

Stakeholders' opinions about the relevance of human activities in Natura 2000 sites: comparison among three European countries (Italy, Slovenia, Slovakia)

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Abstract

Natura 2000 network represents the cornerstone of European Union's nature conservation policy, aimed at ensuring the long-term protection of endangered species in their natural habitats in the territory of EU Member States. The EU based the implementation and management of the Natura 2000 network on the dynamic-innovation approach (integration approach), which combines human activities and nature conservation purposes in the sites or in close proximity to these. The success of the integration approach rests on the collaboration among different stakeholders. Collaboration is fundamental to facilitate the social acceptance of the potential restrictions to the economic activities and to reduce the conflicts due to the perceived unequal distribution of costs and benefits between social actors. The aim of the present study is to analyze the stakeholders' opinions about the relevance of human activities in the Natura 2000 sites in three EU members' countries (Italy, Slovenia and Slovakia). In order to achieve this aim three steps were followed in each country: stakeholder analysis; questionnaire survey; data processing and interpretation of results. Through the stakeholder analysis 96 stakeholders - 56 in Italy, 25 in Slovenia, 15 in Slovakia - were identified and further involved in the survey. The stakeholders' opinions were collected using a questionnaire administered by email. The results show that in all three countries the stakeholders consider nature conservation as the most important human activity in the Natura 2000 sites. In addition, the Slovenian stakeholders emphasized the relevance of forest activities, while the Italian stakeholders highlighted the importance of environmental education and the Slovakian stakeholders the relevance of agricultural activities.

Keywords

protected areas, nature conservation, integration approach, stakeholders' involvement, multi-stakeholders, survey.

Introduction

The Natura 2000 network - established by the Directive 92/43/EEC (or 'Habitats Directive') and Directive 79/409/EEC (or 'The Bird Directive') - was implemented and managed by the European Union (EU) according to the 'integration approach' (JONES et al. 2015). The integration approach is based on combining human activities - i.e. recreational activities, agricultural and forestry practices, environmental education, research activities - and nature conservation aims in the same area or at least in close proximity (STOLL-KLEEMANN 2001). This approach is considered the most suitable one for the management of protected areas in Europe because a large part of Natura 2000 sites are located in rural contexts where significant human activities have always existed and may even have contributed to the creation of certain habitats of conservation value. In these situations the protection of habitats and wildlife species including at the same time inhabitants' wellbeing and better quality of their lives is a priority of the integration approach (PIETRZYK-KASZYŃSKA et al. 2012). At local level the stakeholders' involvement is a key point in order to implement the integration approach, as recognized by the Declaration of EI Teide Declaration (2002): *'...the success of Natura 2000 will require the support of European citizens, especially of local people and landowners, and their participation in the decisions on the implementation of the conservation and management of the areas involved'*. Individuals and organized groups (public institutions, private organizations, and associations) can be involved in the decision-making process at different levels namely information, consultation, collaboration and empowerment (BALEST et al. 2016, BRESANCIN et al. 2017). Information is the level at which stakeholders are assisted in understanding decisions' alternatives through balanced and objective information. Consultation consists in identifying the variables considered relevant in the system to be managed with the purpose to obtain public feedback on analysis, alternatives and/or decisions. Collaboration is the level of participation in which the stakeholders are involved in each aspect of the decision including the development of alternatives and the identification of the preferred solution. Finally, empowerment is the level of participation which places the final decision making in the hands of the stakeholders (IAP2 2007).

Starting from these considerations, the main objective of this study is to analyze stakeholders' opinions about the importance of different human activities in Natura 2000 sites. Relevant stakeholders involved in the process of consultation during Natura 2000 network implementation have been surveyed through a questionnaire. The study was developed in three EU member countries - Italy, Slovenia and Slovakia - involved in the COST Action FP1207 'Orchestrating forest related policy analysis in Europe' (ORCHESTRA - <https://sites.google.com/site/costactionfp1207/>).

Materials and methods

The study was structured in three main steps:

1. stakeholder analysis;
2. questionnaire survey;
3. data processing and interpretation of results.

Stakeholder analysis

The stakeholder analysis encompasses a range of different methods and techniques used to analyze in systematic way stakeholders' roles, relationships, interests, and influence in the decision-making process (REED 2008). The objective of stakeholder analysis is to identify any individuals and groups who are affected by or can affect parts of the process, and to prioritize them in respect to their involvement in the decision-making process (REED et al. 2009, PALETTO et al. 2015).

In the present study, in order to identify and classify the stakeholders in the three EU member countries (Italy, Slovenia and Slovakia) was adopted the same stakeholder analysis approach. During the first step, a preliminary list of stakeholders was developed by a group of researchers involved in the COST Action 'ORCHESTRA' with the support of national experts. Relevant stakeholders in Natura 2000 network implementation were identified based on their influence and relevance in the ambit of the process of sites implementation. Then, previously unknown stakeholders were identified with a snowball sampling approach, in which first identified relevant actors provide additional stakeholders to the preliminary list (HARRISON & QURESHI 2000). At the end of this step, 56 stakeholders in Italy, 25 in Slovenia and 15 in Slovakia were identified and involved in the survey.

During the second step of stakeholder analysis, the stakeholders were classified in four groups based on their status and interests for Natura 2000 network (Tab. 1): public administrations, universities and research institutes, environmental NGOs, farmers and forest owners associations. The different and not always balanced distribution of stakeholders in the four groups is due to the political structure of the country (centralized system in Slovakia and Slovenia and federal system in Italy) and to the non-response rate.

Country	Groups of stakeholders	Number of stakeholders
Italy	Public administrations	29
	Universities and research institutes	7
	Environmental NGOs	8
	Farmers and forest owners associations	12
	<i>Total</i>	<i>56</i>
Slovenia	Public administrations	8
	Universities and research institutes	8
	Environmental NGOs	4
	Farmers and forest owners associations	5
	<i>Total</i>	<i>25</i>
Slovakia	Public administrations	7
	Universities and research institutes	6
	Environmental NGOs	1
	Farmers and forest owners associations	1
	<i>Total</i>	<i>15</i>

Table 1: List of stakeholders involved in the survey by country and group of stakeholders.

Questionnaire survey

A semi-structured questionnaire was used to collect data aimed to investigate stakeholders' opinions about the importance of human activities in Natura 2000 sites in the three EU member countries. The questionnaire is formed by 25 questions divided in three thematic sections ('Personal information', 'Natura 2000 network perceptions' and 'Public participation in the implementation of Natura 2000'). The present paper is focused only on the question 'Could you compare the importance given to nature conservation (biodiversity), agricultural activities, productive forest activities, recreational activities, environmental education and research activities in the Natura 2000 network?', belonging to the second thematic section. The list of human activities considered in the study was developed by researchers involved in the COST Action 'ORCHESTRA' and national experts (Tab. 2).

The semi-structured questionnaire was administered to previously identified stakeholders by email. After 15 days, a reminder email to all those who did not respond to the initial mailing was sent.

N°	Activity	Description
1	Nature conservation	Nature conservation activities are aimed at saving the structures that have evolved in the Natura 2000 sites over time. The nature conservations activity includes all those practices aimed to preserve and improve the natural environment.
2	Recreational activities	Natura 2000 sites are the backdrop for non-consumptive recreational activities such as hiking, bird watching, wildlife viewing and relaxing. Conversely, in Natura 2000 sites are excluded the following recreational activities: gaming, fishing, picking non-wood products.
3	Agricultural activities	Agricultural practices achievable in Natura 2000 sites in accordance with the restrictions established by current legislation. The main restrictions concern mowing in the meadows and pastures in the spring-summer time, number of cattle grazing, and tillage of the soil.
4	Forest activities	Silvicultural treatments aimed to improve the productive function (timber and bioenergy production) of forests in accordance with the restrictions contained in the current legislation.
5	Environmental education	Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action (UNESCO, Tbilisi Declaration, 1978).

Table 2: Description of human activities achievable in Natura 2000 sites. Source: DE MEO et al. (2016).

Data processing

Analytic Hierarchy Process (AHP) method was applied to analyze relevant stakeholders' opinions concerning the importance of human activities in the Natura 2000 sites. AHP is a method that uses pairwise comparisons of the alternatives for solving multi-criteria decision-making (MCDM) between a finite number of alternatives. This method was developed by SAATY (1987) in order to solve complex decision problems and make accurate decision and judgment for complex systems.

In this study, relevant stakeholders evaluated the importance of the five human activities reported in Tab. 2 comparing them in pairs:

Activity 1	5 Much more important	3 Somewhat more important	1 Equal importance	1/3 Somewhat more important	1/5 Much more important	Activity 2
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A pairwise comparison for all five activities was applied, followed by the calculation of the priority value of each activity using the eigenvalue method. The eigenvalue method is based on a procedure of averaging the direct and indirect estimations of the comparisons. At the end of the procedure, the priority score of each activity was used as indicator of stakeholder's individual perception of activities' importance. In addition, we tested the consistency of the matrix using the following formulas:

$$CI = \frac{(\lambda_{\max} - n)}{(n - 1)}$$

$$CR = \frac{CI}{RI}$$

Where: CI is consistency index, CR is the consistency ratio, RI is the expected consistency index obtained from random generated comparisons of the same order n. CR is used to measure how consistent the judgments have been relative to large samples of purely random judgments. The value of CR should be lower or equal to 0.1 (10%) in order to have consistency of the matrix.

Results

The results show that in the three EU member countries nature conservation is considered as the most important human activity in Natura 2000 sites in order to maintain a high level of habitat and species biodiversity. Nature conservation priority scores reported in Tab. 3 are similar for the three countries and respectively 0.3029 in Italy, 0.2849 in Slovenia, and 0.3212 in Slovakia. According to stakeholders opinions in Italy and Slovakia environmental education occupies the second position in importance (priorities scores respectively 0.21 and 0.20), while in Slovenia forest activities are ranked second in the rating. In all three EU member countries recreational activities are considered marginal in the Natura 2000 sites with a priority score of 0.1088 in Italy, 0.1192 in Slovenia, and 0.1503 in Slovakia.

Activity/Country	Italy (n=56)	Slovenia (n=25)	Slovakia (n=15)
Nature conservation	0.3029	0.2849	0.3212
Recreational activities	0.1088	0.1192	0.1503
Agricultural activities	0.1921	0.1957	0.1700
Forest activities	0.1880	0.2455	0.1611
Environmental education	0.2081	0.1548	0.1975
CI	0.0107	0.0063	0.0027
CR	0.0072	0.0042	0.0018

Table 3: Priorities scores for five human activities in Natura 2000 sites by country.

When observing the results by group of stakeholders interesting differences are highlighted in the three countries (Tab. 4). In Italy all groups of stakeholders consider nature conservation (priority score for public administrations 0.2695, environmental NGOs 0.3015, universities and research institutes 0.3577, farmers and forest owners 0.3509) the most important activity in Natura 2000 sites. Conversely, environmental education occupies the second place for two groups of stakeholders (public administrations and environmental NGOs with priority score respectively 0.2143 and 0.2782), while for the representatives of the other two groups (universities and research institutes and farmers and forest owners associations) agriculture represents the second activity with a priority score respectively 0.2233 and 0.1966.

In Slovenia nature conservation is the most important activity in Natura 2000 sites for three groups of stakeholders (public administrations, environmental NGOs, universities and research institutes), while for farmers and forest owners associations forest activities are considered the most important in Slovenian Natura 2000 sites with a priority score 0.2851.

In a similar way, in Slovakia nature conservation occupies the first place for three groups of stakeholders (public administrations, environmental NGOs, universities and research institutes) while for the farmers and forest owners associations the most important activities are forest activities (priority score 0.4147) followed by agricultural activities (priority score 0.3052).

These differences are due to several geographic, territorial and socio-economic variables such as main land uses in Natura 2000 sites or in close proximity, relative importance of human activities, and cultural background of stakeholders in each country. For example, Slovenia has a long forest management tradition and the wood products are important for the local economy as merged from results. Besides, in Slovakia many Natura 2000 sites are in rural area and therefore stakeholders underline the relevance of agricultural activities also in these protected sites. In Italy, in the last decades, the non-marketable ecosystem services are often considered more important than timber and bioenergy production; for this reason stakeholders point out the importance of nature conservation and environmental education rather than forest activities.

Finally, it is important to highlight that for all comparisons, the consistency ratio (CR) resulted less than 0.1.

Italy							
Activity/Group	Public (n=29)	administrations	Environmental (n=8)	NGOs	Academia and research institutes (n=7)	research	Farmers and forest owners associations (n=12)
Nature conservation	0.2695		0.3015		0.3577		0.3509
Recreational activities	0.1137		0.1019		0.0839		0.1134
Agricultural activities	0.1914		0.1595		0.2233		0.1966
Forest activities	0.2112		0.1589		0.1767		0.1611
Environmental education	0.2143		0.2782		0.1583		0.1781
CI	0.0153		0.0369		0.0106		0.0045
CR	0.0103		0.0248		0.0071		0.0030
Slovenia							
Activity/Group	Public (n=8)	administrations	Environmental (n=4)	NGOs	Academia and research institutes (n=8)	research	Farmers and forest owners associations (n=5)
Nature conservation	0.2889		0.3303		0.2904		0.2153
Recreational activities	0.1178		0.2091		0.0960		0.0982
Agricultural activities	0.1772		0.1181		0.2120		0.2712
Forest activities	0.2593		0.1387		0.2630		0.2851
Environmental education	0.1568		0.2038		0.1386		0.1301
CI	0.0366		0.0668		0.02111		0.0164
CR	0.0246		0.0449		0.01417		0.0110
Slovakia							
Activity/Group	Public (n=7)	administrations	Environmental (n=1)	NGOs	Academia and research institutes (n=6)	research	Farmers and forest owners associations (n=1)
Nature conservation	0.3698		0.2816		0.2994		0.1144
Recreational activities	0.1375		0.2260		0.1530		0.0918
Agricultural activities	0.1289		0.1169		0.2051		0.3052
Forest activities	0.1246		0.0939		0.1838		0.4147
Environmental education	0.2393		0.2816		0.1587		0.0737
CI	0.0203		0.0323		0.0245		0.0364
CR	0.0136		0.0217		0.0164		0.0244

Table 4: Priorities scores for five human activities in Natura 2000 sites by country and group of stakeholders.

Conclusion

The results of this kind of studies can be used as starting point for future researches aimed at investigating stakeholders' opinions and views relating to human activities and Natura 2000 sites implementation. This issue is relevant - as recognized by international literature - because the success of Natura 2000 is strictly dependent from the relationship between human activities and ecological conservation in the protected sites (BEUNEN & DE VRIES 2011, TSIAFOULI et al. 2013). Many European countries (FERRANTI et al. 2010, MILLIGAN et al. 2009) experienced conflicts and difficulties during the process of Natura 2000 network implementation and in some cases occurred that directly affected stakeholder have been in a suspicious attitude because they were not consulted (WURZEL 2008).

In this context, the valuation of stakeholders' opinions about the relevance of human activities in the Natura 2000 sites is an important aspect in order to ease the social acceptance of nature conservation policy. Furthermore stakeholders' involvement in the protected areas management is a key ingredient to reduce the potential conflicts between opposite interest parties and to increase the reciprocal trust. Finally, the consultation of stakeholders in the management of protected areas has the advantage to increase the positive partnerships between civil society and public authorities.

Providing an exhaustive knowledge base of the different stakeholders' point of views can support the improvement of policy strategies to reconcile nature conservation and human activities in Natura 2000 sites. Being these kind of studies based on stakeholder analysis and questionnaire implementation, the methodology can be easily replicated in different contexts and similar studies can be easily be carried out in other European countries.

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