RECENT EXPERIENCE OF BIOREGIO CARPATHIANS PROJECT: IUCN CATEGORIZATON OF SPECIES OCCURING IN THE CARPATHIAN REGION OF HUNGARY

MIHÁLY MÁRTON, LÁSZLÓ PATKÓ, LÁSZLÓ SZEMETHY, ANDRÁS GUBÁNYI, MIKLÓS HELTAI

Szent István University, Institute for Wildlife Conservation
2100 Gödöllő, Páter Károly str. 1., Hungary
marton.mihaly1990@gmail.com

ABSTRACT

In conservation biology increasingly more countries are using the IUCN categorization (IUCN category and criteria) to describe species occurrence and population dynamics. Although, the evaluation process of the categories is strict, the category and criteria might change, due to different spatial levels (continent, country, region), which often provide basis for considerable debates, like in the BioRegio Carpathians SEE. The basic aim of the program is to manage and conserve protected areas and natural resources in the Carpathian region, therefore increase the attractiveness of the area. Our aim with this study is to demonstrate the difficulties of the assessment and to draw attention to potential pitfalls. We have evaluated IUCN categories for 46 fish, 13 mammal and four bird species. Based on our result we can state that we usually do not *even* have enough verified data to evaluate the exact IUCN categories for more studied and well known taxa like mammals or birds. Primary reason for this is the lack for sufficient data (area, population size, population decrease/increase) that is needed for an accurate evaluation.

Keywords: nature conservation, IUCN categories, Bioregio Carpathians, databases, red list

INTRODUCTION

In conservation biology increasingly more countries are using the IUCN categorization (IUCN category and criteria) to describe species occurrence and population dynamics. Although, the evaluation process of the categories is strict, the category and criteria might change, due to different spatial levels (continent, country, region), which often provide basis for considerable debates. The primary reason for this debate is that we usually do not have well controlled and verified public databases. However, these databases are essential to assign species in accurate IUCN categories and criteria. Owing to this, the evaluation process is usually aided by individual experts and their educated guesses. We have found the same situation during our work in a recent project, the BioRegio Carpathians SEE, which started in 2012. There are seven countries involved in this international project, all shares a different proportion from the Carpathian region (*Figure 1*). The participating countries are as follows: the Czech Republic, Poland, Hungary, Romania, Serbia, Slovakia and Ukraine. The basic aim of the program is to manage and conserve protected areas and natural resources in the Carpathian region, therefore increase the attractiveness of the area. BioRegio seeks to develop common standards in integrative management, so that countries can apply joint management and implementation techniques. Another important objective of the program is to create a common biodiversity information system and to prepare and maintain a red list of threatened species and habitats, based on existing databases. There is a great importance in the project for exploring and resolving legal, social, economic, and natural problems and barriers. In BioRegio Carpathians SEE, classification of the threatened species and habitats are based on international IUCN categories (IUCN 2012).
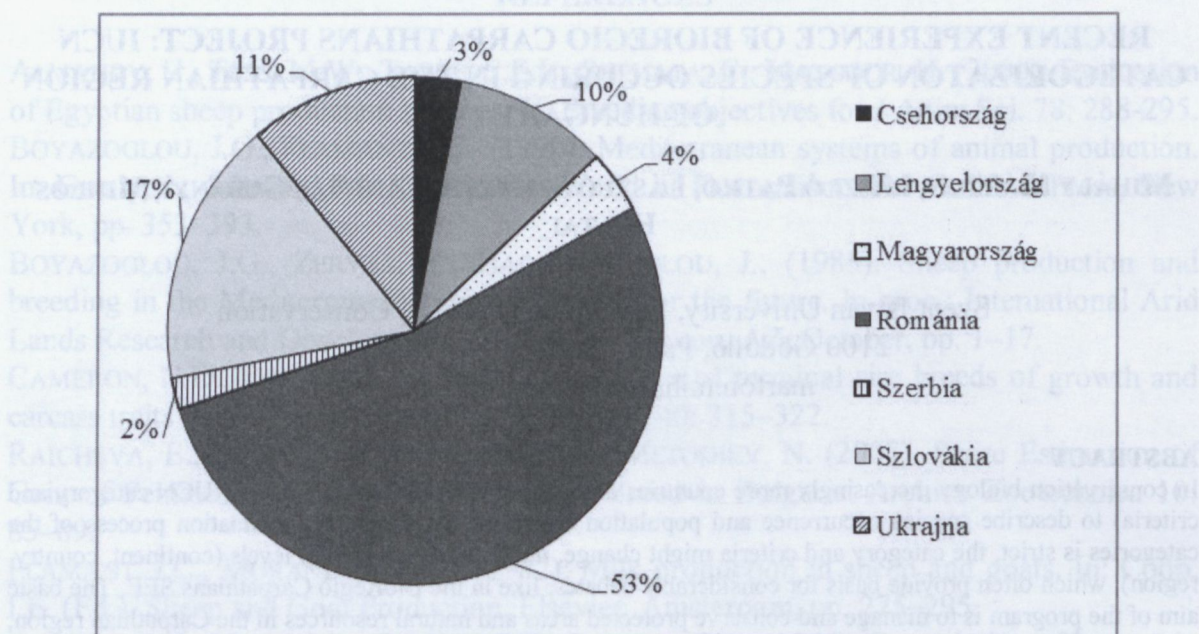
Figure 1. Regional share of the participating countries in BioRegio Carpathians SEE project
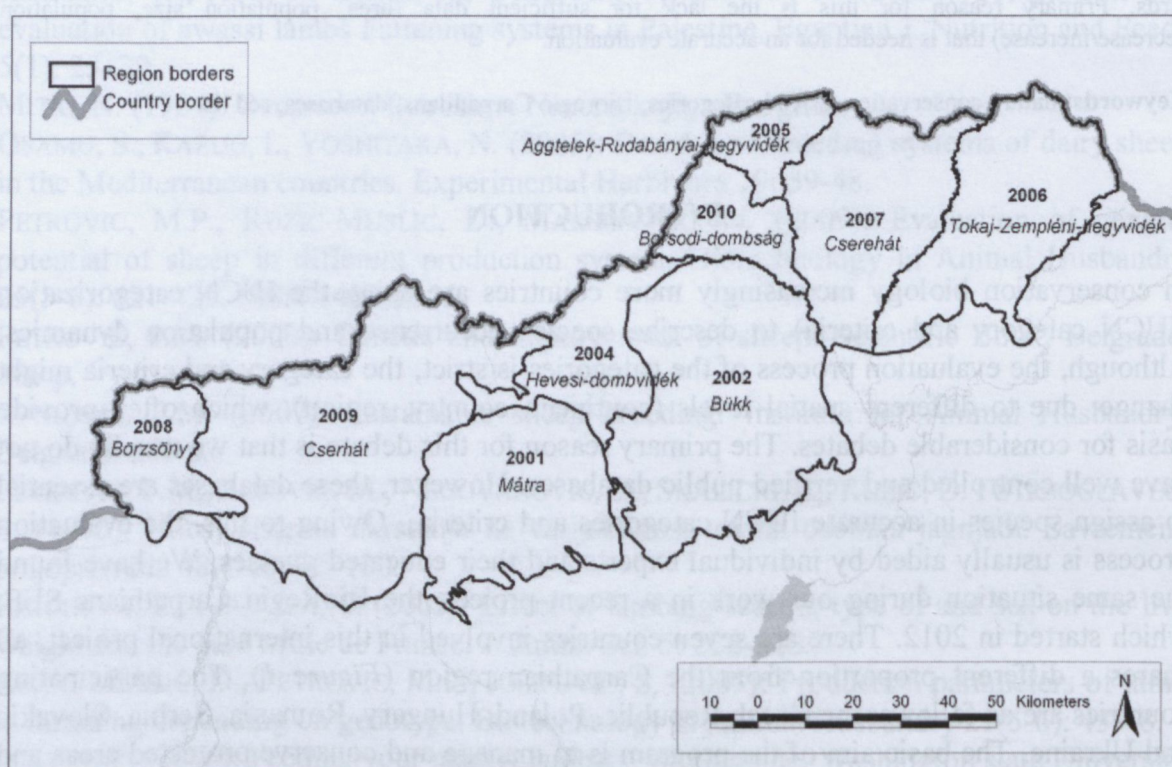
Figure 2. Orographic regions designated in the Carpathian region of Hungary

During the program, our first task was to evaluate the occurrence, threatening factors and conservation approaches for protected and invasive species in all nine orographic regions (*Figure 2*). For this we tried to gather information from public and easily accessible databases, but we could not find any. Number of species in different phylum was as follows: molluscs 61, arthropods 675 vertebrates 505 and other 5 species (total of 1246 species). The second task was to evaluate the same information in given taxonomic

categories (dragonflies (56 species), spiders (1075 species), fish (63 species), molluscs (417 species), altogether 1611 species. These species were categorized as protected in other countries but not in Hungary.

Evaluating natural values based on IUCN categories and criteria is becoming increasingly important in our country too. Our aim with this study is to demonstrate the difficulties of the assessment and to draw attention to potential pitfalls. For this reason, we have chosen several different species where we could find basic data for evaluation.

MATERIAL AND METHOD

We have categorized 46 fish, 13 mammal and four bird species [IUCN categories and criteria (IUCN 2012)]. Mammal and bird species data were given in national level, but fish species IUCN categories and criteria were evaluated at Carpathian level. We have done all evaluation based on literature references. In case of fish we compared four individual experts opinion, whom contributed to BioRegio Carpatians SEE, with literature data. Fisher's exact test was used for statistical analysis (FISHER, 1922; REICZIGEL ET AL., 2010). The calculated IUCN categories of the other two taxa were compared to Hungarian legal status (protected, strictly protected or huntable) *(Table 1)*.

In case of fish, classification was considered identical if expert's opinion were the same with literature based IUCN categorization. In case of mammals and birds the following compliance were made: LC = huntable, NT = protected, and VU, EN, CR = strictly protected.

Table 1. Those IUCN categories that this study dealt with and their descriptions (IUCN 2012)

Categories	Abbreviation	Description
Critically Endangered	CR	A: population decrease in the past $\geq 90\%$ B: Geographic range < 100 km^2
Endangered	EN	A: population decrease in the past $\geq 70\%$ B: Geographic range < 5000 km^2
Vulnerable	VU	A: population decrease in the past $\geq 50\%$ B: Geographic range < 20000 km^2
Near Threatened	NT	Taxon has been evaluated against the criteria but does not qualify for CR, EN or VU now, but is likely to qualify for a threatened category in the near future.
Least Concern	LC	Widespread and abundant taxa are included in this category.

RESULTS

In case of fish species, we have found several differences between experts' opinion and calculated IUCN categories *(Table 2)*. When we compiled all fish species, we have found that experts opinion significantly differ from IUCN classification. If we focus only on protected species we can see that only first and second experts' opinion differed. Categories of not protected species never showed statistical differences.

Table 2. Comparison of experts' opinion with IUCN classification

Fisher's exact test	All species		Protected species		Non protected species	
	p	n	p	n	p	n
Expert 1	**0.004**	92	**0.024**	36	0.172	56
Expert 2	**0.001**	92	**0.008**	36	0.274	56
Expert 3	**0.033**	92	0.219	36	0.149	56
Expert 4	**0.020**	92	0.084	36	0.303	56

Significant differences were shown in seven taxa. The species, *Eudontomyzon danfordii* were categorized as endangered by all four experts, but our literature (HARKA AND SALLAI, 2007; HALASI-KOVÁCS AND HARKA, 2012) based IUCN classification suggest that it should be near threatened. Three experts evaluated *Gymnocephalus schraetser* and *Rutilus virgo* as endangered species, while one expert wrote they are vulnerable. Based on publications both species were assigned in near threatened category. In case of *Umbra krameri* two experts' opinion was that the species is endangered and two experts wrote that it is vulnerable. This species should also be only in near threatened category. One expert's opinion is that *Carassius carassius* should be endangered, three others said it should be vulnerable. According to literature data this species is also near threatened. *Phoxinus phoxinus* and *Zingel zingel* said to be vulnerable, but based on literature they should only be near threatened. The cited publications mention population decrease (HARKA AND SALLAI, 2007; MÜLLER ET AL., 2011) but they do no mention the rate of decrease. That is why categorization only meets the criteria for near threatened but not for endangered or vulnerable.

In case of mammals and birds, most species (76.5%) IUCN category and Hungarian classification is the same. Although, three species shown excessive difference *(Table 3)*. *Lepus europaeus* and *Perdix perdix* are huntable species, however their nationwide classification based on literature should be vulnerable and critically endangered. *Lutra lutra* is a strictly protected Carnivore in Hungary, but due to its stabile area and increasing population (HELTAI, 2010; HELTAI ET AL., 2012) it should be in least concern category.

Table 3. Hungarian legal status of some mammal and bird species and their IUCN categories based on literature

Scientific name	Hungarian name	Status	Calculated IUCN categories	Bibliography
Felis silvestris	Vadmacska	Strictly protected	NT	HELTAI 2010
Lynx lynx	Hiúz	Strictly protected	CR (D)	HELTAI 2010
Canis lupus	Szürke farkas	Strictly protected	CR (D)	HELTAI 2010
Lutra lutra	**Vidra**	**Strictly protected**	**LC**	**HELTAI ET AL. 2012**
Perdix perdix	**Fogoly**	**Huntable**	**CR (A1ce)**	**CSÁNYI ET AL. 2013**
Cervus elaphus	Gímszarvas	Huntable	LC	CSÁNYI ET AL. 2013
Capreolus capreolus	Őz	Huntable	LC	CSÁNYI ET AL. 2013
Sus scrofa	Vaddisznó	Huntable	LC	CSÁNYI ET AL. 2013
Lepus europaeus	**Mezei nyúl**	**Huntable**	**VU (A1ce)**	**CSÁNYI ET AL. 2013**

CONCLUSIONS

Our results showed that significant differences can be observed if we compare Hungarian legal status or experts' opinion with calculated IUCN categories based on publication and literature data. From 48 fish species eight were considered as endangered or vulnerable. From this eight species, nor could meet the criteria for any higher risk categories (VU, EN, CR). From the 17 mammals and birds species three were controversially *(Table 3)*. *Lutra lutra* population is increasing in Hungary (HELTAI ET AL., 2012), therefore it should be in least concern category. Protection might be justified based on vulnerable wet habitats (FARAGÓ, 2008), although strictly protected status may lie on emotional basis and not on exact data. Another controversial species is *Perdix perdix*. Its population has massively decreased from the 1970s (FARAGÓ, 2000; CSÁNYI ET AL., 2013). Owing to the more than 90% population decrease *Perdix perdix* should be critically endangered. In Hungary this species is huntable, but only where individual release take place and just at the release site [72/2012. (VII. 24.) VM decree]. The third species is *Lepus europaeus*, which still has a great importance for wildlife management. In the last 50 years population decrease (FARAGÓ, 2006; CSÁNYI ET AL. 2013) was higher than the bottom limit for vulnerable category. In 2012, hunting season on *Lepus europaeus* was shortened by one month [72/2012. (VII. 24.) VM decree]. During the data collection period of BioRegio Carpathians SEE no information was gathered from the last two species. The reason for this is nor *Perdix perdix*, neither *Lepus europaeus* are protected in Hungary. Based on our result we can state that we usually do not *even* have enough verified data to evaluate the exact IUCN categories for more studied and well known taxa like mammals or birds. In the early stage of this study we tried to find public and easily accessible databases, but we could not find any. The reason for that is databases that collects information on a regular basis on given species groups do not exist, except from few examples like Hungarian National Game Management Database. Database to organize historical data are also seldom. Therefore IUCN categorization becomes impossible to evaluate. That is why international project coordinators search for individual experts of a given species or taxon who can guess the category based on his/her expertise. However, after this, the categorization become hardly or not verifiable, and also strongly depends on the experts' knowledge. Thus, one of the most important and fundamental aspect of science will be questioned; the reproductivity. Furthermore, in the case of BioRegio Carpathians SEE classification should have been done in more detailed level (e.g.: region) than national. That leads us to a need for more developed databases where regional sampling can be carried out. Within the framework of BioRegio for us it was clear that Hungary is not the only one with this problem. This raises the question: how reliable is the collected data that international projects base on? These questionable databases can give solid ground for species conservation plans and can also aid decision makers. To solve this problem, we would need supported monitoring programs with sufficiently unified methodological background that are suitable for scientific publication. In our country continuously operating monitoring systems with a national level coverage like Hungarian Biodiversity Monitoring System (http://www.termeszetvedelem.hu/nbmr) and Hungarian Nature Conservation Information System (http://geo.kvvm.hu/tir/viewer.htm) should collect information on other species than just protected ones.

ACKNOWLEDGEMENTS

REFERENCES

CSÁNYI, S., TÓTH, K., SCHALLY. G. (eds.) (2013): Vadgazdálkodási Adattár - 2012/2013. vadászati év. Országos Vadgazdálkodási Adattár, Gödöllő, 52 p.

FARAGÓ, S. (2006): Magyar Vadász Enciklopédia. - Totem Kiadó, Budapest. 785 p.

FARAGÓ, S. (2008): Élőhelyfejlesztés az apróvad-gazdálkodásban. – Mezőgazda Kiadó, Busapest. 355 p.

FISHER, R.A. (1922): On the interpretation of χ^2 from contingency tables, and the calculation of P. Journal of the Royal Statistical Society 85: 87–94.

HALASI-KOVÁCS, B., HARKA, Á. (2012): Hány halfaj él Magyarországon? A magyar halfauna zoogeográfiai és taxonómiai áttekintése, értékelése. Pisces Hungarici 6: 5-24.

HARKA, Á., SALLAI, Z. (2007): Magyarország halfaunája. Nimfea Természetvédelmi Egyesület, Szarvas. 269 p.

HELTAI, M. (2010): Emlős ragadozók Magyarországon. Mezőgazda Kiadó, Budapest. 240 pp.

HELTAI, M., BAUER-HAÁZ, É.A., LEHOCZKI, R., LANSZKI, J. (2012): Changes in the occurrence and population trend of the Eurasian otter (Lutra lutra) in Hungary between 1990 and 2006. North-Western Journal of Zoology, 8(1): 112-118.

IUCN. (2012). IUCN Red List Categories and Criteria: Version 3.1. Second edition. Gland, Switzerland and Cambridge, UK: IUCN. iv + 32 p.

MÜLLER, T., BALOVÁN, B., TATÁR, S., MÜLLERNÉ TRENOVSZKI, M., URBÁNYI, B., DEMÉNY, F. (2011): A lápi póc (umbra krameri) szaporítása és nevelése a természetesvízi állományok fenntartása és megerősítése érdekében. Pisces Hungarici 5: 15-20.

REICZIGEL, J., HARNOS, A., SOLYMOSI, N. (2010): Biostatisztika nem statisztikusoknak. – Pars Kft., Nagykovácsi, 462 p.

72/2012. (VII. 24.) VM rendelet: A termésnövelő anyagok engedélyezéséről, tárolásáról, forgalmazásáról és felhasználásáról szóló 36/2006. (V. 18.) FVM rendelet, a kistermelõi élelmiszer-termelés, -elõállítás és -értékesítés feltételeirõl szóló 52/2010. (IV. 30.) FVM rendelet és a vad védelmérõl, a vadgazdálkodásról, valamint a vadászatról szóló 1996. évi LV. törvény végrehajtásának szabályairól szóló 79/2004. (V. 4.) FVM rendelet módosításáról.