

Implementation of the "Natura 2000" European ecological network in the 6th Northwestern Region - Romania (II)

¹Marian Proorocu, ²Paul Beldean, ³Andrei Crişan, ¹Tania Mihaiescu, ¹Sinziana Pauliuc

¹ University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Romania; ² Environmental Protection Agency Cluj-Napoca, Romania; ³ Babeş-Bolyai University, Cluj-Napoca, Romania. Corresponding author: M. Proorocu, mproorocu@yahoo.com

Abstract. According to the Habitats Directive, an ecological network known as 'Natura 2000' has been set up at European level. This network consists of special areas of conservation and of special protected areas. The Natura 2000 network consists of sites hosting the natural habitats of Community Interest and habitats of Community interest species. Special areas of conservation (SAC) are declared in two phases. The first phase designates the Sites of Community Importance (SCI). Fifty seven (57) SCI and eight Special Protection Areas (SPA) were declared in the 6th Northwestern Region in 2007. In 2011, the Natura 2000 network in the Region has been supplemented, reaching 71 SCI and 17 SPA. Between 2007 and 2011, the land area covered by at least one conservation status (protected areas of national interest + Natura 2000 network) increased from 581,370 ha (17.02% of the region) to 752,928 ha (22.04% of the region). From the 6 counties of the 6th Northwestern Region, both SCI and SPA sites are best represented in Maramureş County.

Key Words: Natura 2000 Network, conservation, biodiversity, special areas.

Introduction. Natura 2000 network is the centerpiece of EU nature & biodiversity policy. It is an EU wide network of nature protection areas established under the Habitats Directive (92/43 EEC). It is comprised of Special Areas of Conservation (SAC) designated by Member States under the Habitats Directive, and also incorporates Special Protection Areas (SPA) designated under the Birds Directive (79/409 EEC). This network consists of sites with natural habitats of Community Interest and habitats of Community interest species. The two Directives have been transposed into the Romanian legislation by Government Emergency Ordinance no. 57/2007 approved by Law 49/2011.

The role of the 'Natura 2000' network is to ensure the maintenance or, where appropriate, the restoration of the natural habitat types and habitats of species in a favorable conservation status, throughout their natural range areas (Proorocu et al 2007; Iojă et al 2010).

Each EU Member State contributes to the 'Natura 2000' network proportionally with the size of the territory, the natural habitat types and habitats of Community interest species. For this purpose, Member States shall designate Special Areas of Conservation (Proorocu et al 2007).

Material and Method. Although Special Areas of Conservation and Special Protection Areas form together the Natura 2000 European Ecological Network, the declaration procedure for the two types of protected areas is different (Proorocu et al 2007).

Thus, Special Areas of Conservation (SAC) are declared in two phases. The first phase designates the sites of Community Importance. These are selected on the basis of specific criteria for habitats and species of Community importance (Proorocu et al 2007):

a) site assessment criteria for natural habitats of Community importance:

- the representativeness degree of the natural habitat type within the site;
- the area of the site covered by the natural habitat type in comparison to the total area covered by that natural habitat type within the national territory;
- the conservation degree of the structure and functions of the concerned natural habitat type and restoration/reconstruction possibilities;
- the global assessment of the site value for conservation of the concerned natural habitat type.

b) site assessment criteria for species of Community importance:

- the size of population and density of species present on the site, in relation to the populations' occurrence within national territory;
- the conservation degree of the habitat features significant for the concerned species and for the restoration possibilities;
- the isolation degree of the population present on the site in relation to the natural range of the species;
- the global assessment of the site value in terms of species conservation.

Based on these criteria, EU Member States classify the proposed sites in the national list as Sites of Community Importance (SCI), according to their relative value for the conservation of each natural habitat type from Annex I or of each species from Annex II of the Habitats Directive. The list is then sent to the European Commission with information on each site: site map, name, location, area and the data resulting from the application of the selection criteria submitted on a form prescribed by the Commission (Proorocu et al 2007). Based on these criteria and in agreement with each Member State, the Commission establishes a draft list of Sites of Community Importance, based on the Member States' lists. Special Protection Areas (SPA) are designated in a single phase and subsequently included in the 'Natura 2000' network.

The authors used ArcGIS 9.3 (Environmental System Research Institute, Redlands, CA) to analyze the size of protected areas related to the 6th Northwestern Region counties. The borders of the protected areas were downloaded from the Ministry of Environment and Forests official website (<http://www.mmediu.ro>).

Results and Discussion. The first Natura 2000 sites in Romania were declared in 2007. At that time, the 6th Northwestern Region included 57 Sites of Community Importance (SCI) and 8 Special Protection Areas (SPA) (Proorocu et al 2007). Later (in 2011), by supplementing the Natura 2000 network in Romania, the 6th Northwestern Region totalled 71 Sites of Community Importance (SCI) and 17 sites of Special Protection Areas (SPA) (MEF Order 2387/2011 and GD 971/2011).

According to the MEF Order no. 2387/2011 and GD no. 971/2011, the 71 Sites of Community Importance in the 6th Northwestern Region cover 610,811 ha and the 17 Special Protection Areas cover 391,816 ha (Table 1).

From the 71 SCI, 13 exceed administrative boundaries of the 6 counties from the 6th Northwestern Region, so that the total area of the 71 SCI is 703,345 ha. The same situation occurs in the case of the 17 SPA: 3 sites exceed the administrative boundaries of the 6 counties of the 6th Northwestern Region, so the total area of the 17 SPA is 522,871 ha (Table 1).

Sites of Community importance are best represented in Maramureş County where, due to the presence of Munţii Maramureş (106,909 ha) and Valea Iza and Dealul Solovan (46,837 ha) sites, the total area covers up to 201,996 ha. Sites of Community Importance also cover large areas in Bihor: Defileul Crişului Repede-Pădurea Craiului (39,411 ha) and Apuseni Mountains (28,099 ha); Bistrita-Nasaud county comprises entirely the Cusma site (44,284 ha) and most of the Munţii Rodna site (38,450 ha).

The Special Protection Areas are best represented in the Maramureş Mountains, as these mountains covers a territory of 70,972 ha (Table 1).

Since most high biodiversity areas in the region (Apuseni Mountains, Rodna Mountains, Fizeş Basin, etc.) have been declared protected areas of national interest (Law 5/2000, GD 2151/2004, GD 1581/2005, GD 1143/2007, GD 1217/2010) before the implementation of the Natura 2000 network in Romania, many Natura 2000 sites overlap these areas. However, as the preexisting natural protected areas of national interest are highly fragmented and cover small areas, the total size of Natura 2000 sites in the 6th Northwestern Region exceeds the size of protected natural areas of national interest.

Therefore, the protected areas of national interest occupied 7.37% of the region in 2007, the Sites of Community Importance occupied 14.93% and Special Protection Areas occupied 6.08%. Since most of the Sites of Community Importance overlap the Special Protection Areas, the Natura 2000 Network occupies 16.10% (549,883 ha) of the 6th Northwestern Region territory in 2007. As a result of overlapping natural protected areas of national interest with Natura 2000 network, at least 581,370 ha of the 6th

Northwestern Region had the protected area status in 2007, representing 17.02% of the Region's area (Table 2).

In 2011, the spread of national interest protected areas in the 6th Northwestern Region increased by 5004 ha (by the declaration of the Cefa Natural Park), covering 7.52% of the total region.

Pursuant to the completion of the Natura 2000 network in 2011, the area of the Sites of Community Importance reached 610,811 ha (17.88%) and the size of Special Protection Areas reached 391,816 ha (11.47%). After overlapping the two types of Natura 2000 sites, the current situation shows an area of 724,759 ha of Natura 2000 sites, representing 21.22% of the Region's area. Currently, as a result of overlapping the protected areas of national interest with Natura 2000 network, the 6th Northwestern Region totals at least 752,928 ha protected areas, which represent 22.04% of the Region's area (Table 3).

Therefore, from the protection status point of view, the 6th Northwestern Region experienced the following changes during the 2007-2011 period (Tables 2 and 3):

- the size of protected natural areas of national interest increased from 251,868 ha (7.37%) to 256,872 ha (7.52%);
- the area of Sites of Community Importance increased from 510,126 ha (14.93%) to 610,811 ha (17.88%) (Figure 1);
- the size of Special Protection Areas increased from 207,589 ha (6.08%) to 391,816 ha (11.47%) (Figure 2);
- the area of Natura 2000 (SCI + SPA) increased by almost a third, from 549,883 ha (16.10%) to 724,759 ha (21.22%) (Figure 3);
- the land area which subjected to at least one conservation status (protected areas of national interest + Natura 2000 network) increased from 581,370 ha (17.02%) to 752,928 ha (22.04%) (Figure 4).

The distribution of the Sites of Community Importance within the 6th Northwestern Region is uneven. One could notice the hilly and mountainous areas where biodiversity is generally higher than in the plain areas.

Special Protection Areas designated for the protection of bird species and their habitats are distributed both in the hills and mountains, and in the plain areas where there are water reservoirs which have favored the formation of significant bird populations.

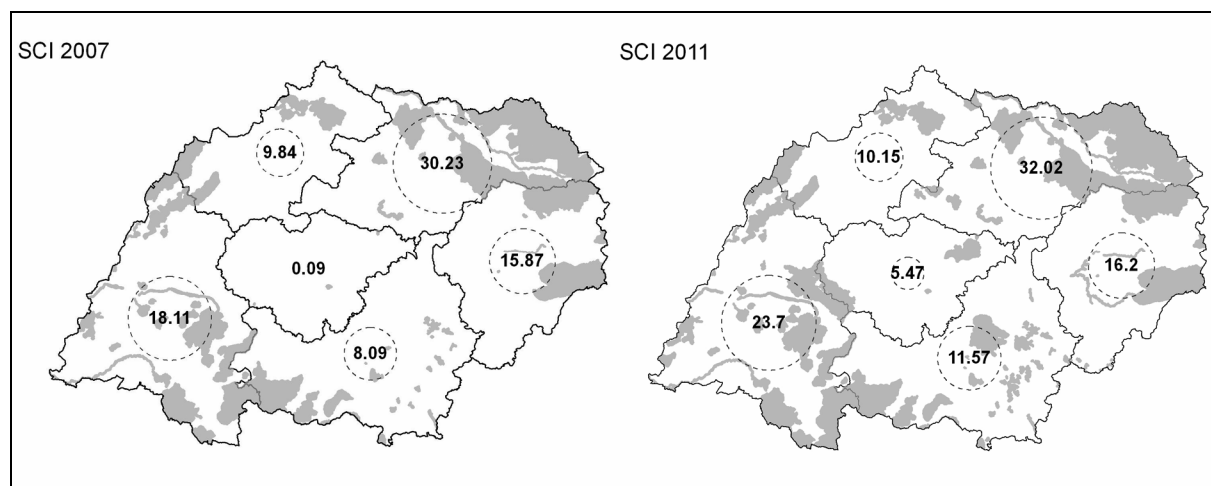


Figure 1. The evolution of the Sites of Community Importance area in 2007-2011 in the 6th Northwestern Region counties (SCI network sites - gray hatch; the SCI area in percentages for each county – numbers in bold text).

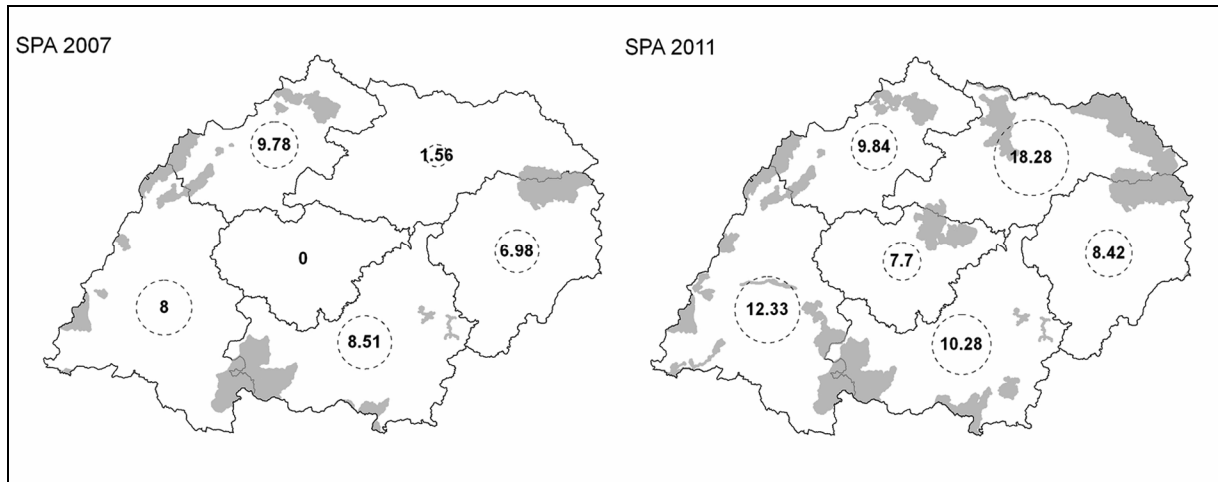


Figure 2. The evolution of the Special Protection Areas size in 2007-2011 in the 6th Northwestern Region counties (SPA network sites - gray hatch; the SPA size in percentages for each county – numbers in bold text).

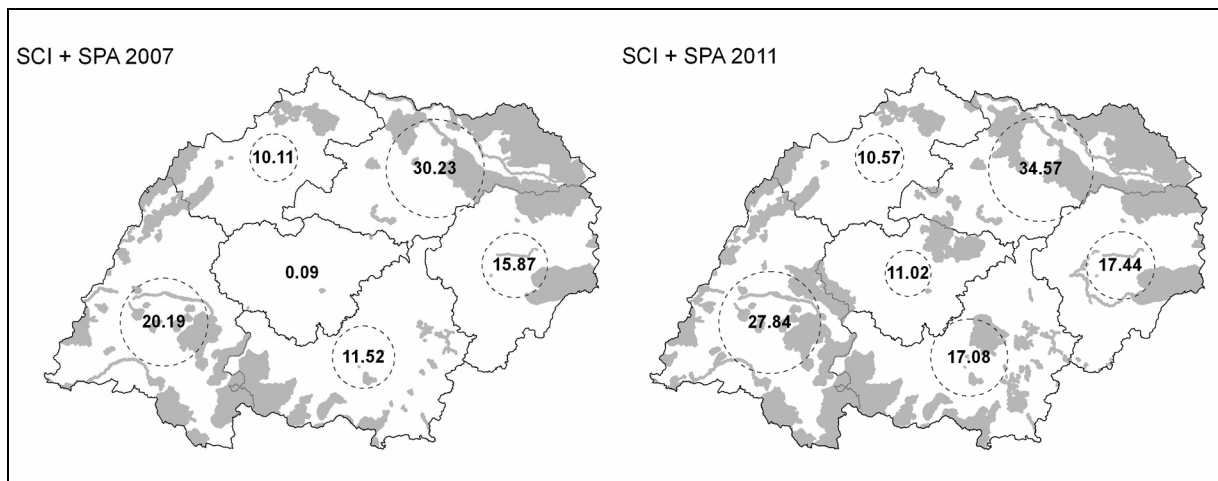


Figure 3. The evolution of the Natura 2000 Network area in 2007-2011 in the 6th Northwestern Region counties (Natura 2000 - gray hatch; the area in percentages of the Natura 2000 for each county – numbers in bold text).

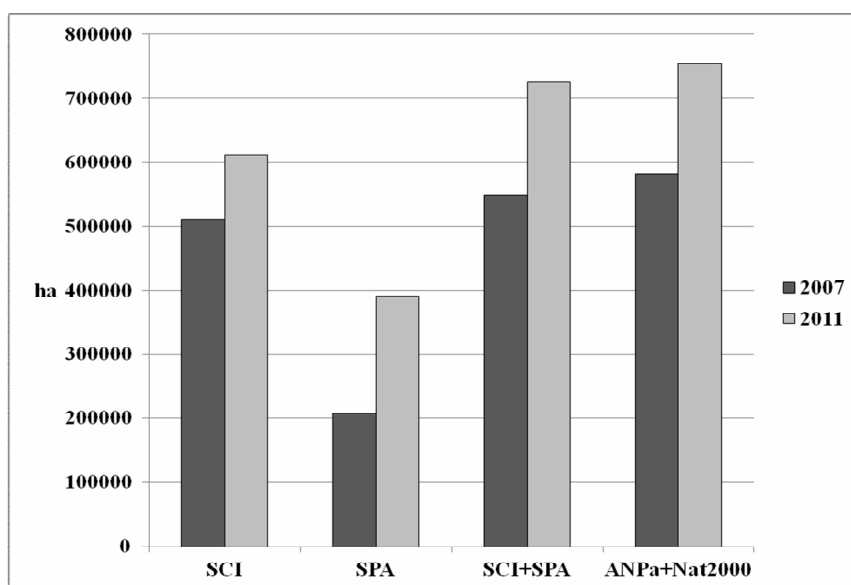


Figure. 4. The evolution of the protected areas in the 6th Northwestern Region in 2007-2011.

Sixty five (65) habitat types (20 priority habitats) and 110 species of Community interest have been identified in the 71 Sites of Community Interest: 27 plant species (3 priority); 38 invertebrates species (4 priority), 19 fish species; 6 species of amphibians, 2 reptiles species (one priority) and 18 mammals species (two priority). The highest number of habitats and species has been identified in the sites that overlap protected areas of national interest (Apuseni, Rodna, Maramures Mountains, etc.), while the number of identified habitats and species of Community interest is lower in the areas where there is a new protection regime established by the assignment of sites (Cuşma, Valea Iza and Dealul Solovan etc).

The 17 Special Protection Areas have been declared for the protection of 227 birds species of Community interest.

Conclusions. The elaboration of the Government Emergency Ordinance no. 57/2007 on the regime of protected natural habitats, conservation of natural habitats of flora and fauna, Minister Order on the establishment of protected natural area regime for the Sites of Community Importance and Decision regarding the declaration of Special Protection Areas are essential elements in the implementation of the "Natura 2000" European Ecological Network in Romania.

71 Sites of Community Importance were designated in the 6th Northwestern Region, covering 610,811 ha, as well as 17 Special Protection Areas, covering 391,816 ha. The total area of Natura 2000 sites in the 6th Northwestern Region largely exceeds the size of protected areas of national interest.

The size of national interest protected areas increased from 251,868 ha (7.37%) to 256,872 ha (7.52%) during the 2007-2011 period. The size of Sites of Community Importance increased from 510,126 ha (14.93%) to 610,811 ha (17.88%), and that of the Special Protection Areas increased from 207,589 ha (6.08%) to 391,816 ha (11.47%). The size of the Natura 2000 network increased from 549,883 ha (16.10%) to 724,759 ha (21.22%), and the land area with by at least one conservation status increased from 581,370 ha (17.02%) to 752,928 ha (22.04%). 65 habitat types (20 priority) and 110 species of Community interest have been identified in the 71 Sites of Community Interest, as follows: 27 plant species (3 priority); 38 invertebrates species (4 priority), 19 fish species; 6 amphibians species, 2 reptiles species (one priority) and 18 mammals species (two priority).

The 17 Special Protection Areas have been declared for the protection of 227 birds species of Community interest.

The large number of habitat types (65) and species of Community interest (110) identified in the Natura 2000 sites and the obligation of the European Union member countries to implement a management committed to the protection of species of Community interest are considerations for the implementation of complex scientific research programs in the Natura 2000 sites focused on identification and mapping of flora and fauna of Community interest.

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Authors:

Marian Proorocu, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca No. 3-5 Calea Mănăștur Street, Cluj-Napoca, Romania, e-mail: mproorocu@yahoo.com

Paul Beldean, Environmental Protection Agency Cluj, No. 99 Calea Dorobanților Street, Cluj-Napoca, Romania, e-mail: beldeanp@yahoo.com

Andrei Crișan, Babeș-Bolyai University, Cluj-Napoca, No. 1 M. Kogălniceanu Street, Cluj-Napoca, Romania, e-mail: andrei.crel@gmail.com

Tania Mihaiescu, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca No. 3-5 Calea Mănăștur Street, Cluj-Napoca, Romania

Sinziana Pauliuc, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca No. 3-5 Calea Mănăștur Street, Cluj-Napoca, Romania

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Table 1

Natura 2000 sites in the 6th Northwestern Region

No.	Code	Site name	Size of the area in the 6 th NW Region						Area in other counties	Total area			
			BH	BN	CJ	MM	SM	SJ			Total		
<i>Sites of Community Importance (SCI)</i>													
1	ROSCI0002	Apuseni	28099		28858					56957	AB	18986	75943
2	ROSCI0003	Arboretele de castan comestibil Baia Mare				2087				2087			2087
3	ROSCI0008	Betfia	1748							1748			1748
4	ROSCI0016	Buteasa	396							396			396
5	ROSCI0020	Câmpia Careiului	9203					14394		23597			23597
6	ROSCI0021	Câmpia Ierului	13621					7662		21283			21283
7	ROSCI0025	Cefa	5268							5268			5268
8	ROSCI0030	Cheile Lăpuşului				1660				1660			1660
9	ROSCI0034	Cheile Turenilor			134					134			134
10	ROSCI0035	Cheile Turzii			326					326			326
11	ROSCI0040	Coasta Lunii			604					604	MS	90	694
12	ROSCI0042	Codru Moma	20213							20213	AR	4437	24650
13	ROSCI0049	Crişul Negru	1591							1591	AR	259	1850
14	ROSCI0050	Crişul Repede	1859							1859			1859
15	ROSCI0051	amonte de Oradea Cuşma		44284						44284			44284
16	ROSCI0061	Defileul Crişului Negru	2203							2203			2203
17	ROSCI0062	Defileul Crişului Repede - Pădurea Craiului	39411							39411			39411
18	ROSCI0068	Diosig	384							384			384
19	ROSCI0074	Făgetul Clujului - Valea Morii			1667					1667			1667
20	ROSCI0084	Ferice - Plai	1997							1997			1997
21	ROSCI0089	Gutâi-Creasta Cocoşului				684				684			684

22	ROSCI0092	Igniș			19598			19598		19598
23	ROSCI0095	La Sărătura		16				16		16
24	ROSCI0098	Lacul Pețea	49					49		49
25	ROSCI0099	Lacul Știucilor-Sic- Puini-Bonțida			3798			3798		3798
26	ROSCI0101	Larion		2177				2177	SV	846
27	ROSCI0104	Lunca Inferioară a Crișului Repede	656					656		656
28	ROSCI0116	Molhașurile Căpățânei			253			253	AB	563
29	ROSCI0119	Muntele Mare			414			414	AB	1240
30	ROSCI0124	Muntii Maramureșului				106909		106909		106909
31	ROSCI0125	Munții Rodnei		38450		9612		48062		48062
32	ROSCI0145	Pădurea de la Alparea	459					459		459
33	ROSCI0146	Pădurea de stejar pufos de la Hoia			8			8		8
34	ROSCI0155	Pădurea Goroniște	952					952		952
35	ROSCI0185	Păduricea de la Santău	89					89		89
36	ROSCI0192	Peștera Măgurici				28	67	95		95
37	ROSCI0193	Peștera Tăușoare		102				102		102
38	ROSCI0200	Platoul Vașcău	4983					4983		4983
39	ROSCI0209	Racâș-Hida					239	239		239
40	ROSCI0214	Râul Tur				20521		20521		20521
41	ROSCI0220	Săcueni	733					733		733
42	ROSCI0223	Sărăturile-Ocna Veche			133			133		133
43	ROSCI0232	Someșul Mare Superior		149				149		149
44	ROSCI0233	Someșul Rece			8529			8529		8529
45	ROSCI0238	Suatu Cojocna Crairât			4146			4146		4146
46	ROSCI0240	Tășad	1557					1557		1557
47	ROSCI0251	Tisa Superioară			6303			6303		6303

48	ROSCI0253	Trascău		2003				2003	AB	48061	50064	
49	ROSCI0257	Tusa - Barcău					10	10			10	
50	ROSCI0260	Valea Cepelor	32					32	AB	764	796	
51	ROSCI0262	Valea Iadei	2946					2946			2946	
52	ROSCI0263	Valea Ierii		6302				6302			6302	
53	ROSCI0264	Valea Izei și Dealul Solovan			46837			46837			46837	
54	ROSCI0267	Valea Roșie	819					819			819	
55	ROSCI0275	Bârsău Șomcuta			4200	573		4773			4773	
56	ROSCI0285	Codrii seculari de la Strâmbu - Băiuț			2497			2497			2497	
57	ROSCI0291	Coridorul Munții Bihorului - Codru Moma	2657					2657	AR	4935	7592	
58	ROSCI0295	Dealurile Clujului Est		18890				18890			18890	
59	ROSCI0300	Fânațele Pietroasa - Podeni		105				105			105	
60	ROSCI0314	Lozna					10249	10249			10249	
61	ROSCI0322	Muntele Șes	24417				10464	34881			34881	
62	ROSCI0324	Munții Bihor	8981					8981	AR, AB, HD	11904	20885	
63	ROSCI0331	Pajiștile Balda - Frata - Miheșu de Câmpie		46				46	MS	154	200	
64	ROSCI0333	Pajiștile Sărmășel - Milaš - Urmeniș	284	557				841	MS	295	1136	
65	ROSCI0347	Pajiștea Fegernic	280					280			280	
66	ROSCI0356	Poienile de la Șard		47				47			47	
67	ROSCI0358	Pricop - Huta - Certeze			1581	1581		3162			3162	
68	ROSCI0387	Salonta	3608					3608			3608	
69	ROSCI0393	Someșul Mare		557				557			557	
70	ROSCI0394	Someșul Mic		117				117			117	
71	ROSCI0400	Șieu - Budac		888				888			888	
Total			179211	86907	76937	201996	44731	21029		610811	92534	703345

<i>Special Protection Areas (SPA)</i>													
<i>No.</i>	<i>Code</i>	<i>Site Name</i>	<i>Size of area in the 6th NW Region</i>							<i>Total</i>	<i>Area in other counties</i>		<i>Total area</i>
			<i>BH</i>	<i>BN</i>	<i>CJ</i>	<i>MM</i>	<i>SM</i>	<i>SJ</i>	<i>AR</i>		<i>AB</i>		
1	ROSPA0015	Câmpia Crişului Alb și Crişului Negru	676							676	AR	38823	39499
2	ROSPA0016	Câmpia Nirului-Valea Ierului	15426					23138		38564			38564
3	ROSPA0067	Lunca Barcăului	5286							5286			5286
4	ROSPA0068	Lunca Inferioară a Turului						20241		20241			20241
5	ROSPA0081	Munții Apuseni-Vlădeasa	33509		42818					76327	AB	16755	93082
6	ROSPA0085	Munții Rodnei		44962		9870				54832			54832
7	ROSPA0087	Munții Trascăului			17706					17706	AB	75483	93189
8	ROSPA0097	Pescăria Cefa-Pădurea Rădvani	12254							12254			12254
9	ROSPA0103	Valea Alceului	3634							3634			3634
10	ROSPA0104	Bazinul Fizeşului			1627					1627			1627
11	ROSPA0113	Cânepişti			6212					6212			6212
12	ROSPA0114	Cursul mijlociu al Someşului				3658		29601		33259			33259
13	ROSPA0115	Defileul Crişului Repede-Valea Iadului	17171							17171			17171
14	ROSPA0123	Lacurile de acumulare de pe Crişul Repede	1817							1817			1811
15	ROSPA0131	Munții Maramureşului				70972				70972			70972
16	ROSPA0134	Munții Gutâi				28406				28406			28406
17	ROSPA0143	Tisa Superioară				2832				2832			2832
Total			89773	44962	68363	115738	43379	29601	391816			131061	522871

Abbrev: BH –Bihor, BN – Bistrița-Năsăud, CJ – Cluj, MM – Maramureş, SM – Satu Mare, SJ – Sălaj, AB – Alba, MS – Mureş, AR – Arad, SV – Suceava, HD - Hunedoara.

Table 2

Absolute and percentage size of protected areas in 2007 (related to the total area of the 6th NW Region)

<i>UAT</i>	<i>Total S (ha)</i>	<i>ANPn (ha)</i>	<i>% ANPn</i>	<i>SCI 2007 (ha)</i>	<i>% SCI</i>	<i>SPA 2007 (ha)</i>	<i>% SPA</i>	<i>SCI+SPA 2007 (ha)</i>	<i>% SCI+SPA</i>	<i>Total ANPn+SCI+SPA (ha)</i>	<i>total % ANP</i>
BH	754997	34499	4,57	136727	18,11	60430	8,00	152466	20,19	152637	20,22
BN	535263	38650	7,22	84961	15,87	37343	6,98	84961	15,87	85068	15,89
CJ	667151	31195	4,68	53994	8,09	56773	8,51	76845	11,52	77191	11,57
MM	630459	145818	23,13	190597	30,23	9840	1,56	190597	30,23	221333	35,11
SJ	386411	90	0,02	339	0,09	0	0,00	339	0,09	419	0,11
SM	441952	1614	0,37	43509	9,84	43203	9,78	44676	10,11	44722	10,12
6NV	3416233	251868	7,37	510126	14,93	207589	6,08	549883	16,10	581370	17,02

Abbrev: UAT – administrative territorial units; Total S – total area; ANPn – protected areas of national interest.

Table 3

Absolute and percentage size of protected areas in 2011 (related to the total area of the 6th NW Region)

<i>UAT</i>	<i>Total S (ha)</i>	<i>ANPn (ha)</i>	<i>% ANPn</i>	<i>SCI 2011 (ha)</i>	<i>% SCI</i>	<i>SPA 2011 (ha)</i>	<i>% SPA</i>	<i>SCI+SPA 2011 (ha)</i>	<i>% SCI+SPA</i>	<i>Total ANPn+SCI+SPA (ha)</i>	<i>total % ANP</i>
BH	754997	39503	5,23	179211	23,74	89773	11,89	210188	27,84	210385	27,87
BN	535263	38650	7,22	86907	16,24	44962	8,40	93331	17,44	93454	17,46
CJ	667151	31195	4,68	76937	11,53	68363	10,25	113982	17,08	114408	17,15
MM	630459	145818	23,13	201996	32,04	115738	18,36	217967	34,57	245293	38,91
SJ	386411	90	0,02	21029	5,44	29601	7,66	42572	11,02	42626	11,03
SM	441952	1614	0,37	44731	10,12	43379	9,82	46718	10,57	46763	10,58
6NV	3416233	256872	7,52	610811	17,88	391816	11,47	724759	21,22	752928	22,04

Abbrev: UAT – administrative territorial units; Total S – total area; ANPn – protected areas of national interest.