Does Natura 2000 Always Mean Ecotourism Potential? Application of PP GIS to the Perception Study of the Tourist Stakeholders' Values at the Local Scale of Natura 2000 Municipalities

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Natura 2000 has been established as the world largest network of protected areas to halt biodiversity loss in Europe, mainly by promoting sustainable use of semi-natural ecosystems. However, in many cases,the implementation of sustainability goals has beenlimited to its environmental dimension. This is evident especially in Central and Eastern Europe where residents reported significant social and economic costsof Natura 2000 (ref. Grodzińska-Jurczak, Cent 2011). Nature conservation authorities and some NGOs often proposeecotourism to respond to the residents' concerns about negative local-scale economic impact of the Natura 2000 program. However, it can be misleading since an ecotourism potential is not solely created byenvironmental assets concentrated in Natura 2000 sites. Thus, inthis study, we focus more closely on social aspectsof ecotourismand provide insight into 1) community values towards nature, 2) stakeholders' attitudes towards ecotourist path of development and 3) local environmental knowledge of the stakeholders. We arguethat only after learning these aspects and gaining an active support of wide array of stakeholders' towards the ecotourist initiatives, the process can trulyaddress local-scale social and economic needswhile contributing to nature conservation (ref. Western, Wright 1994).

Interpretative character of the studied aspects impelled to adopting a qualitative approach.We restricted ouranalyses to three municipalities in Małopolska Region (Poland), all partially covered by Natura 2000 network. While we controlled for inter-regional factors that could affect an ecotourism potential, we kept case study areas diverse in terms of both 1) main subjects of Natura 2000 protection and 2) socio-economic characteristics. Since none of the municipalities have long tradition of well-established nature-based tourism, we identified most of the key-informant stakeholders who perform tourism-related activities among the selected communities. We concurrently used two methods of data collection: 1) in-depth interviews with the stakeholders supplemented with2) a participatory mapping task. A total of 28 respondents were interviewed between July and October of 2013.

The interviews consisted of series of 27 questions, organized in six categories: 1) perception of local natural resources, 2) views of ecotourism development, 3) community participation in nature conservation, 4) community views of Natura 2000, 5) social, economic and environment tourism impacts and 6) connectedness to local

nature. The interviews were transcribed, coded and interpreted, following the formulated research questions.

We included mapping task to enrich the collected results with spatial information. This enabled us to interpret associations between subjective, self-reported attitudes of the respondents and objective, spatially-defined environmental assets and Natura 2000 sites borders. To ensure maximum comprehensiveness of the task to the community respondents, we adopted a pen-and-pencil mapping technique (ref. Pocewicz et al. 2012). We got insight into local environmental knowledge of the respondents by defining separate mapping attributes for each of the environmental components (rocks, air, water, soils, plants and animals) and by asking the stakeholders to map all subjectively valued features of the local-scale landscape, following the proposed categories. To deepen the value-side of the analysis, we divided all the categories into two further subgroups: one connected to the natural values of the landscape and second to the economic ones. For example, respondents were asked to mark a) areas valued for their clear air as well as b) those areas they regarded as attractive for placing wind turbines. Finally, we asked respondents to map: 2) areas subjectively viewed as attractive for a specific (listed) form of ecotourism, 3) areas to be excluded from tourist activities, 4) areas with both existing and preferred elements of ecotourism infrastructure. After digitalizing all the responses using ArcMap 10.2.2 software, we performed hotspot analyses and calculated a collection of spatial indications to enrich qualitative analyses of the maps, following Klain& Chan's (2012) approach.

We observed substantial coherence of the results gained with the use of the two independent methods. We learned that the closest dependence of the residents to provisioning values of the environment, the more limited willingness to diversity local economy through ecotourism development. Spatial analyses allowed for identifying potential areas of conflicts between contradictory directions of use of the same ecosystems. Importantly, the areas were designated based on stakeholders' responses only, thus they are expected to be potentially more easily managed based on bottom-up approaches. Surface area analyses helped to interpret the capability of the area to provide site-specific ecotourism assets: the more uniformly perceived landscape by the stakeholders, the smaller potential to attract well-prepared ecotourists, dedicated to experience a specifically-defined environmental value.

Also, the way the stakeholders' understand an ecotourism itself can influence internal potential of its development. While most of the respondents recognized core components of the ecotourism correctly (they associated it with (1) experience of nature, (2) ecological education and learning about local ecosystemsor(3) minimizing pressure on those ecosystems), we found examples of significant misunderstanding in that respect (e.g. ski resort proposal in the core zone of a Natura 2000 site or associating local ecotourism assets with a town's economic zone or dinosaur theme park).

Finally, Natura 2000 sites may not be perceived as themost environmentallyattractive areas in the municipality and therefore they aren't consideredcore ecotourism assets. We found this perception is linked to the size of the site and its distance from the main municipality settlements (fig. 1.). However, the results of mapping ex-

ercise revealed shortages in internal (community-addressed) promotion of the protected values. This was evident as some of the stakeholders were unaware of the potentially attractive resources of Natura 2000 sites in their vicinity.

The study demonstratespotential of a successfulapplication of public participation GIS (PPGIS) to ecotourism-planning processes. PPGIS, defined as a variety of GIS tools to engage public in decision-making (ref. Sieber 2006), is already widely used for optimising urban planning, protected area management or land-use conflict facilitation, however it has been still unpopular in the ecotourism contexts, so far. We believe our results provide a step forward establishing closer connections between multidisciplinary science, nature conservation agencies, tourism industry and local communities in Poland to better inform unavoidable social and economic processes which affect all of these groups of interests.

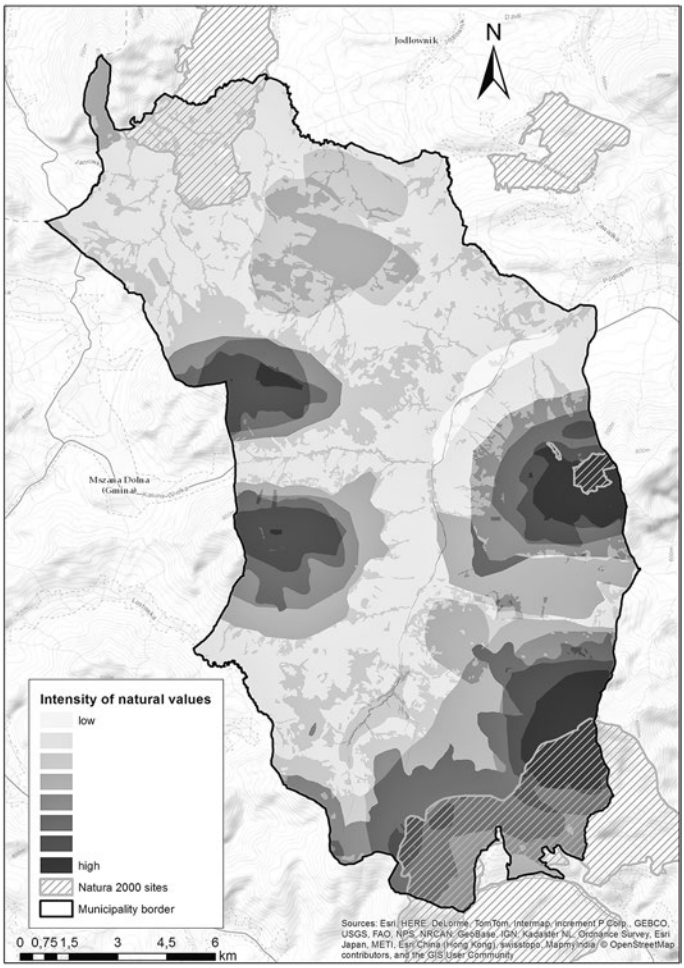

Fig. *1. An example of limited spatial colocation of subjectively valued naturals features and borders of Natura 2000 sites in Dobra municipality (Małopolska Region, Poland)*

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