NATURA 2000 SITE PROPOSAL BASED ON FISH SPECIES IN OLTENIA REGION (SOUTHERN ROMANIA)

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Abstract. In 2010, there were only a few Natura 2000 sites designated for fish species in Oltenia region (the western part of Southern Romania). This paper presents the results of a survey conducted on 6 main rivers in Oltenia region and the proposals of new Natura 2000 sites there, mainly based on fish species. A total of 22 fish species were identified, 7 of which were Natura 2000 species present in the Reference List for the Continental Region of Romania. Four Sites of Community Interest (SCI) were proposed in 2010 based not only on fish species, but also on mammals (especially *Lutra lutra*) and amphibians. However, only one site was accepted without modifications and another with a significant area reduction. We consider these results as inadequate, taking into account that these proposed Natura 2000 sites for the conservation of fish species are based on recent field surveys (which were undertaken for the first time in this region), and not only on old published data.

Keywords: Natura 2000, SCI, fish species, Oltenia.

Rezumat. Propunerea de situri Natura 2000 în Oltenia, în special pentru protejarea speciilor de peşti (sudul României). În 2010 existau foarte puţine situri Natura 2000 propuse pentru conservarea speciilor de peşti în Oltenia. Acest articol prezintă atât rezultatele evaluărilor de ihtiofaună efectuate pe 6 râuri din Oltenia, cât şi propunerile de noi situri Natura 2000 în această regiune, bazate în principal pe prezenţa speciilor de peşti. În total am reuşit să identificăm 22 de specii de peşti, dintre care 7 figurează pe listele de referinţă pentru regiunea biogeografică continentală. Patru situri de interes comunitar (SCI) au fost propuse atât pentru conservarea speciilor de peşti, cât şi a mamiferelor (în special *Lutra lutra*) şi amfibienilor. Din păcate doar unul dintre acestea a fost acceptat fără modificări, iar unul cu o reducere majoră (a suprafeţei). Considerăm că aceste rezultate sunt inadecvate, având în vedere că aceste propuneri de situri Natura 2000 (pentru protejarea speciilor de peşti) au fost primele din această regiune, bazate pe inventarieri recente, şi nu numai pe datele din literatură.

Cuvinte cheie: Natura 2000, SCI, specii de peşti, Oltenia.

INTRODUCTION

The aim of the Natura 2000 Network is to protect vulnerable habitats and species across their natural range in Europe and ensure that they are maintained in a favourable conservation status. Two types of areas are included in the Natura 2000 network: Special Protection Areas (SPA - areas internationally important for wild birds and their habitats) designated by the Member States under the Birds Directive (79/409/EEC), and Special Areas of Conservation (SAC – areas with rare, endangered or vulnerable natural habitats and species of plants or animals, other than birds). The Special Areas of Conservation are designated first as Sites of Community Interest (SCI) under the Habitats Directive (92/43/EEC) and then turned into SACs (CĂLUŞERU et al., 2011; CIOACĂ, 2012).

After Romania became a member of the European Union, the EU Directives on Habitats and Birds were introduced into the Romanian legislation under Emergency Government Ordinance no. 57 of 2007 on the regime of protected natural areas, conservation of wild fauna and flora, natural habitats, and later, with amendments, under Law No. 49/2011. Romania is the most biogeographically diverse member state of the EU (BĂNĂDUC, 2007; CIOACĂ, 2012). With its highly valuable biodiversity, 557 Natura 2000 sites were registered, classified into 149 SPAs and 408 SCIs, covering all 5 bioregions in the country: continental, alpine, pannonic, pontic and steppic.

Our aim was to survey the main rivers in Oltenia region (the western part of Southern Romania) in order to propose new Natura 2000 sites for this region, mainly based on fish species present in the Reference List for the Continental Region (Ref List 2010).

MATERIAL AND METHODS

The ichthyologic surveys in Oltenia region were conducted between 6 and 13 July 2010 on the Cerna, the Olteţ, the Gilort, the Jiu, the Bistriţa and the Motru Rivers in Oltenia. The region is situated in the western part of Southern Romania, south of the Southern Carpathians and is situated entirely in the Continental Bioregion (TATOLE et al., 2008; CĂLUŞERU et al., 2011). The fish specimens were captured mainly by electro-fishing (SAMUS-725MP) (PRICOPE et al., 2004) and different fishnets were also used to increase the capture efficiency (TELCEAN & CUPŞA, 2009). The samples were taken from 21 sampling stations (Fig. 1): the Cerna River (2), the Olteţ River (3), the Gilort River (3), the Jiu River (7), the Bistriţa River (2) and the Motru River (4). The fish species were identified based on external morphological characteristics (BĂNĂRESCU, 1964; GYURKÓ, 1972; PINTÉR, 1989; 2002). After the specimens were recovered, they were released without injury in a slower section of the water bodies (KERESZTESSY, 2007). The localization of the sampling stations was recorded with GPS system (GARMIN), data and observations were noticed on datasheets. Supplementary data on species originate also from observed preys of local fisherman (Fig. 1).

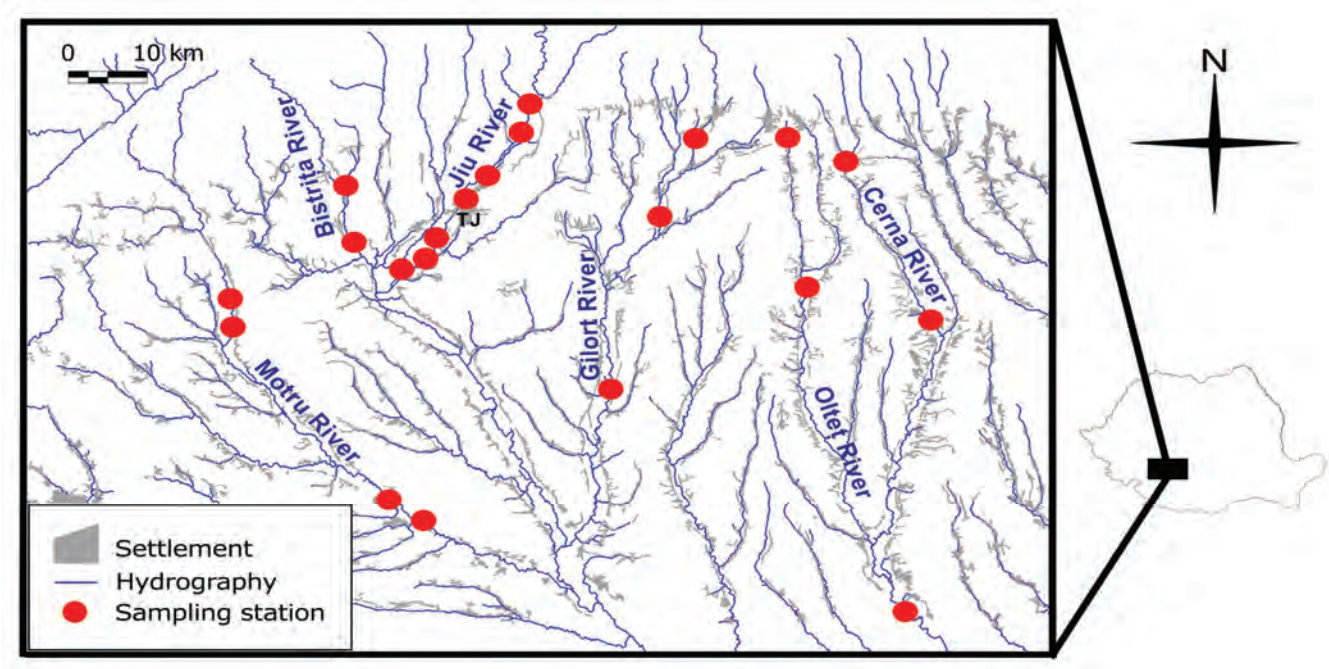

Figure 1. The surveyed rivers and the sampling stations in Oltenia region, South Romania (TJ – Târgu Jiu city) (original).

RESULTS AND DISCUSSION

Fish fauna

Altogether 22 fish species were identified from the surveyed rivers (Table 1). Two of the recorded species (*Perca fluviatilis* and *Silurus glanis*) were captured only by fishing rod by local fisherman (Table 1). Within all 23 fish species, 7 are classified as Natura 2000 species and are listed on the Reference List for the Continental Region of Romania (Ref List 2010): *Eudontomyzon mariae, Barbus petenyi, Romanogobio vladykovi, R. uranoscopus, R. kesslerii, Rhodeus amarus, Sabanejewia aurata*. *Barbus petenyi* was introduced under the name of *B. meridionalis* in the Habitats Directive (92/43/EEC) but later its scientific name was clarified (TSIGENOPOULOR et al., 1999; TSIGENOPOULOR & BERREBI, 2000; MACHORDOM & DOADRIO, 2001; KOTLÍK et al., 2002). In the Habitats Directive (92/43/EEC) the other species like *Romanogobio kesslerii* was introduced under the name of *Gobio kessleri*, *R. uranoscopus* as *G. uranoscopus* and *R. vladykovi* as *G. albipinnatus*. Three invasive species, threatening the fish fauna, were present: *Pseudorasbora parva* (in 3 rivers), *Lepomis gibbosus* (1) and *Carassius gibelio* (2). The *Pseudorasbora parva*, native in Asia, was accidentally imported from China in the 1960's among the fingerling of Chinese carp (BĂNĂRESCU, 1964). *Lepomis gibbosus*, native in North America, is recorded in Romania since 1929 (BĂNĂRESCU, 1964) or even since 1918 (BĂCESCU, 1942). *Carassius gibelio*, which originates from the Amur basin, was identified for the first time in 1912 (POJOGA, 1959); later BĂNĂRESCU (1964) corrected the date of introduction around 1920. However VITOS (1894) describes the species from the Ciuc Basin (Transylvania) already in 1894.

Proposed Sites of Community Interest (SCI)

The Romanian Natura 2000 NGOs Coalition submitted in the end of 2010 four proposals of SCI site for Oltenia region. The proposals were based on the data presented here on the fish species collected during river surveys. The proposed SCI sites are:

1. Proposed SCI name: Râul Motru (the Motru River):

The site is divided into two parts, both situated on the Motru River, north and south of Motru city (Fig. 2). The site has an elongated shape, covering the river and its immediate floodplain. All the Natura 2000 fish species caught in the Motru River, were included in the designation: *Romanogobio kesslerii, Barbus petenyi, Rhodeus amarus, Sabanejewia aurata* (Table 1). Other mammal and amphibian species (*Lutra lutra, Bombina variegata*) and one habitat type (91E0 *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) has been added to the Natura 2000 species and habitats list. Other important fish species were also listed there: *Sabanejewia romanica, Squalius cephalus, Alburnoides bipunctatus, Barbus barbus, Alburnus alburnus, Chondrostoma nasus*.

The proposal was accepted entirely, without any modifications, under the name of ROSCI0366 Râul Motru (1,921 ha) (Fig. 2).

Table 1. Fish species of the surveyed rivers in Oltenia region (* fish species caught by anglers).

Species/Rivers	Jiu	Bistriţa	Motru	Gilort	Olteţ	Cerna	Natura 2000
Eudontomyzon mariae (Berg 1931)				X			X
Salmo trutta fario (Linnaeus 1758)					X		
Squalius cephalus (Linnaeus 1758)	X	X	X	X	X	X	
Phoxinus phoxinus (Linnaeus 1758)		X	X	X	X	X	
Alburnus alburnus (Linnaeus 1758)	X		X	X	X		
Alburnoides bipunctatus (Bloch 1782)	X	X	X	X	X	X	
Chondrostoma nasus (Linnaeus 1758)			X				
Barbus barbus (Linnaeus 1758)	X		X	X	X		
Barbus petenyi (Heckel 1852)	X	X	X	X	X	X	X
Gobio gobio (Linnaeus 1758)	X	X	X	X			
Romanogobio vladykovi (Fang 1943)				X			X
Romanogobio uranoscopus (Agassiz 1828)	X	X					X
Romanogobio kesslerii (Dybowski 1862)			X		X	X	X
Pseudorasbora parva (Temminck & Schlegel 1846)	X	X			X		
Rhodeus amarus (Bloch 1782)		X	X				X
Carassius gibelio (Bloch 1782)	X			X			
Barbatula barbatula (Linnaeus 1758)		X	X	X			
Sabanejewia aurata (De Filippi 1863)	X	X	X	X	X	X	X
Sabanejewia romanica (Băcescu 1943)			X	X	X	X	
Silurus glanis (Linnaeus 1758)	X*						
Lepomis gibbosus (Linnaeus 1758)	X						
Perca fluviatilis (Linnaeus 1758)	X*						
TOTAL	**13**	**10**	**13**	**13**	**11**	**7**	**7**

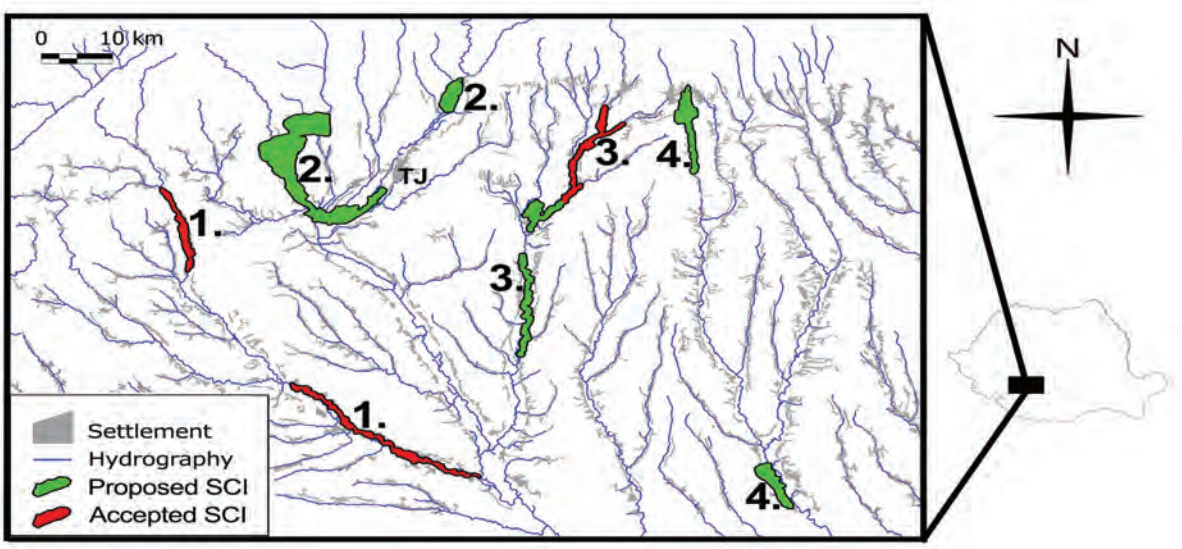

Figure 2. The proposed and accepted SCI sites in Oltenia region, South Romania (1.- the Motru River, 2.- the upper Jiu and the Bistriţa, 3.- the Gilort River, 4.- the Olteţ River), TJ – Târgu Jiu city (original).

2. Proposed SCI name: Jiul superior şi Bistriţa (the Upper Jiu River and the Bistrita River):

The proposed site is situated in the northern part of Oltenia region, directly beneath the Southern Carpathians. It is also divided in two parts (north and north-west of Târgu Jiu city) covering the Jiu and the Bistriţa Rivers and their floodplains (Fig. 2). Four Natura 2000 fish species were caught in these rivers, all of them were included in the proposal: *Barbus petenyi*, *Romanogobio uranoscopus*, *Rhodeus amarus* and *Sabanejewia aurata* (Table 1). Other two Natura 2000 species were listed: *Lutra lutra* and *Bombina variegata*. Other important fish species (*Barbus barbus*, *Squalius cephalus*, *Alburnoides bipunctatus*, *Gobio gobio*, *Phoxinus phoxinus*, *Barbatula barbatula*) and a reptile species (*Natrix tesselata*) have been added as well to the proposal along the Natura 2000 species. The proposal was not accepted by the Romanian Government (Fig. 2).

3. Proposed SCI name: Râul Gilort (Gilort River):

The proposed site covers the Gilort River and its immediate floodplain. The site is almost continuous, only a short river section in middle part is left out (Fig. 2). Four Natura 2000 fish species were caught and have been added to the proposal for this site: *Eudontomyzon mariae, Romanogobio vladykovi, Barbus petenyi, Sabanejewia aurata* (Table 1). Other two Natura 2000 species were listed (*Lutra lutra*, *Bombina variegata*) along with three habitat types (91E0 *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*), 91M0 Pannonian-Balkanic turkey oak-sessile oak forests, 91Y0 – Dacian oak and hornbeam forests). Other important fish species (*Sabanejewia romanica, Gobio gobio, Squalius cephalus, Barbus barbus, Alburnoides bipunctatus, Alburnus alburnus, Barbatula barbatula*) and a reptile species (*Natrix tesselata*) were added as well to the proposal along the Natura 2000 species and habitats.

The Romanian Government accepted only a short river section the northern part of the proposed area - ROSCI0362 Râul Gilort (873 ha) (Fig. 2).

4. Proposed SCI name: Râul Olteţ (the Olteţ River):

The proposed site is divided into two small parts, quite far from each other. The northern part is directly beneath the Southern Carpathians and the southern part is on a lower section of the river (Fig. 2). Both are covering the river and its immediate floodplain. Three Natura 2000 fish species (*Barbus petenyi, Romanogobio vladykovi, Sabanejewia aurata*) were proposed along with one mammal (*Lutra lutra*) and one amphibian species (*Bombina variegata*). Other important fish species (*Sabanejewia romanica, Barbus barbus, Squalius cephalus, Alburnoides bipunctatus, Alburnus alburnus*) and one mammal species (*Meles meles*) have been added as well to the proposal along the Natura 2000 species. The proposal was not accepted (Fig. 2).

After BĂNĂRESCU (2005) *Eudontomyzon mariae* is listed as strictly endangered species because of the habitat deterioration and the habitat loss in the past decades. From this point of view it would be important to accept entirely the proposed site on the Gilort River, where suitable habitats are present**,** to ensure the conservation of this species in the Gilort River.

Sabanejewia romanica is present in three of the four site proposed. Even if it is not a Natura 2000 species, it is a vulnerable fish species (BĂNĂRESCU, 2005), present almost entirely only in Romania. By accepting the sites proposed on the Motru, the Gilort and the Olteţ River, the conservation of this important species could be ensured along with the Natura 2000 fish species.

The designation of Natura 2000 sites is for many fish species the last chance to conserve or restore their populations in Oltenia region. For this reason, the sites network was proposed in such a way to cover the areas of species distribution in large scale. Besides that, it was proposed to designate longer sections on such rivers, which are in well preserved stage and thus offer suitable habitats to several species. It is important to designate not just a particular watercourse, but to include also habitats from its floodplain. Here many backwaters and wetlands can be found - valuable refuges for several stagnophil species. At the same time, these areas play an important role as reproduction sites during the flood periods. For long-term conservation of the fish species it is necessary to designate and conserve also these habitats together with the watercourses. For this reason, the SCI proposals include not only the river bed, but also the suitable natural or seminatural habitats along them.

Even if the Bistriţa River is just a small tributary of the Jiu River it presents very good natural conditions for the fish species there. In its proximity, there are widespread natural or seminatural habitats which were proposed to be included into the protected areas. In other cases (like the Motru River), no large natural or seminatural habitats could be found near the river. Consequently, only a narrow stripe near the river could be proposed.

CONCLUSIONS

Altogether 22 fish species were identified from the Cerna, the Olteţ, the Gilort, the Jiu, the Bistriţa and the Motru Rivers in Oltenia region (Table 1). Seven of them are Natura 2000 species present in the Reference List for the Continental Region (Ref List 2010). During the ichthyologic surveys the data on the other Natura 2000 species and habitats were gathered in order to complete the proposal of new SCI sites. The designations in Oltenia region are based on recent field data and not on old data published in specialized literature. Four sites were proposed in Oltenia region in 2010, based mainly on fish species, but also on mammals (as *Lutra lutra*) and amphibians (as *Bombina variegata*) (Fig. 2). From the proposed SCI sites only one was accepted by the Romanian Government without modifications (1,921 ha - ROSCI0366 Râul Motru), and another site was accepted only partly (873 ha - ROSCI0362 Râul Gilort) (Fig. 2). Other two proposed sites were rejected completely in spite of the presence of several Natura 2000 species. The authors together with the "Romanian Natura 2000 NGOs Coalition" consider that the accepted areas are not sufficient, in terms of both total area of the designated sites and the presence of rare and vulnerable species.

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REFERENCES

BĂCESCU M. 1942. *Eupomotis gibbosus* (L.), Studiu etnozoologic, zoogeografic şi morfologic. *Scientific Section Memoirs of the Romanian Academy Series 3*. Bucharest. **18** (15): 547- 560.

BĂNĂDUC D. 2007. Middle Olt River (Transylvania, Romania) – Special area for conservation (Natura 2000 site) proposal for Barbus meridionalis Risso, 1827 and associated fish species. *Acta Ichtiologica Romanica*. Bucharest. **2**: 37-42.

BĂNĂRESCU P. 1964. *Pisces-Osteichthyes. Fauna R. P. R.* Edit. Academiei R. P. R. Bucharest **13**. 962 pp.

BĂNĂRESCU P. 2005. *Peşti*. In: Botnariuc N., Tatole V. (Eds.), *Cartea Roşie a vertebratelor din România.* Muzeul Naţional de Istorie Naturală „Grigore Antipa". Academia Română. Bucharest: 215-255.

CĂLUŞERU A. L., PAŞCA M., COJOCARIU L. 2011. Expansion of Natura 2000 european ecologcal network. *Research Journal of Agricultural Science*. Bucharest. **43**(4): 17-23.

CIOACĂ D. 2012. Animal species and habitats protected in "Natura 2000" sites Cernica Lake and Forest (Ilfov County, Romania). *Romanian Journal of Biology, (Zoology).* Bucharest. **57** (1): 29-39.

GYURKÓ I. 1972. *Édesvízi halaink. [Freshwater fish.]* "CERES" Publisher. Bucharest. 125 pp.

KERESZTESSY K. 2007. Halfaunisztikai kutatások a Rábában. *Pisces Hungarici*. Budapest. **1**: 19-26.

KOTLÍK P., TSIGENOPOULOS C.S., RÁM P., BERREBI P. 2002. Two new Barbus species from the Danube River basin, with redescription of B. petenyi (Teleostei: Cyprinidae). *Folia Zoologica*. Praha. **51**(3): 277-240.

MACHORDOM A. & DOADRIO I. 2001. Evolutionary history and speciation modes in the cyprinid genus *Barbus. Proceedings of the Royal Society (Biology)*. London. **268**: 1297-1306.

PINTÉR K. 2002. *Magyarország halai.* Academic Press. Budapest. 222 pp.

PINTÉR K. 1989. *Halhatározó.* Agricultural Publisher. Budapest. 210 pp.

POJOGA I. 1959. *Piscicultura.* State Agro-Forestry Publisher. Bucharest. 190 pp.

PRICOPE F., BATTES W., URECHE D., STOICA I. 2004. Metodologia de monitorizare a ihtiofaunei din bazinele acvatice naturale şi antropice. *Studia Universitatis*. Cluj-Napoca. **14**: 27–34.

TATOLE V., TATOLE A., IFTIMIE A., GRIGORAŞ I., OŢEL V., NITZU E., COJOCARIU F., ÖLLERER K. 2008. Approach for the management strategy of Natura 2000 sites – Habitats Directive, in Romania. *European Conference on Ecological Restoration*. Ghent. Belgium. **6**: 1-4.

TELCEAN I. C. & CUPŞA D. 2009. The backwaters and drainage canals as natural refuges for the lowland rivers' fishfauna (Someş, Crişuri, and Mureş Rivers - north-western Romania). *Biharean Biologist*. Oradea. **3**(1): 37-44.

TSIGENOPOULOR C. S. & BERREBI P. 2000. Molecular phylogeny of North Mediterranean freshwater barbs (genus Barbus: Cyprinidae) inferred from cytochrome b sequences: biogeographic and systematic implications. *Molecular Phylogenetics and Evolution*. Elsevier Stuttgart. **14**: 165–179.

TSIGENOPOULOS C. S., KARAKOUSUS Y., BERREBI P. 1999. The North Mediterranean Barbus lineage: phylogenetic hypotheses and taxonomic implications based on allozyme data. *Journal of Fish Biology*. London. **54**: 267–286.

VITOS M. 1894. *Csíkmegyei füzetek. Adatok Csíkmegye leírásához és történetéhez.* Györgyjakab Márton Csíkszereda. 1022 pp.

***. Reference list of habitat types and species of Alpine Region, ETC/BD Paris – December 2010. http://ec.europa.eu (Accessed at February 5, 2013).

***. The European Parliament and the Council Directive 79/409/EEC of 2 April 1979, on the conservation of wild birds, Official Journal of the European Communities, L 103, 25/04/1979.

***. The European Parliament and the Council Directive 92/43/EEC of 21 May 1992, on the conservation of natural habitats and of wild fauna and flora, Official Journal of the European Communities, L 206, 22.07.1992.

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