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Direct Contact with Nature and Online Perspective: Does it Make a Difference in Environmental Attitudes Regarding the Nature Conservation Challenges in Serbia?

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KEYWORDS

- environmental attitudes
- local communities
- visitors
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- direct contact
- online

ABSTRACT

Attitudes towards environment are important for organizing nature protection, especially in countries undergoing political and economic transition. In this paper, attitudes of visitors, local communities and stakeholders towards the environment and nature protection are researched online and within the Special Nature Reserve and surroundings settlements. Data were obtained on the basis of the survey research as part of the 'LIFE WILDisland' project. Additionally, this paper was focused on comparing the attitudes of respondents between those who were in direct contact with nature and those who responded online. Gained results showed that respondents who were in direct contact with nature have more intensive interactions with it and have a good understanding of conservation-restoration measures. Both groups of respondents support nature protection activities.

Introduction

The conventional approach to nature protection emphasises the identification and conservation of important natural 'goods', particularly species and ecosystems (Bennett et al., 2009). Protected areas are one of the most effective tools for conducting nature conservation activities (Baldi, 2020). In the management of protected areas, it is essential to consider their ecological (He & Wei, 2023; Prato & Fagre, 2005), social (Jones et al., 2020; Prato & Fagre, 2005) and economic functions (Pisani et al., 2021; Prato & Fagre, 2005). Nature conservation activities are often hindered by conflicts between conservation interests and the social interests of local populations, as well as political and national economic interests that impede a progress in conservation (Freudenberger et al., 2013). A considerable number of studies on the social relations of protected areas are primarily or solely designed to measure the attitudes of local people towards protected areas (Holmes, 2013).

Environmental attitudes are important because they often, but not always, determine behaviour that either increases or decreases environmental quality (Gifford & Sussman, 2012). Activities aimed at preserving the environment reflect people's attitudes towards it. Besides other factors, environmental attitudes are important in nature conservation (Baierl & Bogner, 2023). Research on attitudes and opinions is conducted to better understand why someone behaves in a particular way. Attitudes also

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play a vital role in the acceptance of environmental policies (Karanth et al., 2008). Effective actions to protect global biodiversity must consider the attitudes of individuals and local communities. Since attitudes are rooted in complex value orientations, the conservation of environmental resources relies on a comprehensive understanding of these orientations (Ihemezie et al., 2021).

Since protected areas reproduce numerous ecological, social and economic functions through sustainable development policies (Gatiso et al., 2022; Rodríguez-Darias & Díaz-Rodríguez, 2023), the management process of these areas must consider the attitudes of different stakeholders (Brankov et al., 2022). The existence of multiple perspectives and representations of different stakeholders poses critical challenges to conservation initiatives. Thus, to foster more just and sustainable agendas in protected areas, this diversity of perspectives must be better understood, acknowledged and tackled (Fromont et al., 2022). To promote pro-environmental attitudes and mitigate conflicts between protected areas and stakeholders, improving environmental education and establishing joint management of protected areas is recommended (Liu et al., 2010).

The task of this paper is to highlight environmental attitudes in the Republic of Serbia, a less developed European country and society in transition facing environmental and nature protection challenges (Stojanović et al., 2022). The results derived from the research published in this paper are part of the international project 'LIFE WILDisland' which, besides the restoration and protection of the Danube islands, aims to assess public support for nature, wildlife and forest conservation actions in Central and South-eastern Europe. The project task 'Socio-economic effect of wilderness protection along the Danube' focuses on: (1) assessing public awareness in support of natural habitat protection along rivers and restoration actions for degraded habitats; (2) comparing public opinion in settlements closer to and further from protected areas along the Danube and (3) the socio-economic impact on the lives of local communities (residents and other stakeholders). Accordingly, the main goal of this paper is to assess environmental attitudes and highlight potential differences in attitudes between visitors, residents and other stakeholders (who were in direct contact with nature) compared to those online opinions of citizens who are geographically distant from the Danube and nature protection in protected areas along this river.

Literature Review

Visitors' Attitudes Regarding Nature Conservation

The attractiveness of the natural environment has deep roots in the history of modern tourism, where such environments are seen as a reason for a development of nature-based tourism forms, such as ecotourism or adventure tourism (Williams & Lew, 2015). Areas of exceptional natural value and rich biodiversity can be subject to strong ecological impacts precisely because they attract many visitors (Wolf et al., 2019). Research has shown that the greatest success in influencing visitors' actions comes from understanding what they think about a particular behaviour. Therefore, it is necessary to influence visitors' attitudes through organized visitor management (Brown et al., 2010; Cheung & Fok, 2013). Positive attitudes towards natural environment are reportedly associated with higher levels of satisfaction when visiting a protected area (de Oliveira et al., 2021). Visitors with pro-environmental attitudes are more willing to support management's conservation efforts (Thapa et al., 2024). A lack of concern for environmental issues among visitors may be due to a lack of ecological awareness, for example, due to omissions in the school system where they were previously educated (Ghazvini et al., 2020). Education and interpretation are key goals of many protected areas, which are also places where visitors can learn about nature and develop positive attitudes towards nature conservation (Hornoiu et al., 2014; Leung et al., 2018).

Local Communities' Attitudes Regarding Nature Conservation

The relationship between nature conservation and local communities is vital for biodiversity conservation (Dawson et al., 2021; Ma et al., 2022), so a better understanding of this issue can help in protecting the biodiversity, while maximizing benefits for local populations at the same time (Holmes, 2013). Contemporary biodiversity conservation trends increasingly view the ecological and social dimensions of this process as inseparable (Guerrero et al., 2018). However, the essence of the relationship between nature conservation and local communities is still not sufficiently and precisely clear (Guo et al., 2024). The role of managers in nature conservation and protected areas is particularly important for local communities (IUCN, 2004; Wells et al., 1992). Managerial understanding of local communities' perspectives on protected area management is paramount for sustainable development of such areas and the establishment of harmonious working relationships within them (Angwenyi et al., 2021). Raising awareness and educating local populations about the importance of biodiversity and nature conservation are recognized as a valuable tool in managing protected areas in a nature-friendly manner (Fotsing et al., 2024; Macharia et al., 2010). The economic perspective and well-being can play a significant role in shaping the attitudes of local communities toward nature conservation (Abukari, 2020).

Stakeholders' Attitudes Regarding Nature Conservation

Attitudes and perceptions of stakeholders towards a conservation area, nature protection and the policy being implemented are essential elements for sustainable conservation (Weladji et al., 2003). The integration of protected areas and their surrounding space relies on the interaction of various stakeholders, including policymakers, practitioners, local communities and visitors (Brankov et al., 2022; Rodríguez-Rodríguez et al., 2019). Effective stakeholder engagement requires a broader strategic view of the social environment and without it, support for nature conservation may be lacking (Mannetti et al., 2019). The link between threats to natural values, priority management actions and trust in protected area management must align with the stakeholders' preferred approach (Engen et al., 2019).

Importance of peoples' direct contact with nature

According to Soga and Gaston (2016), increasing number of people are becoming distanced from nature and they do not have a lot of direct contact with natural resources in their everyday activities. Possible reasons of such situation might be reflected in an increased number of people inhabited within urban areas (Zhang et al., 2014), technological innovations together with activities related to intensive usage of technology (Ballouard et al., 2011) and overscheduled everyday activities (Hofferth, 2009). Nowadays, direct contact with nature is therefore decreasing and it is usually replaced by online alternatives (Ballouard et al., 2011; Hofferth, 2009). Soga and Gaston (2016) indicated that decreased interactions of people with nature also decreases their positive emotions, perceptions and behaviour towards the environment and they highlighted that researchers and policy makers need to focus their efforts towards reconnecting the people with nature, in order to overcome a wide range of environmental issues. In respect to that, this paper is focused on researching the direct contact with nature and online perspective among two separate samples, in order to identify potential differences and similarities in environmental attitudes regarding the nature conservation challenges in Serbia.

Background of the research

The research results on environmental attitudes presented in this paper are also a part of the outcomes of the 'Danube Wild Island Habitat Corridor' project (acronym: 'LIFE WILDisland'), which is being implemented from 2021 to 2027 and aims to protect and restore river islands on the Danube. The project involves 15 partners from eight Danube countries (Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Bulgaria and Romania).

The Danube is an ecological corridor of exceptional significance for Europe, connecting more biogeographical regions than any other European river. Accordingly, the Danube's course is followed by extraordinarily rich biodiversity. The Danube islands represent unique locations with untouched nature and valuable habitats for both plant and animal life. The Danube islands are simultaneously endangered biodiversity hotspots, indicators of dynamic river activity and ecological cornerstones for the development of green infrastructure. Owing to the analysis of the significance of the Danube islands, the 'WILDisland' initiative was formed and launched through the 'DANUBEparksCONNECTED' project. Within the framework of realized activities, it was established that the Danube's course is followed by an eco-corridor composed of 912 river islands (Sidó Öllös, 2019).

The 'LIFE WILDisland' project task 'Socio-economic effect of wilderness protection along the Danube' relates to assessing the public perception of the undertaken nature restoration measures. The first perception survey in all the countries involved in the Project was conducted in 2022, with a follow-up planned for 2027.

An integral part of this work is the results of the environmental attitudes survey conducted in 2022 by the Serbian participant in the 'LIFE WILDisland' project, which is the Public Enterprise 'Vojvodina šume' (responsible for the revitalization of the islands in the Special Nature Reserve 'Gornje Podunavlje', at the cross-border area of Serbia, Croatia and Hungary). Respondents who were in direct contact with nature were surveyed in the area of the Special Nature Reserve and its immediate surroundings. Online respondents were from various parts of Serbia. The research results exclusively reflect the views of the researchers involved in the 'LIFE WILDisland' project from the Faculty of Sciences at the University of Novi Sad and their associates, who were engaged as subcontractors on the Project.

Methodology

Instrument

The research was conducted on the basis of the questionnaire formed for the purpose of previously mentioned 'LIFE WILDisland' international Project focused on a protection of small islands along the flow of the Danube River. More precisely, questions are in line with the main idea of the Project to contribute to a preservation of nature and biodiversity within the islands that are identified as the most natural and valuable in eight Danube countries. The 'LIFE WILDIslands Project' is implemented in a coopera-

tion with different sectors, starting from the managers of protected areas, over representatives of navigation, forestry, hydropower to tourism, which resulted in questions related to all aforementioned sectors. Questions are also in line with main task of the 'LIFE WILDIslands' Project focused on gaining the basic information from visitors, local community members and stakeholders that would contribute to a better design and communication of activities for river and island conservation in the Danube region. The starting point of the research was the previously mentioned project. However, the wider goal of the research is aimed at improving the nature protection in Serbia and other countries on the flow of the Danube River Based on abovementioned facts, the questionnaire could be divided in two sessions. The first group of questions is focused on the respondents' basic socio-demographic characteristics, while the second group of questions represents the main part of this research and it is focused on the respondents' perception regarding the nature conservation challenges along the flow of the Danube River. This study will present the main findings of the LIFE WILDIslands project gained within the territory of Serbia.

Data collecting procedure

Questionnaires were distributed in two ways, online, as well as a part of the field research. Online sample was gathered from January to May of 2023 and it was distributed by various contacts that live within the researched territory (next to the banks of the Danube river in Serbia), as well as by sharing the online questionnaire (previously prepared on the basis of the Google Drive option) via the social media (mainly thematic groups related to nature preservation, recreation and similar topics). When it comes to the sample obtained in the field, it started slightly earlier (in December of 2022) and it also lasts until May of 2023. This part of the research started by collecting the stakeholders' answers during the official meeting which gathered the stakeholders of the Special Nature Reserve 'Gornje Podunavlje' during the regular annual meeting. Later, these stakeholders significantly contributed a distribution of the questionnaires to the visitors and the local community members. Gained answers are analysed separately, in order to compare the answers of those who participated in the study in the field and thus were in direct interaction with nature, with answers of those who provided their answers on the basis of the online platforms, distanced from the researched territory.

Sample

Online sample that was collected on the basis of a distribution of e-questionnaires included 310 respondents, while the ***sample gathered in the field*** included 10 stakeholders (NGOs that are cooperating with the Special Nature Reserve 'Gornje Podunavlje', representatives of the local tourism organizations, managers of protected areas), 50 members of the local community and 100 visitors. Their socio-demographic characteristics are represented within the Table 1.

The research is based on a descriptive statistics. Distribution of the respondents' answers are represented in the form of frequencies and the mean values. Descriptive statistics is also used in order to represent the main characteristics of the respondents.

Table 1. Socio-demographic characteristics of the respondents

	Online sample N = 310	Sample gathered in the field		
		Stakeholders N = 10	Local community N = 50	Visitors N = 100
Gender				
Males	34.2%	50%	36%	40,8%
Females	65.5%	50%	64%	59.2%
Age				
Up to 20	3.5%	/	/	19.4%
20-29	46.5%	/	6%	22.4%
30-39	24.8%	40%	18%	9.2%
40-49	9.7%	40%	38%	31.6%
50-59	11.9%	10%	26%	12.2%
60-69	2.9%	/	10%	4.1%
70 and more	0.6%	10%	2%	1.0%
Education degree				
Primary school or less	0.6%	/	6%	1%
High-school	31.7%	/	50%	45.9%
University	67.7%	100%	44%	53.1%

Results

When they think about the Danube River, online respondents pointed out that the following issues spontaneously come to their minds: protected areas Gornje Podunavlje and Đerdap, larger and smaller cities along the flow of the Danube River through Serbia, historical fortifications, weekend settlements, bridges, but also the sense of peace and silence. When it comes to the broader concepts, online respondents indicated Europe, in the context of the European Amazon (Mura-Drava-Danube Transboundary Biosphere Reserve) and the river that connects countries and peoples. All three groups of respondents from the sample gathered in the field, or more precisely stakeholders, local community and visitors, also expressed the awareness of the fact that Danube is a river which connects countries in its course. It is interesting to notice that Gornje Podunavlje is not mentioned only in the group of respondents from the local community. Representatives of this group mentioned general concepts related to nature and protected areas. Also, it is noticeable that representatives of the local community and visitors, unlike the group of stakeholders, also mentioned the aspects related to the waste in the immediate vicinity. All three groups mentioned concrete activities, with the fact that they are numerous in the group of respondents from the local community and visitors, while in the group of stakeholders only fishing is mentioned.

Based on the research results represented within the Table 2, it can be noted that majority of online respondents (41.3%) is visiting the Danube River and/or the floodplains of this river several times per year. When it comes to the stakeholders group, 50% of representatives among this group are visiting the mentioned areas at least once a week. Representatives of the local community (38%) are visiting these areas several times per year in the largest percentage. When it comes to the visitors, 35.4% of these respondents are visiting the Danube and/or the floodplains of this river at least once a week.

Regarding the functions of the Danube River are represented within the Figure 1. Online respondents consider that habitat of protected species and ecosystem of rich biodiversity are among the most important facts. Slightly lower mean values were recorded regarding online respondents' perception of the importance of other functions of the Danube River, such as source of (drinking) water, fishing and forestry (wood production and hunting). In the field, respondents from all three groups consider that ecosystem of rich biodiversity is the most important fact. When it comes to the function of the Danube River, which can be said to have lower importance, respondents from the group of stakeholders and representatives of the local community agreed on the fact that it is a source of a drinking water. On the other hand, visitors believe that forestry (wood production) and hunting have the least importance of the abovementioned functions.

Respondents were further asked to choose up to three answers related to the elements of importance when visiting the Danube River, results are represented within the Table 3. It can be seen that minimal differences are repre-

Table 2. Frequency of visiting the Danube River and/or its flood habitats

	Online sample	Sample gathered in the field		
		Stakeholders	Local community	Visitors
a. Every day	3.9%	10%	4%	11%
b. At least once a week	22.9%	50%	28%	35.4%
c. At least once a month	25.8%	30%	24%	25.3%
d. Several times per year	41.3%	10%	38%	26.3%
e. Never or almost never	6.1%	/	6%	2%

Table 3. The most important aspects of visiting the Danube River

	Online sample	Sample gathered in the field		
		Stakeholders	Local community	Visitors
▸ Clean water	58.4%	40%	65.3%	51.1%
▸ Pleasant roads	38.7%	30%	36%	36.9%
▸ Pleasant river shores and beaches	69.7%	60%	74%	71.3%
▸ Nature to research, flora and fauna to watch	58.4%	70%	50%	63.2%
▸ Combination of culture and good food	23.8%	30%	22%	31.8%
▸ Offer for visitors and infrastructure	22.9%	20%	16%	19.5%
▸ Distanced places	11.9%	10%	10%	16.3%
▸ I am never visiting the Danube and therefore I am not involved in such activities	/	/	/	4.9%
▸ Other (protection of flood habitats, fishing access)	1%	/	/	2.5%

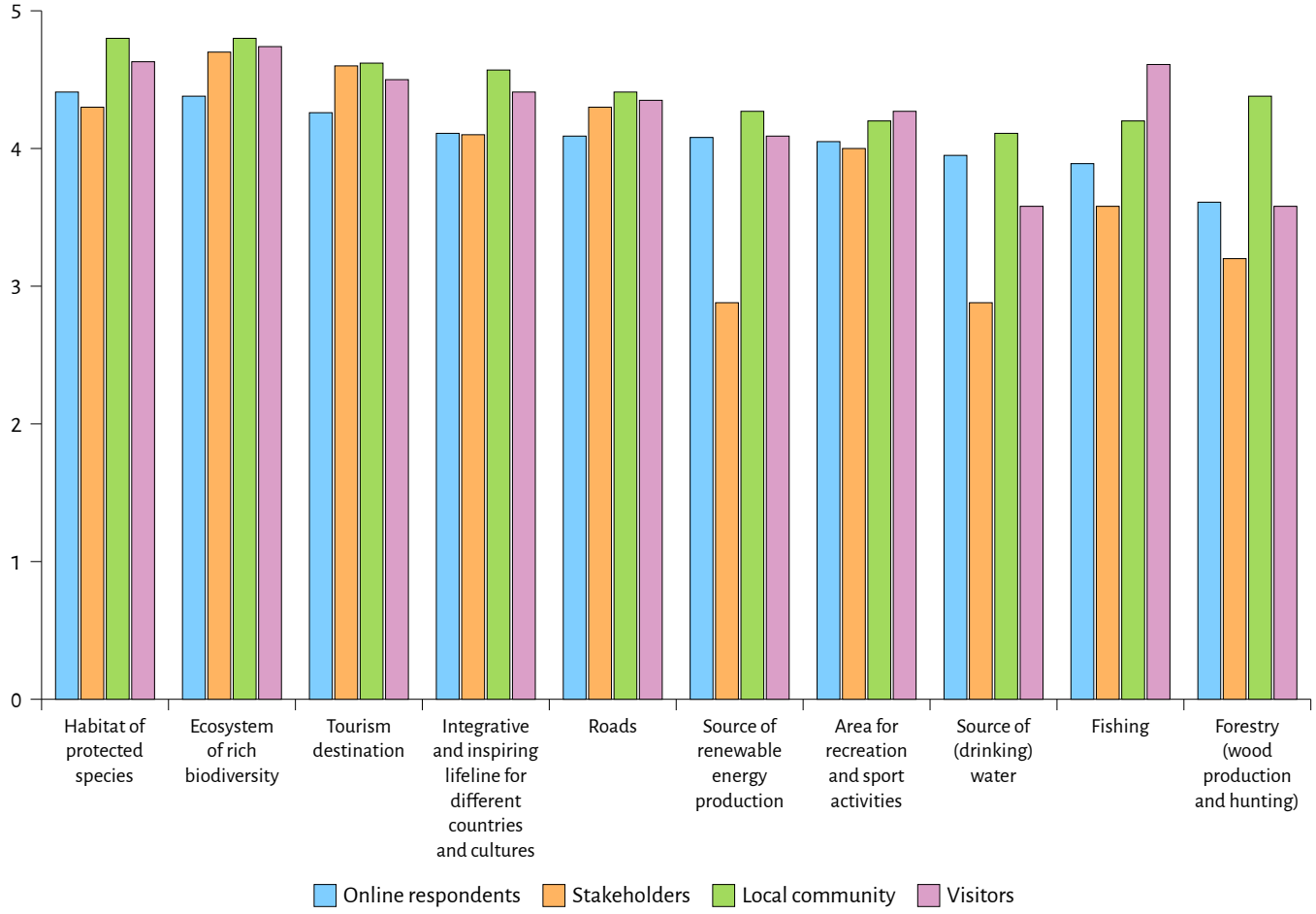

Figure 1. Functions of the Danube River – respondents' perception of their importance

sented when ranking the mentioned elements among different groups of respondents.

In terms of ecology, it can be said that numerous sections of the Danube River are not in an optimal condition. There are many types of threats and pressures and online respondents believe that it is mostly about pollution (for example, from industry, pesticides from agriculture, waste water) (93.2%), as it could be seen in the Table 4. In the field, all three groups of respondents, more precisely 90% of stakeholders, 94% of the local community representatives and 94% of visitors also agreed with this statement.

Table 4. The main types of threats and pressures on the Danube River (in ecological terms)

	Online sample	Sample gathered in the field		
		Stakeholders	Local community	Visitors
▸ Pollution (e.g. from industry, pesticides from agriculture, waste water)	93.2%	90%	94%	94%
▸ Waste and garbage	87.4%	50%	88%	78.6%
▸ River regulation (such as embankments)	2.3%	40%	10%	26.8%
▸ Hydro power plants	29.4%	50%	6%	28.2%
▸ Intensive usage by people for recreation and sport	6.5%	10%	10%	2.8%
▸ Land use, spreading of cities, (traffic) infrastructure	54.8%	20%	44%	67.8%
▸ Intensive forestry	13.5%	10%	20%	19.7%
▸ Other (the quantity of water is decreasing rapidly, exploitation of sand and pebble, degradation of the shore habitats, negligence of humans)	/	10%	/	6.9%

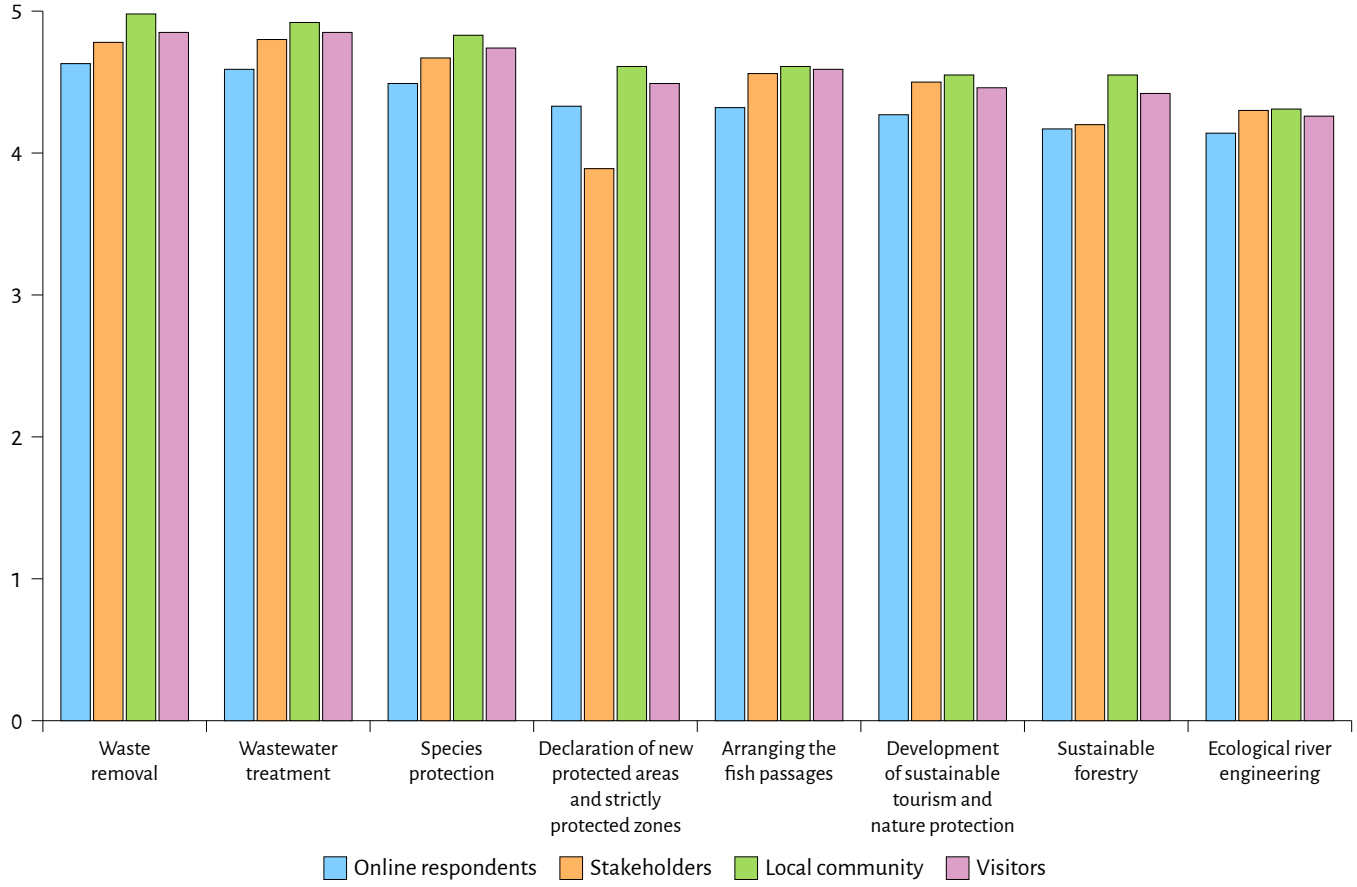

Figure 2. Conservation-restoration measures along the flow of the Danube River – respondents' perception

Online respondents showed a high degree of understanding of conservation-restoration measures along the flow of the Danube River, such as the waste removal, wastewater treatment, species protection. In the field, stakeholders believe that wastewater treatment is the most important. On the other hand, representatives of the local community emphasize the importance of the waste removal. Visitors value both conservation and restoration measures mentioned above equally. The measure for which the lowest mean value was recorded in all three groups of respondents, refers to the formation of new protected areas and strictly protected zones. Details are represented within the Figure 2.

The Danube islands (900 in total) are the habitats of the last remnants of wilderness, 80% of the population of certain species of birds and they also represent places where people can find forest habitats. Encouraging results of this research are indicating that even 83.5% of online respondents would support strict protection and non-interventionist management of 147 most natural islands along the flow of the Danube River. In the field, gained results of the survey also indicated the major interest of respondents to support the strict protection and non-interventional management of the 147 most natural islands along the Danube River flow. In the case of the stakeholders and the local community representatives, this percentage exceeds 90%. The research results also indicated the major understanding of the field respondents about the fact that access to the strictly protected islands is prohibited in order to better preserve their sensitive nature. The percentage of respondents who showed the understanding of this important item exceeds 80% in the case of all three groups of respondents.

Results of the online survey also indicated that 41.3% of respondents stated that they know some protected area along the flow of the Danube River, such as Gornje Podunavlje, Bačko Podunavlje, Djerdap. However, they also stated that they found themselves only somewhat informed (40.6%) or uninformed (39.7%) about protected areas along the flow of the Danube River in Serbia. More precisely, 11.6% of the online respondents feel completely uninformed, while only 1.3% of online respondents stated that they found themselves very informed about this topic. It is an encouraging fact that 47.7% of respondents support the activities focused on preservation of the Danube and its nature, such as natural islands. Besides that, even 36.5% of online respondents would be absolutely willing and interested in supporting the conservation work. As expected, all stakeholders who participated in the survey in the field pointed out that they are informed about protect-

ed areas along the flow of the Danube River. A significant percentage responded positively in the group of the local community representatives (75%) and visitors (81.6%). It is important to indicate that Gornje Podunavlje represents the protected area that is mentioned by respondents in all three groups. When it comes to the respondents' awareness of protected areas along the Danube flow in Serbia, 50% of stakeholders stated that they are very informed. On the other hand, 75.5% of the local community representatives believe that they are somewhat informed about the mentioned topic, while 42.4% of the visitors think the same. Furthermore, the research results indicated that majority of the field respondents are interested in supporting the activities to preserve the Danube and its nature, including the natural islands. More precisely, 60% of stakeholders, 72% of the local community representatives and 46.5% of the visitors would support conservation work.

When asked about the manner in which they could contribute to the preservation of the Danube, its islands and surrounding nature, online respondents firstly stated the attempt to influence the opinion and behaviour of others (65.2%). Finally, respondents from the sample gathered in the field also see their contribution to the preservation of the Danube and its nature on the basis of attempting to influence the opinion and behaviour of others. A detailed presentation of other responses is provided within the Table 5.

Table 5. Contribution to protection of the Danube River, its islands and surrounding nature

	Online sample	Sample gathered in the field		
		Stakeholders	Local community	Visitors
a. By changing the personal behavior in nature	57.7%	40%	46.9%	59.5%
b. By intention to change the attitudes and behavior of others	65.2%	70%	59.2%	71.6%
c. By volunteering	38.7%	30%	28.6%	53.8%
d. By financial contribution	11.9%	/	4.1%	23.3%
e. By sharing the informative campaigns	29.7%	40%	8.2%	33.3%
f. By gathering the waste	46.5%	20%	44.9%	58.4%
g. Other (by promoting the teambuilding (with eco-content), as well as by active promotion of staying in nature among younger generations, participation in projects, nature research)	26.1%	/	2%	8.5%

Discussion

The success of nature protection highly depends on a number of factors of this demanding process in environmental preservation and especially on the participation of the local community members, visitors and other stakeholders, such as managers of protected areas, forest holdings, tourist organizations (Baierl & Bogner, 2023; Brankov et al., 2022; Fromont et al., 2022; Gifford & Sussman, 2012; Holmes, 2013; Ihemezie et al., 2021; Karanth et al., 2008; Liu et al., 2010; Rodríguez-Rodríguez et al., 2019). Broad participation is even more important in societies in transition with lower level of economic development (Freudenberger et al., 2013; Stojanović et al., 2022). Therefore, the main focus of this paper is on the perception of a wide group of respondents regarding the issues of nature protection importance, which later might be used in practical nature protection activities. Previous papers put the visitors, local community members stakeholders and their general perceptions in the focus (Abukari, 2020; Angwenyi et al., 2021; Brown et al., 2010; Cheung & Fok, 2013; Engen et al., 2019; Holmes, 2013; Mannetti et al., 2019; Rodríguez-Rodríguez et al., 2019; Thapa et al., 2024), while this paper is additionally pointing to the importance of comparing the perception of respondents who were in direct contact with specific protected area and those who completed the questionnaire online, distanced from nature. This issue is becoming important topic nowadays, due to the evident decreased interaction of people with nature (Ballouard et al., 2011; Hofferth 2009; Zhang et al., 2014), which also decreases the positive emotions, attitudes and behavior towards the environment (Soga & Gaston, 2016).

First identified difference between online respondents and those who were surveyed in the field for the purpose of our study is reflected in the frequency of their visits to the Danube River and its vicinity. Majority of the online respondents highlighted that they are visiting the Danube River and/or the floodplains of this river only several times per year, while majority of the sample gathered in the field (predominantly stakeholders and visitors) are visiting the mentioned areas at least once a week. Such frequency might be a reason of different first associations on the Danube River, when speaking about online and the sample gathered in the field. More precisely, representatives of the local community and visitors mentioned the aspects related to the waste in the immediate vicinity, while online visitors did not cite the issues related to the waste in the open-ended questions as their firs association

to the researched area. It seems that visitors who were in direct contact with nature have different perspective in terms of indicating the problems related to the nature conservation, while first association of online respondents was primarily related to a positive aspects of visiting the protected area. However, online respondents later expressed a high degree of understanding the issues related to the waste management, when speaking about the understanding of conservation-restoration measures along the flow of the Danube River, which still might be encouraging. Besides that, opposite to the online respondents, representatives of all three groups of the sample gathered in the field, underestimated the importance of formation of new protected areas and strictly protected zones, which might be a consequence of better understanding of the terrain, icluding its strenghts and threats and the following problems that might be caused based on such activities.

When citing the important functions of the Danube River, both online and respondents who were in direct contact with nature highlighted those functions that are important for enjoying within the protected area, while other practical ones are neglected, or more precisely those related to fishing activities, forestry, as well as considering the Danube as a source of a drinking water. It is interesting to notice that online respondents and those who were in direct contact with nature have similar perception of the current state considering the fact that numerous sections of the Danube River are not in an optimal condition. It is also encouraging that majority of online respondents, the same as those surveyed in the field, support the activities focused on a preservation of the Danube and its nature, including its natural islands. This issue is very important to be considered in the future and it is in line with the findings of the study conducted by Wolf et al. (2019), who highlighted the fact that preserved nature is important aspect for attracting the visitors in a concrete protected area, which might shape the higher levels of satisfaction when visiting protected area, as stated in the study of de Oliveira et al. (2021). Back to the findings of our paper, both groups also indicated that they could contribute to the preservation of the Danube River, its islands and surrounding nature, based on the attempt to influence the opinion and behavior of others. However, online respondents found themselves only somewhat informed or uninformed about protected areas along the flow of the Danube River, which is opposite to the respondents who were in direct contact with nature.

Therefore, it could be said that, based on the main aim of this paper, to assess the environmental attitudes between visitors, residents and other stakeholders compared to those online opinions of citizens who are geographically distant from the Danube and nature in protected areas along this river, differences and similarities certainly exists. Besides these theoretical contributions, practical implications of the main results are reflected in the fact that these findings might serve as guidelines for various stakeholders in charge for further development of tourism and nature protection. In such manner, managers of protected areas and tourism organizations might further increase their marketing activities focused on raising the awareness on various problems when it comes to the nature protection, especially when speaking about the human negative influence. Brown et al. (2010) and Cheung and Fok (2013) highlighted in their studies that it is important to shape the visitors' attitudes through organized visitor management, while the main findings of our paper might be used in that purpose, too. Basic findings of our paper could also contribute in preparing the informal education for visitors (and future visitors), based on the interpretation and developing positive attitudes towards nature conservation, which is another important aspect that protected areas should implement in their offer, according to the findings of Ghazvini et al. (2020), Leung et al. (2018) and Hornoiu et al. (2014). Developing positive attitudes of stakeholders and the local community members is also important, according to the findings of Engen et al. (2019), Fotsing et al. (2024), Macharia et al. (2010) and Weladji et al. (2003) while findings of our study provides detailed insight into their perspective. On the other hand, Wells et al. (1992), Angwenyi et al. (2021) and IUCN (2004) highlighted the role of managers in protected areas in nature conservation for the local communities, which additionally raises the importance of our study.

Limitations of the paper are primary reflected in the fact that it obtained only one river as a ecological corridor, while further research might be focused on the other rivers ecocorridors in Serbia, like Sava River, Tisa, Velika Morava, etc. Besides that, this paper is also reflecting the results for only one country in the flow of the Danube as the international river. However, this limitation would be surpassed on the basis of the Danube-wide project 'LIFE WILDislands' funded by the European Union established with the intention to contribute to the preservation of nature and biodiversity within the islands that are identified as the most natural and valuable in eight Danube countries.

Conclusion

This research is focused on attitudes towards the environment and nature protection, with a particular emphasis on comparing the attitudes between respondents who had direct contact with nature and those who participated online. While it is encouraging that both groups of respondents are generally supporting the nature protection activities, there are also differences between them. Respondents who had direct contact with nature have more intense interactions with it, take a different approach to issues in protected areas and have a good understanding of conservation-restoration measures. However, this group of respondents (visitors, local communities and stakeholders) does not emphasize the need for a designation of new protected areas and strict protection zones, which can be justified by their knowledge of the terrain or the fact that they are already sufficiently connected to the protected area covered by this research (Gornje Podunavlje Special Nature Reserve).

The data in this paper could also have practical implications for nature protection or tourism development, allowing protected area managers or local tourist organizations to improve their marketing activities aimed at promoting 'environmentally' and 'socially' responsible marketing. Finally, future research could be even more interesting if it compares attitudes across all the countries along the flow of the Danube River. Perhaps the most important finding is related to the fact that both groups of respondents, those in direct contact with nature and online respondents, confirmed that they support the protection of islands on this great River. In the future, it should contribute to better and detailed results on the way to realize this important task.

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