Survey Design to Estimate the Economic Values of Romanian National and Natural Parks

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Abstract. This paper presents the actions taken in an ongoing research project to reveal tourists' preferences and attitudes towards recreation activities taken in the Romanian national and natural parks. The focus was on establishing the area of research and on creating the survey instrument to collect data in the field, needed to estimate the welfare measures associated to the parks. The area of research was determined based on the estimated number of visitors and the presence of visitor centres or information points. Thus, 10 parks were selected as research area. The design of the questionnaire receives a special attention because the non-market valuation techniques require the use of specific valuation question formats that need to be carefully formulated. The questionnaire incorporates valuation formats specific to different non-market valuation methods, in a way that respondents would be comfortable to provide accurate information. Collected data are organized in four main groups by the nature of their use and the non-market valuation methods to be utilized to determine the welfare measures. The organized and logical manner of constructing the steps provides a strong database that allows a reliable and effective analysis of data.

Keywords: survey design, economic values, national and natural parks, Romania

INTRODUCTION

Tourism and recreation are primary management objectives for category II (National park) and category V (Protected landscape/seascape) of protected areas proposed by the International Union for Conservation of Nature as being worldwide accepted (IUCN, 1994). According to the matrix of management objectives proposed by IUCN for the six protected areas categories, tourism and recreation may be compatible activities with the conservation of protected areas, although they are often in conflict. However, in practice, it is difficult to find a balance between conserving the areas in their natural form and developing the areas for tourism, especially under the condition of an increasing demand for spending leisure time in the public natural areas.

The increase in the number of tourists remains a challenge for park managers, local communities and tourism industry, the task being to maximize tourists' needs under conditions of minimizing negative impacts on natural and cultural resources, and on communities. Under the conditions of implementing the sustainable development principles, tourism may become an important source of benefits for parks and the local economy, with positive influences on the national economy. Definitely, gathering information about tourists and imposing use restrictions of natural resources play an important role in the conservation of the environment.

Romanian national parks (IInd IUCN category) and natural parks (V[th] IUCN category) offer a large variety of recreation opportunities; therefore, demand is increasing every year. In

order to develop and implement efficient management plans for these parks, managers should analyze the good in question from at least two points of view. The first is the interest and responsibility of the authorities to maintain the natural resources at least at the level of quality that currently exists and where it is possible to improve it, i.e. the quality of the water may be improved through use restrictions, repopulation or other actions. The second point of view is the interest of people to visit the parks for recreational use. However, knowledge about these aspects is not sufficient for developing efficient management actions. Practice has proved the importance of including economic values in the decision processes taken at the level of the parks (Loomis, 2005). The economic values can be estimated using the non-market valuation techniques, which have become lately very popular worldwide. In the case of environmental valuation, researchers focus on estimating welfare measures such as consumer surplus per trip (Shrestha *et al.*, 2002; Signorello *et al.,* 2009), willingness to pay to visit the parks or to perform specific recreation activities during a trip (Huhtala, 2004; Rollins *et al.,* 2008) or marginal willingness to pay for specific changes in the development strategies of the areas or characteristics of the areas (Morey *et al.*, 2002; Haider *et al.,* 2004).

As regard to Romania, first efforts were done during 2005-2008, when the first economic values of five national and natural parks were estimated (Dumitras, 2008). Actions continued with another research project, starting 2010, which will allow creating a database at the national level, with valuable information based on which efficient management decisions may be taken. The main objective of this paper is to develop an instrument that will help collecting data needed to develop a strategy on how to relate the estimated welfare measures to management actions taken for tourism development purpose.

MATERIALS AND METHODS

Champ *et al.* (2003) presents the steps for collecting survey data for non-market valuation studies:
1. Choice of the mode of survey administration
2. Development of the survey materials (identification of the desired measures and design of the questionnaire to obtain the desired measures)
3. Survey administration
4. Data preparation

The research area should be defined before following all these steps, because the steps in data collection depend in a great measure on the nature of the study population. For this study, the research area is represented by the Romanian national and natural parks.

Today, Romania covers 27 parks, which are spread on the entire surface of the country, covering 53.71% of the total surface of protected areas. Dumitras (2011) presents and analyzes the information gathered about the parks, grouped as general and specific information. General information referred to surface, number of natural reservations (IVth IUCN category), maximum altitude, number of plants and number of animals. Specific information, related to tourism and recreation, referred to the presence of visitor centers or information points, estimated number of visitors, number of hiking and thematic trails, number of caves, number of ski trails and access fee. This information was used as basis for establishing the area of research.

The parks were grouped based on the estimated number of visitors per year (according to MPDTN 2007-2026) and the presence of visitor centers or information points (marked with 'Yes' if it exists at least one center or point in the park and 'No' otherwise) (Tab. 1). Due to the large number of parks and the budget constraint, it was decided to analyze two parks from

each group. A constraint was set in the random choice of the parks because the collected data will be used to develop optimal management actions for tourism development. That is, to select in each group one park with at least one visitor center or information point and one park with no visitor center or information point. This was the case of only the first three groups. In the last two groups, no constraint was needed since all parks have at least one visitor center or information point, finding which was expected because of the large number of visitors.

This will help in assessing the degree in which tourists' benefits are influenced by the information offered by the parks' administrations. In total, 10 parks were selected for the proposed analyses (Tab. 1 and Fig. 1).

Tab. 1

Distribution of parks by the estimated number of tourists

Estimated number of tourists	No. parks[1]	Visitor Center /Information point		Chosen research areas
		Yes	No	
0-4999	7	2	5	1. Călimani National Park[2] 2. Lunca Joasă a Prutului Inferior Natural Park
5000-9999	6	3	3	3. Munţii Maramureşului Natural Park 4. Grădiştea Muncelului-Cioclovina Natural Park[2]
10000-29999	6	5	1	5. Rodna National Park 6. Putna Vrancea Natural Park[2]
30000-99999	3	3	0	7. Piatra Craiului National Park 8. Ceahlău National Park
More than 100000	4	4	0	9. Bucegi Natural Park 10. Apuseni Natural Park

[1] Defileul Mureşului Superior Natural Park was excluded because the number of visitors was not estimated to the present; [2] There is no visitor center or information point in the park.
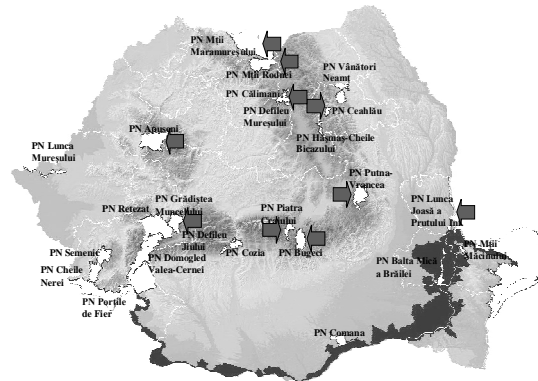

Fig. 1. Selected research area

The target group is represented by the visitors, which are assumed to get benefits after taking trips in the natural and national parks. It is known that, in the case of the non-market valuation methods of public goods, the sample size is conditioned on the accepted sampling error, mode of administration and the allocated budget (Champ *et al.*, 2003).

RESULTS AND DISCUSSION

The work has followed the steps recommended by Champ *et al.* (2003) in collecting data for non-market valuation studies, being adapted to this particular case.

Step 1. Choice of the mode of survey administration. In-person surveys were chosen as mode of administration, by approaching the visitors while recreating in the parks. This

way, the actual feeling of the trip they are taking will be captured and, thus, the preferences may be better revealed.

Step 2. Development of the survey materials. Special attention was given to the design of the questionnaire since the quality of the results depends in a great measure on the quality and accuracy of the data collected. The questionnaire was designed to collect necessary information for analyzing the real situation of tourism in the national and natural parks in Romania, and more specific to the welfare measures associated to the recreational use of the parks. The challenge was to incorporate in the same questionnaire valuation formats specific to different non-market valuation methods, in a way that respondents would be comfortable to provide accurate information, this way any measurement error being avoided (Champ *et al.,* 2003). Collected data may be organized in four main groups by the nature of their use, the non-market valuation methods to be utilized to determine the welfare measures.

The first group is represented by data about the tourist and the group they are part of (Tab.2.). This information is needed to create the tourist profile for each separate park by performing descriptive statistics of the data. A factor analysis may be also considered to investigate how several factors have influenced the trip. Moreover, data will be included as explanatory variables in the econometric models that will be estimated to determine the welfare measures.

Tab. 2

Data about the tourist and the group they are part of

Type of information	Type of question
Main visit to the park	Dichotomous
All recreation activities taken during the trip	Multiple choice
Main recreation activity taken during the trip	Dichotomous
Type of accommodation	Multiple choice
Number of people within the group	Open-ended
Factors that influence the decision to visit the parks	Scale
Socio-demographic data (age, gender, income per household, number members in the household, level of education)	Open-ended and Closed-ended
Congestion level at several points of the trip (at the entrance, on hiking trails, at camp site, while on water, at gondola lift)	Scale

The second group is represented by data about the trip (Tab.3), which will be used to determine the consumer surplus per trip for each park using the travel cost method, which is included in the group of revealed preference methods. It is often used by US and European governmental agencies in cost-benefit analyses based on which management plans are developed for a sustainable development of the regions and environmental policies are created and implemented. The method is based on determining the demand for recreation activities.

Tab. 3

Data about the trip

Type of information	Type of question
Distance from home to the park	Open-ended[1]
Travel time	Open-ended
Mean of transportation	Dichotomous
Trip length	Open-ended
Expenses	Open-ended
Number of groups encountered at several points of the trip (at the entrance, on hiking trails, at camp site, while on water, at gondola)	Open-ended
Number of trips taken in all Romanian natural and national parks in the period 2008-2011, excepting the actual trip	Open-ended[1]
Intention to visit Romanian natural and national parks in 2011 and 2012	Image

[1] Following the procedure explained by Champ *et al.* (2003)

The third group is represented by data regarding the acceptance or refusals of the hypothetical offers made about the trip, in this case the offer being represented by increases in travel expenses (Tab. 4.). This type of information is needed to estimate the median willingness to pay for the same trip and for several activities when the vehicle payment is an increase in travel costs. For this task, the contingent valuation method will be applied, which is included in the group of stated preference methods. A deeper analysis will allow to estimate the marginal changes in willingness to pay for changes in congestion levels for recreation trips, for different points within a trip and for different recreational activities.

Tab. 4

Data about the willingness to pay per trip

Type of information	Type of question
Travel expenses	Open-ended
Yes/No response to the offered bid amounts (increase in travel expenses per trip)	Multiple Bounded Dichotomous Choice[2]
Yes/No response to the offered bid amounts (increase in travel expenses per trip and if the number of groups encountered were double than the current level)	Multiple Bounded Dichotomous Choice[2]
Number of groups encountered at several points of the trip (at the entrance, on hiking trails, at camp site, while on water,at gondola)	Open-ended

[2] Following the procedure explained by Champ *et al.* (2000) and Rollins *et al.* (2008)

The fourth group is represented by data regarding the preferences about several characteristics of the natural and national parks (Tab.5.). Information will be used to order consumer preferences and to estimate the marginal willingness to pay for the presence of several attributes, using the choice experiments method, which is included in the group of stated preference methods. The method is based on the Lancaster theory, according to which the consumer utility is defined based on a series of attributes that characterize the analyzed good. The quality of the results depends in a great measure on the design of the scenarios, the way of coding and the manner of analyzing the data.

Tab. 5

Data about the preferences about several characteristics of the natural and national parks

Type of information	Type of question
Preferences towards several characteristics related to the trips taken to the parks: distance from home to the park, observation of nature with/ without guide, type of information needed for the trip, placement of the camping, congestion level at the camp site, price of fuel	Scenarios[3] with 3 alternatives: 2 hypothetical sites and the option of visiting neither one. Each alternative was described based on 6 attributes of different levels.

[3] Following the procedure explained by Louviere *et al.* (2000) and Kanninen (2007)

Step 3. Survey administration.

The questionnaire was pretested and piloted in Gradistea Muncelului-Cioclovina Natural Park. The pilot results were used to identify any misunderstandings or non-responses of the questions and to find the best way to approach potential respondents. Final survey will be implemented during July – October 2011 following an organized schedule.

Step 4. Data preparation.

The final step implies the preparation to estimate the economic values associated to the parks. This involves preparation of a codebook to explain the way responses are translated into numerical categories. Following, the database will be created, verified and cleaned, if necessary.

CONCLUSIONS

Any non-market valuation study should follow the steps recommended by the literature for collecting survey data. This procedure assures the collection of accurate information, which is needed in order to obtain realistic and quality results. Long-term efficient management decisions should be based on a solid rationale, using information of more type, among which economic values should receive an important place.

This stage of research should not be considered less important than the actual analysis of data, as often it is the case. An organized and logical manner of constructing the steps definitely gives more credit to the work and provides a strong database that allows a reliable and effective analysis of data. Further steps of the ongoing research regards the use of the collected data to obtain the economic values associated to the Romanian national and natural parks.

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