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CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

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Introductory Report on Nature Conservation in Serbia

The Republic of Serbia
Ministry of Environment and Spatial Planning

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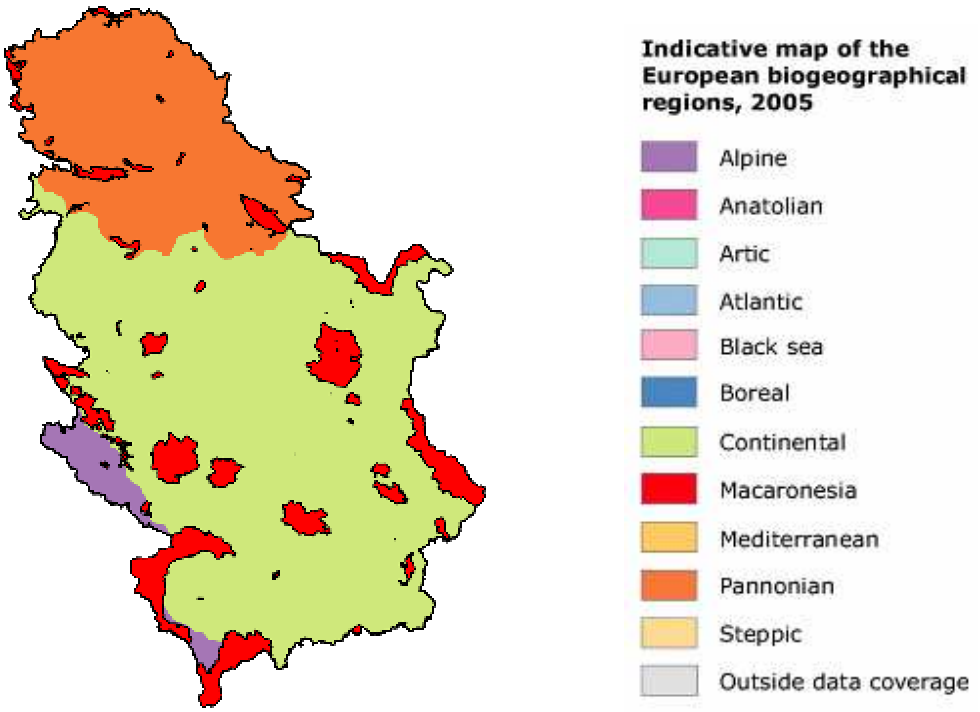
PART I - BACKGROUND INFORMATION

1. Biodiversity

The degree of biodiversity in Serbia, both from the viewpoints of ecosystems and species, is expressedly high. In biogeographic respect, the vascullar flora of Serbia belongs to almost half of all the floristic-vegetational regions of the world and presents one of the biodiversity centres of Europe.



The diversity of ecosystems and species in the territory of Serbia is caused by the geological age, geologically-morphological and climatic features. In particular it is caused by the refugial character of the Balkan and Panonian regions (parts of the European continent, sanctuary for survival of numerous species in the periods of glaciation). Therefore for Serbia, as well as for Balkans as a whole, the occurence is characteristic of the relict life communities with numerous endemorelict flora elements from the former geological periods.

Out of six most important bioregions of Europe, five are represented in Serbia. These are Mediterranean, Mid-European, Pontic, Boreal and Mid-South-European mountainous, with the characteristics of cross-connections of the different floristic influences and the mosaic distribution of ecosystems. The elements are also present of the distant bioregions and provinces (Iran-Turannean, Arctic, Atlantic etc.).

2. Species Diversity

Biological diversity represents the variability of life at all levels of biological organization (Gaston and Spicer, 2004). Such, general definition requires further elaboration since biological diversity involves *itraspecific* (population) and *interspecific* (community) variability. Population or intraspecific diversity depends on genetic variability and variability induced by environment. On the other hand, community diversity involves within community *(alpha) diversity*, species diversity between ecosystems (*beta diversity*) and *gamma diversity* or overall biodiversity within a region (Whittaker, 1972). Investigations of

biological diversity have a long and very rich tradition in Serbia. In a series of articles and monographs, Pancic (1860, 1867, 1869, 1874, 1883) initially described Serbian flora and fauna. His classical work "*Flora Principatus Serbiae*", initiated intensive floristic investigations. As a result of accumulated knowledge, the 10 volume edition of "(vascular) Flora of SR Serbia" was published (Josifovic, 1970-1977; Saric, 1986). Numerous vegetation studies in Serbia were integrated in precious monograph *Vegetation Südosteuropas* (Horvat, Glavas, et Ellenberg, 1974). More recently Saric (1997), Kojic, Popovic and Karadžic (1997) reviewed vegetation units in Serbia. Blaženčic, Cvijan and Lauševic (1995), Cvijan and Blaženčic (1996) and Cvijan and Subakov-Simic *(2003*) reviewed taxonomy and distribution of algae in Serbia. Faunistic investigations covering both *Vertebrates* and *Invertebrates* (Radovanovic, 1951, 1957, Petrov, 1992: Simonovic, 2006, Gasc et al., 1997, Rašajski, 2004, Curcic, Dimitrijevic and Legakis, 2004, Jakšic, 2003, Matvejev, 1950, Vasic, 1995).

Despite the great diversity of different taxa, the process of biodiversity erosion is marked, not only in Serbia but in wider regions of Balkan peninsula. Many species disappeared from Serbia, and some rare species are endangered to alarming limits. Human induced pressures on habitats (urbanization, development of agriculture, industry, mining, transport infrastructures) resulted in:

- degradation of natural ecosystems to cultivated agroecosystems, sylvicultures or (sub)urban area,
- fragmentation of habitats
- overexploitation of genetic and biological resources
- introduction of alien species from remote areas
- contamination of air, water and soil by toxic, mutagenic or cancerogenig pollutants
- increased level of ionizing and nonionizing radiation
- induced climate changes

Synergy of all these effects resulted in significant biodiversity reduction in Serbia and neighbouring region. According to the Red data book of Flora of Serbia (Stevanovic, 1999), four local endemic taxa disappeared from Serbia, and consequently, from the global gene pool (*Althea kragujevaciensis* Pancic, *A. Vranjensis* Diklic & Nikolic, *Scabiosa achatea* Vis. & Pancic and *Trapa annosa* Jankovic). More than 40 vascular 136 plants disappeared from Serbia, but not from other parts of Balkan peninsula. Populations of numerous plant species permanently declined during past 50 years. According to the Red data book of Serbian butterflies (Jakšic, 2003), the species *Leptidea morsei* Fenton 1881 disappeared from Serbia, whereas 22 taxa belong to the IUCN category of endangered species. Unfortunately, the Red data book of other faunistic groups of Serbia is not available yet.

2.1. Flora

Floristic diversity in Balkan peninsula is much greater than in other parts of Europe.

More than 100 endemic taxa are recorded in numerous mountain regions of the Balkans.

Therefore, entire Balkan peninsula in general, and particularly the mountain regions from Creta and Peloponnesus to Dinaric Alps westward and eastward to Balkan-Rhodope mountains represents hot spots of plant diversity on regional (European) level.

Balkan Peninsula is a biodiversity center for 17 mainly monotypic genera, represented by one or only few phylogeneticaly isolated species. Generally, endemic genera, being monotypic, oligotypic or polytypic, indicate age of flora in the specified area and designate this area as a biodiversity center and center of flora diversification. Such monotypic and oligotypic genera, i. e. species belonging to the genera are: *Halacsya sendtneri Boiss., Paramoltkia doerfleri* (Wettst.) Greuter & Burdet, *Paraskevia cesatiana* (Fenzl & Friedr.)

W. & G. Sauer, *Petromarula pinnata* (L.) A. DC. *Degenia velebitica* Deg., *Leptoplax emarginata* (Boiss.) O.E. Schultz, *Haberlea rhodopensis* Friv., *Jankaea heldreichii* (Boiss.) Boiss., *Wagenitzia lancifolia* Sieber ex Sprengel (Dostal), *Hymenonema laconicum* Boiss. & Heldr. & *Hymenonema graecum (L.) DC., Thamnosciadium junceum* (Sm.) Hartvig, *Pancicia serbica* Vis., *Horstrissea dolinicola* Greuter ,

Gertsberger & Egli, *Petteria ramentacea* (Sieber) C. Presl, *Festucopsis sancta* (Janka) Melderis, *Festucopsis serpentini* (C.E. Hubbard) Melderis , *Lutzia cretica* (L.) Greuter & Burdet and *Phitosia crocifolia* Kamari & Greuter.

According to the latest researches, there are over 2600 endemic plant species on Balkan. Territory of Serbia is significant biodiversity center of endemic flora on Balkan Peninsula (Fig. 110). There are 287 *Balkan endemic* species and subspecies in Serbia, which is 8.06% of Serbian flora. The number of Balkan endemics increases from lowland regions in Vojvodina towards high mountain areas. The basic type of endemism in Serbia, like in the entire Balkan Peninsula, is highmountain endemism. Biodiversity centers of endemic flora are primary high mountains (Shar Mt., Prokletije Mt., Koritnik Mt., Pastrik Mt., Kopaonik Mt., Balkan Mt. and Suva Mt.). Besides *highmountain endemis* in Serbia, there exists *edaphic endemism*, as well. Special features are representatives of ophylotic endemic flora on serpentine habitats in west and central Serbia, and in Metohija. Highmountain and edaphic endemism is often combined. In the same time, limestone massifs are richer in endemic species compared to siliceous soils in Serbia. *Local endemics* are of special importance, as specific biological resources globally significant for preservation of gene fund and biodiversity. There are 59 local floristic endemics in Serbia (1,5% of total flora in Serbia), mostly Tertiary relics. Shar Mt., with 19, and Prokletije Mt. with 15 local endemics are mountains with highest local endemism in Serbia.

Both in Asia-Malesia and in America there are around 60 genera; in Africa there are 9 genera (c. 160 spp.), in Europe 3 genera (6 species). Such disjuncted distribution clearly indicates that endemic representatives of *Ramonda, Haberlea* and *Jankaea* are relics of old flora. *Ramonda myconi* (L.) Rchb is distributed in Spain, whereas other European *Gesneriaceae (Jankaea heldreichii* (Boiss.) Boiss, *Ramonda serbica* Panc. *R. nathaliae*

Panc. & Petr. *Haberlea rhodopensis* Friv. and *H. ferdinandi-coburgii* Urum.) are restricted to Balkan peninsula (Serbia, Montenegro, Albania, Greece and Bulgaria). Two *Gesneriaceae* species (*Ramonda serbica* Panc. and *R. nathaliae* Panc. & Petr.) are distributed in Serbia.

The most important endemic plant species in Serbia is *Picea omorika* (Pancic) Purkyne 1877. A wide distribution of *P. omorika* during Tertiary was reduced to an ultimate extent. Recently, it is native to the Tara Mountain, the Mileševka river canyon and part of Western Bosnia in the middle course of the Drina River. Serbian spruce is a graceful, beautiful tree with a narrow pyramidal form.

There are 3662 vascular species and subspecies in Serbia. These taxa are grouped in 141 families and 766 genera, which puts Serbia into a group of European countries with highest floristic diversity per area unit.

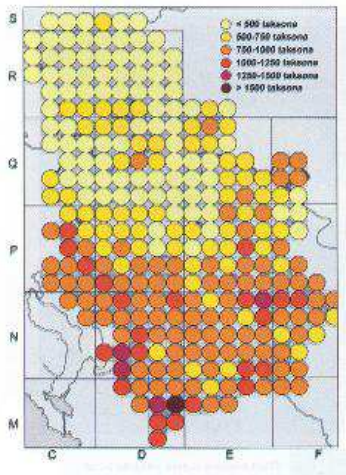


Figure 115
Species density of vascular plants per 20x20 km UTM (Universal Transverse Mercator) squares in Serbia (source: Stevanovic et al, 2005

Figure 115 presents species density (i. e. number of taxa per 20x20 km UTM squares) of vascular plants in Serbia. Vojvodina and areas along large rivers have relatively low species density. Density increases towards south (mountain areas) and the largest is in the area of Prokletije Mt., Shar Mt., Kopaonik Mt., Balkan Mt., and Tara Mt. Gradient of floristic richness is greatly correlated to urban areas and anthropogenic influence to the environment.

High floristic diversity in Serbia is consequence of variety of orographic, geological, climate and historical factors, which have been or are still active in this area. Not all groups of flora in Serbia have been equally studied. The best studied groups are vascular plants, where algae are the least studied.

2.2. Fungi

Fungi and bacteria are the primary decomposers of organic matter in most terrestrial ecosystems. The term *Macromycetes* or *Macrofungi* denotes the representatives of *Basidiomycotina* and *Ascomycotina*, two phila (major divisions) of the kingdom *Fungi*, that form large macroscopic fruitbodies. Macrofungi are a diverse and ecologically important group of organisms. According to Ivancevic (1995), more then 600 species of Macromycetes are recorded in Serbia. They belong to 232 different families of Fungi. More than 60 species of Macromycetes are endangered to various degree.

Kušan (1953) reviewed lichenized fungi of Yugoslavia, including many species from Serbia. According to the most recent data (Savic and Tibell, 2006), 586 lichens are distributed in Serbia.

2.3. Fish diversity

There are 110 *fish species* registered in Serbia, or 51% of all European ichtyofauna. Freshwater ecosystems in Serbia comprise *large basins* (Danube with tributaries), *macroaccumulations* (Djerdap, Vlasina, etc.), *microaccumulations* (larger number of small accumulations for irrigation and other local purposes), *flooded areas and wetlands* (Apatin wetland, Kovilje-Gardinovac wetland, and a series of smaller areas of local significance) and a canal network (Danube – Tisza – Danube, and other smaller networks). There are 4 areas in Serbia with specific ichtyofauna: Danube-Black Sea System, Tara-Piva-Drina, System, Ohrid-Drim-Skadar System and rivers of Aegean basin. There are 79 fish species in Danube Basin, from 16 families and 3 species of Cyclostomata. Family *Cyprinidae* has 50 species. Specific feature of the Danube-Black Sea system is seasonal presence of 5 species from *Acipenseridae* family and 2 species from *Clupeidae* family, which migrate from the Black Sea to the Danube during spawning season. Hydroelectric power plant cut this migratory path, and they can reach only to Djerdap II plant. There are 12 endemic fish species and subspecies in the Danube basin and one endemic species of *Cyclostomata*. There are also 13 allochthonous species. Populations of some introduced species are rather numerous, and some of them are undesirable in natural ecosystems.

Tara-Piva-Drina System is significant for mountain areas. There are 32 fish species registered in this system Ohrid-Drim-Skadar System represents very important area for it is a main corridor between riverine, lacustrine and marine ecosystems. It has specific ichtyofauna for the large number of endemic species and subspecies. Metohija area, as a part of this system, has 16 autochthonous (*Salmo trutta* with two subspecies) and 9 allochthonous species Aegean Basin rivers comprise rather small area in Serbia and there are no precise data on ichtyofauna.

Aquatic ecosystems enable fast spreading of introduced or non-indigenous species that are rapidly expanding outside of their native range. Introduced species can alter ecological relationships among native species and can affect ecosystem function, economic value of ecosystems, and human health. More than 15 fish species in Serbia are introduced from other regions (Jankovic and Krpo-Cetkovic, 1995). The newest case of introduction was recorded in 2006. A specimen of the North American paddlefish, *Polyodon* spathula was caught near Prahovo in the Serbian part of the Danube River (Lenhardt et al., 2006).

2.4. Amphibians and reptiles

Balkan Peninsula has 95 amphibian and reptile species, of which 45 are endemics, and therefore represents very significant area of European herpetofauna. Considering Serbian territory only, 44 amphibian and reptile species were recorder (55 subspecies in total), within 19 genera and 14 families, which clearly indicates large diversity in herpetofauna in this area. Some of these species are important from biogeographic point of view. The Alpine salamander, *Salamandra atra* (LAURENTI, 1768), is a completely terrestrial, and viviparous amphibian. It is an endemic species to the Alpine arc from Switzerland to Austria with some geographically isolated areas in the Dinaric Alps (Slovenia to Albania). There are two currently recognized subspecies: *S. a. atra* and the yellow spotted *S. a. aurorae* which is restricted to an extremely small area in the Asiago plateau in NE Italy (Grossenbacher, 1997).

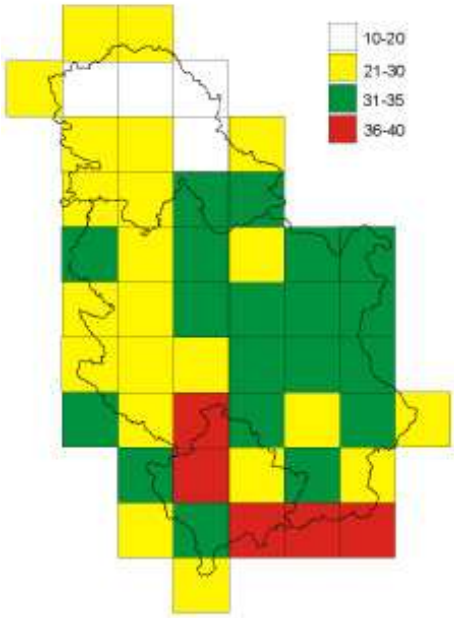


Figure 118

Species density of Amphibians and Reptiles per 50x50 km UTM squares in Serbia (source: Džukić, 1995.)

There is a general trend in decreasing of amphibian and reptile populations in the world, where causes are related to human influence, above all. Such trends are visible in Serbia, as well. The main causes are alterations of autochthonous landscapes, degradation, fragmentation and isolation of habitats, pollution of water, air and soil, transportation and hunting.

2.5. Birds

There are 345 bird species in Serbia registered so far, which presents 74% of European species. This richness is, above all, represented in the number of *nesting bird species*. There are approximately 300 nesting species on the Balkans, where 253 are in Serbia (84%). Migratory species are wintering in Serbia, or continue migration to the south. Serbian south provinces are the richest in bird species inhabiting dry habitats, as opposed to the lowland areas of north-east Serbia, along the Danube.Including waterfowls, south part of Serbia is, after Macedonia, the largest center of bird diversity on the Balkans.The most important bird migration routes in South-Eastern Europe are the Bosfor strait (a west-easter route) and a north-south route in the Caucasus region (EUCC, 1999). However, there are several other migration routes over South-Easter Europe (Fig 119) and some routes over Serbia are of global importance (Biro, Bouwma and Grobelnik, 2006).

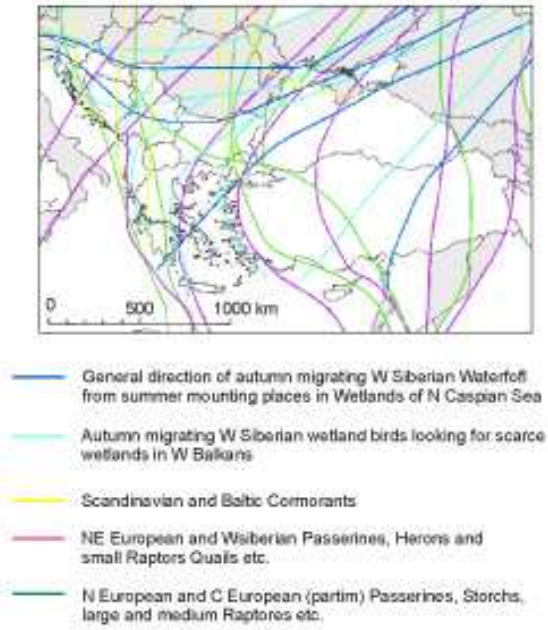


Figure 119

Bird migration routes in Balkan peninsula. Source: Vasić, in: Biro, Bouwma and Grobelnik, 2006.

Decrease of number of species is consequence of synergistic effect of unfavourable factors, and the most prominent are land use alterations (agriculture), loss of habitats, pollution, changes in forestry practice, pressure from hunting and chasing, overexploitation of birds which are not usually hunted and climate changes.

Table 1. Number of nesting species in different regions in Serbia

Territory	All bird species	Dry habitat bird species	Waterfowls
Vojvodina	188	131	57
West Serbia	183	101	82
Central Serbia	188	131	57
Carpathian Serbia	174	143	31
Balkan Serbia	153	144	9
South Serbia	189	169	20
South-west Serbia	191	165	26

Table 1. presents the number of nesting species in Serbia. All species taken into account, and not only nesting ones, shows that diversity per regions is somewhat equalized in relation to the north-south distribution (Vasic, 1995).

2.6. Mammals

Mammals have specific position and role in functioning of natural ecosystems. There are 94 terrestrial mammal species in Serbia, within 6 orders (Fig 121). They inhabit preferably deciduous forests, and less open or semi-open habitats. Endemism is not characteristic for European mammals. However, Martino's snow vole (*Dinaromys bogdanovi* (Martino, 1922) *is* an ancient member of the rodent subfamily *Arvicolinae*, with a small range on the karstic bedrock of the Western Balkans.

There are two areas of high diversity: east area of south Banat, Carpathian and Balkan Serbia and Sumadija, and west area of Backa, Srem and Drina River valley. The lowest diversity is in north Banat and Sava River valley.

Certain species are globally or regionally distributed into different categories of endangered species. Most of them are low risk (**LR**) and its sub-categories. Main factors are degradation of natural habitats, overexploitation and pollution of habitats.

3. Ecosystem Diversity

The vegetation of Serbia is extremely diverse. More than 700 associations, up to 500 subassociations may be grouped in higher phytosociological units (242 alliances, 114 orders and 59 vegetational classes). This fact points out in the best way that the territory of present Serbia is characterized by a high diversity of habitats, and due to that fact, by a diverse plant communities which single out this region as one of the most significant European centers of diversity of vegetation and ecosystems. Polydominant forest vegetation in Serbian (and more generally Balkan) canyons represents a valuable pool of species diversity. A great heterogeneity of environmental conditions and specific history of biota in the canyons resulted with complex communities that represent significant resource of rare and endangered taxa (Karadžic et al., 1996, 2001). The number of species in various types of vegetation on the territory of Serbia has shown that the deciduous forests (*Querco-Fagetea*) with 1,498 recorded species and secondary xero- and xero-mesophilic grasslands (*Festuco-Brometea*) with 1,194 of species, have the highest alpha diversity. The lowest number of species has been recorded in a water environment, within the zone of a floating and submersed vegetation (*Lemnetea, Charetea, Ruppietea maritimae* - between 19 and 37 species).

The highest species diversity is recorded in the inland herbaceous xerophytic and mesophytic ecosystems (2,399 species and subspecies, which make 84 % of the plants of the complete flora of Serbia). Contrary to this type of ecosystem, within the water environment only 74 species have been registered, making just 2.59 % of the analyzed vascular flora of Serbia. Analysis of the changes of the alpha diversity in the ecologicalgradients has shown that a decrease of habitats' temperature provokes the statistically significant decrease in the number of species (Lakušic, 2005).

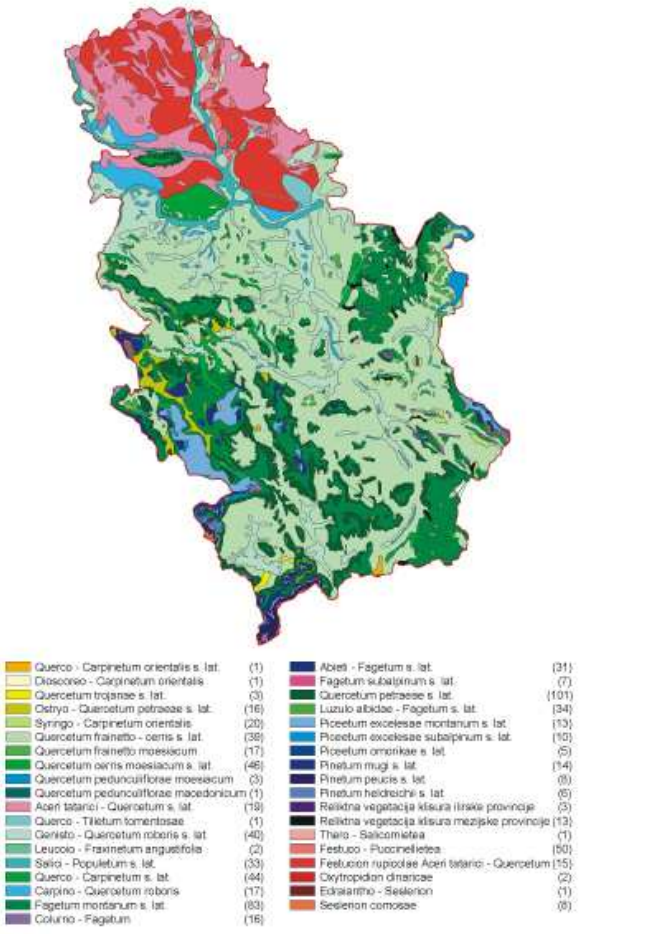


Figure 122

Vegetation heterogeneity in Serbia (source: Stevanović, Jovanović and Lakušić, 1995).

Table 2. Number of species (alpha diversity) in various vegetation types in Serbia (source: Lakušic, 2005)

Vegetation classes	No of species	% species
Querco-Fagetea Br.-Bl. et Vilieger 1937	1498	52.49
Festuco-Brometea Br.-Bl. et R. Tx. 1943	1194	41.84
Molinio-Arrhenatheretea R. Tx. 1937	895	31.36
Vaccinio-Piceetea Br.-Bl. 1939 emend. Zupancic 1976	703	24.63
Erico-Pinetea Ht. 1959	683	23.93
Festucetea vaginatae Soó 1968 emend. Vicherek 1972	681	23.86
Festuco-Seslerietea Barbero et Bonim 1969	673	23.58
Asplenietea trichomanis Br.-Bl. 1934 corr. Oberd. 1977	568	19.90
Artemisietea vulgaris Lohm., Prsg. et R. Tx. 1950	524	18.36
Juncetea trifidi Hada 1944	441	15.45
Betulo-Adenostyletea Br.-Bl. et R. Tx. 1943	357	12.51
Nardo-Callunetea Preising 1949	333	11.67
Bidentetea tripartitii Tx., Lohm. et Prsg. 1950	327	11.46
Chenopodietea Br.-Bl.1951 em. Lohm. J. et R. Tx.1961	301	10.55
Stellarietea mediae Tx., Lohm. et Prsg. 1950	292	10.23
Epilobietea angustifolii R. Tx. Et Preising 1950	291	10.20
Phragmitetea communis R. Tx. et Preising 1942	290	10.16
Festuco-Puccinellietea Soó 1968	246	8.62
Plantaginetea majoris Tx. et Prsg. 1950	242	8.48
Scheuchzerio-Caricetea fuscae (Nordhagen 1936) R. Tx. 1937	238	8.34
Alnetea glutinosae Br.-Bl. et R. Tx. 1943	220	7.71
Drypetea spinosae Quezel 1967	211	7.39
Isoeto-Nanojuncetea Br.-Bl. Et Tx. 1943	148	5.19
Agropyretea repentis Oberd., Th. Muller et Gors 1967	148	5.19
Thero-Brachypodietea Br.-Bl. 1947	112	3.92
Paliuretea Trinajstic 1978	85	2.98
Thero-Salicornietea Pignatti 1953 emend. R. Tx. 1955	77	2.70
Thlaspietea rotundifolii Br.-Bl. et al. 1947	72	2.52
Potametea R. Tx. et Preising 1942	66	2.31
Salicetea purpureae Moor 1958	52	1.82
Salicetea herbaceae Br.-Bl. et al .1947	46	1.61
Montio-Cardaminetea Br.-Bl. Et Tx. 1943	40	1.40
Charetea Fukarek 1961 ex Krauch 1964	37	1.30
Lemnetea W. Koch et R. Tx. 1954	36	1.26

***Ruppietea maritimae* J. Tüxen 1960**	**19**	**0.67**
Total	**2854**	**100.00**

4. Areas Designated for Nature Protection

Total protected areas in Serbia are 6.6% of the country's territory. There are 5 national parks, 14 parks of nature, 72 natural reserves, 17 protected landscapes, 43 cultural-historical landscapes and 312 monuments of nature. The largest share in protected areas goes to national parks and nature parks, as presented in Figure 123.

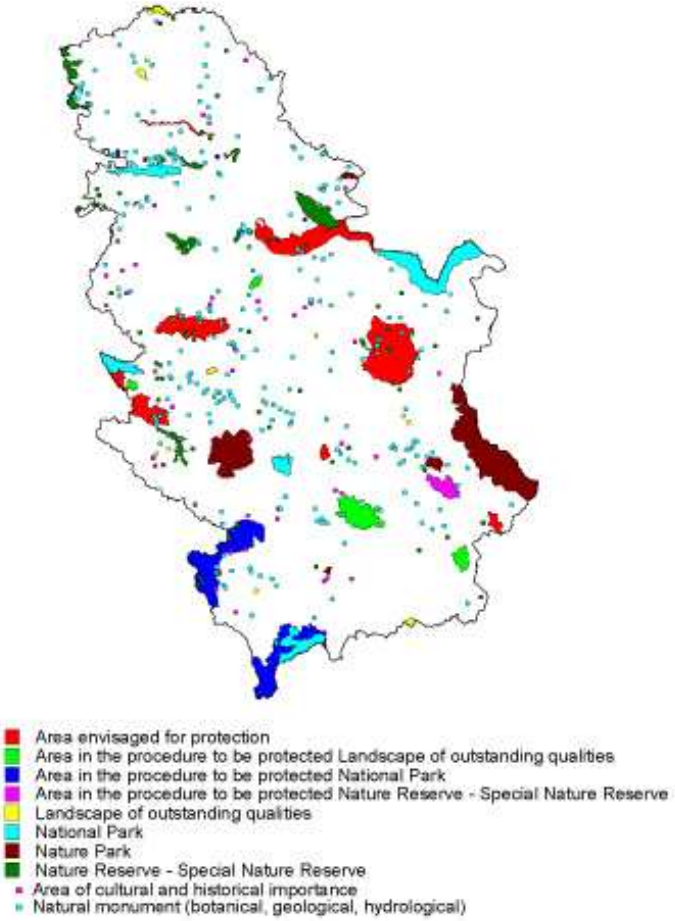


Figure 123

Review of designated areas in Serbia (source: Institute for nature conservation of Serbia)

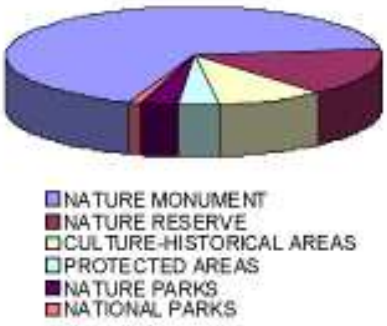


Figure 124

Structure of protected areas in Serbia

Like in any European country, there are two categories of designation. Internationally designated areas involve:

- Bern Convention's Emerald Network
- Ramsar sites and
- UNESCO MAB sites.

Nationally designated areas involve:

- Natural Monument Wildlife reserve
- Natural Monuments and Landmarks
- Nature Landscape Reserve
- Nature Park
- Landscape (of outstanding value) Special Reserve

4. 1. Prime Butterfly Areas (PBA)

Prime Butterfly Areas are an initial selection of important butterfly areas in Europe, focussing on target species that are conservation priorities across a large and diverse region. Protection and proper management of these areas will help to conserve not only these target species, but also the many other characteristic butterflies they contain. There are 13 PBA in Serbia.

4.2. Important Bird Areas (IBA)

BirdLife International provided data on IBAs. A site is recognized as an IBA only if it meets certain criteria, based on the occurrence of key bird species that are vulnerable to global extinction or whose populations are otherwise irreplaceable. An IBA must be amenable to conservation action and management. The IBA criteria are internationally agreed, standardized, quantitative and scientifically defensible. Ideally, each IBA should be large enough to support self-sustaining populations of as many as possible of the key bird species for which it was identified or, in the case of migrants, fulfil their requirements for the duration of their presence. By definition, an IBA is an internationally agreed priority for conservation action. According to the Bird Life International criteria, there are 35 Important Bird Areas (IBA) in Serbia.

4.3. Important Plant Areas (IPA)

IPAs are natural or semi-natural sites exhibiting exceptional botanical richness and/or supporting an outstanding assemblage of rare, threatened and/or endemic plant species and/or vegetation of high botanical value. The mapping of IPAs in Serbia is still in preparation. Initial assessments indicated that 222 potential IPAs and 12 cross border IPA sites may be delimited within Serbia (Boteva et al., 2004). At the moment, there are 59 IPAs in Serbia (Stevanovic, 2005).

5. Reintroduction Programmes and Ex City Conservation of Biodiversity

Reintroduction is rather efficient way for protection of species in their natural habitats. Ministry of Environment and Spatial Planning initiated several (very successful) reintroduction projects. The data from paleontological and archaeological excavations show the continual presence of European beaver (*Castor fiber* L. 1758) in Serbia, from Pleistocene through prehistory to its complete extinction from this area at the beginning of the 20th century. During the first half of the 19th century beaver was relatively widely spread along the river beds and swamp areas along our big rivers (the Danube, Sava, Morava). The project of European beaver reintroduction in Serbia has been realized in association with Ministry of Science and Environmental Protection - Directorate for Environmental Protection, Biology Faculty in Belgrade, the Association from Bavaria and SNR Zasavica. Several beaver families were reintroduced in Obedska swamp and Zasavica special nature reserve.

Micropropagation and reintroduction of *Nepeta rtanjensis* Diklic & Milojevic, an endemic and critically endangered perennial of Serbia is successful ongoing project that is financed by the Ministry of

Environment and Spatial Planning. This species was recorded for the first time in 1974 in the territory of Serbia, in the locality Greda on the southern slopes of Mt Rtanj (eastern Serbia). During the field investigations in 1996, the species was found on southeastern slopes of Mt Rtanj as well, in the locality Javor. By its restricted distribution the plant is *stenoendemite* (local endemic species) of Serbia. At the same time it is the relict one being geographically isolated in relation to the other species of the same *Nepeta sibthorpii* complex..*N*

6. Legislation & Policy

6.1. National Legislation in the Field of nature Conservation

The nature protection system in the Republic of Serbia is regulated according to the following laws and subsequent bylaws:

- The Law on Environmental Protection (*Official Gazette of the Republic of Serbia* Nos. 66/91, 83/92, 53/93, 67/93, 48/94, 53/95 and 135/04),
- The Law on National Parks (*Official Gazette of the Republic of Serbia* Nos. 39/93, 44/93, 53/93, 67/93, 48/94, 48/94 and 101/05),
- The Law on Strategic Environmental Assessment SEA(*Official Gazette of the Republic of Serbia* No. 135/04),
- The Law on Environmental Impact Assessment/EIA (*Official Gazette of the Republic of Serbia* No. 135/04),
- The Law on Fishing (*Official Gazette of the Republic of Serbia* Nos. 35/94, 38/94. and 101/05), The Law on Hunting (*Official Gazette of the Republic of Serbia* Nos. 39/93, 44/93, 60/93) and
- The Law on Forests (*Official Gazette of the Republic of Serbia* Nos. 46/91, 83/92, 53/95, 54/93, 60/93, 67/93, 48/94, 54/96 and 101/05).

6.2. Biodiversity Related Legislation and Programmes

- National Strategy of Sustainable Development in Serbia
- National Strategy of Agriculture
- National Forestry Policy with ecosystem approach
- The Law on Fishing (*Official Gazette of the Republic of Serbia* Nos. 35/94, 38/94. and 101/05),
- The Law on Hunting (*Official Gazette of the Republic of Serbia* Nos. 39/93, 44/93, 60/93) and
- The Law on Forests (*Official Gazette of the Republic of Serbia* Nos. 46/91, 83/92, 53/95, 54/93, 60/93, 67/93, 48/94, 54/96 and 101/05).

Some sections of the Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, and Council Directive 79/409/EEC on the conservation of wild birds are incorporated into the Law on Environmental Protection and subsequent bylaws concerning planning, utilization and environmental resources protection principles. Council Directive 1999/22/EC relating to the keeping of wild animals in zoos and Council Directive 83/129/EEC concerning the importation into Member States of skins of certain seal pups and products derived therefrom (amended by Council Directive 85/444/EEZ and Council Directive 89/370/EEZ) are not integrated into the domestic legislature. Domestic legislature is mostly in agreement with the Council Regulation 3254/91/EEC prohibiting the use of leghold traps in the Community and introduction into the Community of pelts, and with Council Regulation 338/97/EC on the protection of wild fauna and flora by regulating trade and its subsequent amendments, however, the same legislature is not in accordance with the Council Regulation 348/81/EEC on common rules for imports of whales or other cetacean products.

6.3. International Treaties and Activities:

The Republic of Serbia has, in the environmental protection field ratified following international conventions:

- The International Convention for the Protection of Birds (Official Gazette of the SFRY – International Treaties No. 6/73),
- World Heritage Convention and Biodiversity Conservation – Heritage Convention (Official Gazette of the SFRY – International Treaties No. 8/74),
- Ramsar Convention on Wetlands – Ramsar Convention (Official Gazette of the SFRY – International Treaties No. 9/77),
- Convention on Biological Diversity - CBD (Official Gazette of the SRY – International Treaties No 11/2001),
- Convention on International Trade in Endangered Species of Wild Fauna and Flora – CITES (Official Gazette of the SRY – International Treaties No. 11/2001),
- United Nations Convention to Combat Desertification, particularly in Africa - UNCCD (Official Gazette of the Republic of Serbia – International Treaties No. 102/07),
- Convention on Conservation of Migratory Species of Wild Animals – Bonn Convention (Official Gazette of the Republic of Serbia – International Treaties No. 102/07),
- The Convention on the Conservation of European Wildlife and Natural Habitats – Bern Convention (Official Gazette of the Republic of Serbia – International Treaties No. 102/07), and
- The Convention on the protection and sustainable development of the Carpathians – Carpathian Convention (Official Gazette of the Republic of Serbia – International Treaties No. 102/07).

6.4. Linked Activities (other international and national initiatives):

As a first step towards implementation 2010 biodiversity targets, as well as the integration of the economic and environmental policies, several important international projects have been started and are in progress in this field.

1. Elaboration of the National Strategy on Sustainable Development
2. Elaboration of the National Environmental Action Plan
3. Established National Strategy of Agriculture
4. Established National Forestry Policy with ecosystem approach
5. Elaboration of the National Strategy for Sustainable Development of Natural Resources and Goods
6. Elaboration Strategy of Biodiversity Conservation and Action Plan, financed by GEF/UNDP;
7. The Law on Nature Protection in elaboration – harmonization with EU and other international regulations
8. The Law on GMO in elaboration
9. Creating terms for accessing to Natura 2000/Emerald Network etc.

- "Development of Strategy for Biodiversity Protection", "Development of EMERALD network in Serbia and Montenegro" financed by Council of Europe;
- "Inventory of wetlands and other wet habitats in Serbia", financed by MSEP-DEP;

- "Ex situ protection of biodiversity of aquatic ecosystems in Serbia», financed by MSEP-DEP;
- "Harmonization of national nomenclature of classification of habitats with international standards (EUNIS system of classification)", financed by MSEP-DEP;
- "Centres of flora biodiversity in Serbia, guidelines for evaluation and implementation of protection strategy" (IPA), financed by MSEP-DEP;
- Important areas of bird species diversity have been identified for the purpose of implementing Council Directive 79/409/EEC, the Convention on Wetlands, Bern and Bonn Conventions.
- "Establishment of Green Belt in Serbia" as part of European Green Belt Project, financed by MSEP-DEP.

According the Bern Convention, following strategic documents as an Action Plans have been prepared on behalf of the Republic of Serbia:

- Action Plan for Import Control, Monitoring and Combating Invasive Allochtone Species for implementing European Strategy on combating and controlling invasive allochtone species;
- Action Plan for Wetlands Preservation of International Importance;
- Action Plan for Conservation of the Brown Bear (*Ursus arctos*),
- Action Plan for Conservation of the Gray Wolf (*Canis lupus*) and
- Action Plan for Conservation of the Lynx (*Lynx lynx*) species in the Republic of Serbia aimed at implementing Bern Convention.

6.5. Instruments of the Management of the Protected Areas and Biodiversity in Serbia

- Protection regimes
- Management, protection and utilization plans of the areas and natural resources
- Protection and development programmes of the protected areas and natural values
- Strategic Environmental Assessment and Environmental Impact Assessment
- Agreements / approvals by the Government of the Republic of Serbia / Ministry of the Environment
- Institutions in charge of management and control of the protected natural value
- Monitoring
- Financial support

6.6. Institutional Framework

- The Government of the Republic of Serbia defines politics/strategy for protection of nature and natural values and in that context managing those values and action plans in order to conduct established politic/strategy
- The Ministry of Environment and Spatial Planning suggests politics/strategy and action plans, their implementation and co-ordination with activities of other ministries and other competent institutions, supervision of managing, appropriate system of observation and financial support, to the Government of the Republic of Serbia.
- Institute of Nature Protection of Serbia performs specialist activities geared toward protecting natural resources, and conducts research with an objective to protect the nature, implement natural protection regime, prepare reports which emphasize priorities in evaluating and protecting natural resources, monitor the state of natural resources and suggest nature protection measures, determine protection conditions and provide information about protected natural resources for the purpose of developing

spatial and other planning documents, and perform all other relevant duties determined by the legislature.

- Environmental Protection Agency (data collection and reporting on the status of biodiversity) Secretariat for Environmental Protection of province of Vojvodina (in charge of nature protection of the Autonomous Province of Vojvodina territory)
- Public Enterprise "National Park Tara", Public Enterprise "National Park Djerdap", Public Enterprise "National Park Kopaonik", Public Enterprise "National Park Fruska gora" and Public Enterprise "National Park Mountain Sara" are responsible for management of the national parks in Serbia.
- Scientific institutions support and contribute to the scientific researching in the field of designation of new protected areas and establishment of criteria and indicators for monitoring of biodiversity etc.
- NGO's and private enterprises and organizations, and local communities, manage the protected areas by the municipality and support and contribute to the co-operation in the field of managing of protected areas of high national importance.

Close cooperation with the Ministry of Agriculture, Forestry and Water Management, the Ministry of Economy and Regional Development, the Ministry of Energy and Mining, the Ministry of Culture, Ministry of Science and Ministry of Education is required for successful implementation of the nature conservation policy.

Such inter-ministerial cooperation is further supplemented by complementary consultation with the Institute for Nature Protection, municipalities and private land owners and public, which defined by the Law on the Government of the Republic of Serbia and the Law on Ministires and su-law regulations.

PART II - BERN CONVENTION AND SERBIA

7. Bern Convention and Serbia

7.1. Background Information

Serbia took part in Council of Europe activities in the field of nature conservation already in eighties, mostly on expert level, within the State of Serbia and Montenegro.

In 2003. Serbia was accepted by Council of Europe as a member a regular member.

In the field of nature conservation Serbia actively participated in different political bodies, committees of experts and activities, such as: *Committee of experts for development of the Pan-European Ecological Network (PEEN), Committeee of experts for the setting-up of the Emerald Network of Areas od Special Conservation Interest and the Council of the Pan-Europeano Biological and Lanscape Diversity*, experts groups for biodiversity and climate change, large carnivors (preparations, implementation) etc.

Bern Convention was *ratified* by the Parliament of the Republic of Serbia on December 2007. (Official Gazette of the Republic of Serbia – International Treaties No. 102/07), instruments of ratification were handed to the General Secretar of the Council of Europe on January 2008. The Convention *entered in force* by 1st May 2008.

The Republic is, since 2002, a member of the Concil of the Pan-European Biological and Landscape Diversity Strategy (*PEBLDS).*

7.2. Reservations

In accordance with Article 22, paragraph 1 of the Convention, and regarding Articles 5 and 6 of the Convention, during the ratification process the Republic of Serbia has been proposed a reservation in respect of one species specified in Appendix I and five species in Appendix II.

Appendix I

Water fern (Salvinia natans)

It is a type of floating plant widely distributed in the Republic of Serbia, especially in Vojvodina, in stagnant and slow waters. Since successive healing is one of the major problems in the conservation of marsh and bog ecosystems, there is a need for their frequent clearing, that is, for sludge and vegetation removal. The reservation is necessary to enable conservation of water ecosystems through their removal at certain locations. Note that this species is not endangered in the Republic of Serbia.

Appendix II

Wolf (Canis lupus)

On the territory of the Republic of Serbia wolf population of 800 wolves is above the population size which would require strict protection. Pursuant to applicable regulations, the wolf is not strictly protected, except on the territory of AP Vojvodina. Beside the 200 wolf shots registered annually, certain damage done to domestic livestock and wild fauna has also been recorded. Mindful of the problems which may arise from the fact that wolves feed on domestic livestock, it is recommended that the wolf should be excluded from strict protection and that wolf population management should be regulated by national legislation. The basis for wolf population management will be provided within the Action Plan for Wolf Conservation which is currently being prepared.

Horned viper (Vipera ammodytes)

Pursuant to applicable regulations, the collection and use of the above named species has been restricted. It means that it can be collected at specific time, in specific quantity, at specific places and with a special permit. This species is used for the production of snake-bite antidotes. Mindful of the problems which may arise due to the strict prohibition passed on snake hunting and their use, it has been proposed to exclude this species from strict protection and to continue applying strict rules to the use of natural populations.

Wild cat (Felis silvestris)

The wild cat population size estimated at 6000 is above the optimal size, and the registered number of shots amounts to 300 per year. Pursuant to applicable regulations, the wild cat is not strictly protected, that is, it is protected by closed season on the territory of Serbia, except on the territory of AP Vojvodina.

Hawk (Accipiter gentiles) – facilities for the production of wildfowl and refuges shall not be protected.

In 2003, the number of nesting pairs of hawks was estimated at 1500. Average nesting density in Serbia ranges from 1,5 to 2,5 pairs per 100km^2. According to applicable regulations, except on the territory of AP Vojvodina, the hawk is not strictly protected. Mindful of the existent protection regime in Serbia, the reservation should be made in respect of facilities for the production of wildfowl and refuges.

7.3. Implementation of the Bern Convention in Serbia

Bern Convention obligations will be implemented by national legislation, basic Law on Environmental Protection (Official Gazette of the Republic of Serbia Nos. 66/91, 83/92, 53/93, 67/93, 48/94, 53/95 and 135/04), the Law on National Parks (Official Gazette of the Republic of Serbia Nos. 39/93, 44/93, 53/93, 67/93, 48/94, 48/94 and 101/05), and

Habitats of the Bern Convention species and habitat types will be defined first as ecological important areas in a new Draft Law on Nature Conservation, so that they can benefit legal instruments. That will be a basis for selection of ASCI Emerald areas as well as SPA and pSCI of Natura 2000 network. Both processes will be fully co-ordinated.

All activities are planned in accordance to other international obligations, especially CBD and Ramsar Convention, Bon Convention and Bern Convention using PEBLDS as a usuful strategic tool.

In order to get more consistent information on species and habitat types distribution better co-operation with scientific institutions, NGO's and private enterprises as well establishing data standards and enable data flow at national level.

7.4. Action Plans for threatened species

According the Bern Convention, following strategic documents as an Action Plans have been prepared on behalf of the Republic of Serbia:

- Action Plan for Import Control, Monitoring and Combating Invasive Allochtone Species for implementing European Strategy on combating and controlling invasive allochtone species;
- Action Plan for Wetlands Preservation of International Importance;
- Action Plan for Conservation of the Brown Bear (*Ursus arctos*),
- Action Plan for Conservation of the Gray Wolf (*Canis lupus*) and
- Action Plan for Conservation of the Lynx (*Lynx lynx*) species in the Republic of Serbia aimed at implementing Bern Convention

Action plans for conservation of Large Carnivore species, Brown Bear, Grey Wolf and Eurasian Lynx, in Serbia are already prepared but still discussed.

7.4.1. Purpose and goal within Action plans

Large carnivores in Serbia were long neglected both in research and management. For a long time there has been a large interest in protection and conservation throughout Europe, as these animals are deeply rooted in awareness and everyday life of people, due to their appearance, bionomic characteristics, charisma and economic importance. These plan documents include Serbia in the synergic efforts for conservation of large carnivores in Europe.

In 2006, the Ministry for Environment Protection of Republic of Serbia had initiated the preparing of plan documents for the first phase of protection and conservation of 3 large carnivore species – Brown Bear, Grey Wolf and Eurasian Lynx. This decision has included Serbia on the list of responsible European countries that actively manage the conservation and protection of nature and priority species and their habitats. In addition, assembling the national plan documents also represents an international obligation recommended by the Council of Europe in order to protect the large carnivores of this continent.

The strategic plans represent a beginning of a process of active protection and a relatively fast fulfillment of conditions necessary for conservation and management of large carnivores in Serbia. Regarding all the possible consequences that should be considered when planning the survival and prosperity of large carnivores in Serbia, it should be immediately stressed that, besides the measurements and possible means of protection and conservation of species and their habitats, these plans will also include the ways of management, with the goal of controlling the populations in order to ensure their prosperity. The last mentioned part of the plan is the most subtle and most fragile part of any plan, as numerous conditions must properly match each other. The most important of these favorable conditions are: complete integration of Serbia in the international system of nature conservation through the active membership in all the international documents in field of environment conservation and general nature conservation, change and adjustment of our legal acts and regulations and their adjustment with the international documents, activities being performed according to scientifically determined facts and

present field conditions, stricter and more adequate conservation of habitats suitable for large carnivores with prevention of their further fragmentation and control of anthropogenous activities, inclusion of interested and broader public into the process of management of large carnivore populations.

The implementation of planned management of large carnivore populations in Serbia will introduce the periodical variableness and purposefulness, without relying on final universal decisions. Therefore the plans should represent the central documents that would be used as framework with a possibility of flexible changing and reaching the adequate decisions according to the present and new changes in the nature.

Finally, these plans match the similar plans for large carnivores in the neighboring countries, as the principle of integration and trans-border activities is the only possible way to protect and conserve the populations of large carnivores in Serbia, with all the complementary parts already present in the neighboring countries.

The strategic plans for conservation of large carnivores in Serbia represent a positive response at the appeal of international community for cooperative action in this field, as expressed in the European action plans, made on initiative and under the guidance of European Council, Bern Convention and Large Carnivore Initiative for Europe – *LCIE*.

Printing of these strategic plans represents the first step in integration-based and sustainable management of large carnivore populations from the standpoint of active conservation of these species, opening the possibilities for further integration processes in management and conservation on regional and European level.

7.4.2. Structure of strategic plans

The strategic plans for conservation of large carnivores in Serbia mostly include three parts developed in great detail. The first part explains the bionomy and ecology of large carnivores. The second part shows the history of presence, present state, status and population trends, ecological characteristics, relationship with humans, damage caused by large carnivores. The last chapter includes the proposal of necessary measurements and the guidelines for protection and conservation of populations and their habitats.

7.4.3. Necessary measurements for protection and conservation of large carnivores in Serbia outlined in the strategic plans

- Management of large carnivore populations in Serbia, through preparing of the plan documents, conservation of species, recovery of threatened populations, assigning and assuming the responsibility by relevant institutions and organizations for synergic cooperation at the national council for management of large carnivore populations, forming a team for urgent interventions, modification of national legal regulations and their adjustment to international documents, active implementation of international documents, as well as trans-border coordinated cooperation on population management.
- Classifying, recording, zoning, protection and conservation of habitats; minimization and/or prevention of habitat fragmentation and connection of the fragments with corridors, as well as providing the natural trophic base and additional feeding at the feeding places.
- Prevention and minimization of damage, identification, estimation and recording, compensation and prevention of damage, building a large carnivore shelter facility, especially for wolves and bears.
- Inclusion of public in management of large carnivore populations, formation and activities of the national council for population management; education and providing information for the public.
- Research and monitoring of large carnivore populations in Serbia: population-ecological studies, genetic studies, monitoring of large carnivore populations, research on predator-prey relationship, monitoring of damage on domestic animals, and recording the public opinion.

These plans are prepared by the experts, Mr Milan Paunović, Museum of Natural History, Mr Miroljub Milenković, Institute for biological research and Mr Duško Ćirović and supported by the Ministry of Environment and Spatial Planning of the Republic of Serbia.

7.5. Emerald Network

According to the criteria from the Recommendation No. 16, 1989, of the Bern Convention, the pilot project in 2005 included the realisation of the "List of potential EMERALD sites in Serbia" with 61 localities (Table 1). For the purpose of the Pilot Project, in the realisation of which the experts from the Institute for Protection of Nature of Serbia took part, six sites have been set apart and studied in detail (9.83%). In the first part of the second phase, data for another 17 sites were analysed (27.87%), and for the purpose of the second part of the second phase of the project, the Institute for Protection of Nature of Serbia has analysed the remaining 38 sites (62.30%).

According to the Administrative Arrangement between the Council of Europe and the Republic of Serbia (Ref. **N°** 77/06 and **N°** 401-00-436/2006-01) from September 18th, 2006. and regardin the Project "Development of Emerald Network in the Republic of Serbia", Republic of Serbia (Ministry of Environment and Spatial Planning and Faculty of Biology Belgarde University and Institute for Nature Conservation of Serbia) has done the following:

- Identified the species and habitats according to biogeographical regions for the cited 61 sites following the Resolutions No. 4 and No. 6 of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and the Annex I of the Habitats Directive;
- Determined boundaries in GIS for each of the chosen sites;
- Realised field research for particular sites with the purpose to obtain relevant information necessary for filling in the database;
- Filled in the database for each of the chosen sites with a minimum of 80% of the data on its ecological characteristics;
- Made the report;
- The financial report with auxiliary documentation is in preparation.

Details of the pilot project are presented in the document Emerald Network Project in Serbia (T-PVS/Emerald (2007).

Twinning Project "Strenghtening Administrative Capacities for Protected Areas in Serbia-NATURA 2000" will be started at the and 2008.

Project purpose is Development of the NATURA 2000 Network in the Republic of Srerbia and to strengthen the capacities of competent bodies in the Republic of Serbia fro implementation and enforcement of Natura 2000 network at the central and regional/local levels.

This project will contribute to: (a) harmonisation of sub-laws with EU regulations; (b) establishment Natura 2000 network in accordance with EU criteria, as well (c) elaboration and

7.6 Climate Change and Biodiversity

7.6.1. National Climate Change Observation and Research Activities as Fundamental Base of Impact Climate Change on Biodiversity

Republic Hydrometeorological Service of Serbia (RHMSS), in cooperation with other stakeholders in the implementation GEF/UNDP project "Capacity building activities for the creation of the First national communication of Serbia for the UN Framework Convention on Climate Change", now in preparation, plan to carry out research program in the part dealing with the climate change impacts assessment on forestry and other ecosystems, vulnerability research

A number of major projects for capacity building is either in progress or planed to make RHMSS more efficient in performing its functions and tasks in the field of climate change monitoring and research are listed below.

1. UN/ISDR PROJECT ”Assessment of needs for capacity building of RHMS” within the Regional project of International strategy for mitigation of natural catastrophes in coordination with WMO.
2. Project under bilateral Technical cooperation program with Italy “SINTA: Simulations of Climate Change in the Mediterranean Area”
3. Project on establishment of CLIDATA System for climate database management under WMO Program for technical cooperation.
4. Project ”Upgrading of measuring system and registering of hydrological data through the introduction of new technologies” in cooperation with Norwegian Directorate for Water and Energy-NVE.
5. Project “Design and optimization of national network of hydrological stations in Serbia” in cooperation with Norwegian Directorate for Water and Energy-NVE
6. Project “National forecasting system for medium and minor basins” in cooperation with Norwegian Directorate for Water and Energy – NVE

7.6.2. Review of the Recent/Elaborated Projects on Biodiversity and Climate Change

1.Subproject « Climate Change and Sustainable Development of Forset Ecosystems in Serbia within the National Project «Sustainable Development and Protection of Forest Ecosystems in Serbia – Harmonization with International Standards” which is realized as a I Phase by the Faculty of Forestry University of Belgarde

2. Project Proposal “Impact of Climate Change on the Forest Biodiversity” is elaborated by the Ministry of Environmental Protection of the Republic of Serbia and Forest Faculty of the Belgrade University for IPA Funds.

The overall goal:

– to improve state of forestry in Serbia and describe most likely impacts of climate change and its consequences for forest management, timber production and biodiversity with the risk assessment

8. Responsible bodies and useful addresses

8.1. Diplomatic level

Ministrstvo spoljnih poslova Republike Srbije (Ministry of Foreign Affairs)
Kneza Miloša 24-26
Serbia-10000 Beograd
Tel.: 00 381 (0) 11/3615-055, 3616-333, fax: 00 381 (0) 11/ 3618-366, 3618-379
http://www.mfa.gov.yu

Stalno predstavništvo pri Svetu Evrope (Permanent Mission to the Council of Europe)
26, Avenue de la Foret Noire,
FR-67000 Strasbourg
France
Tel.: 00 33 3 90 22 15 88, fax: 00 33 3 88 37 09 49

8.2. Implementing Authorities

Decision making level and legal service:

Ministrstvo životne sredine i prostornog planiranja (Ministry of Environment and Spatial Planning)
Nemanjina 11
Srbija-10000 Beograd
Tel.: 00 381 (0) 11/ 3617-717, fax: 00 381 (0) 11/3617-722
Minister: Dr Oliver Dulić
State Under-Secretary: Mr Miladin Avramov
Focal point for Bern Convention: Ms Snežana Prokić
www.ekoplan.gov.rs
info@ekoserb.sr.gov.yu

Technical and administrative level

Zavod za zaštitu prirode Srbije (Nature Conservation Authority)
Dr Ivana Ribara 91
SRI-10070 Novi Beograd
Tel.: 00 381 (0) 11/2093-801; 2093-802 , fax: 00 381 (0) 11/2093-867
Direktor: Dr Nenad Stavretović
http:// beograd@natureprotection.org.yu

Agencija za zaštitu životne sredine (Serbian Environmental Protection Agency - SEPA)
Ruze Jovanovica 27a, 11160 Beograd
Tel: 00 381 (0) 11/ 241 39 66
Fax: 00 381 (0) 11/380 95 24
http://www.sepa.sr.gov.yu

9. References

The Report on the Environment in Serbia: an indicator – based review, First edition, ISBN 978-86-84163-34-1, Published by the Serbian Environmental Protection Agency.

The Council of Europe, Report on Committee of experts for the setting-up of the Emerald Network, (T-PVS/Emerald (2007).

The Council of Europe, the Report of the meeting of the Group of Experts on Biodiversity and Climate Change (Seville, 13-15 March 2008)