESCO World Heritage Site, thanks to the universally recognised value of the exceptional tufa formation process taking place there. A major wound was left by the Croatian Homeland War (1990–1995), during which many structures were destroyed or extensively damaged, and many mines were scattered in the PLNP area. Since 1995, the PLNP staff has been recovered, user fees have been set and a first administrative program has been implemented. In 1997, the PLNP area expanded to the current surface of 29,630 hectares. Until the 2000s, the PLNP received significant but steady flows of visitors. For this reason, the General Management Plan developed in 2007 focused mainly on the multiple natural ecosystems of the PLNP, while little attention was given to the system of visits. In particular, the 2007 Plan paid more attention to the preservation and enhancement of the territory's cultural and historical values, crafts and local traditions. Some limited changes have also been proposed in the trail network and internal transportation (e.g. the conversion of panoramic buses from diesel engines to electric motors). Nevertheless, few interventions were actually carried out in response to increased visitor flows. As regards the importance of the PLNP for the biodiversity conservation, this was underlined in 2013 when the PLNP was declared Important Bird Area (IBA) and Special Area of Conservation (SAC) within the Natura 2000 network. The Nature Protection Act requires the renewal of NP management plans every ten years. As a result, a new planning process was launched in 2016, with the primary goal of addressing the pressing issue of visit management. Between 2015 and 2018, several workshops and training seminars were organised for PLNP staff by external experts in the management of visits (McCool et al. 2021).

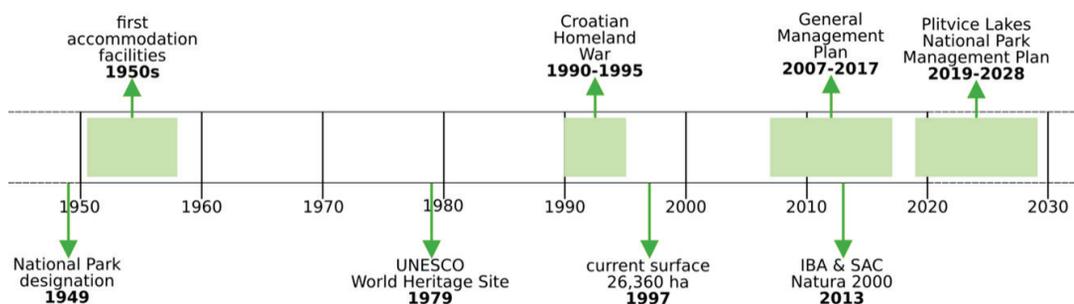


Figure 1. Main stages in the history of Plitvice Lakes National Park.

The current Plitvice Lakes National Park Management Plan 2019-2028 (2019), which set out to address these challenges, came into force in 2019 (Figure 2). After an introduction to the PLNP area, the Plan organises the chapter dedicated to management into five main themes: Conservation of natural values (theme A); Conservation of cultural heritage (theme B); Visitor management (theme C); Support to sustainable development of the local community (theme D); Capacity development and management of Public Institution (theme E). Each theme is further divided into a number of specific objectives, which are in turn organised into macro-topics containing several actions (see for example: theme C - Visitor management, Figure 3).

Questionnaire Survey and Sampling Method

This study is based on a demand-driven survey of nature-based tourism management in the PLNP. First, two interviews with PLNP managers were undertaken. This preliminary stage proved to be useful both for deepening the process of drafting the current Management Plan, and for identifying the steps within which visitors have already been involved as stakeholders. Given the recent adoption of the Plan, visitor opinion has not yet been deeply taken into account, in particular as regards the evaluation of the PLNP management. For this reason, an online questionnaire was structured according to the current Management Plan. Visitors of the PLNP were chosen as the privileged interlocutors of this survey. In particular, user inputs are recognized as an effective support to improve management practices (Marin et al. 2021). In fact, unlike visitors, other stakeholders - e.g. park managers and administrators; staff members; public institutions; and local people - have already participated in extensive interviews and focus groups (Mandić 2021, McCool et al. 2021). The questionnaire was designed to identify visitors' perceptions of certain topics related to the visitor system theme, which are considered fundamental to the management of the PLNP. The topics were taken from both the Plan and interviews with PLNP managers.

According to a previous study (Sergiacomi et al. 2022), visitors are very interested and often express opinions about management aspects, which can impact making their experience memorable, either positively or negatively. For this reason, only the action groups included in the macro-topics concerning the Visitor management (i.e. theme C) in the current Management Plan were considered (Figure 3). From the original set of 25 macro-topics, three of them were not

included in the survey, because they were considered out of the interest and the perception of the visitors (i.e. Applied research for visitation management purposes and improving quality and diversity of the offer and feasibility of business operations) or because they partially overlap with another topic (i.e. Development studies and plans with Maintenance, renovation, construction and quality improvement of facilities) (see Figure 3). The questionnaire opens with a short presentation of the research project. The first section contains some questions concerning memories related to the last visit to the PLNP and its relative date (month and year). In the following five sections, visitors were asked to assign a priority level to each macro-topic group of actions related to theme C. In the current Management Plan, priorities for individual actions were assigned on a scale ranging of one to three. Within each macro-topic analysed - which contains multiple actions (see Figure 3) - the mean priority level assigned by PLNP managers was calculated. However, in the questionnaire a 9-point Likert scale (from 1 = low priority to 9 = high priority) was used to allow visitors to express their priority levels. Subsequently, the 9-point scale was transformed into a 3-point scale to facilitate the comparison between the priority scores obtained through the questionnaire and the average scores obtained for each macro-topic within the current Management Plan. In this way, in both cases, values close to the second decimal place were obtained, which make them easy to comparable. These sections were intended to compare the mean priority values assigned to the different action groups. This has been done in order to interpret: the behaviour of the different types of visitors, and the discrepancies in the evaluations given by users and managers. Lastly, a final section was dedicated to collecting information on the profile of respondents (e.g. age; gender; highest level of education; country of origin). A final place was given to free comments and suggestions.

The questionnaire was drawn up via the Google Form application and translated into six languages (i.e. English, Deutsch, French, Italian, Spanish and Croatian), in connection with national and international visitors from the countries for which the most important tourist flows come from (Plitvice Lakes National Park Management Plan 2019-2028, 2019). Prior to disclosure, a pre-test was conducted with a sample of seven visitors - who were also experts of the forestry sector - to ask them for suggestions to improve the clarity of the survey. The questionnaire was distributed by the main social media platforms of the PLNP, and then by e-mail via the PLNP newsletter.

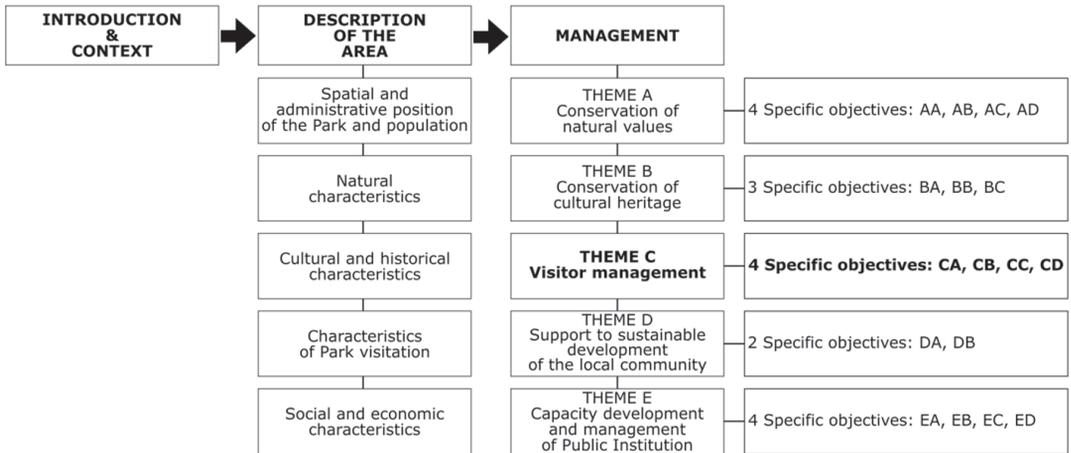


Figure 2. Plitvice Lakes National Park Management Plan 2019-2028 map.

SPECIFIC OBJECTIVES	MACRO TOPICS	NUMBER OF ACTIONS
CA Visitor use management system	<ul style="list-style-type: none"> - Informing visitors - Supervision of respect for rules of conduct in the visitation system - Management of distribution of park visits - Visitation program development - Visitor safety - Visitor infrastructure - maintenance and development - Visitor transport - Monitoring - Applied research for visitation management purposes 	56
CB Hotels, camping sites, restaurants and shops	<p>Activities for restaurant facilities:</p> <ul style="list-style-type: none"> - Development studies and plans - Monitoring - Maintenance, renovation, construction and quality improvement of facilities - Improving quality and diversity of the offer and feasibility of business operations <p>Activities for retail and souvenir shop section:</p> <ul style="list-style-type: none"> - Facilities - profiling and management - Renovation and maintenance of old facilities - New facilities - Offer - Monitoring and continuous improvement 	64
CC Interpretation and education	<ul style="list-style-type: none"> - Systematic approach to the development of education and interpretation - Printed materials, web and mobile applications - Educational trails and interpretation content in the field - Educational programs: guided tours, lectures, workshops, courses - for visitors - Presentation centers and exhibitions - Events, campaigns 	42
CD Marketing	<ul style="list-style-type: none"> - Marketing 	11

Figure 3. Specific Objectives of Theme C. Visitor management (Plitvice Lakes National Park Management Plan 2019-2028).

RESULTS

Description of Sample Characteristics

At the end of the data collection period (May-July 2022), 214 questionnaires were collected. Since the study refers to the current Management Plan, 25 of the questionnaires originally collected were rejected as they referred to visits conducted prior to the implementation of the Plan in 2019.

Table 1 presents respondents' socioeconomic characteristics. Most of the sample is in the 30-50 age group. For what concern the gender, the majority of interviewees were female. In terms of origin, Croatian visitors represent the greater part of the group examined.

Regarding the key features of the visits to the PLNP (Table 2), over half were conducted in 2021. Following the natural trend of tourism flows, the majority of the

Table 1. Individual variables: socioeconomic aspects.

Variables	Numbers	% Total
Age class		
< 30	37	19.6
30 - 50	102	54.0
> 50	50	26.4
Gender		
male	64	33.9
female	118	62.4
do not wish to respond	7	3.7
Origin		
National (Croatia)	102	54.0
International	87	46.0

Table 2. Individual variables: visit habits.

Variables	Numbers	% Total
Number of visits		
1 visit	70	37.0
2 visits	27	14.3
3 visits	19	10.1
4 visits	11	5.8
5 visits	3	1.6
More than 5 visits	59	31.2
Number of companions		
Individuals or couples	58	30.7
Families (2-5 companions)	110	58.2
Groups (> 5 companions)	21	11.1
Year of the last visit		
2019	15	7.9
2020	12	6.3
2021	98	51.9
2022	64	33.9
Month of the last visit		
Dec-Feb	11	5.9
Mar-Apr	69	36.7
Jun-Aug	61	32.4
Sep-Nov	47	25.0

sample reported having visited the PLNP between March and August. Visitors who went to the PLNP only once represented the highest percentage of tourists in the sample. As concerns the number of companions, more than half of respondents declared they were accompanied by a few persons (i.e. between 2 and 5 companions).

As a first question, the respondents were asked to indicate which elements of the PLNP surprised them the most, both positively and negatively, in the last visit. As shown in Figure 4a, the natural landscape represents the most appreciated characteristic of the PLNP, followed by a much lower percentage of preferences for staff organisation. Instead, the main weaknesses (Figure 4b) are considered to be food services and the cost of the visit which is deemed too high. For the management of public transport and parking lots, both were assessed positively by a reduced number of visitors and negatively by a slightly higher percentage. Finally, the natural landscape is not listed as a negative; therefore, it is believed that it is a generally shared strength of the PLNP.

Actions Related to the Visitor Management System

The following sections of the questionnaire were devoted to the collection of visitor opinions. In particular, it analyses the level of priority deemed necessary for various macro-topics of actions within four different issues related to the management of visits (Table 3). The results show that visitors

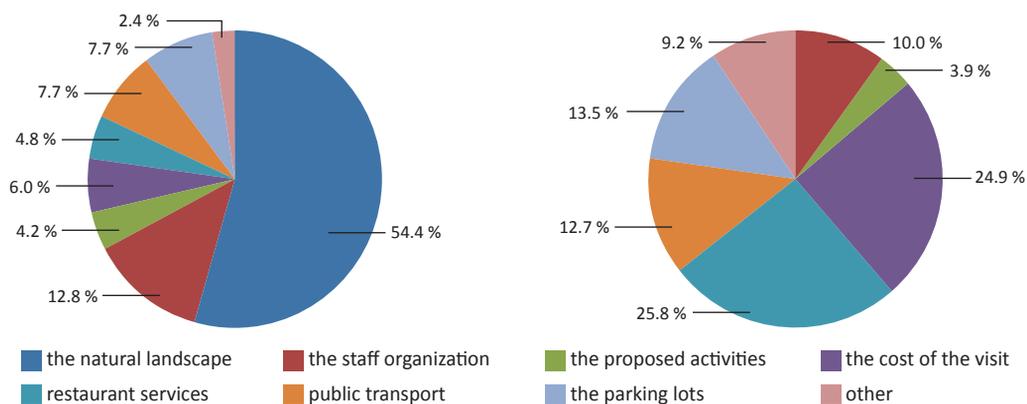


Figure 4. Plitvice Lakes National Park elements that surprised more positively (a) and negatively (b).

tend to assign slightly higher priority levels for each macro-topic studied under the theme “Visitor use management system” (mean value: +0.28). The only exception is the need to install new signage to improve the safety of the paths (A.5), for which tourists roughly agree with the priority assigned within the current Management Plan. In particular, there are three macro-topics for which visitors recognize a half-point higher priority than that assigned by the managers: (A.1) actions aimed at increasing tourist information; (A.8) the monitoring of tourist satisfaction with regard to the system of visits and the infrastructure of the PLNP; (A.4) the definition of new visiting programs, useful for redistributing the presence of visitors even outside the crowded lakes area. Conversely, as regards the management of “Restaurant facilities” (B.a.1, and B.a.2), visitors recognize a lower priority than that envisaged in the Plan. For what concern the section on “Retail and souvenir shops”, visitors expressed on all the macro-

topics a priority of half a point more than that established in the Management Plan. In particular, the renovation of old structures and shops (B.b.2) recorded the higher difference, in positive terms, than that established by the managers. But it should also be said that this is the theme where, on average, the lowest priorities were assigned by tourists in relation to the other issues analysed in the questionnaire. With regard to the “Interpretation and education” segment, visitors on average agree with the priority assigned in the current Management Plan. The only exception concerns the macro-topic relating to the construction of a new visitor centre (C.5), for which they assigned a lower priority than that established by the managers.

For what concerned the characteristics and habits of visitors, a statistical analysis was performed using R software, in order to identify which are the variables that most influence the opinion of tourists. First of all, a Shapiro-Wilks test

Table 3. Comparison between priority scores assigned by visitors and those defined by the Plitvice Lakes National Park Management Plan 2019-2028 for the macro-topics of the theme C “Visitor management”.

	Macro-topics	Visitors' score	Plan's score
Visitor use management system			
A.1	INFORM VISITORS through the website, apps, social networks, etc. on: park rules; maximum daily number of visitors; presence of alternative tours in non-congested areas.	2.48	1.67
A.2	ENHANCE SURVEILLANCE: increasing the number of rangers to check the rules and report illegal acts.	2.49	2.00
A.3	AVOID OVERCROWDING by introducing new technologies and pricing policies.	2.18	1.67
A.4	OFFER NEW VISIT PROGRAMS for alternative areas to the Lakes area.	2.40	1.64
A.5	INCREASE the signage to ensure SAFE use of the itineraries.	2.16	2.20
A.6	MAINTAIN and ADAPT the different INFRASTRUCTURE, such as: bus stops, boat docks, parking areas and toilets.	2.24	1.84
A.7	INCREASE the capacity of the TOURIST MEANS OF TRANSPORT used during the visits.	2.07	1.67
A.8	Prepare a PERMANENT MONITORING SYSTEM on the visitors' satisfaction degree on: infrastructure and visits management system.	2.05	1.25
Restaurant facilities			
B.a.1	IMPROVEMENT of the RESTAURANT STRUCTURES according to ecological standards.	2.25	2.86
B.a.2	Prepare a PERMANENT MONITORING SYSTEM on the visitors' satisfaction degree on restaurant facilities.	2.11	3.00
Retail and souvenir shops			
B.b.1	EXPAND the range of PRODUCTS in souvenir shops to suit all visitor preferences.	1.77	1.00
B.b.2	RENOVATE the old STRUCTURES according to styles that are modern and well integrated with the landscape.	2.12	1.00
B.b.3	REALISE NEW STORES of souvenirs and local products and NEW EXHIBITION AREAS.	1.75	1.00
B.b.4	EXPAND THE OFFER of: local products; souvenirs; equipment for outdoor visits.	2.03	1.43
B.b.5	Prepare a PERMANENT MONITORING SYSTEM on the visitors' satisfaction degree on the offer of local products and souvenirs.	1.87	1.00
Interpretation and education			
C.1	DEVELOP new programs for EDUCATIONAL VISITS and content adapted to people with disabilities.	2.53	2.67
C.2	Prepare: MONOGRAPHS on the park for both adults and children; MANUALS for tourist guides; WEB PLATFORM and MOBILE APPLICATIONS.	2.45	2.38
C.3	Create NEW EDUCATIONAL TOURS with informative signs.	2.45	2.30
C.4	Program GUIDED TOURS, LESSONS, WORKSHOPS, COURSES on: ecosystems and landscapes; cultural heritage, history and tradition; nature photography; recognition of plants and animals.	2.40	2.50
C.5	Design and build a new VISITOR CENTRE for shows and exhibitions.	2.01	2.75
C.6	Organise cultural and promotional EVENTS on the park's heritage.	2.15	2.29

($\alpha=0.05$) was conducted to verify whether the data for the 21 macro-topics were normally distributed or not. The Shapiro-Wilks test showed a non-normal distribution for all 21 macro-topics; therefore, non-parametric tests were used to identify statistically significant differences between the variables. The Mann-Whitney-Wilcoxon U test ($\alpha=0.05$) was performed for the dichotomous variables (i.e. gender; country of origin; and number of visits, by dividing the sample into two classes: those that visited the PLNP once, and those that returned there more than once). For the variables where there were more than two independent groups (i.e. age; number of companions) the Kruskal-Wallis test ($\alpha=0.05$) was performed. The results showed that for only two variables (i.e. Origin and Number of visits) there is a significant difference within the groups for most of the macro-topics analysed (Table 4). This means that the diverse visitor characteristics associated with these two variables tend to influence the opinions of the visitors themselves.

As regards the Origin variable (Table 5), Croatian visitors on average assigned higher priority to all the macro-topics than foreign tourists. In particular, the macro-topics with a higher priority difference of one point are the following: the monitoring of visitors' satisfaction with the management system (A.8) and the restaurant facilities (B.a.2); the renovation and expansion of restaurant facilities (B.a.1) and retail and souvenir shops (B.b.1÷B.b.5); the preparation of a new visitor centre (C.5); the organisation of events (C.6).

Regarding the Number of visits (Table 6), those who chose to return to the PLNP have expressed on average a higher priority for all macro-topics than tourists who have visited the PLNP only once. In particular, the macro-topics that reported a higher priority difference at one point are the following: increasing surveillance (A.2); monitoring visitor satisfaction

(A.8, and B.a.2); the implementation of retail and souvenir shops (B.b.1, B.b.3, B.b.4, and B.b.5); the organisation of events (C.6).

Table 5. Mean and standard deviation of the priority for the macro-topics with statistically significant difference between national visitors and foreign visitors. (Δ Mean - the difference between the average values of national visitors and the average values of foreign visitors).

Macro-topics	National visitors	Foreign visitors	Δ Mean
	Mean \pm SD	Mean \pm SD	
A.2	6.92 \pm 2.19	6.10 \pm 2.16	0.82
A.4	7.16 \pm 2.07	6.64 \pm 2.11	0.51
A.5	6.86 \pm 2.17	6.02 \pm 2.07	0.84
A.7	6.58 \pm 2.35	5.78 \pm 2.46	0.80
A.8	6.87 \pm 1.98	5.29 \pm 2.29	1.58
B.a.1	7.36 \pm 1.88	6.07 \pm 2.13	1.29
B.a.2	7.25 \pm 1.91	5.28 \pm 2.27	1.98
B.b.1	6.13 \pm 2.33	4.38 \pm 2.45	1.75
B.b.2	6.99 \pm 2.36	5.63 \pm 2.37	1.36
B.b.3	5.91 \pm 2.45	4.48 \pm 2.65	1.43
B.b.4	6.87 \pm 2.44	5.19 \pm 2.33	1.69
B.b.5	6.66 \pm 2.28	4.40 \pm 2.37	2.26
C.1	7.88 \pm 1.68	7.26 \pm 1.74	0.63
C.4	7.52 \pm 1.81	6.81 \pm 2.07	0.71
C.5	6.53 \pm 2.52	5.45 \pm 2.40	1.08
C.6	7.07 \pm 2.23	5.76 \pm 2.52	1.31

Table 4. Statistically significant results of Mann-Whitney-Wilcoxon U test for variables: Origin and Number of visits.

Macro-topics	Origin	N of visits
	p-value	p-value
A.2	<0.01	< 0.001
A.4	0.04764	-
A.5	<0.01	-
A.7	0.02130	0.04579
A.8	< 0.001	< 0.01
B.a.1	< 0.001	< 0.01
B.a.2	< 0.001	< 0.001
B.b.1	< 0.001	< 0.001
B.b.2	< 0.001	0.01508
B.b.3	< 0.001	< 0.01
B.b.4	< 0.001	< 0.001
B.b.5	< 0.001	< 0.001
C.1	< 0.01	-
C.4	< 0.01	0.03153
C.5	0.00137	0.04712
C.6	< 0.001	< 0.001

Table 6. Mean and standard deviation of the priority for the macro-topics with statistically significant difference between visitors who went to the PLNP only once and visitors who returned more than once to the PLNP (Δ Mean - the difference between the average values of national visitors and the average values of foreign visitors).

Macro-topics	National visitors	Foreign visitors	Δ Mean
	Mean \pm SD	Mean \pm SD	
A.2	6.95 \pm 2.08	5.86 \pm 2.25	1.09
A.7	6.45 \pm 2.44	5.79 \pm 2.36	0.66
A.8	6.53 \pm 2.16	5.49 \pm 2.30	1.04
B.a.1	7.11 \pm 2.04	6.19 \pm 2.08	0.92
B.a.2	6.83 \pm 2.12	5.51 \pm 2.36	1.32
B.b.1	5.78 \pm 2.50	4.54 \pm 2.42	1.24
B.b.2	6.66 \pm 2.50	5.87 \pm 2.32	0.78
B.b.3	5.67 \pm 2.60	4.54 \pm 2.56	1.13
B.b.4	6.55 \pm 2.51	5.33 \pm 2.40	1.21
B.b.5	6.24 \pm 2.38	4.55 \pm 2.56	1.69
C.4	7.44 \pm 1.80	6.78 \pm 2.15	0.66
C.5	6.28 \pm 2.59	5.63 \pm 2.36	0.65
C.6	6.87 \pm 2.44	5.79 \pm 2.33	1.09

DISCUSSION

Natural landscapes are widely recognised as important reasons for choosing one tourist destination over another (Lončarić et al. 2021). For this reason, it is considered essential to examine in depth the preferences of tourists (Perera et al. 2015). Some studies have already investigated visitors' opinions on management issues, but with an exclusive focus on environmental and nature conservation aspects (Cihar and Stankova 2006, Arnberger et al. 2012, Belkayali and Kesimoğlu 2015, Abdullah et al. 2018). Whereas the present study goes even further: involving tourists in the evaluation of the adequacy of the actions related to the visitor management system of a NP, and thus giving voice to the opinions of the beneficiaries of such planning.

Besides, it is also important to point out that different types of tourists visit nature-based destinations, following a great variety of motivations, needs and expectations. Indeed, the outcomes of this study have revealed the existence of different types of visitors, also within the PLNP. For example, Croatian visitors gave a higher priority to the implementation of services and infrastructure, compared to tourists from other countries (Table 5). Approximately half of the sample is represented by Croatian visitors who are returned to the PLNP on more than one occasion. Only a small part of the sample consists of foreign vacationers who have visited the PLNP more than once. This means that the expectations that national visitors have by frequenting the PLNP many times are more related to the good maintenance of the services and infrastructure that the PLNP offers.

Another aspect found in the study is that which concerns the retention of visitors. In fact, it has proven that those who have repeatedly returned to the PLNP have higher safety expectations, and consider it important to taken into account the visitor opinion (i.e. through tourist satisfaction monitoring systems), both as regards the organisation of the visiting system and the improvement of the infrastructure. For this purpose, information panels with QR codes linked to a survey web page may be installed. This would ensure that a high percentage of visitors could easily accessed PLNP information services and express their preferences. These kinds of applications have been developed and refined in recent years, and prior to them it was considered extremely demanding to conduct multilingual surveys (Perera et al. 2015). Thanks to these new technologies, six versions of the questionnaire could be adopted in different languages to reach more international tourists, without creating data processing problems. In addition, the majority of questions were asked in such a way as to receive numerical answers that could easily converge in a single archive.

For those who chose to return to visit the PLNP, having travelled many times towards the same nature-based destination creates a desire to participate in new events or to benefit from a variety of facilities (e.g. the sale of products and restaurant services) that can diversify their experience (Lončarić et al. 2021). These aspects had already been identified among the strategies adopted in previous studies (McCool et al. 2021), in order to increase the duration of visits and the average expenditure of visitors. Higher expectations for infrastructure and services can also be viewed as advantage

benefit. Services and facilities are actually a fundamental part of the physical infrastructure of a tourist destination, making a territory more attractive and competitive (Mandić et al. 2018). Furthermore, tourist attractions, events, local food and craft products can provide an excellent opportunity to experience the local culture (Lončarić et al. 2021), sensitising visitors to explore the various aspects that characterise a place. Finally, from an economic and market point of view, the range and quality of services greatly influence the success of a tourist destination (Radisic and Basan 2007). However, the results also demonstrated that visitors are generally inclined to set lower priorities for strategies related to retail and souvenir shops than those assigned to other management issues. In any case, they attribute greater importance to this macro-topic than that envisaged in the current Management Plan (Table 3). Therefore, it would be useful for PLNP managers to develop actions related to this theme in slightly shorter timeframes than those foreseen in the current Plan, to meet the expectations of a large number of visitors.

In addition, the Interpretation and education section received the highest priority from tourists (Table 3). Particularly, visitors showed interest in the development of new visit programs and educational materials and activities related to the natural and cultural heritage of the PLNP (see macro-topics C.1, C.2, C.3, and C.4, Table 3). So, in accordance with what has already been established in the current Management Plan, if these aspects were developed with a medium-high priority, it would increase the attractiveness of the PLNP, with tangible economic consequences (Wolf et al. 2015). Furthermore, this would redistribute visitors through a range of interesting alternative activities, which would decongest the most crowded area of the PLNP (i.e. the Lakes area). Finally, these initiatives would enhance visitors' awareness of the values and resources of the site. In this way, they would be more conscious of the environment, and therefore more respectful of the natural landscape and its ecosystems (Perera et al. 2015, Wolf et al. 2015). Among the new activities to be proposed, it would be important to involve local people, who are crucial stakeholders in the sustainable development of a PA (Marković et al. 2013). Private farms and villages can be interesting destinations to appreciate local traditions (McCool et al. 2021).

Regarding the Visitor use management system, tourists confirmed the need to intervene with almost the same level of medium-high priority already established in the current Management Plan. As stated in other studies (Radisic and Basan 2007, Lončarić et al. 2021), it is fundamental for managers of nature-based destinations to disseminate information on the various natural attractions and services available, using communications materials, web pages and social media. By being informed in advance, visitors would be facilitated in planning their trip, which would increase their satisfaction with the chosen destination. This is also confirmed by the results of this study. In fact, the survey sample gave a slightly higher priority to multiple actions related to this issue compared to the current Management Plan (see macro-topics A.1, A.4, and A.8 Table 3).

As PLNP tourism receipts represent approximately 98% of the total income (Mandić 2021), it is evident that any kind of action included in the management strategies could not be

developed without visitors. Moreover, effective integration in the international tourism market requires specialised managerial skills and the provision of high quality tourism products, which can satisfy a wide range of visitors (Lundmark and Müller 2010). For this reason, the managers of the PLNP, as a nature-based tourist destination, must necessarily consider the satisfaction of their users.

CONCLUSIONS

In this study, a new research dimension concerning the investigation of visitors' perceptions of the management of an international nature-based destination - the Croatian Plitvice Lakes National Park - was experienced. This study builds on the findings of a previous research that used a methodology based on big data analysis to identify the topics of greatest interest to PLNP visitors (Sergiacomi et al. 2022). The results of this study may be useful to PLNP managers in formulating and promoting innovative experiences aimed at improving the aspects that the tourists themselves consider most relevant.

With respect to research questions, the survey identified management issues considered as priorities by PLNP visitors (RQ1). In particular, the actions strictly related to the issues of the "Visitor use management system" and "Interpretation and education" appear of greater interest to tourists. Furthermore, the study also identified the main discrepancies between the priorities expressed by visitors and those assigned by the managers (RQ2). Specifically, visitors gave a much higher priority than the current Management Plan on information and monitoring of tourist preferences. The theme of the renovation of the old souvenir shop structures reported the largest difference in positive terms on behalf of visitors, even if the absolute score they assigned to this topic is not one of the highest in the survey.

Although the online survey was released through the main social channels of the PLNP, this strategy collected only a small sample of respondents (214). Therefore, it

would be useful to expand data collection by enabling an on-going monitoring system, for example using information panels with QR codes that are always connected to an online questionnaire on visitor preferences.

Nowadays, to achieve effective economic sustainability, PA managers are increasingly faced with a dual mission. On the one hand, the protection of natural and cultural resources, which makes the sector of interest a unique heritage. On the other hand, satisfying the expectations and needs of those who choose to use and enjoy these goods. To do this, visitors should be regularly included in the stakeholder categories to be involved in the decision-making process of managing the PLNP. In conclusion, all the results of this study are a confirmation of the fact that it is essential to involve tourists to management issues of a nature-based destination. In this way, it will be possible to turn them into visitors actively involved in the conservation of the resource, and attentive inspectors of the behaviour of the other users.

Author Contributions

CS, DV, AP and CF conceived and designed the research; CS carried out the data collection and processing; CS and AP performed the statistical analysis; DV, AP and CF supervised the research; CS prepared the original draft of the manuscript; CS, DV, AP and CF reviewed and edited the final version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

REFERENCES

- Abdullah AR, Weng CN, Fatah IAA, 2018. Ecotourism in Penang National Park: a multi-stakeholder perspective on environmental issues. *J Bus Soc Dev* 6(1): 70-83.
- Arnberger A, Eder R, Alex B, Sterl P, Burns RC, 2012. Relationships between national-park affinity and attitudes towards protected area management of visitors to the Gesäuse National Park, Austria. *Forest Policy Econ* 19: 48-55. <https://doi.org/10.1016/j.forpol.2011.06.013>.
- Belkayali N, Kesimoğlu MD, 2015. The stakeholders' point of view about the impact of recreational and tourism activities on natural protected area: A case study from Kure Mountains National Park, Turkey. *Biotechnol Biotech Eq* 29(6): 1092-1103. <https://doi.org/10.1080/13102818.2015.1072054>.
- Cihar M, Stankova J, 2006. Attitudes of stakeholders towards the Podjiří/Thaya River Basin National Park in the Czech Republic. *J Environ Manage* 81(3): 273-285. <https://doi.org/10.1016/j.jenvman.2005.11.002>.
- European Commission, 2021. Flash Eurobarometer 499. Attitudes of Europeans Towards Tourism. Available at: http://ec.europa.eu/public_opinion/archives/ebs/ebs_385_en.pdf (20 June 2022).
- Héritier S, 2010. Public Participation and Environmental management in Mountain National Parks. *Rev Géographie Alpine* 98-1. <https://doi.org/10.4000/rga.1156>.
- Jones N, Filos E, Fates E, Dimitrakopoulos PG, 2015. Exploring perceptions on participatory management of NATURA 2000 forest sites in Greece. *Forest Policy Econ* 56: 1-8. <https://doi.org/10.1016/j.forpol.2015.03.010>.
- Kaffashi S, Radam A, Shamsudin MN, Yacob MR, Nordin NH, 2015. Ecological conservation, ecotourism, and sustainable management: The case of Penang National Park. *Forests* 6(7): 2345-2370. <https://doi.org/10.3390/f6072345>.
- Kičić M, Marin AM, Vuletić D, Kaliger I, Matošević N, Šimpraga S, Krajer Ostoić S, 2020. Who are the Visitors of Forest Park Grmoscica and What Are Their Needs? Results of Quantitative Exploratory Survey. *South-east Eur for* 11(2): 169-180. <https://doi.org/10.15177/see-for.20-19>.

- Krajter Ostoić S, Konijnendijk van den Bosch CC, Vuletić D, Stevanov M, Živojinović I, Mutabdžija-Bećirović S, Lazarević J, Stojanova B, Blagojević D, Stojanovska M, Nevenić R, Pezdevšek Malovrh Š, 2017. Citizens' perception of and satisfaction with urban forests and green space: Results from selected Southeast European cities. *Urban For Urban Gree* 23: 93-103. <https://doi.org/10.1016/j.ufug.2017.02.005>.
- Lončarić D, Prodan MP, Dlačić J, 2021. Memorable tourism experiences inspired by the beauty of nature. *Tour Hosp Manag* 27(2): 315-337. <https://doi.org/10.20867/THM.27.2.5>.
- Lundmark L, Müller DK, 2010. The supply of nature-based tourism activities in Sweden. *Tourism* 58(4): 379-393.
- Mandić A, 2019. Nature-based solutions for sustainable tourism development in protected natural areas: a review. *Environ Sys Dec* 39(3): 249-268. <https://doi.org/10.1007/s10669-019-09718-2>.
- Mandić A, 2021. Protected area management effectiveness and COVID-19: The case of Plitvice Lakes National Park, Croatia. *J Outdoor Rec Tour*: 100397. <https://doi.org/10.1016/j.jort.2021.100397>.
- Mandić A, Mrnjavac Ž, Kordić L, 2018. Tourism infrastructure, recreational facilities and tourism development. *Tour Hosp Manag* 24(1): 41-62. <https://doi.org/10.20867/thm.24.1.12>.
- Marin AM, Kičić M, Vuletić D, Krajter Ostoić S, 2021. Perception and Attitudes of Residents Towards Green Spaces in Croatia – an Exploratory Study. *South-east Eur for* 12(2): 123-134. <https://doi.org/10.15117/seefor.21-12>.
- Marković I, Pejnović D, Boranić-Žovoder S, 2013. Influence of tourism development on sustainability of local communities in natural protected areas, case study of Plitvice lakes National park. In: International Critical Tourism Studies Conference V, Sarajevo, Bosnia and Herzegovina, 25-28 June 2013, 13 p. <https://doi.org/10.13140/2.1.3470.6241>.
- McCool SF, Eagles PFI, Skunca O, Vukadin V, Besancon C, Novosel A, 2021. Integrating Marketing and Management Planning for Outstanding Visitor Experiences in a Turbulent Era: The Case of Plitvice Lakes National Park. In: Mandić A, Petrić L (eds) *Mediterranean Protected Areas in the Era of Overtourism*. Springer, Cham, pp. 221-240. https://doi.org/10.1007/978-3-030-69193-6_11.
- Moreno J, Palomo I, Escalera J, Martín-López B, Montes C, 2014. Incorporating ecosystem services into ecosystem-based management to deal with complexity: a participative mental model approach. *Landscape Ecol* 29(8): 1407-1421. <https://doi.org/10.1007/s10980-014-0053-8>.
- Niezgoda A, Nowacki M, 2020. Experiencing nature: Physical activity, beauty and tension in Tatra National Park-analysis of tripadvisor reviews. *Sustainability* 12(2): 601. <https://doi.org/10.3390/su12020601>.
- Paletto A, Giacovelli G, Pastorella F, 2017. Stakeholders' opinions and expectations for the forestbased sector: A regional case study in Italy. *Int For Rev* 19(1): 68-78. <https://doi.org/10.1505/146554817820888654>.
- Paletto A, De Meo I, Cantiani P, Guerrini S, Lagomarsino A, 2018. Social perception of forest management: the case of the peri-urban forest of Monte Morello (Florence, Italy). *Forest@* 15(1): 29-39. <https://doi.org/10.3832/efor2769-015>.
- Perera P, Senevirathna MC, Vlosky RP, 2015. Recreationist perspectives, attitudes, and perceptions towards national park management in Sri Lanka. *Tourism* 63(4): 497-514.
- Pezdevšek Malovrh Š, Paletto A, Posavec S, Dobšinská Z, Dordević I, Marić B, Avdižbegović M, Kitchoukov E, Stijević A, Trajkov P, Laktić T, 2019. Evaluation of the operational environment factors of nature conservation policy implementation: Cases of selected EU and Non-EU countries. *Forests* 10(12): 1-24. <https://doi.org/10.3390/F10121099>.
- Pietilä M, 2019. A management perspective to using Public Participation GIS in planning for visitor use in national parks A management perspective to using Public Participation GIS in planning for visitor use in national parks. *J Environ Plan Manag* 62(7): 1133-1148. <https://doi.org/10.1080/09640568.2018.1473757>.
- Plitvice Lakes National Park Public Institution, 2019. Plitvice Lakes National Park Management Plan 2019-2028.
- Plunz RA, Zhou Y, Carrasco Vintimilla MI, Mckeown K, Yu T, Ugucioni L, Sutto MP, 2019. Twitter sentiment in New York City parks as measure of well-being. *Landscape Urban Plan* 189: 235-246. <https://doi.org/10.1016/j.landurbplan.2019.04.024>.
- Radisic BB, Basan L, 2007. The Logistics of Selling a Destination'S Tourism Product. *Tour Hosp Manag* 13(3): 725-732. <https://doi.org/10.20867/thm.13.3.18>.
- Roberts H, Resch B, Sadler J, Chapman L, Petutschnig A, Zimmer S, 2018. Investigating the emotional responses of individuals to urban green space using twitter data: A critical comparison of three different methods of sentiment analysis. *Urban Plan* 3(1): 21-33. <https://doi.org/10.17645/up.v3i1.1231>.
- Sandell K, 2016. Ecostrategies: Presentation and elaboration of a conceptual framework of landscape perspectives. *Tourism* 64(1): 63-80.
- Sergiacomi C, Vuletić D, Paletto A, Barbierato E, Fagarazzi C, 2022. Exploring National Park Visitors' Judgements from Social Media: The Case Study of Plitvice Lakes National Park. *Forests* 13(5): 717. <https://doi.org/10.3390/f13050717>.
- Smolčić Jurdana D, 2009. Specific Knowledge for Managing Ecotourism Destinations. *Tour Hosp Manag* 15(2): 267-278. <https://doi.org/10.20867/thm.15.2.10>.
- Stoleriu OM, Brochado A, Rusu A, Lupu C, 2019. Analyses of Visitors' Experiences in a Natural World Heritage Site Based on TripAdvisor Reviews. *Visitor Stud* 22(2): 192-212. <https://doi.org/10.1080/10645578.2019.1665390>.
- Vurnek M, Brozinićević A, Čulinović K, Novosel A, 2018. Challenges in the Management of Plitvice Lakes National Park, Republic of Croatia. In: Suratman MNE (ed) *National Parks - Management and Conservation*. IntechOpen, London, UK, pp. 55-72. <https://doi.org/10.5772/intechopen.72375>.
- Wolf ID, Stricker HK and Hagenloh G, 2015. Outcome-focused national park experience management: transforming participants, promoting social well-being, and fostering place attachment. *J Sust Tour* 23(3): 358-381. <https://doi.org/10.1080/09669582.2014.959968>

