Anthropogenic Influence Mapping in Protected Areas. A Case Study from Bucegi Natural Park, Romanian Carpathians

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Extended Abstract

Evaluating environmental problems in protected areas is still not an easy task. As these areas are usually created in order to preserve natural complex diversity, there are many parameters to keep track with. Whether the main focus is on the habitat fragmentation or on the endangered species sensitivity to an impact factor, the evaluation must balance all these indicators for a more objective evaluation (Cucu et al, 2013).

Bucegi Natural Park is a good example for this type of study as one may find almost all types of impact factors, from chaotic tourist traffic, track extension, up to illegal hunting and construction expansion (Knorn et al 2012, Mihai et al, 2009,). The main objectives for this study were to evaluate the park's environmental problems, mapping the impact factors, elaborate an algorithm for analysis and finally find a way to cartographically represent all the resulted features.

The anthropogenic influence is the expression of the actual environmental state which indicates the level of change from the initial state, expressed in quantifiable data. The methodology used for the study was based on field data collection, processing and analysing, then validation and finally cartographic representation. Firstly, habitats were mapped, using Landsat 8 images for supervised classification analysis and NDVI (Weiers et al, 2004), same as all the impact factors (constructions, roads, tracks, sheepfolds, pastures, utilities, traffic, affected vegetation, soil erosion, pollution and any other environmental disturbance). Afterwards, all these data were analysed using GIS tools. Several models were applied for the analysis, including the InVEST model. A grid was generated for the study area and based on all raster data that was mapped and analysed, scores were derived. The result

is a new raster map, with information for all levels of anthropogenic influence.

The last step consisted in finding the best way to represent all the features that were valuable for an environmental evaluation. Thus, for constructing the final map a hillshade of the elevation grid model was used together with the anthropogenic influence raster and selective data for the impact factors, in order to have a clear extent of the impact sources. Some of the symbols were manually designed for a better fit, turning the map into a complex, yet easy to read, "Report" of the environmental state of Bucegi Natural Park.

Key words: conservation, anthropogenic influence, cartographic representation, GIS, Bucegi Natural Park

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