



**The Republic of Croatia
Ministry of Culture**

**FOURTH NATIONAL REPORT OF THE REPUBLIC OF CROATIA
TO THE CONVENTION ON BIOLOGICAL DIVERSITY**



Croatia, Zagreb, 2009

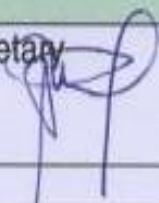
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1. OVERVIEW OF BIODIVERSITY STATUS, TRENDS AND THREATS

In the previous two-year period (2007 - 2008) which is covered by this Report, significant changes have taken place in the activities of nature protection that are largely in line with the commitments which the Republic of Croatia took over when joining the Convention on Biological Diversity.

Considering the existing situation, threats and reasons for protection of biological and landscape diversity in Croatia, and the progress achieved in implementing the National Strategy and Action Plan for the Protection of Biodiversity in 1999, it was found that the Republic of Croatia has a great wealth of biological and landscape diversity, in a very high degree of conservation, especially in the framework of Western and Central Europe. However, the trend of loss of biological and landscape diversity is still present, and it is globally recognized by causes such as:

- Excessive exploitation of natural resources,
- Introduction of non-native (allochthonous) species in ecological systems,
- Development of infrastructure which leads to loss and fragmentation of habitat (roads, energy, water management facilities, etc.),
- Agricultural activities (soil, concentration of agricultural land or abandoning grassland areas),
- Environmental pollution (soil, water, air),
- Urbanization,
- Global climate change.

1.1. Ecosystems and habitats

Present state preview — Croatia is endowed with a great diversity of habitats and ecosystems in all areas, lowland, mountain and coastal. It is very rare to have such great diversity of habitats in such a small country. Wealth of geomorphologic forms, both above and below ground creates a three-dimensional distribution of habitats and ecosystems, contributing to their extreme diversity. Karst ecosystems therefore represent the uniqueness and richness of global value.

National classification of Croatian habitats (made according to the EUNIS classification) defines ten main classes of habitats, and is prescribed by *Ordinance on the classes of habitat types, habitat map, threatened and rare habitat types and by the measures for the preservation of habitat type* issued in January 2006. This Ordinance protects all habitat types protected by the EU Habitats Directive, Resolution 4 (1996) of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), and those threatened on the national level. General protection measures are prescribed, while the specific protection measures need to be further developed and embedded into the spatial plans, sectoral plans as well as in management of individual projects. These measures are, through specific terms of nature protection, issued by the Ministry of Culture. The first eight classes contain most of the natural or semi-natural types of habitats and ecosystems in Croatia, and are therefore described in this report in more detail.

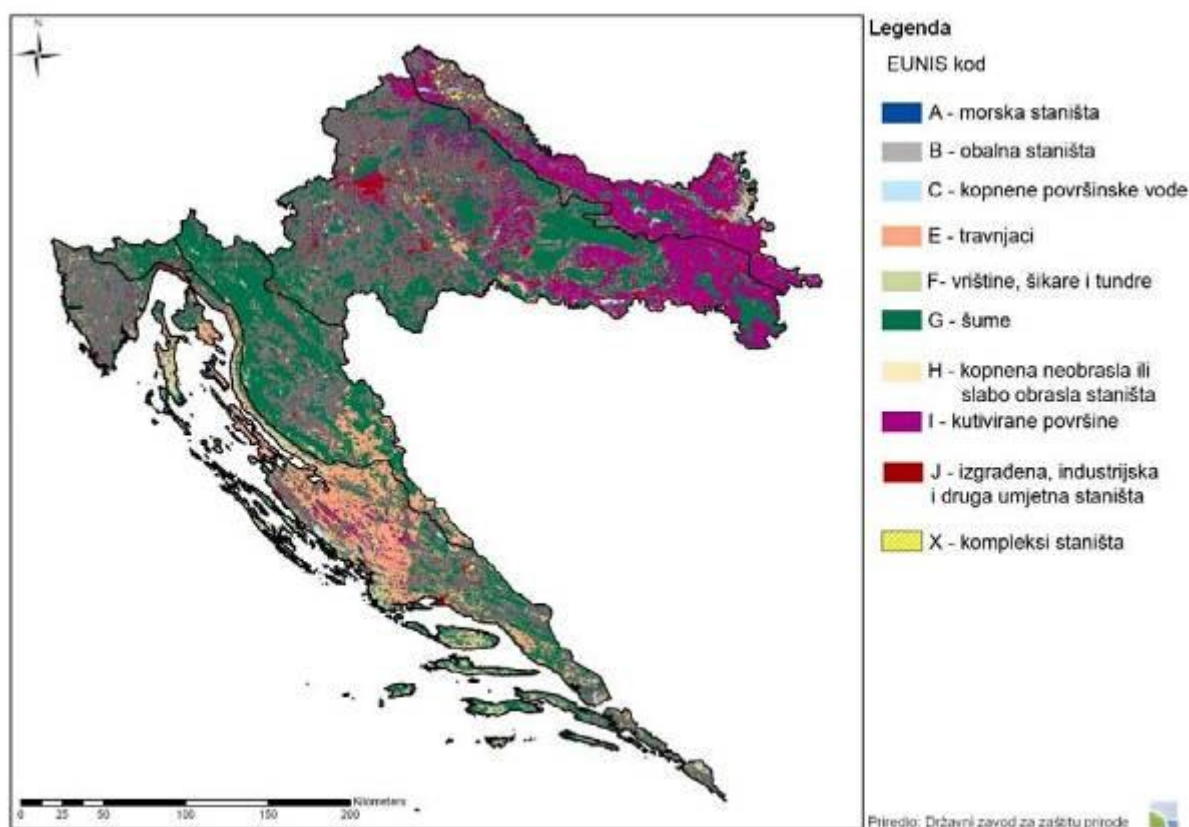


Figure 1.1-1. Habitat map of Republic of Croatia according to the EUNIS classification.

Table 1.1-1. Allotment of habitat types according to the EUNIS classification in Republic of Croatia.

Habitat type	EUNIS code	Surface (km ²)	Relative share (%)
Marine habitats	A	20	0,04
Coastal habitats	B	20	0,04
Inland surface waters and wetland habitats	C	588	1,04
Grassland habitats	E	9.972	17,62
Shrub, heath and tundra habitats	F	1.925	3,40
Forest habitats	G	24.928	44,04
Inland non and poorly covered land surface	H	60	0,11
Cultivated non-forested land and habitats with weeds and ruderal vegetation	I	8.973	15,85
Constructed and industrial habitats	J	2.651	4,68
Habitat complexes	K	7.471	13,20
Total		56.542	100,00

General trends and threats – Marsh and aquatic ecosystems are in general most valuable, as well as very rare habitats outside their usual areas of distribution (bogs, vegetation of sands). Anthropogenic influences also affect and thus endanger habitats of small spatial coverage (gravelly and sandy beaches, ponds on the islands, small wetlands).

Loss and degradation of habitats are one of the major reasons of endangerment of biological diversity. Habitats in Croatia are affected primarily by anthropogenic influence. Among these anthropogenic activities the following should be mentioned: construction of hydroelectric

power plants and the creation of accumulation lakes, construction of drainage channels for irrigation of agricultural land, draining marshes and other wetland habitats and different forms of pollution. The construction of tourist infrastructure causes devastation of rare coastal habitat types. Loss of habitats is not necessarily caused by anthropogenic influences. Natural vegetative succession also leads to changes in the environment and the disappearance of many species. Today's grasslands in Croatia originated almost exclusively under the influence of people, who have in this way contributed to an increase in biodiversity. Without grazing, mowing and similar activities, pastures and meadows gradually heal crossing over to shrubs and finally forests.

A. Marine habitats – The variety of eastern Adriatic habitats is largely due to geomorphologic characteristics of the coast, which is formed in karst limestone and belongs to the Dalmatian type of coast. The northwest-southeast geographical position of the Adriatic also contributes to its diversity, affects its climate differences, and the main direction of sea currents. Characteristic habitats, like those in sea filled karst, such as anihaline caves, sea caves, cold saltwater caverns with batial elements, submarine springs, karstic estuaries, saltwater lakes and submarine bare karst stone are extremely endangered in Croatia.

Some of the biggest threats to biodiversity conservation of marine and coastal ecosystems and habitats are: invasive species of *Caulerpa* genus, excessive fishing, trawl, lack of peaceful zones (no-fishing zones), and ineffective supervision.

Caves in the tidal area are threatened by pollution and waste deposits, creation of coastal embankments, and sometimes they can be harmed by bathers. Anihaline caves are endangered by polluted fresh water reaching them through porous karst, by waste disposal, and by filling the caves through backfilling of the coastal area. On a deeper level, sea caves can be endangered by irresponsible divers' excessive visiting. These divers rise fine sediment from the bottom of the cave and sometimes tear colourful marine organisms that live in them but renew very slowly.

Submarine springs are threatened by polluted fresh water reaching them through porous karst and by filling them through backfilling of the coastal area or construction along the coast. Karst estuaries are highly exposed to man's influence. They are endangered by filling of the coast, pollution and intensive exploitation (urbanization, mariculture, tourism, agriculture in the hinterland). They take up a relatively small area in Croatia, which makes their level of sensitivity even higher.

Saltwater lakes are a rare karst phenomenon of the Adriatic coast and are already endangered because there are only few of them, and they comprise a very small surface area. Other threats include illegal sewage water disposal from households, waste, advancement of invasive species, and too many visitors.

Bare submarine karst is inhabited by marine communities, most often by coralligenous biocenoses which are considered endangered in the Mediterranean. Survival of coralligenous communities is threatened by pollution and excessive fishing which changes the structure of populations so that some key species, such as lobsters and groupers, become extremely rare. Anchoring and trawling also damages coralligenous organisms. Intensive diving activities may result in intentional or random twitch of organisms, tumbling of stones, harassment of large organisms and invasion of allochthonous algae species *Caulerpa racemosa* and *Caulerpa taxifolia*.

Submarine meadows of marine sea grass *Posidona oceanica* are important habitats because of their primary production, and because many organisms (including those economically important) feed, reproduce or find shelter in it. *Posidonia* grows in the area where the

pressure from human activities is very high. Natural regeneration of damaged *Posidonia* settlements takes many years, which makes this species particularly sensitive and endangered. It is threatened by the anchoring of vessels, trawling, pollution and shading as well as by the progress of invasive species, such as green algae of the genus *Caulerpa*.

B. Coastal habitats – Among the most vulnerable are some very rare habitats, such as the shallows in the Northern Dalmatia, halophytic habitats recorded at several sites, mixed habitats of the Neretva river delta and sandy and pebbly shores. Sandy and gravel beaches are represented in Croatia only in 5.4%. These are extremely endangered habitats under pressure from tourism, construction, and uncontrolled waste disposal. Their special flora and fauna has almost disappeared from most of the sites. Complexes of coastal habitats estuaries and lagoons have been classified under class K, according to the National classification of habitats. They consist of a mixture of coastal and marine habitats. Both types of habitats appear along the Croatian coast; they are rare and endangered, especially by numerous development projects, most notably tourism.

C. Inland surface waters and wetland habitats – Large wetlands (marsh complexes) are comprised of various wetland habitats and are extremely important for conservation of biodiversity. In Croatia they are mostly situated at floodplains of large rivers. Along the watercourses of Northern Croatia there are series of carp fish ponds which are important areas for nesting and migration of birds. Rich in food and suitable vegetation, such as reedbeds, and surrounded by the riparian forests, these artificial wetland areas are often of an international ornithological importance for some of the most endangered European bird species. Wetland habitats in Croatia cover 390.975 ha and 50.516 kilometers of watercourses and canals.

Table 1.1-2. Wetland habitats in Croatia.

Ram sar code	Habitat type	No of areas	Length (km)	Surface area (ha)
	Wetland complexes	11		800.365
A/B	Coastal seawater and bottom			26.028
D	Rocky seashore*		5.599	
E	Sandy or gravelly seashores*		354	
F	Estuaries	9		7.523
G	Muddy, sandy or salty shallows	18		666
H	Coastal salty wetlands	83		
J	Coastal seawater or brackish lagoons	6		4.058
Zk(a)	Marine/coastal karstic and other underground hydrological systems – submarine springs	9		
M	Permanent running watercourses		14.338	30.127
N	Temporary/disconnected running watercourses		15.109	
O	Permanent freshwater lakes	441	8.916	
P	Temporary freshwater lakes (incl. flooded karst depressions)	15		29.405
Q	Permanent saltwater/brackish lakes	6		361
Tp/p	Permanent freshwater habitats/swamps	343		1.929
Tp/r	Permanent freshwater habitats/reed beds			6.290
Ts/p	Temporary freshwater habitats/ponds	994		
Ts/m	Temporary freshwater habitats/flooded meadows			72.486
U	Bogs	30		
W	Wetland shrubs			4.784
Xf	Riparian forests			178.262

Y	Freshwater springs	1.027		
Zg	Thermal springs	75		
Zk(b)	Continental karstic and other underground hydrological systems	161		
1	Fish ponds	31		12.730
2	Ponds	562		
5	Salt pans	3		495
6	Accumulation lakes	24		5.966
7	Gravel, sand and clay pits	47		859
8	Sedimentation ponds	1		
9	Canals		21.069	
	Total	3.883	56.469	390.975 (6,9% of Croatian territory)
* The length of the sea coast area does not include harbour areas (76,1 km)				

Riverine gravel, sand and muddy habitat types, most common in large lowland rivers (Drava and Mura, and some parts of the river Sava) are among the most vulnerable of aquatic habitats. Watercourses with travertine communities and travertine barriers, typical for karstic rivers, are also endangered.

E. Grassland habitats – From the standpoint of nature protection, the most valuable are wet and Mediterranean grasslands. These types of habitats are extremely vulnerable. Wet grasslands are mostly found in Northern Croatia, where they form a large part of wetland complex along the river valleys. Dry Mediterranean grassland covers large areas of coastal lands and its hinterland. Grassland vegetation of continental sands exists only on two small sites near the river Drava, and these are Đurđevački and Kloštarski pijesci, known for the *Corynephoro-Festucetum vaginatae* endemic plant community.

Hydro-melioration activities are the main reason for endangerment of wet grasslands. All types of grassland are endangered by the neglect of meadows and pastures due to the abandonment of rural areas and neglect of extensive agriculture. Some of the most endangered types of wet habitats are the peat-bogs. Peat-bogs in Croatia are located on the southern border of distribution for that habitat type, characteristic for Central and Northern Europe. Many highly specialized and highly endangered plant species are dependent of this type of habitat. Peat-bogs can be found on ten locations, and all of them are on the edge of extinction. Aside from the direct influence of man, the peat-bogs and related vegetation suffer from the negative effect of overgrowing, so the rest of the peat-bogs are in highly degraded condition. These days they can be safeguarded only by the application of active measures of conservation such as maintenance of favourable water regime and by cleaning the vegetation that overgrows them.

F. Shrubs – This class consists of shrub vegetation, which floristically clearly differs from the forest vegetation. Forest vegetation in the development stage of shrubs is included in the forest classes of habitat types. Among the endangered and rare shrub habitats are some types of willow shrubs found near large continental rivers, and galleries of oleander in Southern Dalmatia – a rare habitat type protected at European level. It grows near occasional Mediterranean watercourses. In Croatia, natural oleander vegetation has recently been recorded in 2004 and 2005, on two small localities only, in the southernmost part of the country. Illyrian gariques are typical evergreen vegetation of low bushes, which often disappear with development of forest vegetation.

G. Forest habitats – Croatia has nearly 100 forest plant communities. The total area covered in forests is 2.492,800 hectares, representing 44.04% of land surface in Croatia.

High forests cover 37% of national territory and the rest are different degrees of degraded forest vegetation. Forests in Croatia today belong to the first or second generation after the natural restoration of vast primary forests in the area between the rivers Sava and Drava and karst region south of the River Kupa. No less than 95% of forest vegetation is in its natural composition, which is rare and extremely valuable at both European and global level. Almost all the forest habitats in Croatia belong to the NATURA 2000 habitat types protected by the EU Habitats Directive.

Main threats to forests in Croatia are: pollution of air, soil and water (fir tree is the most sensitive species), changes in water regimes due to inappropriate water-management activities (endangered forests are Slavonian oak forests), transportation and other linear infrastructure through the large forest complexes, conversion of forest land into building and/or agricultural land, deforestation and fragmentation of forests, forest fires especially in the Mediterranean part of Croatia and uncontrolled cutting in private forests.

H. Inland non- and poorly covered land surface – Most interesting habitats in this class are grindstones, cliffs and bare limestone rocks. These are important because of a range of endemic and relict plants and plant communities, scattered mostly across the mountains of coastal areas. These plants are: endemic *Degenia velebitica* which grows in a specific community *Bunni Iberetum pruitii*, developed at grinders of the Velebit Mountain and exposed to severe winds, and community *Phagnalo-Centaureetum ragusinae* with Croatian endemic species *Centaurea ragusina*. Due to its hard accessibility and specific environmental conditions, this type of habitat is not extremely endangered.

Underground habitats – Karst area occupies 46% of the terrestrial part of Croatia. So far, there are about 7,000 known caves, but due to the intensification of research, significant increase of new discoveries is expected. Some of the underground habitats, such as deep karst sinkholes or alluvial deposits, house many relic organisms. Dinaric karst area is characterized by a high degree of endemism. No less than 70% of 500 registered terrestrial and water cave invertebrates are endemic to Croatia. Caves and pits are important habitats for many species of bats, which inhabit them in summer or winter colonies. They create rich deposits of guano, which serves as a source of food for many cave invertebrates.

Underground habitats and its species are extremely vulnerable and sensitive to external influences. Quarrying and road building, underground water pollution, disturbance of animals by light in caves open to the public and excessive amateur collection of underground fauna are some of the major threats.

1.2. Biological diversity of native wild species

General review – Due to its specific geographical position, Croatia is one of the richest countries in Europe concerning biodiversity. It is located at the crossroads of several biogeographical regions and therefore has specific environmental, climate and geomorphological conditions. Large variety of land, freshwater, marine and underground habitats has resulted in an abundance of species and subspecies with a significant number of endemic species.

Table 1.2-1. The number of known and endemic taxons in Croatia.

Taxonomic group	Total number of known taxa	Number of endemic taxa	Share of endemic taxa (%)
Plants	8.582	485	5,65
Fungi	4.500	0	0,00

Lichens	1.019	0	0,00
Breeding birds/total*	230+9/401	0	0,00
Reptiles	41	6	14,63
Amphibians	20	5	25,00
Freshwater fish	152	16	12,00
Saltwater fish	437	6	1,37
Terrestrial invertebrates	15.228	350	2,30
Freshwater invertebrates	1.850	171	9,24
Total	37.913	1040	3,23

* recorded total of 401 bird species, of which 230 regular nesting birds and 9 irregular

The number of known taxa (species and subspecies) in Croatia is almost 38,000, although it is assumed that the number of species is much higher – from 50,000 to more than 100,000. During the last five year period in Croatia, 199 new species of land invertebrates, 205 species of freshwater invertebrates and 20 species of marine invertebrates have been registered and 3 new species of freshwater fish have been described. This indicates that the actual biological diversity of Croatia is much higher than present day data indicate.

One of the reasons for large number of endemic species in Croatia, especially tertiary relicts, is the fact that some areas of Croatia were not under any significant influence of glaciations. The main centres of endemic species of flora are the Velebit and Biokovo mountains, while endemic fauna is found in underground habitats (cave invertebrates, *Proteus anguinus*), on the islands (lizards, snails) and in the rivers of the Adriatic Basin (minnows and gobies).

In Croatia there is a significant part of the populations of many species endangered on the European level. These species are associated with large, well-preserved areas of their typical habitats. Spacious mountain forests of beech and fir provide habitats for three major populations of large carnivores in Croatia (bear, wolf and lynx). Marsh complexes with floodplain forests are important areas for breeding, wintering and migrating of European water birds and birds associated with wetland habitats, which nest in the forests, such as white-tailed eagle, black stork and Lesser Spotted Eagle. High biological diversity of the sea, along with a large variety of islands and rocks where there is a large number of endemic species, gives international importance to the coastal area of Croatia.

General trends and threats – Despite the high value of nature in Croatia, many of its components are extremely threatened. On the basis of previously analyzed estimates of threat to plant, fungal and animal groups (vertebrates, butterflies, dragonflies, underground fauna, corals, ground beetles, stoneflies, vascular plants, lichens, and fungi), there are 2,235 threatened taxa on the red list. The most vulnerable are freshwater fish, reptiles, amphibians, dragonflies and birds.

Table 1.2-2. The number and proportion of threatened species in Croatia.

Taxonomic group	Total number of known taxa	Threatened taxa CR/EN/VU	Relative proportion of threatened taxa CR/EN/VU (%)
Fungi	4.500	251	5,6
Lichens	1.019	46	4,51
Vascular plants	5.347	223	4,2
Butterflies	180	11	6,1
Dragonflies	71	16	22,53
Stoneflies	82	17	20,73
Ground beetles	820	136	16,59

Freshwater fish	152	64	42,1
Saltwater fish	442	24	5,42
Corals	-	65	-
Amphibians	20**	4	20
Reptiles	41	15	36,58
Breeding birds/total	230+9/401	95	23,69
Mammals	101	8	8
Cave fauna	694*	27	3,89
Total	13.797	911	15,71
* Includes troglophilous and troglobionic species, ** indicates the number of species, one of these species is endangered, along with three other subspecies			

The greatest threat to native wild taxa in Croatia is the destruction and loss of habitats, partly as a result of the conversion of natural habitats in urbanized or agricultural land or building roads and other transport routes, which often leads to fragmentation of habitats. Wild taxa are also threatened by over-exploitation in hunting, fishing and forestry sector, introduction of non-native (allochthonous) species, tourism, intensive agriculture and the pollution of water, soil and air.

Fungi and lichens – Fungi are the least-known group of organisms in Croatia. There were around 4.500 registered species of fungi to date, and it is estimated that some 20.000 species exist. Almost one quarter of fungal taxa (mainly ascomycetes) is symbiotic with some kind of algae or cyan bacteria, and such association is termed lichen. In Croatia, according to the lichen directory, there are 1.019 known species. Lichens are generally poorly explored, mainly due to lack of specialists, and because researches are made sporadically.

The first Red list of lichen species was made in 2007. It contains 46 endangered species (3 CR, 11 HR and 32 VU), 2 LC species, and 8 near-threatened species (NT). At the end of 2008, The Red Book of Croatian Fungi was issued.

The red list of fungi in Croatia (2005) lists 349 endangered fungi which makes 9.2% of the now known number of species. The main threats are disappearance and fragmentation of habitat and environmental pollution.

Table 1.2-3. The number of known species within the researched groups of fungi.

Taxonomic group	Known	Assumption	Explored (%)
Hitridiocyota	?	~ 200	?
Zigomycota	?	~ 250	?
Askomycota	~ 1.900	~ 10.000	19,00
Bazidiomycota	~ 1.900	~ 7.000	22,40
Total	~ 3.800	~ 17.000	22,40

Plants - According to available data, Croatian flora has a total of 8.582 taxa (species and subspecies), and it is assumed that the number is almost 10.000 species. One of the best researched is vascular flora (ferns and spermatophyta), with 5.347 known species and subspecies. These data show that Croatia is among the richest parts of Europe in variety of plant species. Taking into account the ratio of the total number of known plant species and the surface of its territory, Croatia takes the third place in Europe with 0.075 species/km², after Slovenia and Albania. If the number of subspecies is added, then Croatia has 0.094 taxa/km².

In Croatia, about 86% of plant life is explored and well-known. Although there has not been any systematic and complete mapping of maritime macro flora, there are 663 known species of benthic algae, of which 4.52% are endemic and 888 species of plankton algae. Four species of marine flowering plants have been recorded in the Adriatic Sea.

Table 1.2-4. Number of known species of the major groups of plants in Croatia.

Taxonomic group	Number of known taxa	Assumption	Explored (%)
Algae	2.597	3.717	69,87
Mosses	638	700	91,14
Vascular plants	5.347	5.500	97,22
Total	8.582	9.917	86,54

Table 1.2-5. An overview of the number and representation of benthic algae and flowering plants on the east coast of the Adriatic.

Taxonomic group	Known		Endemic		Assumption	
	Number	%	Number	%	Number	%
Rhodophyta	350	52,80	19,00	63,30	370	52,50
Phaeophyta	179	27,00	11,00	36,60	195	27,66
Chlorophyta	134	20,21	0,00	0,00	140	19,86
Algae - Total	663		30	4,52	705	
Spermatophyta	4		0		4	

Due to its specific position, its distinctive ecological, climatic and geomorphologic conditions, and because of the large number of different habitat types, Croatia is a centre of endemism in South-eastern Europe. No less than 5.65% of the total number of known plant species are endemic.

Table 1.2-6. Representation of endemic taxa by major plant groups.

Taxonomic group	Number of taxa	Endemic	
		Number	%
Algae	2.597	152	5,85
Mosses	638	7	1,72
Ferns	86	2	2,33
Gymnosperms	47	1	2,12
Angiosperms	5.214	323	6,19
Total	8.582	485	5,65

The Red Book of Vascular Flora of Croatia mentions 760 threatened species of plants (14.2% of the total number of known taxa of Croatian flora). It has been estimated that no less than 62% of all causes of threat to vascular flora in Croatia is related to the loss or degradation of habitat, primarily due to anthropogenic influences. The most important anthropogenic activity which leads to loss or degradation of habitat is the impact through various water management practices, melioration and draining of wetlands.

Another important anthropogenic activity that leads to loss of habitat is direct agricultural activity. By ploughing of grasslands and usage of fertilizers, the natural grassland species are disappearing and being replaced with weed species of eutrophic habitats. On the other

hand, with abandoning of the arable land and the cessation of farming, segetal weeds disappear. Usage of herbicides in agriculture makes native weed species disappear, being replaced by more aggressive and resistant weeds, often of allochthonous origin (e.g. *Ambrosia artemisiifolia*).

On the other hand, the absence of anthropogenic activities leads to natural succession and loss of habitat. Due to the progress of succession, most endangered plant species are plant species of wetland and peat-bogs habitats. Succession threatens sandy habitats, while overgrowing threatens many prairie-like and wet meadows and pastures.

Terrestrial invertebrates – So far, Croatia has registered 15.228 species of terrestrial invertebrates. This group is dominant in numbers and diversity of species, but is still insufficiently known. Past investigations have not been systematic. This can be seen in the fact that only 20% of Croatian territory is explored (among the best explored are islands and coastline) and in the fact that certain groups of terrestrial invertebrates are explored very well (such as Lepidoptera, certain Coleoptera and Diptera families) while some are almost unknown. Recent surveys conducted from 1999 until 2007 improved the knowledge on terrestrial invertebrates. In this period, 47 new families and 199 new species of terrestrial invertebrates were recorded.

Table 1.2-7. An overview of the number of known species of terrestrial invertebrates.

Taxonomic group	Number of families	Number of taxa	Number of endemisms	% Endemic
ASCHELMINTHES				
Nematodes	40	100		
Nematomorpha	2	16		
Acanthocephala	3	11		
MOLLUSCA				
Gastropoda	42	470	90	19,15
ANNELIDA				
Clitelata, Oligocheta	7	141	18	12,77
TARDIGRADA				
	1	7		
ARTHROPODA				
Scorpiones	1	3		
Aranea	35	662	48	7,25
Pseudoscorpiones	10	109	38	34,86
Opiliones	8	65	13	20,00
Acarina	63	201	12	5,97
Palpigrada	1	2	1	50,00
Chilopoda	7	89	5	5,62
Diplopoda	22	179	46	25,70
Paupoda	1	4		
Symphyla	2	10		
Collembola	13	105	3	2,86
Protura	1	4		
Diplura	1	7		
Thysanura	2	3		
Blattoidea	3	21		
Dictioptera (Mantodea)	2	6		
Ispotera	1	2		

Cheleutoptera	1	2		
Orthoptera	13	169		
Embioptera	1	1		
Dermaptera	3	11		
Coleoptera	76	5894		
Cave Coleoptera	6	107	42	39,25
Megaloptera	1	4		
Rhaphidioptera	1	6		
Planipennia	9	83		
Mecoptera	2	5	1	20,00
Lepidoptera	82	2508	7	0,28
Diptera	61	1868		
Siphonaptera	4	80	1	1,25
Aculeata (Apocrita)	26	718	4	0,56
Symphyta	13	434		
Psocoptera	12	61		
Malophaga	4	5		
Anoplura	2	5		
Terebrantia	2	73		
Tubulifera	1	46		
Heteroptera	38	700	10	1,43
Homoptera	17	231	5	2,16
Total	643	15.228	350	2,30

Main reasons for threats of certain species of invertebrates are: change of habitat and its destruction, all kinds of pollution, excessive use of pesticides, introduction of allochthonous species, over-exploitation and collecting. Melioration or draining change wetland habitats into other types of habitats, with modified flora and fauna. Excessive usage of pesticides has a particularly negative impact on the underground and soil fauna.

Freshwater invertebrates –1.850 species of invertebrates have been recorded in Croatian mainland waters. As a result of an intensive research in the period 1999 – 2007, there was an increase in the number of known species within the groups of Trichoptera, Plecoptera and Copepoda.

Table 1.2-8. An overview of the number of known species of freshwater and brackish water invertebrates*.

Taxonomic group	Number of taxa	Endems	% Endemic
PROTOZOA			
Sarcodina	54		
Ciliophora	214		
SPONGIA	4		
PLATODES			
Temnocephalidea	5		
Tricladida	15		
CNIDARIA			
Hydrozoa	6		
ASCHELMINTHES	360		

MOLLUSCA			
Gastropoda	139	79	56,83
Bivalvia	17	1	5,88
ANNELIDA			
Polychaeta	1	1	100
Oligochaeta	81	2	2,47
Hirudinea	17	1	5,88
TARDIGRADA	7		
ARTHROPODA			
Acarina	142		
Harpacticoida	44	2	4,55
Calanoida	17		
Cyclopoida	52	3	5,77
Cladocera	35		
Notostraca	2		
Diplostraca	5		
Syncarida	2		
Decapoda	8	3	37,50
Amphipoda	85	49	57,65
Isopoda	34	26	76,47
Ostracoda	63	1	1,59
Ephemeroptera	24		
Plecoptera	82		
Odonata	71		
Trichoptera	130	2	1,54
Megaloptera	4		
Mecoptera	5	1	20,00
Chironomidae	125		
Total	1850	171	9,24
* Some representatives of insect groups of which larvae live in freshwater (e.g., other Diptera families, except Chironomidae) are not included in the total number of species. Representatives of some groups of insects of which most species belong to the terrestrial fauna and in smaller numbers are represented in the waters (eg Collembola, Coleoptera, Heteroptera) are also not included. The reason is that aforementioned groups are insufficiently known, especially those species that inhabit freshwater habitats.			

Of the total number of known freshwater invertebrate groups, 171 taxa are endemic, which amounts to almost 10% of freshwater fauna of invertebrates. It should be emphasized that the majority of species inhabit underground waters, such as the representatives of groups Gastropoda, Amphipoda, Isopoda and Decapoda. In aboveground waters, a large proportion of endemic species is found among snails. From the well-known groups of freshwater invertebrates, threats to dragonflies and stoneflies have been analyzed so far. From a total of 70 dragonfly taxa, the red list includes 36 or 50% of them, and from about 90 stonefly species, as many as 82 taxa or 91% is included on the red list. The red list of cave fauna includes 29 species of freshwater invertebrates.

Reasons for endangerment of some species are changes or destruction of habitat (remodelling and regulation of streams, draining marshes, habitat fragmentation), various types of pollution, excessive use of pesticides, introduction of non-native species and over-exploitation and collection. Among endangered habitats, the importance of very poorly known

swampy and wetland habitats should be emphasized. The few researches that have already been made indicate that these are areas of large biodiversity.

Invertebrates of the Adriatic Sea – Invertebrate fauna of Adriatic is very diverse, but still insufficiently known. So far 5,655 species of invertebrates have been recorded in the Adriatic Sea. According to available data, only one species of sea squirt (*Polycitor adriaticus*) is stated as endemic to the Adriatic, although it has not yet been fully confirmed because of insufficient exploration of that group in other parts of the Mediterranean. Fauna is best explored at coastal and open waters of northern Adriatic Sea, and it is very poorly explored at river estuaries, pelagic string of islands and deep southern Adriatic Basin.

Invertebrates of the Adriatic Sea are threatened by over-exploitation, destruction of habitats due to economic use and tourism. Most vulnerable of the economically important species are the prawn (*Nephrops norvegicus*) and scallop shell (*Pecten jacobaeus*), and extremely endangered are the colonies of red coral (*Corallium rubrum*). In some areas, divers have almost completely eradicated lobster colonies (*Homarus gammarus* and *Palinurus elephas*). Despite the long-standing legal protection of noble pen shell (*Pinna nobilis*), it is still endangered by divers and tourists who collect it as a souvenir, furthering its disappearance in many areas. In some areas of Croatian part of the Adriatic there is a serious threat to the existing living communities of the seabed – the expansion of invasive alien species of green algae of genus *Caulerpa*, which has no natural enemies in the Adriatic.

Table 1.2-9. Diversity of invertebrates of the Adriatic sea.

Taxonomic group		Order No	Family No	Genus No	No of species		
					Total	Threatened	Protected
Sarcomastigophora	Mastigophorae	1	1	10	14	0	0
	Granuloreticulosae	1	69	192	583	0	0
	Sticholonchea	1	1	1	1	0	0
	Phaeodaria	2	9	11	16	0	0
	Polycistinea	2	13	33	35	0	0
	Acantharia		12	22	27	0	0
Sporozoa	Gregarinidea	1	1	1	1	0	0
	Coccidea	1	3	6	23	0	0
Myxozoa	Myxosporaea	1	7	11	25	0	0
Ciliophora	Holotricha	3	13	25	36	0	0
	Peritricha	1	5	6	21	0	0
	Spirotricha	3	22	70	150	0	0
Porifera	Calcispongiae	2	7	9	35	0	0
	Hexactinellidae	1	1	1	1	0	0
	Demospongiae	11	42	100	185	1	4
Platyhelminthes	Turbellaria	6	25	41	60	0	0
	Trematoda		23	46	61	0	0
	Cestoda		4	5	8	0	0
Gnathostomulida		2	3	4	5	0	0
Cnidaria	Hydrozoa	3	59	138	212	0	0
	Anthozoa	8	42	80	116	85	4
	Scyphozoa	4	8	11	11	0	0
Ctenophora		4	6	8	10	0	0
Rotifera		3	9	17	31	0	0
Gastrotricha		2	5	15	36	0	0
Cephalorhyncha	Kinorhyncha	2	4	7	13	0	0

Acanthocephala			3	4	5	0	0
Nematoda	Adenophorea	2	34	136	287	0	0
	Secernentea		8	11	25	0	0
Priapulida			2	3	3	0	0
Kamptozoa		1	3	3	6	0	0
Nemertina	Anopla		4	8	14	0	0
	Enopla	3	6	8	13	0	0
Mollusca	Aplacophora	2	4	5	7	0	0
	Polyplacophora	1	5	7	16	0	0
	Gastropoda	17	125	271	565	4	4
	Scaphopoda	2	4	5	9	0	0
	Bivalvia	9	56	130	228	11	6
	Cephalopoda	3	13	26	41	1	0
Sipuncula	Sipunculidea	2	3	6	11	0	0
	Phascolosomatidea	2	2	3	7	0	0
Echiura			1	2	2	0	0
Annelida	Polychaeta		60	286	579	1	0
	Oligochaeta		3	8	13	0	0
	Hirudinea		2	3	3	0	0
Tardigrada		1	3	3	4	0	0
Arthropoda	Arachnida	1	4	16	41	0	0
	Pantopoda		5	9	23	0	0
	Crustacea	26	260	711	1530	6	7
Phoronida				1	1	0	0
Bryozoa	Gymnolaemata	2	46	96	211	0	0
	Stenolaemata	1	10	27	52	0	0
Brachyopoda	Craniata	1	1	1	2	0	0
	Rhynchonellata	1	5	7	9	0	0
Hemichordata	Enteropneusta		3	4	4	0	0
Echinodermata	Crinoidea	1	1	2	2	0	0
	Holothuroidea	3	8	16	36	0	36
	Asteroidea	5	10	15	23	0	0
	Ophiuroidea	2	8	12	22	0	1
	Echinoidea	4	11	16	21	0	1
Chaetognatha		4	10	11		0	0
Tunicata	Appendicularia		3	14	27	0	0
	Thaliacea		3	7	9	0	0
	Ascidiacea	3	11	32	87	0	0
Chordata	Cephalochordata		1	1	1	0	0
Total		164	1.134	2.796	5.655	109	63

Of all the invertebrates, 199 species have been strictly protected (terrestrial and Adriatic invertebrates) so far, as was the complete underground fauna too. Legal protection has been established over 31 taxa, mainly from groups of butterflies and dragonflies.

Freshwater fish – Of the total of 545 species of European freshwater fish, 152 species, of which 16 are karst endems, inhabit rivers and lakes of Croatia thus ranking it second in Europe by the richness of ichthyofauna, second only to Turkey. This diversity in the number of species is a result of Croatia's geographical position, which covers two basins (the Adriatic and the Black Sea) as well as the existence of specific karst habitats. The Black Sea (Danube) Basin (62% of the territory) is populated by 83 species of fish, while 88 species inhabits the Adriatic Basin (38% of the territory). The Adriatic Basin stands out by its high

degree of endemic species (45 Mediterranean, 41 Adriatic and 17 Croatian endemic species), which is a direct consequence of diversity and isolation of the freshwater karst habitats.

Freshwater fish are one of the most endangered groups of vertebrates. As many as 89 species of fish are included in the Red Book of Freshwater Fish of Croatia, representing 59.3% of freshwater ichthyofauna in Croatia. So far, 6 species of fish are extinct (4 from the Danube and 2 from the Adriatic Basin). A considerable number of the Red List fish species is almost extinct (mostly the endemic species of the Adriatic Basin).

The introduction of alien species, pollution, and habitat degradation, particularly due to regulation of rivers and building of hydro-accumulation dams has the strongest impact on fish communities in Croatia. The most important areas for the protection of endangered fish species in the Danube catchment area are the flooded wetland areas (Kopački rit, one of the largest alluvial lowland habitats in Europe and Lonjsko polje as one of the best preserved flooded lowlands of Europe).

Sea-water fish - According to the latest list of the Adriatic Sea fish, 442 taxa were registered, representing approximately 65% of the known taxa of fish in the Mediterranean Sea. Nevertheless, it should be noted that the data for 20 Adriatic taxa are old, unreliable and/or imprecise. There is a record of 3 agnatha, 55 chondrichthian and 384 actinopterygian taxa. However, the number of taxa that actually live and reproduce in the Adriatic Sea is unknown. Most valuable areas of the eastern part of Adriatic concerning biological diversity of marine ichthyofauna are the offshore islands and the area of channels between them.

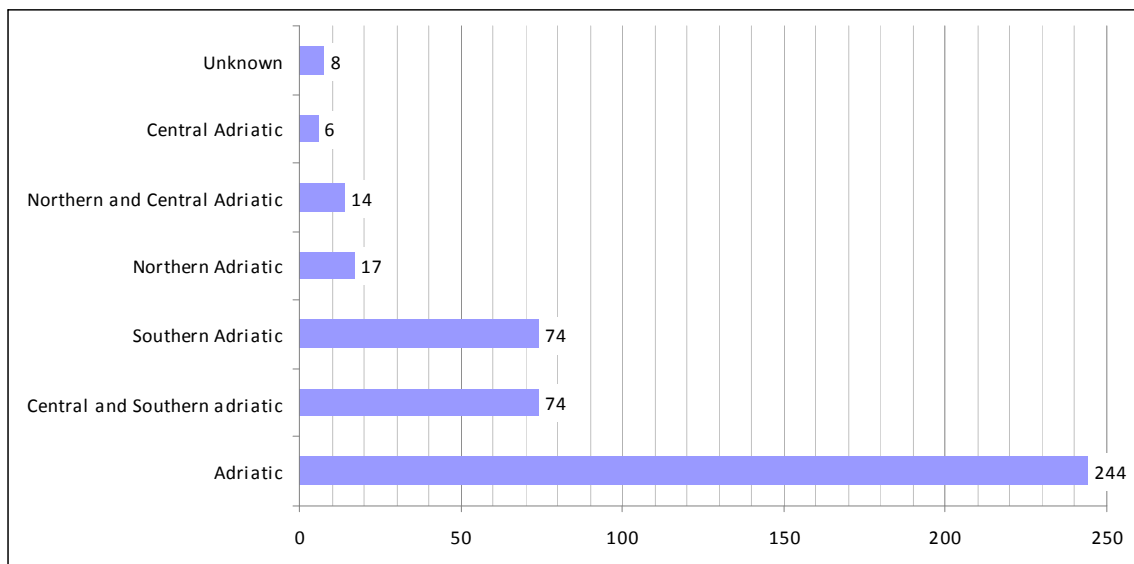


Figure 1.2-1. The number of fish species and subspecies in different parts of the Adriatic Sea.

Fish are one of the most vulnerable animal groups in the sea, due to their economic importance. Pressure on fish population has not ceased, despite many obvious signs of their excessive exploitation in the Adriatic Sea, which lasts for decades now. Of all the fish recorded in the Adriatic Sea, 123 taxa or 28% are endangered. Causes of such endangerment are not individual, but combined.

Amphibians – To this date, 20 species of amphibians, of which 5 are considered regionally endemic, have been recorded in Croatia. The richest fauna of amphibians is found in the western part of the Pannonian plain, with as many as 16 species.

The Red Data Book of Amphibians and Reptiles of Croatia (2006) lists 6 species of amphibians. The most common reasons for endangerment of amphibians are destruction or degradation of habitat due to neglect and disappearance of puddles; melioration projects; draining lakes, swamps, ponds and other stillwater habitats and channelling and regulation of rivers. Fragmentation of habitats is caused by the construction of asphalt roads with no fences and no passages for the amphibians. Amphibians are also endangered by water pollution (especially in smaller water areas, ponds and puddles), soil pollution and the excessive use of pesticides and artificial fertilizers.

Reptiles – Out of 41 reptile species recorded in Croatia, 9 species are endemic. The most diverse part of Croatia regarding reptiles is Dalmatia with a total of 36 recorded species.

The most vulnerable types of reptiles are freshwater and sea turtles. The main cause of endangerment of sea turtles in the Adriatic Sea is accidental catching in fishing nets. Reduction of feeding areas, especially *Posidonia* meadows and algal blooms, also endangers them. Particularly endangered are the reptiles living on the islands, due to their limited distribution and isolation, which makes them very vulnerable. In addition, there is also a high risk of introduction of predators or other competitive reptile species. The most common causes of endangerment are fragmentation and loss of natural habitat (due to melioration, channelling of rivers, natural draining of ponds and puddles and water pollution). Roads without routed animal passages also present a problem, as well as poaching and collecting animals for collections.

Birds – A total of 401 bird species has been recorded on the Croatian territory so far. Of these species, 230 are regular and 9 are irregular breeding species. Migrating birds count 182 species and 94 species are wintering birds. When taken into account that 78 bird species are breeding species and threatened on European level, Croatian ornithofauna is one of the richest in Europe, with significant populations of extremely endangered European species. The reason for such abundance is mainly because of large areas of preserved habitats.

Of the total number of birds in Croatia, 63% of breeding and 32% of non-breeding species are considered vulnerable. Thirteen breeding species and 2 non-breeding species are considered regionally extinct. From the remaining number of species, those that are almost extinct and those that are not yet threatened by extinction are equally represented. In Croatia, birds are primarily threatened by poaching, disappearing of wetland areas, intensification of agriculture, and degradation of carp ponds. Other threats include tourism and recreational activities, destruction of shallow, muddy and sandy sea-coast, disappearing of traditional agriculture (animal husbandry), forest and river management, shell collecting, reduction of the quantity of prey because of intensive hunt and distribution on the edge of their distribution area.

There are 326 strictly protected bird species, while a milder protection category includes 33 species. Strictly protected are all breeding species and all species listed in the annexes of the Conventions which Croatia has ratified, and in the Annex I of the EU Birds Directive.

Mammals – With 101 mammal species, of which 90 are indigenous, Croatia is ranked among the eight European countries with the highest diversity of mammals. Most species of mammals are recorded in the north-western part of Croatia (67 species) and the Dinaric area, from the Slovenian border to South Velebit (66 species). The Dinaric mountain area, covered in large forest complexes is still inhabited by all three large carnivores – wolves,

bears and lynx. Diverse fauna of bats is represented with as many as 34 species, representing 75% of all bat species recorded in Europe. The Bottlenose dolphin (*Tursiops truncatus*) is the only marine mammal permanently inhabiting the Adriatic Sea while many other types of order Cetacea (whales) have been recorded in the eastern Adriatic. Mediterranean monk seal no longer reproduces in the Adriatic, but occasional records of individual specimens have been reported. Regional endemic species are also represented in the Croatian mammalian fauna but their real number needs to be identified in future research.

According to the Red Book of Mammals of Croatia, 43 species of mammals have their place in the Red List, which makes 42.57% of the total mammalian fauna of Croatia. The most vulnerable are bottlenose dolphin, 6 species of bats, and the last remaining island population of the European mole (the Kvarner mole). The main reasons for endangerment of mammals are disappearance and fragmentation of habitat, poaching, destruction of bat colonies and the use of pesticides. Construction of highways through the area of distribution of large carnivores introduced a significant risk of fragmenting the habitat of these species. Potential negative impacts have been reduced by the construction of green bridges, which serve as animal corridors through these new barriers. Besides these green bridges, tunnels and viaducts also serve as corridors.

1.3. Domesticated native taxa

There is a record system covering domestic animal breeds but such system is not yet established for plant varieties. Preservation of plant varieties is carried out sporadically, mostly through 'ex situ' methods. Institute for Seed and Seedlings in Osijek, in cooperation with the Faculty of Agriculture of the University of Zagreb is conducting the project "Croatian bank of plant genes", with the goal of collecting samples of all the varieties grown in Croatia. Among them are native domestic varieties of the following groups: grape vines, fruit species, agrarian cultures, vegetable species, and aromatic and medicinal herbs. Such samples are stored in the form of seeds ('ex situ') or in the form of field collections ('in situ'). There are several 'in situ' collections in Croatia. These are mostly field collections of grape vines raised at various locations in Croatia, depending on the climate in which the varieties are grown, although there are also some small collections of other groups mentioned above.

The List of Native and Protected Breeds and Varieties of Domestic Animals as well as their necessary number was determined by the Ministry of agriculture. The list includes the following: three cattle breeds, four horse breeds, three donkey breeds, nine sheep breeds, two goat breeds, two pig breeds, two poultry breeds and one breed of bees.

According to the Croatian animal husbandry centre, the following taxa are endangered: Međimurje horse, North-Adriatic and Istrian donkeys, Slavonian, Buša and Istrian cattle, Turopolje and Black Slavonian pig, Dubrovnik and Cigaja sheep, Croatian white goat, Hrvatica hen and Zagorje turkey.

Appearance of brucellosis in 2005 caused decrease in reproduction which affected the Turopolje pig, making it critically endangered. The Lonjsko polje Nature Park and the Noble Union of Township Turopolje take care of Turopolje pigs. There are also several nucleus flocks in Austria. Ex-situ protection of livestock breeds is implemented by the Centre for Cattle Reproduction of Croatia, caring for the preservation of traditional breeds through organized sperm collecting from quality breeders and its deposition into the "sperm bank". This ensures a long-term high quality genetic resource for the Istrian Buša and Slavonian cattle. This type of preservation should be applied for other native breeds as well.

1.4. Invasive taxa

Like many other European countries, Croatia has increasing problems with invasive alien species. The oldest known problem dates from the year 1910, when 11 specimens of the Indian mongoose (*Herpestes javanicus auropunctatus*) had been brought to the island of Mljet in order to reduce the population of poisonous snakes. After twenty years almost all of the snakes having been exterminated, and mongoose started attacking other small wild animals, migratory birds, and small domestic animals.

There is a number of invasive alien species that have a large negative impact on Croatian biodiversity. These are primarily allochthonous green algae in the Adriatic Sea: *Caulerpa taxifolia*, recorded in three areas and an invasive variety of the species *Caulerpa racemosa*, recorded for the first time in Croatia in autumn 2000. By the end of the year 2005, the algae were recorded at 43 sites, of which 42 are in the southern part of the Adriatic Sea and one is in the Northern Adriatic (Istria).

Invasive terrestrial plant taxa are also dangerous. The commonest is *Ambrosia artemisifolia*. It overgrows grassland habitats, suppressing native weed and ruderal species, and due to its high pollen production, it is identified as one of the major allergens in Europe. *Amorpha fruticosa* is a plant which was deliberately imported due to its honey giving properties. Today it is unstoppably overlaying lowland wet grassland areas (e.g. Lonjsko polje Nature Park).

During the last century, 16 allochthonous species of fish were brought to the rivers of the Danube and Adriatic basin. These species cause great damage to autochthonous ichthyofauna, especially are endangered rivers of the Adriatic basin, rich in endemic fish taxa. In the past 15 years expansion of ponto-caspian goby species was recorded, spreading upstream in the Danube river from the Black Sea. Other examples of invasive species include zebra mussel *Dreissena polymorpha* and some species of freshwater crayfish.

Invasive species on the islands present a special problem since island ecosystems are particularly sensitive due to their isolation. Allochthonous game species, intentionally introduced to island and continental hunting grounds present a special problem too. Besides the fact that they are competing with the native species, they often carry new types of parasites which additionally negatively affect native populations.

In the last twenty years, ballast waters have been a great danger, because they are the main cause of introduction of the invasive alien species in aquatic and especially marine ecosystems.

Box 1-1. Success case – Regulating the spread of invasive taxa

The Brod Ecological Society and the Public Institution for Management of Protected Natural Values in the area of Brod-Posavina County are implementing the CARDS project "Protection, conservation and improvement of biodiversity and the development of environmental awareness through the breeding of Croatian autochthonous breeds and stimulating ecological production". At the protected landscape of Gajina, the main problem was that pastures were overgrown with invasive species *Amorpha fruticosa*. Within the project framework a flock of Slavonian cattle, Croatian Posavac horses and a few Black Slavonian pigs were brought to the Gajina pastures. The pasture was fenced with tight chorale covering the area of 10 ha, while an additional 10 ha of pasture was fenced with electric shepherd fence. This enabled controlled release of bovine animals to specific pastures during certain number of days. Alternate cattle release on fenced pastures enabled intensive grazing and treading, which led to a visible reduction of overgrown areas of the desert false indigo (*Amorpha fruticosa*). Simultaneously, the restoration of common flora of pastures and plant species growth was noted, which was previously disabled due to growth of *Amorpha fruticosa*.

The Lonjsko polje Nature Park has been using the same methods for reduction of *Amorpha fruticosa* for years. They started with buying off Slavonian cattle, and keeping it at the overgrown surfaces. Since the flock moved freely within the large fences, a mobile milking mechanism was bought. In cooperation with the local cattle breeders, the area of the Nature Park is at present being used as a grazing land, not only by keeping cattle but also the Croatian Posavac horses and Pramenka sheep breeds.

Presented ways of management are excellent examples of combining breeding and preservation of native breeds with restoration and preservation of the endangered habitats, resulting in promotion and protection of biological and landscape diversity.



The Gajna protected landscape

1.5. Landscapes

Present state preview – Because of its shape and its position in Europe, Croatia has very rich landscape diversity. Croatia is currently divided into 16 basic landscape units, of which majority can still be subdivided. A more detailed analysis and synthesis of gamma-biodiversity within a landscape unit has not been done so far. Just as well, till now seascape was not analyzed at all or it was not analyzed in a satisfying way.

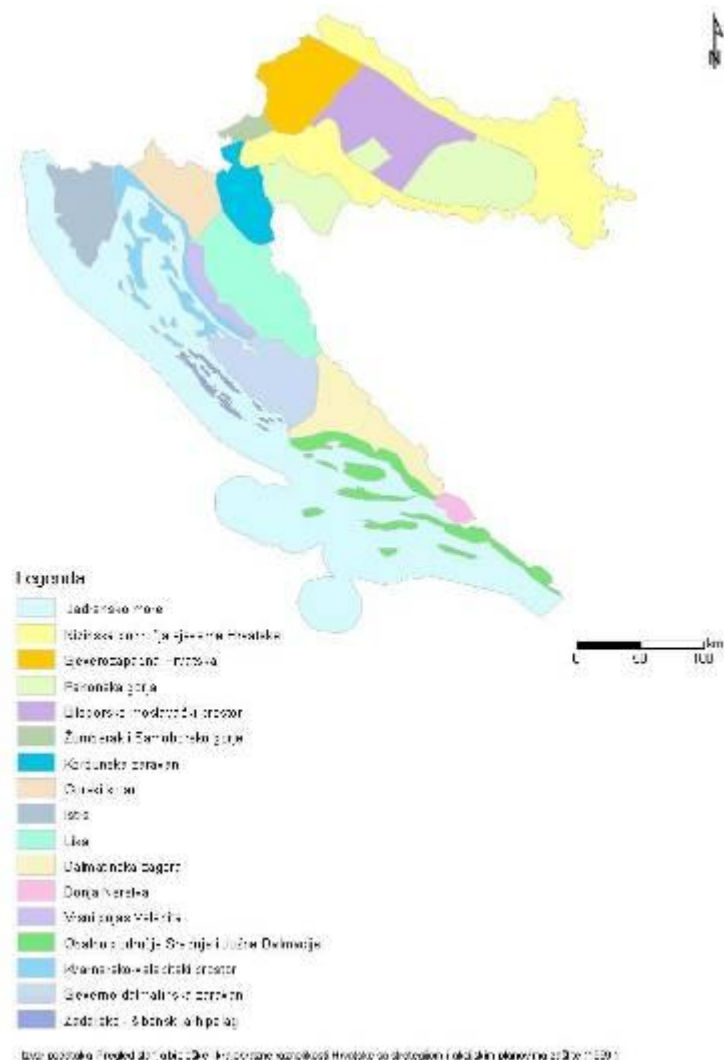


Figure 1.5-1. Basic landscape units of the Republic of Croatia.

Trends and threats - Accelerated urbanization and expansion of settlements along the Adriatic coast have a negative effect on preservation of landscape diversity. A strong *litoralisation* trend is noted on the Adriatic coast. Negative changes occurred in rural areas too, mainly due to depopulation, abandonment of traditional ways of land management (expansion of forest vegetation and its spreading over grassland areas), illegal and uncontrolled construction of mainly holiday houses, but also because of the physical plans with guidelines which did not respect natural environmental characteristics and traditional activities. Level of threat to biodiversity of individual landscape units is also not known, although generally speaking, lowland and coastal landscapes and their biodiversity are undoubtedly among the most endangered. The main threats to landscape diversity in Croatia are:

- Uneven, uniform, and environmentally asynchronous urbanization,
- Huge infrastructure interventions,
- Roads,
- Energy facilities (power plants, accumulations, power lines, pipelines, etc.),
- Water management structures (flow regulation, canals, accumulations-retentions, embankments, etc.),

- Melioration, commassations, monocultures, destruction of groves, tree alleys and hedgerows,
- Unplanned, environmentally and architecturally inappropriate and inadequate building of housing, holiday and tourist facilities at prominent locations of landscape, and in particular,
- Undefined institutional framework for landscape conservation,
- Lack of specialists for this area, and
- Insufficient coordination and cooperation among various government and local administration bodies.

2. Current Status of National Biodiversity Strategy and Action Plan

First National Strategy and Action Plan for the Protection of Biological and Landscape Diversity of Croatia was adopted in June 1999. It is a fundamental document on protection, conservation and management of biological diversity, defining long-term goals and guidelines for preserving biological and landscape diversity, and in conformity with the then overall economic, social and cultural development of the Republic of Croatia. Ten years after its implementation, the Strategy went through a complex and comprehensive review and in late November 2008, the new Strategy and Action Plan for the Protection of Biological and Landscape Diversity of Croatia was adopted.

Along with the commitment for protection of landscape and biological diversity on the national level as a fundamental development value of the Republic of Croatia, the Strategy also includes ways of fulfilling international obligations for nature protection, especially those related to the harmonization of national legislation in the process of joining the European Union. As a contracting Party of the Convention on Biological Diversity, membership obligations pledge Croatia in fulfilling three fundamental objectives:

- The conservation of overall biodiversity,
- Sustainable use of components of biological diversity, and
- A fair and balanced distribution of the benefits arising from the use of genetic resources.

In order to achieve these basic objectives, the Republic of Croatia in accordance with its own conditions and possibilities, with the adoption of the National Strategy and Action Plan for the protection and sustainable use of biodiversity, participated in developing a Pan-European Biological and Landscape Diversity Strategy, which expanded the scope of the Convention on Biological Diversity to landscapes, taking into account the specific situation in Europe, including Croatia, where very little of original nature is left, and most of it was in large measure changed by human activity that it is almost impossible to observe biological and landscape diversity separately.

2.1. The First Strategy and Action Plan for the Protection of Biological and Landscape Diversity of Croatia (1999 - 2008)

Challenges to the protection of biological and landscape diversity – Analyzing the existing conditions and reasons of threats and problems of protection of biological and landscape diversity in Croatia, it was found that Croatia has a very high degree of preserved biological and landscape diversity at European level, particularly within the framework of Western and Central Europe. The trend of loss of biological and landscape diversity in Croatia is caused by general and recognizable factors, and as such represents a challenge for the future. Analysis also determined the necessity of urgent implementation of measures for protection and conservation of the individual components of biological and landscape diversity. Unfortunately, in the last period, the heterogeneity, quantity and quality of existing data on the biological diversity of Croatia and the lack of approved procedures, limited the implementation of appropriate measures of protection and conservation in many cases.

From the general achievements of the implementation of the Strategy, the following should be pointed out:

- an overview of the status of biological and landscape diversity has been prepared for the needs of development the Strategy,
- institutional strengthening at the national and regional/local level –raising the activities of nature protection at the Ministry level and the establishment of the Nature Protection Directorate, the establishment of the State Institute for Nature Protection

as the central specialized institution for the protection of nature, the intensification of procedures for establishing and activating public institutions for managing protected natural values on county level (at present there are 20 such institutions),

- administrative strengthening at all levels – Ministry of Culture, State Institute for Nature Protection, national parks, nature parks and public institutions for managing protected areas at the county level,
- accession, ratification and implementation of all international agreements in the field of nature protection (total of 16 conventions, protocols and agreements),
- establishment of national legislative framework in the field of nature protection that is largely compliant with the legislation of the European Union (two laws on protection of nature adopted in 2003 and 2005); 13 implementing regulations, in great measure harmonized with European legislation, were made based on the Law of 2005 (with amendments from the year 2008),
- establishment of national legislative framework in the field of genetically modified organisms, which is also largely compliant with the legislation of European Union,
- establishing a systematic process of inventory of biological diversity of Croatia, which resulted in publishing red lists of threatened fungal, plant and animal species and the Red Books for specific groups of fungi, plants and animals,
- making of a basic habitats map of the Republic of Croatia,
- successful implementation of a large number of international projects funded from various funds, including EU funds (LIFE III, CARDS, PHARE), which contributed to the realization of the above activities (KEC, PAMS - Phase I-III, the CRO-NEN, CRO-WOLF, institutional strengthening of the State Institute for Nature Protection etc. and
- institutional strengthening and implementation of ecological network NATURA 2000 in Croatia

Conservation of habitat and ecosystem diversity – Most of the strategic action plans for habitats and ecosystems have been partially implemented (primarily those concerning endangered terrestrial habitats). Of the action plans for ecosystems, most have been implemented on the protection of karst and caves and the least on the protection of endangered wetland habitats. The main achievements in implementation of conservation of habitats and ecosystems are:

- in 2003, with support from the Ramsar Convention Fund began the implementation of a two-year project "Inventarisatio of wetlands in Croatia", in which wetland habitats in Croatia were identified and mapped,
- in 2003 and 2005 (amended in 2008) the Nature Protection Act, which stipulates the protection of endangered and rare habitat types, was adopted,
- in 2004, habitats of the entire territory of the Republic of Croatia were mapped, including the marine habitat, in the scale of 1:100.000 (GIS database),
- in 2004, The National Classification of Habitats was made, in which all habitat types in Croatia were classified and described,
- in 2006, within the CARDS project for institutional strengthening of the State Institute for Nature Protection, visitor's infrastructure was made and the management plans for Dubravica bog and Djurdjevacki pijesci floristic nature reserve were developed,
- in 2006, the manual for inventory and monitoring of habitats was developed, educational workshops were held and inventory of habitats started,
- in 2006, the Ordinance concerning habitat types, map of habitats, threatened and rare habitat types and measures for the conservation of habitat types entered into force prescribing general measures for protection of habitats, while specific measures have to be built into spatial planning, sectoral planning of management as well as individual projects,
- in 2007, important areas for conservation of rare and endangered habitat types were determined as part of the creation of ecological network of the Republic of Croatia, whose proposal was prepared through the projects LIFE III, "Building-up of the

National Ecological Network as a part of Pan-European ecological network and the network NATURA 2000 – CRO-NEN”,

- by the end of 2007, in twelve national parks and parks of nature a more detailed map of the habitat was made or is being made, on a scale of 1:25.000,
- 2007– within the framework of the UNDP / GEF project of Conservation and Sustainable Use of Biodiversity on the Dalmatian Coast through Greening of Coastal Development – COAST, began the making of map of habitats with a minimum mapping surface of 2.25 hectares for forest and 1 ha for non-forest habitats in the following four pilot areas – the central part of the island of Pag, the river Krka delta and its surrounding area, the island of Vis with its archipelago (including remote islands Biševo, Svetac, Jabuka, Brusnik and Palagruža) and the island of Mljet,
- in 2007, within the framework of creating a Natura 2000 network, an interpretation guide for habitat types was made,
- mapping of marine caves in coastal and insular areas of the southern part of the Adriatic is underway,
- from 2004 to this day, detailed research of biological diversity of Croatia is being conducted, with a focus on species and habitats from the EU directives list.

Box 2-1. Success case – Management plan for Dubravica bog

Within the CARDS project for Capacity Building of the State Institute for Nature Protection (CARDS Project EuropeAid/119879/C/SV/HR), selected pilot projects were developed for effective conservation of small protected areas that are by their features and values included in the list of NATURA 2000 areas in Croatia. The special reserve Dubravica bog is a priority habitat type of the EU Habitats Directive – "7140 Transition mires and quaking bogs".

Although bogs occupy small areas, they are botanically very important because of their size, rarity, and isolation. Small surface of site allows effective management even with limited financial resources. For these reasons, Dubravica bog was suggested as one of the two pilot areas within the CARDS project.

The purpose of the pilot project "Development and preparation of management and use of small areas of NATURA 2000" was involvement of all relevant stakeholders, use of all data collecting methods, as well as monitoring and interpretation of the protected area. The Action Plan for the Protection of the Special Reserve Dubravica bog was created with the following goals:

1. to enable controlled visit to the reserve with minimum negative impacts on species in the reserve,
2. to organize high-quality and well trained group of interpreters,
3. to prepare guidelines for permanent education of new interpreters,
4. to develop a network of stakeholders who will, each in his or her own capacity, permanently provide the best protection for the reserve Dubravica bog,
5. to initiate the process and to prepare technical and other basis for creating a Management Plan for the Reserve Dubravica bog (with the possible production of the draft plan),
6. to develop promotion materials for the special reserve Dubravica bog,
7. to raise public awareness (both local and professional) for the values of NATURA 2000 areas and the importance of effective and useful protection of such sites.

The objectives of the pilot project have been achieved with the successful active cooperation of all interested parties. An active network of stakeholders who will be involved in the future conservation of reserve has been established. The Public Institution for the Management of Protected Areas of Nature – Zagreb County, State Institute for Nature Protection (Municipality Dubravica), The Hunting Club "Vidra", Dubravica, Tourist Board of Zagreb County and the City of Zaprrešić, Elementary School Dubravica, The Association for the Advancement of Ecology and Tourism – Ekoturistiko, The Faculty of Science, Department of Botany, Croatian Mycological Society, took part in the project.



National ecological network – The establishment of an ecological network of Croatia is prescribed by the Nature Protection Act, in which this network is identified as a system of interconnected or spatially close ecologically significant areas (which significantly contribute to the conservation of natural balance and biodiversity with their balanced biogeographic distribution), which should include ecologically important areas of international and national importance (international conventions, the relevant EU Directives, national Red Lists of threatened species and habitats). Areas of ecological network in Croatia, in accordance with the European Union ecological network NATURA 2000, are divided to internationally important areas for birds and areas important for other wild taxa and habitat types. Of the main achievements, the following should be pointed out:

- proposal for the National Ecological Network project as a basis for elaboration of the Regulation on the proclamation of the Ecological Network (CRO-NEN, year 2002 LIFE III Fund) was prepared,
- during 2006 data collection financed from the State budget continued, as well as implementation of the second phase of the project Smaragdna mreža (Emerald Network), which was implemented with the support of the Council of Europe,
- preparation of background documents for the elaboration of Ordinance on Nature Impact Assessment and the Regulation on Proclamation of the Ecological Network,
- proclamation of a National ecological network, which covers 47% Croatian land and 39% of its sea territory and two corridors: corridor for sea turtles and the Palagruža-Lastovo-Pelješac corridor (an area important for bird migration).

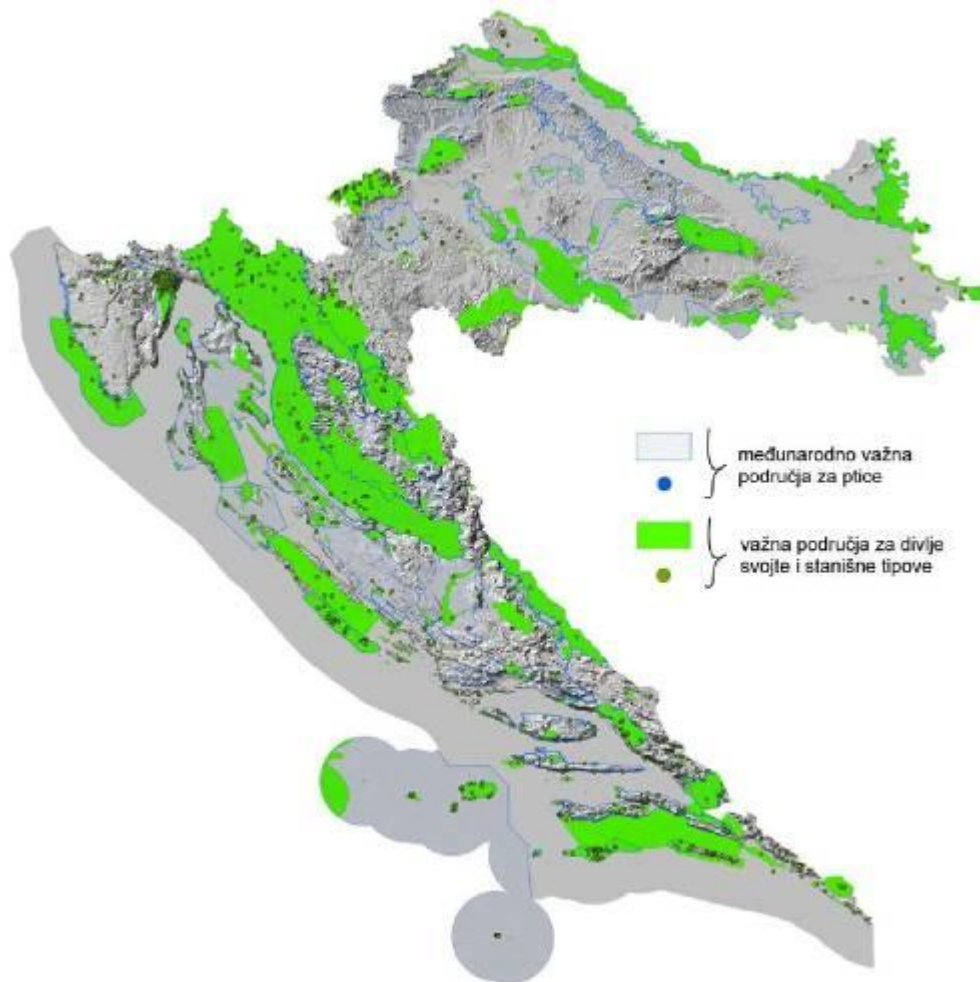


Figure 2.1-1. National Ecological Network of the Republic of Croatia.

The Emerald Network – Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and EU legislation prescribe the protection of endangered species and habitat types within the bio-geographical regions at the territory of the state (pannonian, continental, alpine and mediterranean). The Emerald Network consists of areas of special conservation interest (ASCI), which should be established by the contracting parties of the Bern Convention, and for the EU member states Emerald network is identical to the NATURA 2000 network. Following achievements should be emphasized:

- the development of Emerald network began in 2002 through a pilot project of the first phase of Emerald network in Croatia. The objective was to create a database that will contain a significant proportion of data on areas of special conservation interest (ASCI), and propose them to the Standing Committee of the Bern Convention as Emerald Sites. As a result of the pilot project, six regions occupying 17.12% of preliminary ecological network or 5.47% of the entire territory of Croatia have been selected: The Plitvice Lakes National Park, Velebit Nature Park, Lonjsko Polje Nature Park, Kopački Rit Nature Park, the proposed Neretva Nature Park and Crna Mlaka Ornithological Reserve,
- in 2006, during the second phase of the project, data were collected and Standard forms have been completed for 80% of the area of the Emerald Network for the Republic of Croatia,
- through the third phase of the project, in 2008, data were collected for the remaining 20% ASCI area in Croatia.

Natura 2000 – The NATURA 2000 is the ecological network of the European Union that comprises sites important for conservation of threatened species and habitat types. The protection mechanisms for the NATURA 2000 network include adoption of management plans and conducting of acceptability assessments of each plan or project, which alone or in combination with other plans/interventions may have an important impact on the goals of preserving a particular NATURA 2000 site. In NATURA 2000 sites, monitoring the state of qualification species and habitats is mandatory. Following achievements should be emphasized:

- broad activities for mobilization and inclusion of scientific and professional public, so that Republic of Croatia could fulfil its obligation towards the European Union within the prescribed time-limits,
- analysis of existing published and unpublished data on distribution of NATURA 2000 species and habitat types in Croatia and the preparation of proposals for the NATURA 2000 ecological network for Croatia, including the appropriate GIS database,
- a map with distribution of all known sites for each NATURA 2000 species and habitat types was made,
- in 2008, through the "Institutional Building and Implementation of Ecological Network NATURA 2000 in Croatia" project (2005 PHARE fund EU), support in the process of accession to the European Union was provided. Through this project, extensive consultative process associated with the Proposal of ecological network NATURA 2000 will be implemented, and the Final proposal based on the results of consultative process will be defined. The project will also contribute to institutional strengthening of the State Institute for Nature Protection in terms of implementation of Article 6 of the Habitats Directive, and implementation of the nature impact assessment procedure.

Conservation of species and genetic diversity - In conservation of biodiversity, the following priority species and subspecies were selected: those which are threatened globally, nationally or on the European level, endemic, and those which have economic and/or educational significance. Protection of wild species is regulated by the Nature Protection Act (2005). All endangered taxa are protected by the Ordinance on Proclamation of Wild Taxa as Protected and Strictly Protected (2006). The Ordinance determines two different levels of protection of wild species:

- strictly protected wild taxa may not be used (picking, collecting, handling, holding, killing, etc.), or disturbed in any way, except in certain purposes prescribed by the Nature Protection Act (research, education, repopulation, re-entering, etc.), with the permission issued by the Nature Protection Directorate of the Ministry of Culture,
- protected wild taxa are allowed to be used in a way that does not lead to endangerment of their populations at national or local level, with the permission issued by the competent authority (Ministry of Culture for fungi, land snails, wild growing plants and green frogs, and the Ministry of Regional Development, Forestry and Water Management for hunting species). This Regulation is currently in the process of revision, adapting the requirements of the EU nature protection legislation along with other requirements of the Conventions and the Agreements to which the Republic of Croatia is a contracting party.

The following achievements in the conservation of species and genetic diversity should be pointed out:

- since 2000 a systematic removal of woody vegetation and mowing has been carried out in the floristic nature reserve Dubravica bog, in cooperation with the Croatian Mycological Society,
- in 2001, action plan for the False ringlet (*Coenonympha oedippus*) butterfly was generated,

- in the period 2003 – 2008, red books for fungi, vascular flora, dragonflies, freshwater fish, marine fish, amphibians and reptiles, birds and mammals, were made and issued
- in 2004, as part of the LIFE III project CRO – NEN, the inventory and monitoring of populations of river turtles (*Mauremys rivulata*) and Lombard frogs (*Rana latastei*) were launched,
- during 2004 and 2005, Wolf and Lynx management plans (competent Ministry of Culture), and Bear Management Plan (former Ministry of Agriculture, Forestry and Water Management) were adopted. Plan for the wolf was made in the framework of the LIFE III project CRO – WOLF,
- in 2005, in the framework of the LIFE III project "Conservation and Management of Wolves in Croatia" (CRO – WOLF), alert network was organized, in the event of finding hurt or killed large carnivores,
- since 2005 – monitoring of Chequered-lily (*Fritillaria meleagris*) is conducted in cooperation with primary and secondary schools,
- in 2005, within the project "Institutional Strengthening of the State Institute for Nature Protection", handbooks for inventory and monitoring of the status of vascular flora and habitats were designed with a description of methodology and descriptions of individual species,
- in 2006, the Ordinance on Proclamation of Wild Taxa as Protected and Strictly Protected was adopted,
- red lists of lichens, butterflies, ground beetles, stoneflies, corals and cave fauna were made,
- in 2006 began the development of the manual for inventory and monitoring of fauna, with the methodology and keys for determination of representatives of individual groups of animals, including freshwater fish, amphibians, reptiles and bats,
- since 2006, training workshop for volunteers on the inventory and monitoring of vascular flora are being held,
- from the winter 2006/2007, actions on monitoring of populations of large carnivores by traces in the snow are being conducted, mainly collecting information on the wolf population; field action is carried out by members of a number of hunting societies, the employees of Croatian forest service and rangers in the protected areas,
- from 2006, a more systematic research on the ecology of Balkan long-eared bat and its distribution is being performed,
- since 2006 – a more systematic inventory of otters distribution is being carried out,
- in 2007 began mapping of flora of the island of Pag, South Dalmatian remote islands (Biševo, Vis, Komiža), the island of Mljet and the wider area of the lower flow of the river Krka and on a few sites in the area of the Šibenik-Knin County within the framework of the UNDP/GEF Project COAST,
- important fungi areas (IFA) are being identified within the framework of the LIFE III CRO - NEN project,
- in 2007, project inventory and monitoring of populations of the Karst meadow viper (*Vipera ursinii macrops*) was initiated,
- systematic monitoring of individual species of birds is being carried out,
- the inventory and monitoring of bats in caves on the entire territory of Croatia is being carried out,
- since 2007, more intensive research of important species for creation of NATURA 2000 ecological network began,
- database was made concerning allochthonous taxa of vascular flora, incl. invasion power, in cooperation with the Faculty of Science, as a part of the existing Flora Croatica Database,
- proposal for the Action Plan for Eleonora's falcon (*Falco eleonorae*) was made,

- action Plan on the protection of freshwater fish Croatian dace (*Telestes polylepis*) was completed in 2007,
- during 2007, the revision of Management Plans for Wolf, Lynx and Bear was performed,
- in 2007 began preparations for the joint Slovenian – Croatian strategy for management of Lynx population, within the INTERREG III project "A Cross-border cooperation in management, protection and investigation of lynx populations in the Dinaric region" (DinaRis),
- implementation of the project "Important plant areas (IPA)" is underway.

Despite the undertaken efforts, from a huge number of action plans set forth in the Strategy, the least conducted were those related to the wild taxa. Completely implemented are only action plans for large carnivores.

Box 2-2. Success case – Wolf management in Croatia

Establishing a mechanism for long-term conservation of wolves and their coexistence in harmony with humans was the objective of the project "Protection and Management of Wolves in Croatia", which was implemented by the State Institute for Nature Protection, with the co-funding of the European Commission LIFE – the third country since 2003 – 2005. As the leading large predator in Europe, wolf is an important part of biodiversity. Because of its lifestyle, especially with regard to the prey, it has always been a human opponent. At the end of 19th century, wolves were living on the entire territory of Croatia. With time, they were gradually exterminated from certain parts of Croatia, and their number reduced so drastically that there was a time when they were isolated only to the narrow area of Gorski Kotar and Lika. Negative attitude towards wolves is the consequence of lack of knowledge concerning its biology, and the presence of this endangered species gives evidence of the value and conservation of biological diversity of a certain country. For this reason, the protection and management of wolves needs to be prominent as one of the priority action plans, according to the National Strategy and Action Plan for the Protection of Biological and Landscape Diversity (NSAP).

Through this project, with cooperation of all stakeholders, the Wolf management plan in Croatia was prepared and then it was adopted by the competent Ministry. The following activities were conducted:

1. In order to achieve institutional strengthening, two regional offices (Gospić and Šibenik) were established, allowing more active role of local communities in solving the problem of wolf protection.
2. Donation of Tornjak shepherd dogs and electric fences, as a measure of protection of livestock from the wolf.
3. Improving the existing compensation system by providing timely assessments and by increasing the number of damage appraisers, as well as organizing professional training and seminars for them.
4. Mechanisms for systematic monitoring of wolf population have been established, where besides the telemetry research, analysis of mortality of wolves and collecting data on all factors affecting the population are conducted.
5. Educational publications and annual bulletins on the activities of wolf protection in Croatia were printed, a website and a documentary on wolves were created, and lectures at schools on the wolf distribution area were held regularly.
6. Various interest groups (cattle breeders, hunters, NGOs, local administrations and self-administrations) are included in decision-making on solving problems of wolf protection, especially through workshops and maintaining regular contacts.
7. Representatives of neighbouring countries (Slovenia, Bosnia and Herzegovina) have participated in the preparation of management plan, given that the wolves in Croatia are a part of the Dinaric-Balkan population and their protection should be planned in a cross-border context.
8. Public opinion research on wolves and also about the degree of knowledge on them was conducted at the beginning and at the end of the project. People who live in the area of wolf distribution and those from Zagreb were interviewed.

Goals of the LIFE project "Conservation and Management of Wolves in Croatia" were achieved

with the successful cooperation of all stakeholders involved. Only through their cooperation, consent and mutual trust was it possible to identify concrete actions in order to achieve effective protection of the wolf, and to make the Wolf Management Plan in Croatia which was then accepted by the public. The local community was included into decision making and the public awareness on wolves and the level of knowledge on that subject has increased. Given that the Dinaric-Balkan wolf population covers the area of several states, Wolf management in Croatia has been planned in cooperation with the neighbouring countries. Although the project was completed in late 2005, the State Institute for Nature Protection still continues to conduct and promote initiated activities related to the protection of wolves in Croatia.

Landscape conservation – Conservation of landscape values as a foundation for total valuation of space has been seriously taken into account only recently, after people became aware of increased threat to environment in general and to landscape as its component. Although landscape conservation in Croatia is being carried out for years, it was mainly reduced to normative measures, which protected the landscape only in specially designated areas, or in the known natural and cultural heritage areas, and especially through measures of protection identified in the procedure of Environmental impact assessment. Following European trends in the conservation of landscape, Croatia initiated activities which laid emphasis on complete evaluation and conservation of landscape in Croatia.

In recent activities pertaining to landscape conservation or landscape management, three main sectors are interwoven: spatial planning, protection of nature and cultural heritage protection. Each of these sectors, in its scope of work, seeks to incorporate the protection of landscape into the legislation. Given that there was a general lack of mutual coordination between various sectors, central government and regional authorities as well as NGOs, lack of a unified plan for the improvement of the situation at the national level resulted in a very small shift in protection of structure and functions of the landscape.

Since the adoption of the Strategy, the most important shift in the field of landscape conservation was made in creating the legislative framework. The Republic of Croatia has signed and ratified the European Landscape Convention. It is expected that the progress in protection, planning and managing landscapes in Croatia will be accomplished due to the implementation of the Convention. The provisions of this Convention have already been built into the Nature Protection Act in 2003, where it was stated in the definition of the nature protection that it is comprised of the total biological and landscape diversity.

Main achievements in preserving diversity of Croatian landscape in this period were:

- in 1999 the publication “Landscape – Content and methodological framework for landscape protection” was issued, representing a good basis for further discussion on the conservation of landscape,
- in 2003 and 2005 (amended in 2008), the Nature Protection Act was adopted, protecting the landscapes,
- in 2004, European Convention on landscapes was ratified,
- several international conferences and workshops on landscapes were held, including the 10th ECLASA conference (European Landscape Architecture Students Association) in Dubrovnik in 2000, the international workshop of European Network of Landscape Architects on the island of Hvar in 2005, and Summer School of Architecture – Konavle,
- since 2005, the “Eco-teens project – evaluation and protection of landscape” is being implemented in the Istria County under the expert guidance of the “Put” NGO from Labin,
- a study on evaluation of landscape of the greater Lim channel area was conducted, as a basis for redefinition of physical planning documentation and the creation of

spatial plan for the Lim channel area. This study is particularly important because it is considered a methodological innovation in spatial planning,

- out of 5 action plans envisaged by the Strategy, two of them have been partially implemented – creating a landscape methodology framework and embedding the provisions on the landscape protection in different laws.

2.2. Second National Strategy and Action Plan for the Protection of Biological and Landscape Diversity of Croatia (2008).

Given the major changes in the concept of nature protection, the establishment of new legislative and institutional framework of nature protection that occurred because of accession to all international treaties in the field of nature protection and because of the process of joining the European Union and the harmonization of legislation with the relevant Directives and the regulation of the EU, not only the revision of the previous Strategy, but a review of strategic objectives and guidelines on an entirely new basis was needed.

The difficulties in defining and implementing measures for the protection of biodiversity in Croatia are still related to the lack of data on overall biodiversity. Comparing the present state of the nature protection sector with other European countries, it was concluded that we have been able to follow the European legislation and practice, but additional efforts should be directed to the implementation of action plans. Further efforts have to be directed at strengthening the institutional framework and the allocation of more funds for nature protection from the state and local/regional budgets.

The Nature Protection Act generally regulates the system of protection and conservation of nature and its values. In addition to biological and landscape diversity it includes geological diversity as well. Strategy and action plan on protection of biological and landscape diversity from 1999 have not covered protection of geo-diversity or non-living nature of Croatia as a whole, but only partially through general and specific strategic goals or action plans, as well as through landscape, ecosystems and habitats conservation. Equally, the protection of geo-diversity was not treated as a separate chapter in the Report on the State of Nature and Nature Protection Status for the period of 2000-2007.

The priorities in the coming five year period are tightly associated with the process of accession of the Republic of Croatia to the European Union. In nature protection, this means harmonization of legislation including establishment of effective enforcement mechanisms, and the adoption of the proposal for the NATURA 2000 ecological network. The new strategy recognizes the following general strategic objectives:

- maintain overall biological, geological and landscape diversity as a fundamental value and potential for further development of the Republic of Croatia,
- fulfilling all obligations arising from the process of joining the European Union and the harmonization of legislation with the relevant EU Directives and Regulations
- fulfilling all obligations arising from international treaties in the field of nature protection, biosafety, access to information, etc.,
- ensuring an integrated protection of nature through cooperation with other sectors,
- identifying and assessing the status of biological, geological and landscape diversity; establishing information system for the nature protection with the database linked to the national information system,
- encouraging and improving institutional and non-institutional methods of education on biodiversity and public participation in decision-making procedures and,
- developing mechanisms for the efficient implementation of legislation through the legislative and institutional capacity building, education, development of scientific resources, information dissemination and development of financial mechanisms.

Strategic guidelines for conservation of habitats and ecosystems in the coming period

Protected areas:

- creating fundamental documents for management of protected areas,
- digitalizing the borders and continuing auditing existing protected areas,
- evaluating, categorizing and legally protecting certain areas,
- ensuring public participation,
- improving the management system of protecting areas,
- solving property rights relations, and increasing the share of state-owned land in the protected areas.

Protection of ecosystems and habitats:

- ensuring the prerequisites for a more effective implementation of the Ordinance on habitat types, map of habitats, threatened and rare habitat types and measures for conservation of habitat types,
- scientifically identifying threats to individual habitat types in Croatia as well as developing specific measures for their protection,
- ensuring protection of habitats threatened at national and European level.

Ecological Network of the Republic of Croatia and the NATURA 2000:

- ensuring efficient conservation of all components and ecological integrity of the National Ecological Network and the NATURA 2000 network,
- ensuring financial mechanisms for the enforcement of measures for conservation of National Ecological Network and NATURA 2000 network.

Strategic guidelines for conservation of species and genetic diversity in the coming period

Protection and conservation of wild species:

- providing favourable status of threatened species in the Republic of Croatia and of taxa listed on Annex II, IV and V of the Habitats Directive and Annex I of the Birds Directive, which are important for the establishment of the NATURA 2000 network,
- determining exact distribution and status of species proposed by the Republic of Croatia for amending the annexes of the Habitats Directive,
- scientifically determining vulnerability of the so far untreated groups of wild species and ensuring protection of threatened, endemic and relict species,
- continue with establishing a national monitoring system for wild species,
- continue with establishing a national information system of nature protection which will include data on wild species,
- actively carrying out protection of migratory species,
- managing the populations of large carnivores on national and international level,
- improving the system of nursing and care of injured, poisoned, ill or confiscated strictly protected wild animals,
- co-operating with all relevant stakeholders in addressing the problems of inadequate poison usage.

Protection and conservation of domesticated taxa:

- ensuring conservation of critically endangered breeds and varieties,
- improving the system of incentives for breeding and usage of indigenous domesticated species,
- encouraging the use of indigenous domesticated species for maintenance and improvement of the vulnerable habitat types status.

"Ex-situ" protection

- carrying out "ex-situ" protection of threatened wild native and endemic species as well as of indigenous domesticated taxa.

Suppression of invasive species:

- identifying the current state of non-native and invasive species, assessing their impact and identifying and implementing the necessary activities which would remove or reduce negative impacts,
- taking necessary actions to prevent entry of new non-native species,
- systematically monitoring distribution of invasive alien species in Croatia.

Strategic guidelines for conservation of landscapes in the coming period

- systematic approach to conservation of landscapes through intersectoral cooperation,
- recognizing the value of landscapes in Croatia through identification, development of typology, as well as scientific and expert evaluation of the landscapes,
- ensuring implementation of the European landscapes convention and Methodological framework for landscape protection.

3. SECTORAL AND INTERSECTORAL INTEGRATION OF BIODIVERSITY CONSERVATION

3.1. Intersectoral integration of biodiversity concerns through sustainable use

Protection and conservation of all natural values of the Republic of Croatia are guaranteed by the Constitution. With the overall aim of conserving biodiversity, general and special provisions and measures of the Nature Protection Act of 2005, amended in 2008, anticipate an integration of conservation and sustainable use of biological and landscape diversity into other sectors. Equally, most sectoral regulations address issues of conservation and management of biodiversity. One of good practice examples is the Law on agricultural land which prescribes that state-owned grassland and meadows located within national and nature parks are to be managed by the respective protected area authorities, while agricultural land owned by the state in other protected areas are to be managed based on approval of the central government authority in charge of nature protection.

Pursuant to the Nature Protection Act, the use of natural resources is governed by management plans and physical plans, taking into consideration conservation of biological and landscape diversity. Resource uses that might cause land degradation and loss of soil fertility, damage to surface and underground geological, hydrological and geomorphological values, decline in plant, fungi and animal species in the wild, reduction of biological and landscape diversity, water pollution or contamination, as well as endanger its exploitation potential, are prohibited.

Resource management plans contain nature conservation measures and conditions. Nature conservation measures include: an overview of protected and inventoried natural values, ecologically important areas and specially valuable landscapes including description of their features and status assessment; an overview of areas where existence of natural values is expected, as well as recommendations for procedures to be applied in case of finding such values or proclaiming their protection status; protective measures and development directions for protected natural values, ecologically important areas and specially valuable landscapes; biodiversity conservation measures with emphasis on habitat types conservation measures, and a habitat map. Prior to developing a resource management plan, owners and holders of rights need to obtain nature conservation conditions from the Ministry.

Adoption of resource management plans in protected areas by their owners or holders of rights require prior Ministry approval. Projects and activities in protected areas that are undertaken on the basis of forest, hunting, fishing, water and mining management plans do not require prior approval if they already include nature conservation conditions.

Agriculture

The Nature Protection Act prescribes grassland management by way of species-oriented grazing and mowing regimes and ecologically sound use of plant protection agents and mineral fertilisers, with the purpose of biodiversity conservation. With the same purpose, it prescribes preservation of valuable and threatened edge habitats of farmland (hedges, individual trees, tree groupings, ponds and meadow strips). During planning and implementation of agricultural land consolidation, it is necessary to conserve the existing

habitats or create new ones to the largest possible extent (hedges, individual trees, tree groupings, ponds and meadow strips), and plan for their distribution and size in the way that ensures their highest possible relevance for biological and landscape diversity.

In areas without perspectives for intensive agriculture development, population resettlement and abandonment of meadows, pastures and small farmlands took place, which resulted in vegetation overgrowth with the tendency of reinvasion of forest vegetation which, in Croatia, presents a permanent natural condition. Such process has been distinctively present, endangering the survival of grasslands and the related plant and animal species.

Loss of habitats is not the only threat; species typical for agricultural land are frequently threatened by the use of plant protection agents and mineral fertilisers.

A new problem of agricultural impact to biodiversity occurred after 1990 with the introduction of genetically modified crops. Within a decade these crops spread around the world and significantly endangered the existing genetic diversity of domesticated taxa linked to agriculture, as well as natural biodiversity of the areas to which they were introduced. In the Republic of Croatia, officially there are still no genetically modified crops; however it is a matter of time when they will appear, given the high probability of their unintentional introduction, low control efficiency, and the EU practice which already allows introduction of certain quantities of genetically modified crops.

Data of the State Bureau of Statistics show a permanent reduction of agricultural land. Difference between statistical data based on land area recorded as agricultural land in official registers, and the actual status was created due to abandonment and overgrowth of large agricultural plots as well as losses due to land use change in favour of areas intended for construction and infrastructure facilities.

The new image of the current state significantly changes different estimates based on the square unit of the agricultural land. For example, use of pesticides and mineral fertilizers turned out to be considerably larger than it was estimated earlier.

At the moment, one fourth of the total arable land either lies fallow or is unused. In mountainous and coastal areas more than half of agricultural lands aren't farmed regularly, mainly due to landmine contamination and intensive resettlement.

Table 3.1-1. Reduction trends for certain agricultural land categories.

Category	Land area (ha)			
	2000	2002	2004	2006
Used farmland	1,101,000	1,126,000	1,110,000	866,000
Meadows	355,000	347,000	322,000	163,000
Pastures	479,000	482,000	443,000	110,000
Vineyards	59,000	58,000	50,000	31,000
Orchards	70,000	68,000	66,000	46,000
Total	2,064,000	2,081,000	1,991,000	1,216,000

As an EU candidate country, Croatia has started the development of its Agri-environmental Programme. Specific for the proposed Croatian Agri-environmental Programme are the incentives for extensive and semi-intensive production on carp ponds due to their significance for waterfowl conservation. In 2006, Ministry of Agriculture, Forestry and Water Management, Rural Development Directorate / Administration of the SAPARD/IPARD Programme started the development of the Agriculture and Rural Development Plan 2007 –

2013 (the IPARD plan), which should include the National Agri-environmental Plan intended to serve as the link between the Agri-environmental Programme and the National Ecological Network.

Box 3.1-1. Success story – Agriculture and Rural Development Plan 2007– 2013 under the IPARD programme, agri-environmental measures

Results of the analysis of agri-environmental sector show that the environmental impact of agriculture in Croatia is much bigger than it was thought. Key stakeholder groups: farmers, agricultural extension services, local, regional and national authorities and policy makers have very little information on the Agri-environmental Programme. In addition, current attitudes towards agriculture, nature and the environment, as well as agricultural knowledge and skills are not grounds for introducing the Agri-environmental Programme, due to insufficient information and experience. Therefore, it is proposed a two-tiered approach – introduction of agri-environmental measures in pilot areas, coupled with the introduction of knowledge transfer as a horizontal measure. Knowledge transfer needs to be aimed at key stakeholders (farmers, agricultural extension services, nature protection NGOs, local and regional authorities) and implemented in all Croatian counties, with focus on the suggested pilot areas. Measures in pilot areas are intended to solve the key two problems of the Croatian agriculture – loss of grassland biodiversity and environmental degradation resulting from application of inadequate agri-technical measures on ploughfields. Therefore the following demonstration sites and measures are proposed:

- Maintenance and conservation of grasslands in the Velebit Nature Park, aimed at preventing further overgrowth of grasslands abundant in plant and animal species, preservation or increase of existing valuable grassland habitats listed in the annexes to the Habitats Directive; prevention of reduction in landscape values due to the loss of open landscapes, and with the aim of conserving biodiversity of karst areas and vulnerable underground ecosystems,
- Demonstration measure for grasslands in the Lonjsko polje Nature Park, aimed at restoration and maintenance of wet grasslands as habitats of threatened species that are listed in the annexes to the Habitats Directive and Birds Directive,
- Demonstration measures on ploughfields in the County of Zagreb, aimed at preventing and reducing the existing negative environmental impacts resulting from inadequate agricultural practices, and increase ploughfield biodiversity values in order to preserve the characteristic mosaic landscape of the County.

Timetable for accreditation and implementation of pilot agri-environmental measures.

Month and Year	Description
1 st quarter of 2008	Establishment of the Code of Good Agricultural Practice Training of trainers (programme and materials) Preparation of promotion and publicity campaign Preparation of training methodology for potential beneficiaries
2 nd - 3 rd quarter of 2008	Establishment of a monitoring system for data gathering on the monitoring and evaluation criteria defined in the programme Establish the premium calculations IPARD programme modification to incorporate the missing information on CGAP and providing a final technical measure sheet for the pilot AE measure
4 th quarter of 2008	Training of trainers Training of potential beneficiaries
1 st quarter of 2009	National accreditation of the measure
2 nd quarter of 2009	Conferral of management Training of potential beneficiaries
3 rd quarter of 2009	- Implementation of the pilot AE measure

Table 3.1-2. Status of integrating biodiversity concerns into the agricultural sector.

Year	Scope of integration
Activities	
2001	Adoption of the Act on Organic Farming of Agricultural Products and Foodstuffs
2002	Enactment of the Agricultural and Fisheries Strategy of the Republic of Croatia
2003	Enactment of the Rural Development Strategy of the Republic of Croatia
2003	First proposal of the Agri-environmental Programme completed, new proposal initiated
2007	Republic of Croatia included in the EU's IPARD programme
2008	Proposal of the national list of indicators for agriculture, soil and land protection
Assessment of National Strategy implementation	
NBSAP (1999) anticipated four action plans related to biodiversity conservation in the agricultural sector. These action plans have been partially implemented by adopting the Act on Ecological Production and the proposal of the National Agri-environmental Programme being developed within the IPARD programme.	
Guidelines for the following period	
<ul style="list-style-type: none"> • Maintain cooperation among nature protection and agricultural authorities in the enactment and implementation of the Agri-environmental Programme, • Preserve the sites harbouring representative threatened habitat types within the ecological network and NATURA 2000, • Maintain a favourable water regime, including high groundwater levels in the areas of bogs, wet grasslands and tall herb communities, • Reduce the trend of declining grassland areas and diversity of unimproved and semi-natural grasslands as valuable anthropogenic habitats extremely rich in biodiversity, • Stimulate organic farming and other agricultural forms that contribute to biodiversity conservation and provide assistance to producers in the promotion and market positioning, • Stimulate conservation of biological taxa important for particular habitat types on agricultural areas, and prevent introduction of non-native (allochthonous) species and genetically modified organisms into nature, • Educate agricultural producers on the importance of biodiversity conservation through agricultural practices, • Use plant protection agents and fertilisers in agriculture sustainably, • Ensure implementation of nature protection measures in agriculture. 	

Forestry

Geographical position of the Republic of Croatia which is at the border of the Euro-siberian, North American and Mediterranean vegetation region caused an exceptional diversity of the forest habitats with 105 forest communities. It is in compliance with the National classification of habitats and about 4500 plant species and varieties. In comparison with the European forests, forest ecosystems in Croatia are in a very good state. The Zagreb School of Forest Cultivation is the basis for maintaining naturalness and stability of forest ecosystems. Also, the legislation supports natural composition of forests, general protection of nature and does not allow clear cutting of forests. It adheres to the principles of the sustainable management. Integration of guidance of the nature protection in the managing of Croatian forest resources requires principles of implementing the FSC certificates for managing the forests which the Croatian Forests Ltd. received for the whole managing area.

The forests and forest area in Croatia are situated at 2.688.687 ha, which makes 47.5% of the Croatian continental surface. 2.106.917 ha (78%) is owned by the state and 581.770 ha (22%) is privately owned. The Croatian forests Ltd. are managing the forests in the Republic of Croatia and since 2006 the Forest Counselling Service controls the improvement of privately owned forests managing.

Box 3.1-2. Success story – Protection forests and special purpose forests

The Forestry Act prescribes three forest functions: production forests, protection forests, and special purpose forests. Protection forests are primarily intended for protection of the soil, water, settlements, objects and other assets, whereas special purpose forests include: forests and forest parts registered for production of forest seeds, forests within protected areas or natural values proclaimed on the basis of nature protection regulations, forests intended for scientific research, education, national defence or other specially regulated purposes.

Management of forests in protected areas and ecological network sites is prescribed in the Forest Management Documents including the programme of forest ecosystem conservation measures in protected areas and ecological network sites in line with the Nature Protection Act. Management of protection forests and special purpose forests differs from the basic management style for such forest types; basically these forests present an additional system of protected areas, which however hasn't yet been fully integrated into the nature protection system.

About 18.59% of forest surfaces in Croatia is protected by the Nature Protection Act and Forestry Act. The forest areas, important for all threatened species and habitat types at national or international level have been included in the National Ecological Network so they will be in the composition of the Croatian part proposal of the European Ecological Network NATURA 2000. Due to the fact that many forest certification principles are in compliance with the principles of the National Ecological Network and the NATURA 2000 network, the process of elaboration and implementation of plans for managing those parts of ecological networks that are covered in forests will be much easier than in other sectors. In that sense the cooperation with the forestry profession has already been made.

The forests in Croatia have been managed in compliance with the Forestry Act since 2005. On the basis of the forest managing plans, the conditions for usage of forests, the forest grounds and the intervention in that area, the needed range of cultivation and forests protection, the possible percentage of usage and conditions for managing the animal world have been determined. In compliance with the Nature Protection Act it has been regulated that the elaboration of all forest managing plans has to integrate conditions and the nature protection measures brought by the Nature Protection Directorate of the Ministry of Culture according to the experts' backgrounds elaborated by the State Institute for Nature Protection. All forests in the strict reserves, national parks and special reserves are excluded from the management in compliance with the directives of the Nature Protection Act. Management of forests in the protected areas will be defined by the Programmes for protection of forest ecological systems which are part of the Plans for managing the protected areas.

The basic strategic document of this sector is the National Forestry Policy and Strategy. The objective of the Strategy is an increase of the contributions for the national management by the sustainable management, usage and protection of forest resources and biological diversity.

Table 3.1-3. Status of integrating biodiversity concerns into forestry sector.

Year	Scope of integration
Activities	
2003	National Forestry Policy and Strategy adopted
2003	Start of cooperation with the forestry sector, especially in terms of setting up the ecological network and NATURA 2000
2005	Adoption of the second draft of the Croatian FSC forestry certification standard
2005	Enactment of the Forestry Act
2008	Proposal of the national list of indicators for forestry
Assessment of National Strategy implementation	
Action plans anticipated for the forestry sector have been partially implemented. This refers to the	

incorporation of nature protection measures and conditions into forest management plans and forestry legislation.

Guidelines for the following period

- Use and manage forests on the forest ecosystems biodiversity conservation principles, with special emphasis on protected areas, ecological network sites and future NATURA 2000 sites,
- Monitor the status of forest ecosystems in protected areas, ecological network sites and future NATURA 2000 sites,
- Address the problem of landmine contaminated forest areas,
- Improve cooperation among relevant sectors at national and international level in relation to implementation of the NATURA 2000 and biodiversity conservation programmes.

Hunting

Hunting grounds in the Republic of Croatia are situated on the surface of 5.508.518 ha. Exceptions are the protected parts of nature in which there is a prohibition of the hunting, sea and ponds with the coastal area which serves for exploitation of fish ponds, hotbeds, orchards and vineyards aimed for intensive production and pasture lands if they are surrounded by the fence which inhibits the natural migration of wild animals, mined surfaces and the security area up to 100m wide and other surfaces in which hunting is prohibited by a special act proclaiming their allocation. In Croatia, about 1060 hunting grounds have been established, of which there are 315 state areas and 745 joint areas. In 2008, 51.308 hunters and 926 trainees were registered.

The wild animals at hunting grounds are managed on the basis of 10 years planned acts (hunting management base or programme of the wild animals cultivation), and animals outside the hunting grounds are being managed in compliance with the wild animals protection programme. The brown bear is managed on the basis of the Brown Bear Management Plan for the Republic of Croatia and the derived Action Plan for Management for each year.

Box 3.1-3. Success story – Brown bear management in the Republic of Croatia

The brown bear in Croatia is wildlife protected species, as well as a game species. The Brown Bear Management Plan for the Republic of Croatia is a comprehensive document offering the fundamentals of the brown bear life and management in the Republic of Croatia. This plan is based on scientific and ecological knowledge, placed within the legislative, administrative, cultural, economic and social frameworks in Croatia. Management plan attempts to encompass the current knowledge related to brown bear management, as well as to promote modern, ecologically-based wildlife management that includes protection and conservation of biological and environmental balance of natural habitats and their sustainable use. The purpose of the Brown Bear Management Plan is to determine a management goal within a framework established by international and national regulations, to define measures to be implemented for the conservation of natural habitats and the bear population, as well as measures enabling the coexistence of man and bear.

By implementation of the Nature Protection Act it has been enacted that during the making of hunting management documentation, the programme of the wild animals cultivation and the programme of the wild animals protection, the conditions and measures for the nature protection have to be integrated, so that the assumptions for the compliance of hunting with the nature protection should be created. The Nature Protection Act forbids introduction of foreign species to the nature. The exceptions are allowed only after the risk estimation of introduction in the nature in compliance with the Ordinance on the method of preparing and

implementing risk assessment studies with respect to introduction, reintroduction and breeding of wild taxa.

At this moment there is no special systematical observation of certain species which are on the hunting species lists of the Bern Convention, Birds Directives and Habitats Directives. The Republic of Croatia is a full legal party of the African - Euroasian Waterbird Agreement (AEWA) since the year 2000. In this Agreement, the Action plan has been brought in which the parties are obliged to the systematical decrease and termination of the shotgun pellets use and its replacement with the steel shots while hunting the wetlands birds in the swamps and other shallow water surfaces. The Republic of Croatia has to start with the activities in order to enact this Action plan.

Table 3.1-4. Status of integrating biodiversity concerns into hunting sector.

Year	Scope of integration
Activities	
2005	Brown bear management plan for Croatia adopted
2005	New Hunting Act and the Ordinance on Closed Hunting Season enacted
2006	Enactment of the Ordinance on Contents and Methods of Development and Approval of Hunting Management Programmes Game Rearing and Game Protection Programmes and the Ordinance on the content and maintenance of the central hunting records
2006	Start of development of the database on game types and quantities in state-owned hunting grounds
2008	Background document prepared for the Ordinance on the method of preparing and implementing risk assessment studies with respect to introduction, reintroduction and breeding of wild taxa.
Assessment of National Strategy implementation	
NSAP anticipated an action plan for incorporating nature protection measures into hunting sector. Enactment of the Nature Protection Act, and the Hunting Act of 2005, greatly contributed to implementation of this action plan and created preconditions for harmonisation of activities between the two sectors.	
Guidelines for the following period	
<ul style="list-style-type: none"> • Implement the programme of scientific determination of game population sizes and set up a monitoring system, • Monitor the status of game in protected areas where no hunting is allowed, • Enhance cooperation between relevant sectors at national and international levels in relation to implementation of the NATURA 2000 and biodiversity conservation programmes, • Enhance work and mutual cooperation between the hunting and the nature protection services, • Develop management plans for animal species that are subject to stricter protection regime according to the EU directives, • Assess the status of allochthonous game on islands and in the continent and start addressing the issue accordingly, • Protect waterfowl and their habitats against shotgun pellets. 	

Freshwater fisheries

The freshwaters fisheries' management is related to the Danube area and part of the River Sava flow. Almost all management is conceded to the owners of the fishing rights, mostly fisheries associations. It is based on the fishing management. Recreational anglers are main participants in fishing and greatest fresh water users.

The fish cultivation is related to many carp ponds situated in the lowland part of Croatia. The surface and intensity of the production in the carp ponds has been decreased in comparison to the beginning of the 1990s, although a slight increase was seen in 2005 and 2006. At the same time, the number, surface and the production of the trout ponds increased.

Table 3.1-5. Number, exploited surface and fish production in carp ponds.

Year	No. of fishponds	Fishpond surface (ha)	Fish production (t)
1997	22	9118	2783
1998	24	9124	2909
1999	20	8967	2836
2000	18	8369	2713
2001	21	7887	3350
2002	19	7786	2549
2003	19	7663	2449
2004	19	7809	2318
2005	20	6623	3002
2006	19	6229	3202

The reduction in number of carp ponds directly influences biological diversity and protection of wetlands birds for which the Croatian wide semi intensive or extensive managing ponds are exceptionally valuable alternative wetlands habitats. The termination of production in the ponds leads to quick overgrowing of the shallow wetland surfaces and overgrowing and disappearance of open water surfaces which are habitats and source of food for numerous wetlands fish-eating birds. The Republic of Croatia is obliged to protect the threatened and rare wetlands birds and their habitats according to the international conventions. In order to protect them, it was proposed that additional premiums should be approved for every hectare of the pond for those fish ponds that oblige themselves to the way of production in compliance with the nature protection principles.

Fishery, cultivation and protection of freshwater fish have been regulated by the Freshwater Fisheries Act. According to the Nature Protection Act, certain freshwater fish species are strictly protected and fishing species are on the list of the protected species. The Act regulates integration of measures and conditions of nature protection for the fish management as well as for other activities related to use of natural resources. That mechanism was implemented in mid 2005. The introduction of allochthonous species to the natural water was also prohibited, and so was transfer of these species from ponds to other wetlands habitats.

The basic strategic document for fishery is the Strategy of Agriculture and Fishery of the Republic of Croatia from 2002. The general objective of this strategy is to protect and develop Croatian freshwater fishery, whose production will satisfy Croatian needs, as well as actual demands of foreign markets, at the same time respecting market and ecological legitimacy.

Table 3.1-6. Status of biodiversity concerns integration into freshwater fisheries and aquaculture sector.

Year	Scope of integration
Activities	
2002	Agricultural and Fisheries Strategy of the Republic of Croatia enacted
2005	New Freshwater Fisheries Act enacted
Assessment of National Strategy implementation	
The NSAP anticipates an action plan for incorporating nature protection measures into freshwater	

fisheries sector. The plan has been partially implemented by means of the Nature Protection Act, which prescribes incorporation of nature protection measures and conditions into fisheries management documents.

Guidelines for the following period

- Strengthen the biodiversity conservation measures in regulations and documents of the freshwater fisheries sector,
- Prevent introduction of non-native (allochthonous) species into open water bodies, especially these in the Adriatic catchment, and start their eradication,
- Enable survival of the semi-intensive and/or extensive carp rearing, as a precondition for maintaining their ornithological value.

Marine fisheries

According to the Marine Fisheries Act the marine fishery encompasses managing renewable biological sea resources, which integrate protection, fishery and cultivation of fish and other sea organisms.

Many types of tools are used for fishing. Nowadays it is officially used about 50 types of fishery tools which have significant synergetic, cumulative and competitive effects. Many species appear in the fishing bags while fishing. For example, more than 200 species appear in the trawl bags, and if coastal tools are used, there are about 120 species, of which half are economically interesting.

The majority of fish population in the Adriatic Sea are biologically unique but economically shareable among fleets of different countries, so that for long-term managing of renewable biological resources, cooperation is necessary among all fishery participants. Out of total number of registered fish species and subspecies in the Adriatic Sea, 120 are of great or small economic significance.

Out of total surface of the Adriatic Sea, which is 135.000 square kilometres, the fishing sea of the Republic of Croatia encompasses 55.360 square kilometres. The sea surfaces Brijuni National Park, Kornati National Park, Krka National Park, Mljet National Park, Nature Park Telašćica and Lastovo archipelago Nature Park are not included in the fishery sea of the Republic of Croatia. Fishery in the mentioned protected areas is regulated by the directives of the Ordinance on the Internal Order.

Certain strictly protected species, such as sea turtles and dolphins can be accidentally caught while fishing. By monitoring dolphin mortality in the period 1990 – 2008 it has been found that they equally die from natural causes and because of human activities – mostly from entanglement in fishing nets.

Table 3.1-7. Percentage of dolphin mortality in the Adriatic in the period 1990–2007.

Cause of death	Number	Relative share
Human activity	25	14.12
Natural causes	30	16.94
Unknown	122	68.92
Total	177	100.00

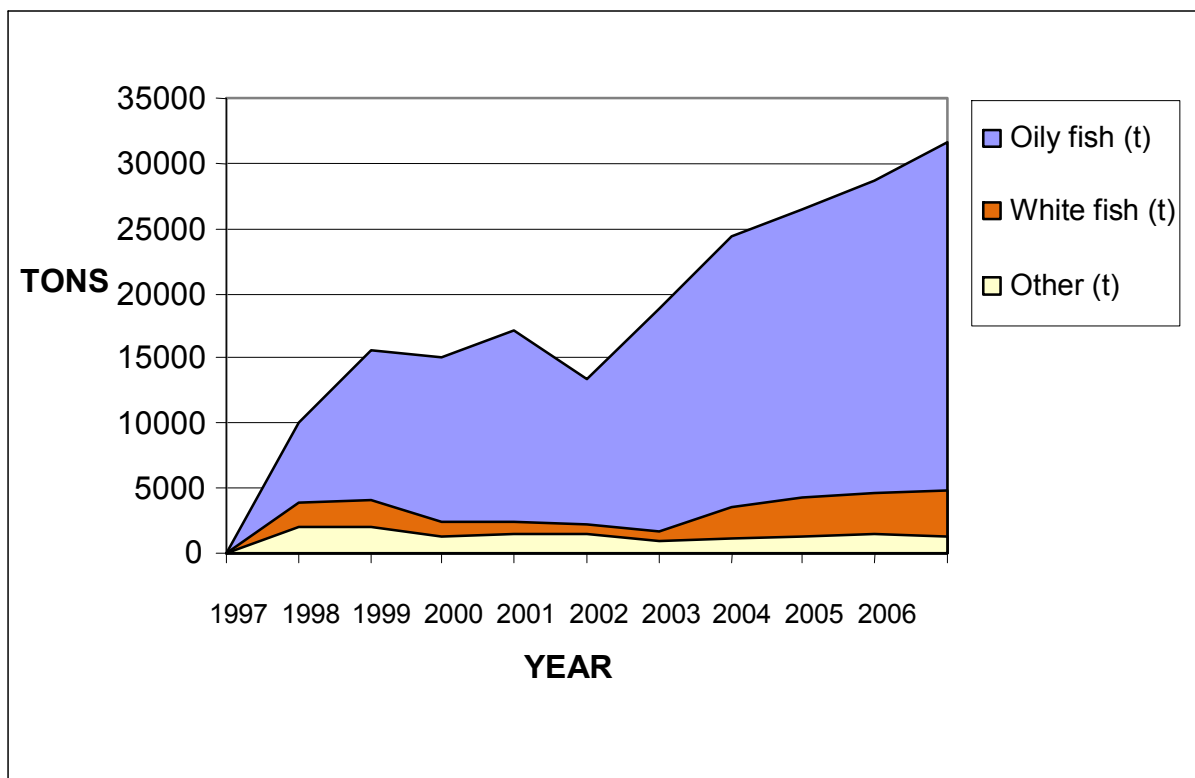


Figure 3.1-1. Catches of fish and other marine organisms in the Croatian part of the Adriatic.

Other species gathered for commercial purpose include sponges and corals: in 2003 and 2004, collecting of 100 t of sponges and 450 kg of red corals was registered (per year).

Except from tuna fattening, mariculture in the Republic of Croatia stagnated until 2006, when it increased in comparison to the previous years. In tuna fattening, numbers increased because of the increase of the breeding sites, so in 2006 it amounted to 6.700 t. The total production of shells in 2006 was estimated to 3.500 t of mussels and a million oysters.

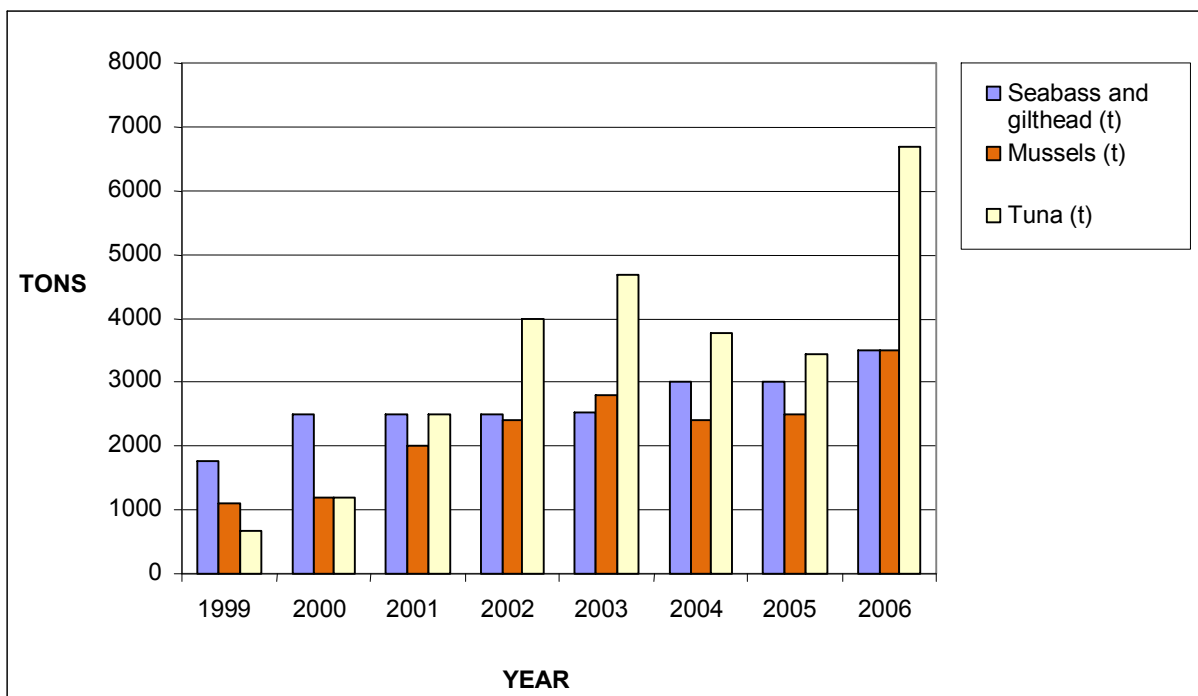


Figure 3.1-2. Status of Croatian mariculture in the 1999 – 2006 period.

Table 3.1-8. Status of integrating biodiversity concerns into marine fisheries and aquaculture sector.

Year	Scope of integration
Activities	
2002	Agricultural and Fisheries Strategy of the Republic of Croatia enacted
2002	With the support of the Government of the Kingdom of Norway, a project «Monitoring and Management of Demersal Resources along the Eastern Adriatic Coast – Croatian Territorial Waters (DemMon)» started
2003	Under the UN Convention on the Law of the Sea, the Ecological and Fisheries Protection Zone (ZERP) was proclaimed
2005	The Act on Amendments to the Marine Fisheries Act and implementing regulations enacted
2008	Proposal of the national list of indicators for the sea, fisheries and aquaculture
Assessment of National Strategy implementation	
Adoption of the Marine Fisheries Act and its implementing regulations as well as the Agricultural and Fisheries Strategy signifies partial implementation of the action plan for incorporating measures of rational and long-term sustainable use of biological resources into the marine fisheries sector.	
Guidelines for the following period	
<ul style="list-style-type: none"> • Use of biological resources of the Adriatic should be based on principles of sustainable management • With the aim of conserving marine biodiversity, conditions and protection measures should be built in plans/programmes in the marine fisheries sector, and in physical plans in the part addressing the use of marine and coastal areas • Scientific research programmes and projects should be directed towards research of specific, valuable, commercially exploited, vulnerable, insufficiently known and threatened communities, taxa and habitats. 	

Use of genetically modified organisms (GMOs)

The basic acts which integrate the question on the use of GMO in the Republic of Croatia are Act on Genetically Modified Organisms and Food Act. The Ministry of Health and Social Care was nominated for implementation of the Act on Genetically Modified Organisms for central and coordination body for managing the professional work in relation to GMO. This Ministry is in compliance with the Act on Genetically Modified Organisms and Food Act and it is authorized for market launch of GMO or products that contain and consist of GMO or are of GMO origin and are used as food or food for animals. In compliance with the directives of the Act on Genetically Modified Organisms, the same Ministry is authorized for the use of GMO and products which contain and consist of GMO and are of GMO origin in cosmetics, pharmacy and health protection of people. The Ministry of Science, Education and Sports is responsible for use of GMOs in a closed system, whereas the Ministry of Culture is responsible for deliberate introduction of GMOs into the environment. Ministry of Agriculture, Fisheries and Rural Development is responsible for the use of GMO as reproduction material in the agriculture and veterinary as well as veterinary medicines and for the plants protection products. The Ministry for Regional Development, Forestry and Water Management is responsible for the use of GMO as reproduction material in forestry and the plants protection products in the forestry.

In compliance with the Act on Genetically Modified Organisms, in December 2008, the Government of the Republic of Croatia nominated the Council for genetically modified organisms which will be listed by the Committee for restricted use of GMO and Committee for introduction of GMO in the environment. All Acts from the restricted GMO use area; intentional introduction of GMO to the environment, and majority of Acts from the GMO market launch area were brought.

For the efficient enacting of the Act on Genetically Modified Organisms and the Protocol on Biosafety it is necessary to establish the national mechanism for data exchange of biological security (BCH mechanism) and a unique website at the state level which consists of all necessary information about national legislation, the Protocol itself and supervisory bodies, projects, activities, etc.

Table 3.1-9. Status of integrating biodiversity concerns into the GMOs sector.

Year	Scope of integration
Activities	
2003	Croatia became a full party of the Protocol on Biosafety to the Convention on Biological Diversity
2003-2005	The UNEP/GEF project "Development of the National Biosafety Framework for the Republic of Croatia" implemented; all GMO-related draft bills according to the Nature Protection Act of 2003 prepared
2003	Food Act enacted
2005	For better enforcement efficiency, that part of the Nature Protection Act referring to GMOs was extracted and made into a separate Act on Genetically Modified Organisms.
2005-2009	Most regulations anticipated by the GMOs Act enacted
	A web portal (www.gmo.hr) created, containing all results of the biosafety project, an overview of the Croatian GMO legislation and other related information.
Assessment of National Strategy implementation	
The Strategy does not significantly address the issue of GMO use. This issue is reflected in the action plan for the development of the GMO legislation, which has been implemented.	
Guidelines for the following period	
<ul style="list-style-type: none"> • Set up a comprehensive legislative and institutional system of GMO application control, • Set up and maintain a national BCH (Biosafety Clearinghouse) mechanism, • Continuously work on educating the staff of competent authorities, inspection services and the public. 	

Water management

The water management can have a significant influence on preservation and improvement of biological and landscape diversity in the Republic of Croatia. The waterway set up consists of building, technical and management maintenance of the regulatory and protected water buildings and constructions for the hydromelioration drainage system, technical and waterway management, water property and other activities which make available the water flows and their use.

In the integrated management of waterways concept, which represents the base of the modern approach to the integrated water management, the biological and landscape diversity is one of the key segments and therefore a significant component of the European as well as National legislation and the practice in this sector. The Republic of Croatia as a party of the internationally important Ramsar Convention on Wetlands, undertakes the measures for wetlands birds habitats protection.

Water management activities can have a great influence on the biological and landscape diversity especially on the protected values and ecologically significant areas (i.e. areas of the Republic of Croatia ecological network). The integration of the conditions and measures for the nature protection, guidance for the ecological network preservation while implementing the plans of managing the water areas, preparation and enacting of demands and actions in water management is enacted by the Nature Protection Act, Regulation on Proclamation of the Ecological Network and Ordinance on Nature Impact Assessment.

The impacts on the biological and landscape diversity are mostly related to the waterway management, works and flood protection measures, extraction of river deposits, maintenance and construction of waterways and their technical maintenance, hydromelioration drainage, irrigation and construction of accumulation and hydroenergetic objects.

The impact of hydropower plants and accumulation on water ecosystems can be multiple. It can lead to the change of water regime, reduction of deposits quantity, erosion and deepening of the parts of river beds of Drava, Sava, etc. Accumulations can cover valuable natural and subnatural areas, and dams can be obstacles for fish and other organisms. In the karst area, the construction of tunnels is connected to the hydroenergetic objects as well as conveying waters in the karst area waterways. This can lead to imbalance of the underground waters regimes in greater area.

Another problem is the waste waters impact on the biological and landscape diversity. The percentage of the system connectivity to the public drainage of 40% is still insufficient so one part of the polluted waste waters goes directly to the environment. There is a significant influence of the spotting pollution related to industry and tourism especially at the Adriatic coast. The dispersed pollution is related to the chemical products and fertilizers in agriculture, erosion of the polluted grounds, precipitation drains from the urban areas, roads, disordered waste disposals and the war consequences. It is possible that pollution will have a negative effect on wetlands, water habitats and karst and underground ecological systems.

Table 3.1-10. Status of integrating biodiversity concerns into water management sector.

Year	Scope of integration
	Activities
2005	Adoption of the Act on Amendments to the Water Act
2005	Water Management Strategy drafted
2005	Start of development of the river basin management plans

2008	Proposal of the national list of indicators for inland waters and wastewater
Assessment of National Strategy implementation	
Action plan for water management was not implemented.	
Guidelines for the following period	
<ul style="list-style-type: none"> • Water management and waterway maintenance operations need to take account of the principles of conservation of biological, geological and landscape diversity of water ecosystems, with particular focus on protected areas, ecological network sites and future NATURA 2000 sites, • Prevent disturbance of river ecosystems caused by excessive extraction of riverbed deposits, • During waterways development planning, ensure safe existence of river ecosystems, • Flood protection activities should be carried out as much as possible by using the natural retention systems and preservation of natural floodplains, • During hydromelioration planning, take account of biodiversity conservation needs, • Look into possibilities of joint implementation of programmes in protected areas by the nature protection and water management sectors, • Strengthen cooperation of water inspection and nature protection inspection services in the enforcement of nature protection conditions and measures related to water management activities, • Strengthen the institutional framework of the water management and nature protection sectors in relation to the protection of water habitats, especially wetlands. 	

Tourism

In the Republic of Croatia, tourism is one of the most significant movers of the economic development. In the last ten years, tourism enabled creation of significant financial revenues, revitalization of many rural areas and protected areas promotion, especially national and the nature parks.

Simultaneously, the negative effects of tourism are recorded in the world as well as in our country. A significant increase and development of tourist capacities and activities and a large concentration of people often endanger valuable habitats and sensitive ecosystems as well as plants and animals species.

The strategy of Croatian tourism development recognises that Croatia owns exceptionally diversified and preserved natural tourist potential which has to be protected in order to contribute to the development of tourism in the long run. Therefore, a detailed analysis of tourism efficiency in certain areas, on certain plants and animal species, their habitats and the whole ecosystems is needed.

Due to the fact that Croatian coast and islands are still oriented to the mass tourism, the pressure on national areas, especially national and nature parks which are situated near the coast and on the islands has been increased.

Uncontrolled number of visitors and disregard of the space capacity can badly influence biological and landscape diversity in these areas. The establishment of the system is of significant importance as well as development of methodology for capacity estimates of the tourism reception and connected system of monitoring so as to ensure strict management of tourists' circulation.

Due to its geographical position, exceptionally mild climate and protected biological and landscape diversity, Croatia has exceptional potential for the development of ecotourism. Therefore, it is necessary to define its development strategy and develop it systematically as a recognisable segment of Croatian tourist offer.

The development of tourism has increased the number of visitors in the protected areas. In the last 7 years, increase in the number of visitors has been registered in all national parks and especially in the Plitvice lakes NP and the Krka NP.

Better tourist promotion of natural and cultural values of the Republic of Croatia has built more attractive country identity and led to the increased interest of the visitors. The possibility of education of bigger larger number of people in nature protection significance and its preservation has presented itself. All national and nature parks enrich their tourist and educational offer for visitors from year to year. In all the parks there is a possibility of organized tourist guidance with expert explanations and organization of trips for visiting some especially interesting and attractive localities. Recently, the number of the educational paths increased significantly, so nowadays there are about 20 educational paths in national and nature parks.

Increased number of visitors in national and nature parks ensures larger revenues. This, in turn, enables accumulation and use of a significant part of these revenues for nature protection. National and nature parks participate in infrastructure construction, research and monitoring by using these assets. In many protection areas there is a moderate increase of ecotourism. Although development of tourism in the protected areas represents potential danger, it also enables collection of financial assets, profit for the local community and it increases public conscience about the importance of preservation and protection of nature.

Table 3.1-11. Number of tickets sold / fees collected / visitors registered in Croatian national parks in the period 2000-2007

Year	2000	2001	2002	2003	2004	2005	2006	2007
Protected area								
Brijuni NP	105,706	127,741	139,418	146,928	162,959	157,420	168,431	176,925
Kornati NP	55,550	52,451	50,202	63,018	74,434	61,465	77,096	49,411
Krka NP	367,608	451,314	515,031	555,641	577,877	677,621	670,104	700,828
Mljet NP	33,737	59,381	69,753	83,692	99,662	86,383	83,832	87,816
Paklenica NP	70,363	86,737	105,017	102,183	108,414	113,736	104,071	109,933
Plitvice Lakes NP	482,275	597,884	665,108	721,265	749,209	854,914	866,218	925,561
Risnjak NP	7,591	8,067	11,265	12,710	12,945	14,982	15,359	20,593
Northern Velebit NP	-	-	5,430	6,293	6,356	10,862	9,724	11,949
Total	1,122,830	1,383,575	1,561,224	1,691,730	1,791,856	1,977,383	1,994,835	2,083,016

Table 3.1-12. Status of integrating biodiversity concerns into tourism sector.

Year	Scope of integration
Activities	
2003	Adoption of the Tourism Development Strategy until 2010
2004	Enactment of the Regulation on Planning and Protection of the Protected Marine Coastal Areas
2006	The Ministry of Tourism commissioned the Tourism Institute for a research on the attitudes and consumption patterns of the national and nature park visitors
2008	Proposal of the national list of indicators for tourism
Assessment of National Strategy implementation	
The Strategy did not specifically address impacts of tourism on biological and landscape diversity; therefore no action plans have been anticipated.	
Guidelines for the following period	
<ul style="list-style-type: none"> • Strengthen the nature protection significance at all levels of the tourism sector, • Develop tourism that is not conflicting with biodiversity conservation in protected areas and 	

- ecological network sites,
- Educate visitors in visitor education centres set up in protected areas, particularly on natural values and the importance of protected area conservation.

Transport

Transport becomes one of the management sectors which grow fast. All types of transport – road, railway, air and maritime/waterway transports – influence the components of biological diversity. The existing transport structure – 2.726 km of the railway routes, 30.000 km of the roads (highways, motorways and low capacity roads), waterways, 7 airports – directly influence the habitats.

The main negative effects of roads are loss or fragmentation of habitats that lead to population fragmentation, habitats quality degradation, disturbance caused by lights and noise, pollution by different agents, undesirable impacts on habitats, death of animals while crossing the roads and risks of endangering traffic participants. Habitats fragmentation has been recognized as one of the most important causes of biological diversity decrease in Europe. In Croatia, hundreds kilometres of new highways were constructed in the last ten years. Those highways connect inland with northern and southern coast passing through Gorski Kotar, Lika and Dalmatia and crossing the habitats of the various animals groups. Large carnivores which need large living space are especially sensitive to big infrastructure projects. The increase of the wild animals' mortality has been registered in recent years.

With the exception of habitats fragmentation, another problem is a poorly put up road security fence (for example, an inadequate wire fence along the highways which makes it possible for animals to go beneath or jump over the fence) which is dangerous for both animals and people in the traffic safety.

The highway capacity for wild animals is being observed in cooperation with the Croatian Highways Ltd company and the experts from the Veterinary Faculty of the University of Zagreb. In 2002, a study with guidelines for animals' crossings was made. In the beginning of 2007, the Ordinance on Wildlife Crossings was enacted. It prescribes protection measures, the persons obligated to carry out protection and the maintenance of wildlife crossings across public roads, other roads or structures that extend over known wildlife migration routes.

Birds are often killed on the roads. There is a negligible impact on some species, but for others it can be one of important factors for population quantity decrease in a certain area (for example, nighthawk, grey owl and barn owl). River traffic can have a negative influence on wetlands birds which are the most threatened birds in Croatia as maintenance of waterways includes river habitats (for example, destruction of shoals, channelling of rivers and establishing river banks), as well as swamps habitats, survival of which depends on these rivers.

Other animal groups influenced by traffic include amphibians which are often killed on the roads during migrations. Although this problem was not solved at the state level, on the basis of individual actions of the non-government organizations, a special sign that warns about amphibians crossing the road was put in relevant regulations.

Box 3.1-4. Success story – Wildlife crossings in Croatia

More than 400 km of motorways have been or are being built within a large carnivores' habitat, on the stretches from Karlovac to Rijeka and from Bosiljevo and Split towards Dubrovnik. The motorway network has fragmented the large carnivores' habitat into four separate areas, which greatly affects

their spatial redistribution. Although these motorways affect habitat quality and migration possibilities for all animals, the number and length of wildlife crossing objects along the motorway routes theoretically ensure adequate permeability. Namely, during the construction of these motorways, the 'green bridges' were set up near tunnels and viaducts. A total of nine such wildlife crossings were built in the period from 1998 till the end of 2007.

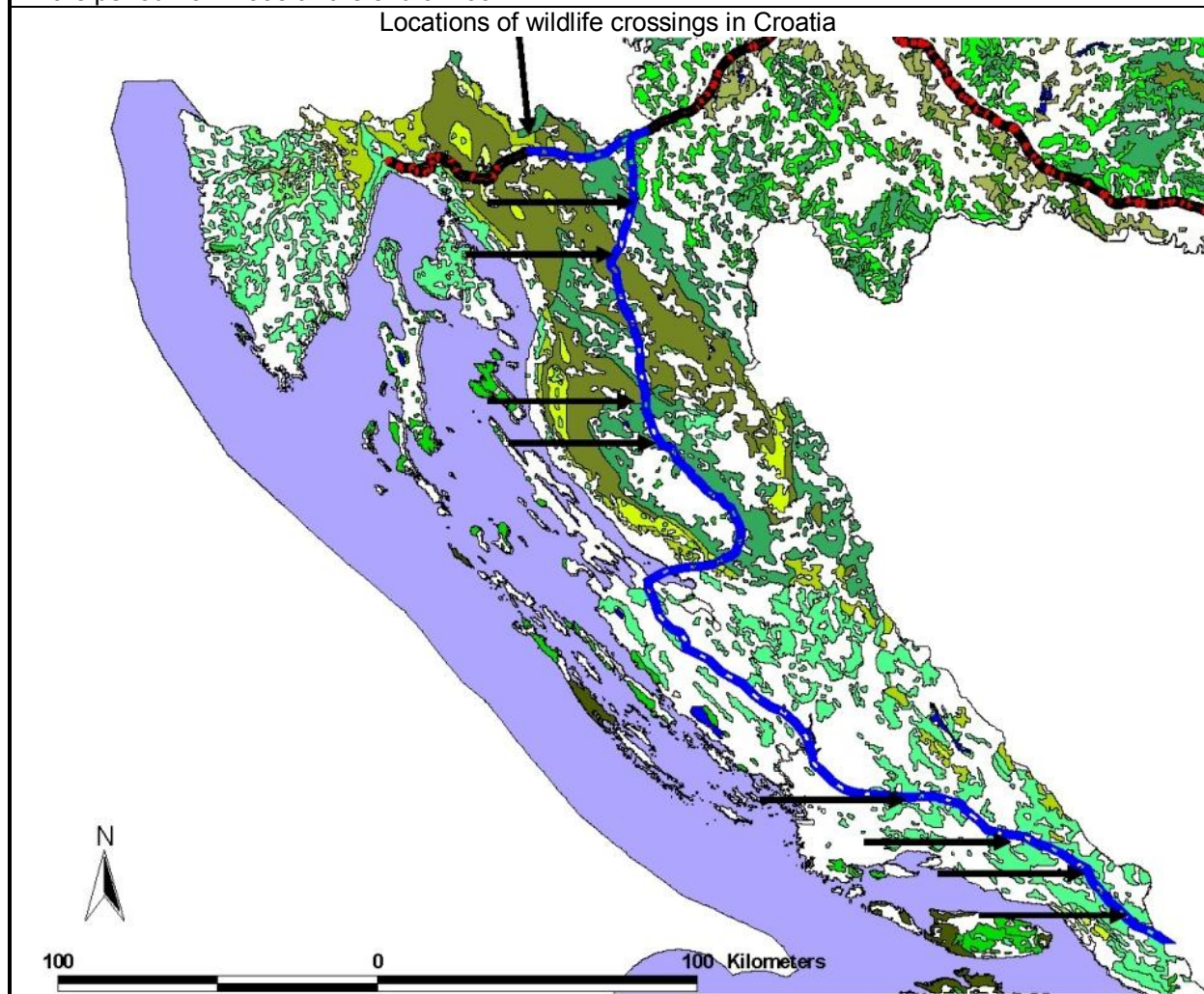


Table 3.1-13. Status of integrating biodiversity concerns into transport sector.

Year	Scope of integration
Activities	
1998-2007	A total of 9 wildlife crossings was built on new motorways; start of permeability monitoring for wild animals
1999	The „Hyla“ NGO implemented the project „Saving Amphibians on Roads“ in Đelekovci near Koprivnica
2002	With the support of the Civil Engineering Institute of Croatia (IGH), a study and guidelines for wildlife crossings were prepared
2003, 2005	The Nature Protection Act prescribed protection of wildlife migration routes
2004, 2005	Management plans for large carnivores adopted, containing guidelines for habitat integrity conservation
2007	Ordinance on Wildlife Crossings enacted
2008	Proposal of the national list of indicators for transport
Assessment of National Strategy implementation	
The Strategy did not specifically address impacts of transport on biological and landscape diversity; therefore no action plans have been anticipated.	
Guidelines for the following period	

- Systematically monitor the impacts of roads, railways and other transport lines to species and habitats,
- Ensure permeability of existing and planned transport routes for wild animals in order to enable their daily and seasonal migration.

Energy

Due to the energy crisis, pollution of environment and climate changes related to the use of energents, the trend of passing from the conventional type of energy production to the renewable energy sources of wind, solar energy, geothermal energy and biomass is visible. Regarding the same trends in Croatia, it is necessary to pay attention to the introduction of renewable sources of energy which don't produce greenhouse gas. However, controversial questions about the impact of the renewable energy sources on the biological diversity arose.

In the Republic of Croatia the legislative frame which regulates the area of renewable sources of energy has been established. In consuming electrical energy, the objective is to achieve that 5.8% of energy is ensured from the renewable sources without the hydropower plants use. The further objective is the increase of 15% until 2020 which is in compliance with the EU trends. It is strategically necessary to develop systems which enable and stimulate savings and reduction of energy consumption. It includes stimulation for the more efficient production systems, transfer and energy consumption. The Master plan for the energy efficiency will be established and the Act on efficient use of energy in direct consumption has been enacted.

Windpower plants – In Croatia, about 20 MW are temporarily being produced from the windpower plants, of which 300 MW are expected to be produced by 2010. The growing number of windpower plants represents bigger potential problem for different types of birds and bats. In Croatia, the selection of potential locations for the windpower plants has included the wind energy potential of certain locations as well and possible impacts on birds and bats have not been evaluated enough. The cumulative effects of setting many windpower plants in some areas have not been taken into account. The wind generators are planned to be installed on the mountain ridges or just below them, at the places which are, due to specific conditions (for example thermals) important for vultures, especially those that use sailing as a way of flying (for example eagles and griffon vultures). In addition, these cliffs, situated above tunnels that are part of highways or other roads, are valuable corridors for road crossings. Existence of wind power plants; their work, noise, and access roads obstruct them. According to the Ordinance on Wildlife Crossings, this type of construction has to be subject to Nature Impact Assessment.

Hydropower plants – Nowadays, 35.845.700 thousands m³ of water is being used for production of electrical energy annually, of which 97.4% is used from waterways, 2.2% is used from accumulations and the rest from other resources. By construction of hydropower plants and accumulation pools, national river flows have been significantly changed, which has a negative impact on the whole series of habitats and life communities that belong to them. For the programmes and plans of implementation of the Strategy for energy development for which public discussion was finished, it is necessary to elaborate strategic estimation of the impact on environment including nature impact assessment, in order to identify which of the planned hydropower plants have significant negative impact on species and habitats at the ecological network area. While planning the construction of hydropower plants, the procedure of environmental impact assessment was prescribed, together with nature impact assessment. The three hydropower plants on the River Drava: Varaždin HPP,

Čakovec HPP and Dubrava HPP are the first hydropower plants in Croatia to receive the ISO 9001 and ISO 14001 certificates. Such certificates, especially ISO 14001 should be provided for all other hydropower plants in the Republic of Croatia.

Electricity lines – Since electric wires network in Croatia is becoming denser, the risk of birds suffering on the electricity lines and negative effects on threatened bird species increase. The Nature Protection Act anticipates protection measures for birds endangered by electric shocks. It is very important to make quality environmental impact studies while planning new electricity lines construction. It is also important to make real estimates of the negative effects of the planned intervention on the bird population and to integrate protection measures where it is necessary. It is necessary to take into account the same problems when replacing used electricity lines by new ones.

Biofuels – Recently the biofuels have been discussed at all levels and in all sectors but for the biological diversity the conclusions and decisions made at the Convention of biological diversity are relevant. Biofuels Act with the proposal for adoption in the first quarter of 2009 has been drafted.

Isolated systems – In the protected nature areas the conditions are ideal for implementation of the pilot project of the renewable sources of energy use and replacement of the conventional energy sources by implementation of solar collectors, biomass use and small wind power plants especially for mountain huts, houses and shelters, telemetric fire-fighting stations, buildings, administration offices, parks and other infrastructure energy supply. Some objects are not connected to electric lines because it has not been built or the construction of the electricity network pillars has not been allowed. Therefore the fossil fuel aggregates, generators are used and their usage is problematic.

Table 3.1-14. Status of integrating biodiversity concerns into energy sector.

Year	Scope of integration
Activities	
2003	Enactment of the Act on the Fund for Environmental Protection and Energy Efficiency
2008	Proposal of the national list of indicators for energy sector
Assessment of National Strategy implementation	
The Strategy did not specifically address impacts of energy sector on biological and landscape diversity; therefore no action plans have been anticipated.	
Guidelines for the following period	
<ul style="list-style-type: none"> Management actions in the energy sector should be based on the principles of conservation of biological and landscape diversity, with particular focus on protected areas, ecological network sites and future NATURA 2000 sites. 	

Mining

Exploitation of mineral resources which covers stone technical and building materials, sand, gravel and brick clay has a negative impact on landscape and biological diversity. It is related to the surface diggings, quarries, gravel areas, clay and sand diggings. Exploitation of mineral resources takes place on 584 approved fields (the average of the exploiting field has a surface of 34 ha.) cover the surface of about 21 877 ha which, in relation to the total continental surface of the Republic of Croatia, amounts to 0,38%. Statistically, the mineral resources exploited fields don't cover a large surface in the Republic of Croatia but considering ways of excavating resources, they have significant impact on nature, i.e. biological, geological and landscape diversity. The existing open excavation surfaces are

results of former exploitation. Many quarries, gravel areas, clay diggings and other mining objects were opened according to construction needs but their restoration and restructuring, which would be acceptable for the environment, failed because there were no activities of design and allotment of the final uncovered excavations.

Table 3.1-15. Status of integrating biodiversity concerns into the mining sector.

Year	Scope of integration
Activities	
2008	A proposal of the national list of indicators for industry, including mining, has been prepared.
Assessment of National Strategy implementation	
The Strategy did not specifically address impacts of mining on biological and landscape diversity; therefore no action plans have been anticipated.	
Guidelines for the following period	
<ul style="list-style-type: none"> • Improve cooperation among relevant sectors at national and local levels regarding planned and sustainable use of mineral resources, taking into consideration biodiversity conservation measures, • Plan for exploitation in combination with physical restoration, as well as remediation or land use change of all abandoned (unremediated) excavations, • Enhance cooperation between the mining and the nature protection inspection services. 	

3.2 General intersectoral integration

Education

Education about nature protection is still not a priority although younger generations should take care about nature protection in the future. There is no constant and active cooperation among the state administration bodies authorized for education and protection of nature and their belonging expert institutions. This cooperation is needed for the implementation of education strategy for nature protection and respective changes of existing school programmes. Although there are thematic expert congresses of educational workers held annually, expert trainings on nature protection are not very important. Institutions that work on nature protection have sporadically implemented educational activities about nature protection in the frame of different projects of nature protection, through extra-curricular activities and in direct contact with certain schools.

In order to create interest for nature protection and necessity of its preservation, the existing school programmes should be supplemented with field education and stress out education about natural resources values that are situated in the region in which elementary and high schools are located. The next step is active integration in monitoring certain plants and animal species and habitats. For example, the GLOBE programme has been launched for monitoring physical and chemical parameters.

Box 3.2-1 Success story – Counting Barn Swallow and House Martin nests

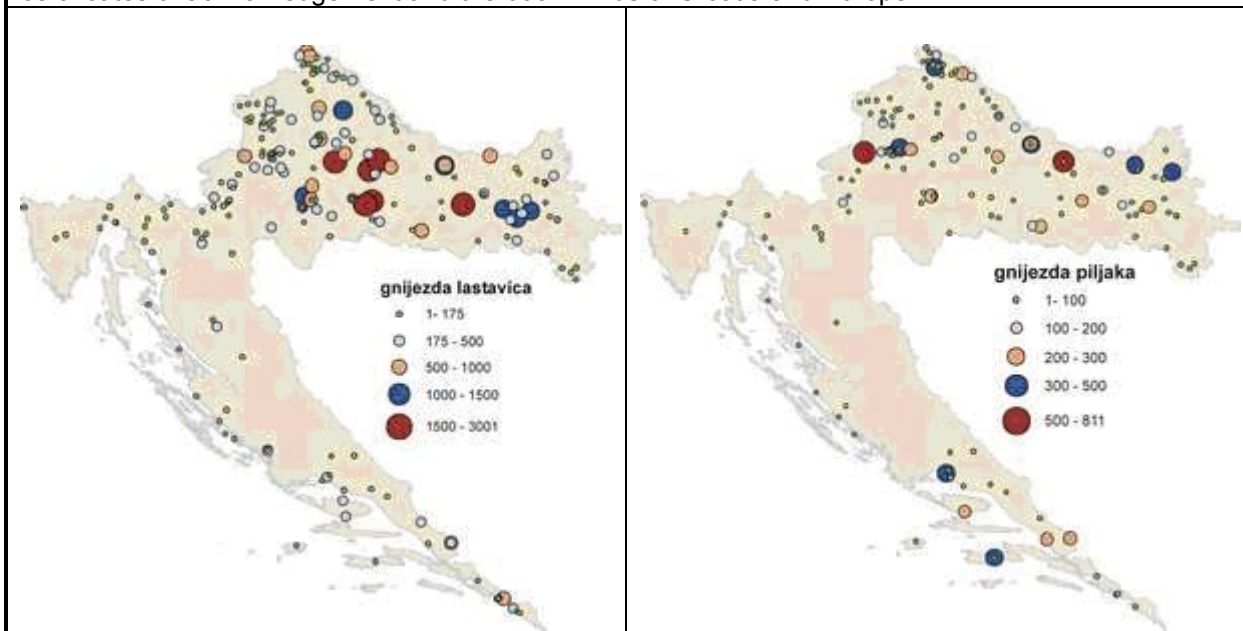
All Croatian schools have been invited to join the action of counting Barn Swallow and House Martin nests in 2004. The idea was to develop interest of schoolchildren in biodiversity monitoring, and to make it more understandable to them by focusing on the species that are very common, well known and easy to identify. Protocols and monitoring forms were prepared. Data forms with instructions were distributed to regional education commissioners during a project presentation, and they were expected

to further distribute them to all Croatian schools.

The nest counting action was combined with the call for schools to take part in the visual and literary artwork competition, with the topic of swallows. The results of nest-counting and best children's artwork were presented on May 21, 2004, on the occasion of the International Day for Biodiversity, including the exhibition of all children's works. The event was held at the Children's Corner of the Zagreb City Libraries, under the auspices of the Ministry of Culture. The occasion was also used to present the leaflet containing the results of nest-counting and the poster. The schools that counted the most nests and those that managed to involve the largest number of pupils received books and binoculars, as prizes for their efforts.

The big interest of schools enabled collection of as many as 8,574 completed data forms. The total of involved schools was 249 (197 elementary and 46 secondary schools) with approximately 5,000 pupils. In order to be able to use the data for future monitoring purposes, all data have been entered into a special database. A GIS map of nests was also produced.

Based on the very good response of schools from all parts of Croatia, it was decided to continue the action in 2005, however with the selected schools only and in pre-defined areas. Continuing this activity through subsequent years would enable proper monitoring. Nest counting was conducted in May 2005, with a total of 53 involved schools that returned cca 5,000 forms. A total of 14,627 Barn Swallow and 3,117 House Martin nests were counted. As a sign of gratitude, teachers received certificates of acknowledgement and the book "Birds of Croatia and Europe".



The nature protection is more and more represented in the high education programmes but it is still insufficiently represented. University of Zagreb, University of Josip Juraj Strossmayer in Osijek, University of Split, University of Dubrovnik and Polytechnic College in Karlovac have subjects on the nature protection of those areas, conservation biology and natural resources management.

The professional congresses and seminars have been regularly held and educational excursions for the workers of the nature protection sector have been periodically organized. Since 2003, the Ministry of Culture has been organising seminars for education of customs officers, border and criminal police and workers of the border veterinary and fito-sanitary inspection due to the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The professional meetings of the expert directors, the supervisors of protected areas, and public institutions are being organized on a regular basis. Since 2003, the seminars for damage experts of strictly

protected large carnivores have been organized. Within the project of the communication of nature protection, many various seminars and workshops have been organized. Many activities have been made for education of experts for managing the protected water and wetlands habitats through different workshops and seminars in nature parks.

Table 3.2-1. Status of integrating biodiversity concerns into the education sector.

Assessment of National Strategy implementation
NSAP anticipated 9 action plans, which have only been partially implemented – predominantly focused to on-the-job training for nature protection officials.
Guidelines for the following period
<ul style="list-style-type: none"> • Enhance understanding, significance and presence of the concepts of biological, landscape and geological diversity and its conservation at all educational levels. • Encourage institutional and extracurricular education on biological, landscape and geological diversity and its conservation. • Enable and encourage professional and scientific training of staff dealing with nature protection issues. • Strengthen cooperation among national authorities, expert and scientific institutions, educational institutions and NGOs in the area of nature protection education.

Research and monitoring

The data on biological and landscape diversity in the Republic of Croatia are collected by the scientific, high-school and museum institutions but the collecting is not systematical and data availability is poor. Due to the insufficient valorisation of the expert work significance, inventorization of the biological and landscape diversity components, the interest of young scientists at scientific, high-school and museum institutions for classical taxonomy, floristic and faunistic studies declines.

State Institute for Nature Protection is authorized for coordination of the inventorization and monitoring of the biological diversity conditions on the basis of the Nature Protection Act. By establishing the State Institute, the collection of data has been institutionalized since 2003. The prerequisites for creating of the central database have been created in the frame of the nature protection information system. In the period of implementation of Strategy by the end of 2007, red lists and red books of threatened species were made and some of them are yet to be created. Regarding the evident lack of data, the accent has been put on the project financing of inventorying and monitoring the status of the threatened species and habitats. The mobilization of a large number of experts for inventorying and monitoring of flora and habitats, sea habitats and part of fauna conditions is necessary. These handbooks are the first step in standardization of data collection methodology, as a basis for establishment of systematical monitoring.

The Croatian Environment Agency (CEA) is the central information body for coordination of the reports and reporting of the European Commission of the implementation of individual environment protection acts. The CEA reports to the European Environment Agency (EEA) and is in compliance with the demand of the European information and monitoring network (EIONET). The part of the data delivered by the Agency are the data about protected areas for the Common Database on Designated Areas (CDDA) which are collected in cooperation of the Ministry of Culture, Nature Protection Directorate and State Institute for Nature Protection. In compliance with the Environmental Protection Act, CEA is obliged to establish the Environmental Protection Information System (EPIS) in cooperation with other bodies of the state administration and other institutions. According to the Regulation on Environmental

Protection information system, EPIS represents a series of the mutually connected electronic databases and sources of the data about conditions, pressure on the environment, regional characteristics and other data and information important for monitoring of the environment conditions at the national level.

Table 3.2-2. Status of integrating biodiversity concerns into research and monitoring.

Assessment of National Strategy implementation
NSAP anticipated a large number of action plans, which have only been partially implemented due to limited material and human resources.
Guidelines for the following period
<ul style="list-style-type: none"> • Conduct inventorying and monitor the status of biological, landscape and geological diversity. • Continue the establishment of the national monitoring system for biological, landscape and geological diversity. • Continuously improve the nature protection information system. • Monitor the impact of climate change on biodiversity. • Encourage scientific community to carry out national research with the purpose of inventorying and establishing species and habitat distribution and population sizes. • Make use of the list of indicators during biodiversity monitoring.

Public information and participation

Public information systems have an important role in the protection of the biological, landscape and geological diversity. They can create support, pressure or public engagement by providing information to the general public. The increase of the electronic communication share is a global trend, and this potential should be used in educational, communication and public participation purposes for the protection of biological, landscape and geological diversity.

Information about the biological, landscape and geological diversity condition and availability of information are fundamental prerequisites for raising public awareness on biological diversity topics.

Legal prerequisites have been created for the public participation in decision making about nature and environment protection, but it is necessary to influence the public on integration in the procedures of public inspection and public discussions. Implementation and full functioning of the Mechanism for exchange of information on biological diversity (Clearing House Mechanism – CHM) will contribute to this objective.

The important communication agents of the biological diversity concept are the non-government organisations which can include general public in the processes of biological, landscape and geological diversity protection.

Informing the general public and target groups about biological and landscape diversity protection has been implemented in the frame of various nature protection projects or celebrations of the important dates as Nature Protection Day, The Earth Day, Wetlands Day, promotion of scientific publications, temporary organisation of the thematic round tables, press conferences, etc.

Regarding the media coverage, nature protection is becoming increasingly popular. Daily newspapers follow events related to these issues, most often in the shape of short news, although recently there are new specialized editions of magazines which cover nature protection topics.

The Republic of Croatia is a party of the Aarhus convention. The obligation of informing the public and cooperation of the public in the decisions has been regulated by the Nature Protection Act, Environmental Protection Act and Act on Physical Planning and Construction while the procedures of the public participation have been enacted by the Regulations and Ordinances.

Table 3.2-3. Integration of biodiversity concerns into public information and participation.

Assessment of National Strategy implementation
Only some of the NBSAP action plans related to public information have been implemented, predominantly those related to cooperation with NGOs. NBSAP did not anticipate action plans related to public participation in decision-making.
Guidelines for the following period
<ul style="list-style-type: none"> • Enhance and raise public awareness and education levels on biological, landscape and geological diversity and enhance public participation in decision-making. • Set up mechanisms for international, regional and national data exchange on biological, landscape and geological diversity and on conservation actions. • Encourage civil society organisations to implement activities related to nature protection and promotion. • Encourage participation of the media in public education, information and participation related to biological, landscape and geological diversity. • Encourage volunteering and other forms of extracurricular education and public actions in the area of biodiversity conservation.

Physical planning

In compliance with the new Act of Physical Planning and Construction, the documents of the physical planning cover the organisation, use and allotment of the space, measures and guidelines for arrangement and protection of the state, counties, the City of Zagreb, big towns, towns and communities areas. The documents of physical planning have been brought at the state level (Strategy for Physical Planning Development, Program of Physical Planning of the Republic of Croatia, and the part of the physical planning in the areas with special characteristics) and physical planning at regional and local level. These documents include the physical planning of the county or the City of Zagreb and a part of the physical planning of the specific characteristics areas, physical planning of a big town area, community area, urbanistic and detailed physical planning. Regarding allotment, they are divided in strategic documents of physical planning (Strategy for Physical Planning Development, Program of the Physical Planning of the Republic of Croatia and the Physical Planning of Specific Area Characteristics, Physical Planning of Town and Community) and directives documents of physical planning (Urbanistic Physical Planning and Detailed Physical Planning).

In spite of the positive legislation in the Republic of Croatia, there is an intensive use and unselected 'occupation' of rural and coastal area (enterprise zones, training grounds, apartment settlements, wind power plant fields, golf playgrounds, large surfaces anticipated for tourist construction at the coastal area, etc.) Therefore, the necessity for nature protection is not only important as a representative protection (threatened species, sensitive habitats or corridors, categorized protected areas) but also as protection of individual nature areas.

The valid generation of the counties physical plans (adopted in the period 2000 – 2004) with the exception of fundamental planning (for example, candidacy of new protected areas) does not contain other serious instruments of protection and preservation of biological and landscape areas values. It is partially due to lack of data about biological and landscape

values, but also because of the lack of sensibility of the physical planning documents designers that there should be a biology expert in the team for physical planning. Physical plans are dominantly dedicated to the constructed environment, they are concentrated on infrastructure, recreation, tourism, buildings, economic development and traffic. They rarely enact nature protection measures for the whole area including inadequate development (for example, numerous quarries, oversized enterprise and tourist zones, etc). Such physical planning determines the use and allotment of the planning and represents the basis for the development directions.

Act on Physical Planning and Construction and Nature Protection Act enact physical planning drafts of the specific characteristics areas for the protected areas (especially National and Nature parks). All national parks, except Northern Velebit National Park, and two nature parks – Učka and Kopački rit have valid physical plans, while physical plans for other nature parks are under preparation.

The Nature Protection Act enacts the obligation of issuing the conditions and nature protection measures to the physical planning holder and obligation of issuing the preliminary agreement in the procedure of adoption of physical planning which cover the protected area.

Upon the entry into force of the Ordinance the Habitat Types, Habitat Map, Threatened and Rare Habitat Types, and on Measures to Preserve Habitat Types in January 2006 and the Regulation on Proclamation of the Ecological Network in October 2007, in the procedure of establishing the prerequisites and nature protection measures, the State Institute for Nature Protection provides the Ministry of Culture data about presence of the threatened and rare habitats types for in the area of the plan range, the proposal of measures for their protection, data about areas included in the national ecological network or represent the potential NATURA 2000 area. The data about wild species, their vulnerability and protection status have been also provided (Ordinance on Proclamation of Wild Taxa as Protected and Strictly Protected since January 2006). The data provided from the State Institute are integrated in the conditions and nature protection measures of the Ministry and are delivered to the physical planning holder with other data needed for elaboration of plans related to the nature protection area.

Table 3.2-4. Integration of biodiversity concerns into physical planning.

Assessment of National Strategy implementation
The action plan anticipated by NBSAP has only been partially implemented.
Guidelines for the following period
<ul style="list-style-type: none"> • Conduct territorial evaluation (at the level of counties and the City of Zagreb) focused on nature protection and conservation/enhancement of populations of threatened and protected species, threatened and rare habitat types and conservation of landscape values; define priorities for planning the proclamation of new protected areas. • Enact the remaining physical plans (and/or amendments thereof) for areas of special features in all national parks and nature parks. • Define interlinkages between physical plans for areas of special features and management plans of national parks and nature parks with regard to their content. • Carry out capacity building of regional and local authorities for implementation and enforcement of physical planning provisions and project permitting, particularly with regard to new territorial evaluation of counties, protected areas and ecological network sites. • Improve implementation and enforcement of nature protection measures and conditions built into physical plans. • Raise public awareness on biological, geological and landscape diversity and the importance of spatial conservation; encourage public involvement in preparation and adoption of physical plans.

Nature Impact Assessment

The Nature Protection Act enacts implementation of Nature Impact Assessment. It is also in charge of those interventions that can have a significant impact on ecologically important areas or protected natural values. The evaluation procedure of interventions covered by the EIA, has been regulated by the Regulation on the Environment Impact Assessment while the procedure of evaluation of other interventions has been regulated by the Ordinance on Nature Impact Assessment.

In order to harmonize the Nature Protection Act with the EU Habitat Directive and enact the detailed procedure, the way and necessity of evaluation of acceptability for nature, in December 2008, the Act on amendment of the Nature Protection Act in which there are detailed phases of the acceptability evaluation for nature as it follows: the previous evaluation, the main evaluation with the evaluation of other suitable possibilities and identifying of the prevailing public interest and compensation conditions. The existing Ordinance on Nature Impact Assessment will be necessarily amended in compliance with the adopted amendments of the Nature Protection Act.

The Environmental Protection Act ensures complete preservation of the environmental quality, preservation of nature communities, rational use of nature resources and energy in the best suitable way for the environment as the fundamental condition of a healthy and sustainable development. The objectives of environmental protection are enacted by law and some of them are: plants and animal world protection, biological and landscape diversity and ecological stability preservation; sustainable development of natural resources without bigger damage and threatening to the natural environment, protection and quality improvement of certain environmental components, improvement of natural balance and establishment of the environment regeneration capabilities, improvement of environmental conditions, ensuring healthy environment, etc.

One of the instruments that implement environmental protection in compliance with the Environmental Protection Act is the Environmental Impact Assessment that looks at all possible direct and indirect impacts of intervention on the soil, water, sea, air, forests, climate, health of people, plants and animal world, landscape, material assets and cultural heritage, taking into account relations between them. The estimation of the impact on environment has been implemented within the preparation of the intended intervention, before issuing the location licence or other act which would approve that intervention. The interventions with estimation of impact on nature have been implemented, the way of the evaluation of impact on the nature, the way of the implementation of the evaluation procedure about the necessity of evaluation of impact on the environment and the way of the work of the committee have been enacted by the Regulation on the Environmental Impact Assessment. For the interventions where the EIA and the nature impact assessment are obligatory, in compliance with the Article 36 of the Nature Protection Act, the two procedures have been implemented as a unique procedure. The request for the EIA contains the appropriate act issued in the procedure of the acceptability evaluation of the nature intervention – the previous evaluation (the certificate of the intervention acceptability or opinion of obligation of the main evaluation procedure implementation). The procedure of the main evaluation has to be implemented in compliance with the procedure of evaluation of impact on the environment and before the implementation of the resolution; the supervisory body must deliver the committee opinion of the intervention acceptability to the supervisory body for nature protection.

The strategic estimation of the plan and programme impact on the environment is an instrument which implements nature protection and it represents an innovation in relation to the former Environmental Protection Act. The significant environment impacts which can arise from the implementation of the plan or programme have been evaluated so the

applicable decisions of the plan or programme acceptability should be enacted in reference with the possible significant impacts. The strategic evaluation is implemented during the elaboration of the plan and programme proposals before the establishment of the final proposal and reference to the implementation procedure. The way of implementation of the strategic evaluation has been enacted by the Regulation on strategic environmental assessment and the procedure of the acceptability evaluation has to be implemented as a unique procedure. The decision of the implementation of the strategic estimation procedure should contain an opinion of the obligation of main evaluation procedure implementation. The procedure of the main evaluation has to be implemented in compliance with the evaluation procedure of the impact on the environment.

Table 3.1-3. Integration of biodiversity into strategic planning and investment cycles.

Assessment of National Strategy implementation
NSAP did not anticipate separate action plans for strategic planning and investment cycles.
Guidelines for the following period
<ul style="list-style-type: none"> • Set up mechanisms and a system for Nature Impact Assessment. • Strengthen the principles of conserving biological, landscape and geological diversity within environmental impact assessment procedure. • Build capacity of regional and local authorities for implementing the procedure of Nature Impact Assessment. • Raise public awareness on the importance of Nature Impact Assessment, the ecological network and the international NATURA 2000 network.

4 Conclusions: Progress towards the 2010 Targets and Implementation of the Strategic Plan

General progress in the achievement of biodiversity conservation targets until 2010 and achievement of goals and targets of the Strategic Plan of the Convention on Biological Diversity in the Republic of Croatia primarily involves creation of the legislative, strategic and institutional framework for their implementation. Having incorporated biodiversity conservation concerns in national laws and regulations, Croatia has also started to integrate biodiversity conservation in all relevant sectors at international and regional levels. This particularly refers to accession to majority of international environmental agreements, and especially integration into regional biodiversity conservation systems (Euroregion, European Union, Mediterranean, the Danube River Basin, etc.). Bearing in mind that Croatia is a transition economy, with limited resources for implementation of all commitments it has taken upon, the focus of implementation of the Convention's goals and targets in the reporting period was put on biodiversity inventorying, strengthening the system of specially protected areas, and overall biodiversity protection through national and regional ecological network systems (National Ecological Network, Emerald Network, Natura 2000).

4.1 Progress assessment towards achieving the biodiversity conservation targets until 2010

Table 4.1-1. Progress assessment of the Republic of Croatia regarding biodiversity components protection.

Focal area: Protect the components of biodiversity			
Goals and targets	Relevant CBD indicators	National indicator	Progress assessment
Goal 1. Promote the conservation of biological diversity of ecosystems, habitats and biomes			
Target 1.1: At least 10% of each of the world's ecological regions effectively conserved.	<ul style="list-style-type: none"> • Coverage of protected areas • Trends in extent of selected biomes, ecosystems and habitats • Trends in abundance and distribution of selected species 	BR1 – BR09 BR14	<ul style="list-style-type: none"> • 11.59% of national territory covered by the protected area system • 1,050 km² of the marine territory under protection • Croatian Ecological Network encompasses 47% of land and 39% of marine territory of the Republic of Croatia as well as two corridors: corridor for sea turtles and Palagruža-Lastovo-Pelješac corridor (important bird migration area). • 44.83% of the national territory proposed for NATURA 2000 (2008)
Target 1.2: Areas of particular importance to biodiversity protected	<ul style="list-style-type: none"> • Trends in extent of selected biomes, ecosystems and habitats • Trends in abundance and distribution of selected species • Coverage of protected areas 		
Goal 2. Promote the conservation of species diversity			

Target 2.1: Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups.	<ul style="list-style-type: none"> • Trends in abundance and distribution of selected species • Change in status of threatened species 	BR07 – BR10	<ul style="list-style-type: none"> • 1,682 strictly protected and 4,630 protected taxa • 11.59% of the national territory covered by the system of protected areas • 1,050 km² of the marine territory under protection • Croatian Ecological Network encompasses 47% of land and 39% of marine territory of the Republic of Croatia as well as two corridors: corridor for sea turtles and Palagruža-Lastovo-Pelješac corridor (important bird migration area). • 44.83% of the national territory proposed for NATURA 2000 (2008) • A system for inventorying and monitoring of species diversity is set up
Target 2.2: Status of threatened species improved.	<ul style="list-style-type: none"> • Change in status of threatened species • Trends in abundance and distribution of selected species • Coverage of protected areas 		
Goal 3. Promote the conservation of genetic diversity			
Target 3.1: Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained.	<ul style="list-style-type: none"> • Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socioeconomic importance • Biodiversity used in food and medicine (indicator under development) • Trends in abundance and distribution of selected species 	BR09-BR10 BR12	<ul style="list-style-type: none"> • Endemic plants grown in in-vitro culture. • Botanical gardens harbour a large number of threatened and endemic, as well as other taxa that enjoy limited ex-situ conservation status. • Zoological gardens are included in the threatened breeds' conservation programmes. • Some protected areas implement their own programmes for conservation of certain native animal breeds and plant varieties. • Protection of autochthonous regional products, products with protected designations of origin, as well as of protected name and regional trademark products enables conservation of traditional knowledge and practice (local breeders' and manufacturers' associations).

Table 4.1-2. Progress assessment of the Republic of Croatia in sustainable use and consumption of biodiversity.

Focal area: Promote sustainable use			
Goals and targets	Relevant CBD indicators	National indicator	Progress assessment
Goal 4. Promote sustainable use and consumption.			

<p>Target 4.1: Biodiversity-based products derived from sources that are sustainably managed, and production areas managed consistent with the conservation of biodiversity.</p>	<ul style="list-style-type: none"> • Area of forest, agricultural and aquaculture ecosystems under sustainable management • Proportion of products derived from sustainable sources (indicator under development) • Trends in abundance and distribution of selected species • Marine trophic index • Nitrogen deposition • Water quality in aquatic ecosystems 	<p>BR07 – BR09 BR12-BR15</p>	<ul style="list-style-type: none"> • Programmes and plan with likely significant impact on the environment, including biodiversity, are subject to strategic environmental assessment procedure • Most economic activities that exploit natural resources undergo environmental impact assessment procedure, which includes assessment of impact on biodiversity. • Economic activities that may affect areas covered by the ecological network (species and habitats) are subject to nature impact assessment (NIA) • Management plans for natural resources (water bodies, forests, game, and wildlife) need to include biodiversity conservation measures. • Sustainable management measures are applied on 37.1% of the national territory covered by forests, with the aim of maintaining biodiversity levels and ensuring that they are managed according to principles of economic sustainability, social responsibility and ecological acceptability. • Sustainable use is ensured through issuing permits for collection and use, as well as through control over collection and use of plants, fungi, snails, frogs etc. • Brown bear is managed based on the Management Plan and the related annual Action Plan for Management. • CITES provisions are fully implemented in the area of international trade.
<p>Target 4.2: Unsustainable consumption, of biological resources, or that impacts upon biodiversity, reduced.</p>	<ul style="list-style-type: none"> • Ecological footprint and related concepts 		
<p>Target 4.3: No species of wild flora or fauna endangered by international trade.</p>	<ul style="list-style-type: none"> • Change in status of threatened species 		

Table 4.1-3. Progress assessment of the Republic of Croatia in reduction of threats to biodiversity.

Focal area: Address threats to biodiversity			
Goals and targets	Relevant CBD indicators	National indicator	Progress assessment
Goal 5. Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced.			
<p>Target 5.1: Rate of loss and degradation of natural habitats decreased.</p>	<ul style="list-style-type: none"> • Trends in extent of selected biomes, ecosystems and habitats • Trends in abundance and distribution of selected species • Marine trophic index 	<p>BR04 – BR10 BR15 M07</p>	<ul style="list-style-type: none"> • Map of Habitats of the Republic of Croatia was made. • Preparation of the Red Book of threatened habitats is planned. • Red Books of threatened plant, animal and fungi

			<p>species were developed or are in development.</p> <ul style="list-style-type: none"> • Full implementation of this goal is expected in the framework of management of the Ecological Network and the protected area system.
Goal 6. Control threats from invasive alien species			
Target 6.1: Pathways for major potential alien invasive species controlled.	<ul style="list-style-type: none"> • Trends in invasive alien species 	BR11	<ul style="list-style-type: none"> • The Nature Protection Act and the Environmental Protection Act have set the framework for the control of introduction of non-native invasive species into Croatia. • The Hunting Act and the Islands Act include provisions for the prevention of expansion of non-native invasive species. • The Freshwater Fisheries Act and the Marine Fisheries Act regulate rearing of non-native species and introduction of non-native species in freshwater and marine habitats. • The Animal Protection Act prohibits releasing of pets into nature and the related introduction and expansion of non-native invasive species.
Target 6.2: Management plans in place for major alien species that threaten ecosystems, habitats or species.	<ul style="list-style-type: none"> • Trends in invasive alien species 	BR11	<ul style="list-style-type: none"> • Systematic removal of the invasive seaweed <i>Caulerpa racemosa</i> is ongoing. • Systematic removal of the invasive plant <i>Ambrosia artemisiifolia</i> is ongoing. • Systematic removal of the invasive plant <i>Amorpha fruticosa</i> is ongoing.
Goal 7. Address challenges to biodiversity from climate change and pollution			
Target 7.1: Maintain and enhance resilience of the components of biodiversity to adapt to climate change.	<ul style="list-style-type: none"> • Connectivity/fragmentation of ecosystems 	BR02, BR03 KP08 – KP17	<ul style="list-style-type: none"> • 11.59% of the national territory covered by the system of protected areas • 1,050 km² of the marine territory under protection • Croatian Ecological Network encompasses 47% of land and 39% of marine territory of the Republic of Croatia as well as two corridors: corridor for sea turtles and Palagruža-Lastovo-Pelješac corridor (important bird migration area). • 44.83% of the national territory proposed for NATURA 2000
Target 7.2: Reduce pollution and its impacts on biodiversity.	<ul style="list-style-type: none"> • Nitrogen deposition • Water quality in aquatic 	KV05, KV07, KV09	<ul style="list-style-type: none"> • Environmental impact assessment system is implemented, and it includes protection of biodiversity

	ecosystems	M09, M11 PO02, PO09- PO10, PO15 Š10 Z13	against environmental pollution. • A NIA is introduced and implemented. • Environmental, water management, agriculture, forestry, energy and industry sectors have set up standards for prevention of environmental pollution.
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Table 4.1-4. Progress assessment of the Republic of Croatia in maintaining goods and services from biodiversity.

Focal area: Maintain goods and services from biodiversity to support human well-being			
Goals and targets	Relevant CBD indicators	National indicator	Progress assessment
Goal 8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods			
Target 8.1: Capacity of ecosystems to deliver goods and services maintained.	<ul style="list-style-type: none"> • Biodiversity used in food and medicine (indicator under development) • Water quality in aquatic ecosystems • Marine trophic index • Incidence of Human-induced ecosystem failure 	BR02-BR06, BR13-BR14, BR16 KV05-07 M07, M17-M18, M20 PO01-PO02, PO04, PO07, PO12 Z13	<ul style="list-style-type: none"> • State-owned forests are managed according to principles of sustainable use. • Agricultural sector promotes ecological farming based on principles of good agricultural practice, which includes biodiversity conservation aspects. • Management plans for natural resources (water bodies, forests, game, and wildlife) need to include biodiversity conservation measures. • Sustainable use is ensured through issuing permits for collection and use, as well as through control over collection and use of plants, fungi, snails, frogs etc. • A system of environmental impact assessment is implemented, which includes preservation of capacity of ecosystems to deliver goods and services. • A system of NIA of economic activities implemented in the territory of the Ecological Network ensures maintaining the ecosystems' capacity to deliver goods and services.
Target 8.2. Biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained.	<ul style="list-style-type: none"> • Health and well-being of communities who depend directly on local ecosystem goods and services • Biodiversity used in food and medicine 		<ul style="list-style-type: none"> • There are no local communities in Croatia that depend exclusively on the ecosystems capacity to support livelihood.

Table 4.1-5. Progress assessment of the Republic of Croatia in the protection of traditional knowledge and practices.

Focal area: Protect traditional knowledge, innovations and practices			
Goals and targets	Relevant CBD indicators	National indicator	Progress assessment
Goal 9. Maintain socio-cultural diversity of indigenous and local communities			
Target 9.1. Protect traditional knowledge, innovations and practices.	<ul style="list-style-type: none"> • Status and trends of linguistic diversity and numbers of speakers of indigenous languages • Additional indicators to be developed 	BR12	<ul style="list-style-type: none"> • In the framework of the future Agri-Environment Programme, collection and conservation of local knowledge and practices in sustainable management of resources is planned.
Target 9.2. Protect the rights of indigenous and local communities over their traditional knowledge, innovations and practices, including their rights to benefit-sharing.	<ul style="list-style-type: none"> • Indicator to be developed 	-	<ul style="list-style-type: none"> • The Constitution of the Republic of Croatia and its legislative system ensures the right of local communities (including minorities) to demonstrate traditional knowledge, skills and customs and participate in biodiversity-related benefit-sharing.

Table 4.1-6. Progress assessment of the Republic of Croatia in fair and equitable use of genetic resources.

Focal area: Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources			
Goals and targets	Relevant CBD indicators	National indicator	Progress assessment
Goal 10. Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources			
Target 10.1. All access to genetic resources is in line with the Convention on Biological Diversity and its relevant provisions.	<ul style="list-style-type: none"> • Indicator to be developed 	BR12	<ul style="list-style-type: none"> • The Nature Protection Act provides for fair and equitable use of research & development findings resulting from the use of genetic resources, and prevents anyone from becoming an owner of genetic material created from genetic material of wildlife taxa.
Target 10.2. Benefits arising from the commercial and other utilization of genetic resources shared in a fair and equitable way with the countries providing such resources in line with the Convention on Biological Diversity and its relevant provisions	<ul style="list-style-type: none"> • Indicator to be developed 		

Table 4.1-7. Progress assessment of the Republic of Croatia in ensuring provision of adequate resources for implementation of the Convention.

Focal area: Ensure provision of adequate resources			
Goals and targets	Relevant CBD indicators	National indicator	Progress assessment

Goal 11. Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention			
Target 11.1. New and additional financial resources are transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20.	<ul style="list-style-type: none"> Official development assistance provided in support of the Convention 	BR18	<ul style="list-style-type: none"> The Republic of Croatia, as a country in transition and beneficiary of international aid, is currently not able to provide financial and technological assistance to developing countries.
Target 11.2. Technology is transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with its Article 20, paragraph 4.	<ul style="list-style-type: none"> Indicator to be developed 		

4.2 Progress assessment in the achievement of goals and targets of the Strategic Plan of the Convention

Table 4.2-1. Progress assessment in fulfilling the Convention's leadership role in biodiversity conservation.

Strategic goals and objectives	Possible indicators	Progress assessment
Goal 1: The Convention is fulfilling its leadership role in international biodiversity issues.		
1.1 The Convention is setting the global biodiversity agenda.	CBD provisions, COP decisions and 2010 target reflected in workplans of major international forums	<ul style="list-style-type: none"> All provisions of the Convention have been built into the relevant legislation and the National Biodiversity Strategies and Action Plan, and actively implemented at local, national, regional and international levels.
1.2 The Convention is promoting cooperation between all relevant international instruments and processes to enhance policy coherence.		
1.3 Other international processes are actively supporting implementation of the Convention, in a manner consistent with their respective frameworks.		
1.4 The Cartagena Protocol on Biosafety is widely implemented.		<ul style="list-style-type: none"> In the last 15 months significant progress was made with regard to implementation of the Protocol in Croatia. The Ministry of Culture, which is the competent national authority responsible for implementation of

		<p>the Convention as well as the Protocol, has designated National Focal Point for Cartagena Protocol and NFP for Biosafety Clearing-House.. The first national report on the implementation of the Protocol was submitted in September 2007. Other country obligations after the entry into force of the Protocol were also fulfilled, such as registration of national biosafety information to the Biosafety Clearing-House (BCH).</p> <ul style="list-style-type: none"> • CPB/BCH NFP had prepared the national BCH strategy and initiated and prepared the plan of activities under the UNEP-GEF BCH Project. This project lasted from May until Dec 2008. Five national BCH workshops were conducted for several stakeholder groups. Workshops significantly increased the awareness of and knowledge on the Protocol, the BCH mechanism and its possibilities. In addition, activities have been taken with regard to the national roster of experts. • Recently, some other-related biosafety capacity-building activities took place in Croatia, mainly related to human resources development. Several national workshops under the FAO Project and one regional workshop on risk assessment and GMOs have been conducted in Croatia.
<p>1.5 Biodiversity concerns are being integrated into relevant sectoral or cross-sectoral plans, programmes and policies at the regional and global levels.</p>	<p>Possible indicator to be developed: Number of regional/global plans, programmes and policies which specifically address the integration of biodiversity concerns into relevant sectoral or cross-sectoral plans, programmes and policies Application of planning tools such as strategic environmental assessment to assess the degree to which biodiversity concerns are being integrated Biodiversity integrated into the criteria of multilateral donors and regional development banks</p>	<ul style="list-style-type: none"> • The integration of biodiversity conservation concerns into sectoral and intersectoral plans, programmes and strategies has been achieved through implementation of the procedures of strategic environmental assessment, environmental impact assessment and NIA • The Nature Protection Act prescribes integration of nature protection measures and requirements into natural resource management plans (forestry, agriculture, water management etc.).

<p>1.6 Parties are collaborating at the regional and subregional levels to implement the Convention.</p>	<p>Possible indicator to be developed: Number of Parties that are part of (sub-) regional biodiversity-related agreements</p>	<ul style="list-style-type: none"> • The Republic of Croatia is a contracting party to all relevant regional conventions, protocols and agreements (at European, Euro-Asian and Euro-African level). • The Republic of Croatia has been intensively participating in the integration of national nature protection system into the EU nature protection system. • The Republic of Croatia supports and takes part in a number of projects and initiatives aimed at conservation of regional and sub-regional biodiversity (e.g. the Dinaric Arc Initiative, the Big Win Commitment)
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Table 4.2-2. Progress assessment of the Republic of Croatia in improvement of overall conditions for implementation of the Convention.

Strategic goals and objectives	Possible indicators	Progress assessment
Goal 2: Parties have improved financial, human, scientific, technical, and technological capacity to implement the Convention.		
<p>2.1 All Parties have adequate capacity for implementation of priority actions in national biodiversity strategy and action plans.</p>		<ul style="list-style-type: none"> • In the past period, through implementation of the National Biodiversity Strategies and Action Plan, the Republic of Croatia has done the most work on the creation and development of technical, institutional and financial capacities for implementation of the Convention's goals, in line with the possibilities.
<p>2.2 Developing country Parties, in particular the least developed and the small island developing States amongst them, and other Parties with economies in transition, have sufficient resources available to implement the three objectives of the Convention.</p>	<p>Official development assistance provided in support of the Convention (OECD-DAC Statistics Committee)</p>	<ul style="list-style-type: none"> • In the implementation of the Convention's goals, in addition to the funds from the State Budget and local budgets and revenues of protected areas, Croatia as a country in transition also makes use of the donations and loans of international financial and other institutions. • An important source of financing for biological diversity are available pre-accession funds of the European Union.

<p>2.3 Developing country Parties, in particular the least developed and the small island developing States amongst them, and other Parties with economies in transition, have increased resources and technology transfer available to implement the Cartagena Protocol on Biosafety.</p>		<ul style="list-style-type: none"> • At the national level, significant efforts were taken to increase human resources and strengthen institutional biosafety capacities. • Relevant ministries that are competent national authorities dealing with the GMO issues in Croatia have strengthened their human resource capacities and a significant number of new staff has been employed and further trained in biosafety issues.
<p>2.4 All Parties have adequate capacity to implement the Cartagena Protocol on Biosafety.</p>		<ul style="list-style-type: none"> • Some institutional capacities have been strengthened by the ongoing FAO Project („Capacity building of regulatory agencies for handling and monitoring GM crops, products and processed food“). Through the financial support of that project, one laboratory for GM identification and analysis has been fully equipped. However, our institutional capacities still need to be improved and updated in the technical sense. • With regard to human resources development, several activities took place recently. Several workshops were organised under the FAO project, as well as one regional workshop on risk assessment and GMOs funded by the Austrian Federal Environment Agency. • Under the UNEP-GEF BCH Project („Building Capacity for Effective Participation in the Biosafety Clearing-House“) several national BCH workshops have been organised, with a lot of positive feedback. Significant outcome of those workshops was increased knowledge on the provisions of the Protocol as well as the BCH mechanism and its possibilities in information sharing.
<p>2.5 Technical and scientific cooperation is making a significant contribution to building capacity.</p>	<p>Indicator to be developed consistent with VII/30</p>	<ul style="list-style-type: none"> • In order to strengthen implementation of the NBSAP, the widest possible range of technical experts and scientists was involved in the implementation of the Convention's goals at national, sub-regional and regional levels.

Table 4.2-3. Assessment of National Biodiversity Strategy effectiveness in implementation of the goals of the Convention.

Strategic goals and objectives	Possible indicators	Progress assessment
Goal 3: National biodiversity strategies and action plans and the integration of biodiversity concerns into relevant sectors serve as an effective framework for the implementation of the objectives of the Convention.		
3.1 Every Party has effective national strategies, plans and programmes in place to provide a national framework for implementing the three objectives of the Convention and to set clear national priorities.	Number of Parties with national biodiversity strategies	<ul style="list-style-type: none"> • In 2008, Croatia enacted the second National Biological and Landscape Diversity Strategy and Action Plan. • In the end of 2007, the Government of the Republic of Croatia enacted the Regulation on proclamation of the Ecological Network of the Republic of Croatia • The draft proposal of the NATURA 2000 ecological network is currently in preparation, undergoing public consultations.
3.2 Every Party to the Cartagena Protocol on Biosafety has a regulatory framework in place and functioning to implement the Protocol.		<ul style="list-style-type: none"> • The Protocol on Biosafety to the Convention on Biological Diversity was ratified in 2002 • The Food Act was enacted in 2003 • The Act on Genetically Modified Organisms was enacted in 2005 • The Ordinance of Risk Assessment for the Deliberate Introduction of Genetically Modified Organisms into the Environment was enacted in 2006
3.3 Biodiversity concerns are being integrated into relevant national sectoral and cross-sectoral plans, programmes and policies.	To be developed Percentage of Parties with relevant national sectoral and cross-sectoral plans, programmes and policies in which biodiversity concerns are integrated	<ul style="list-style-type: none"> • Programmes and plans with potential significant impact on the environment, including biodiversity, are subject to strategic environmental assessment procedure. • Individual commercial plans and projects are subject to environmental impact assessment procedure. • Individual commercial plans and projects with potential impact on the area of ecological network are subject to the NIA • Incorporation of nature protection measures into physical plans, as well as into sectoral plans – hunting management plans, forest management plans, water management and other types of resource management plans is a legal obligation.

3.4 The priorities in national biodiversity strategies and action plans are being actively implemented, as a means to achieve national implementation of the Convention, and as a significant contribution towards the global biodiversity agenda.	To be developed Number of national biodiversity strategies and action plans that are being actively implemented	• Implementation of most projects (see Annex II.6.) is in fact active implementation of action plans anticipated by the NBSAP with the aim of achieving goals of the Convention.
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Table 4.2-4. Assessment of public involvement effectiveness in the implementation of the Convention's goals.

Strategic goals and objectives	Possible indicators	Progress assessment
Goal 4: There is a better understanding of the importance of biodiversity and of the Convention, and this has led to broader engagement across society in implementation.		
4.1 All Parties are implementing a communication, education, and public awareness strategy and promoting public participation in support of the Convention.	Possible indicator to be developed: Number of Parties implementing a communication, education and public awareness strategy and promoting public participation Percentage of public awareness programmes/projects about the importance of biodiversity Percentage of Parties with biodiversity on their public school curricula	<ul style="list-style-type: none"> • In the process of enactment of strategic documents all relevant sectors are consulted and public participation is ensured in the framework of strategic environmental assessment. • Public involvement in the procedures of enactment of physical plans and strategies is mandatory • Public involvement in the NIA as well as in strategic environmental assessment and environmental impact assessment procedures is mandatory • Public involvement in the procedure of proclamation of protected areas and ecological network areas is mandatory
4.2 Every Party to the Cartagena Protocol on Biosafety is promoting and facilitating public awareness, education and participation in support of the Protocol.		<ul style="list-style-type: none"> • In order to promote and facilitate public awareness, education and participation in support of the Protocol, the Ministry of Culture as the competent national authority responsible for the Protocol and therefore for the BCH mechanism as well, under the UNEP-GEF BCH Project overtook the responsibility to revamp, update and modernize the current GMO website. This work is still in progress and it is envisaged that by the end of summer of 2009 this website would become main biosafety portal, containing not only national biosafety information but international updates as well.

<p>4.3 Indigenous and local communities are effectively involved in implementation and in the processes of the Convention, at national, regional and international levels.</p>	<p>To be developed by the Ad Hoc Open-ended Working Group on Article 8(j)</p>	<ul style="list-style-type: none"> • Participation of local communities in the enactment of strategic documents is ensured by means of the strategic environmental assessment procedure. • Participation of local communities in the enactment procedures for physical plans and strategies is mandatory • Participation of local communities in the NIA and environmental impact assessment procedures is mandatory • Participation of local communities in the proclamation procedure for protected areas and ecological network areas is mandatory
<p>4.4 Key actors and stakeholders, including the private sector, are engaged in partnership to implement the Convention and are integrating biodiversity concerns into their relevant sectoral and cross-sectoral plans, programmes and policies.</p>	<p>To be developed Indicator targeting private sector engagement, e.g. Voluntary type 2 partnerships in support of the implementation of the Convention</p>	<ul style="list-style-type: none"> • In the framework of the UNDP/GEF project „Conservation and Sustainable Use of Biodiversity in the Dalmatian Coast through Greening of Coastal Development – COAST“ a model is being created for private sector involvement in the conservation and sustainable use of biological and landscape diversity in Dalmatia, by way of supporting sustainable development of coastal areas.

APPENDIX I. INFORMATION CONCERNING THE REPORTING PARTY AND PREPARATION OF NATIONAL REPORT

APP.I.1. INFORMATION CONCERNING THE REPORTING PARTY

Contracting Party	Republic of Croatia
NATIONAL FOCAL POINT	
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SUBMISSION	
Signature of officer responsible for submitting the national report	Mr Zoran Šikić, State Secretary
Date of submission	

APP.I.2. PREPARATION OF THE FOURTH NATIONAL REPORT

The Fourth National Report of Croatia on Biological Diversity was created within the project financially assisted by the GEF and implemented by the UNDP. The project was implemented during the period of September 2008 – March 2009. The executive agency of the project was the Ministry of Culture.

The Fourth national report is based on the new Strategy and Action Plan for the Protection of Biological and Landscape Diversity of Croatia, which was adopted in November 2008, after thorough analysis of the status of biological and landscape diversity of Croatia and the procedure of public hearings. The Ministry of Culture initiated the process of elaboration a new Strategy on the basis of proposal given in the Report on the State of Nature and Nature Protection for the period 2000 – 2007, which was produced by the State Institute for Nature Protection.

Given that the 1999 Strategy had not taken into account geological diversity or protection of non-living nature, the new Strategy changed this. Non-living nature already treated in the Nature Protection Act was therefore covered from a strategic standpoint as well. Namely, the Act regulates the system of protection and conservation of nature and its values, which in addition to biological and landscape diversity includes geo-diversity, namely minerals, fossils, stalactites and stalagmites. Therefore, the new strategy, in addition to biological and landscape diversity, in a separate chapter deals with issues of geological diversity protection.

With the aim of analyzing the implementation of the 1999 Strategy and determining new strategic goals, guidelines and priority action plans as components of the new Strategy, ten working groups were appointed by the Decision of the Minister of Culture in 2006:

1. Working Group on Species, Habitats, Landscapes, Minerals, Fossils and Stalactites and Stalagmites
2. Working Group on Protected Areas
3. Working Group on Spatial Planning and Assessment of Impact on Nature
4. Working Group on Agriculture (including GMOs) and the Fisheries
5. Working Group for Forestry and Hunting
6. Working Group on Water Management
7. Working Group for Tourism
8. Working Group for Transportation, Energy and Mining
9. Working Group for Education, Information and Public Participation
10. Working Group on Legal and Institutional Framework

Working groups include appointed representatives of the competent state administration bodies, professional institutions, public institutions for management of protected areas, inspection services, science (research) institutions, economic sector and NGOs. Inclusion of a wide circle of participants in the creation of the Strategy allows an integral approach towards the protection of nature and thus creates the preconditions for the instalment of biodiversity issues in all relevant sectors. Working Groups started their work in July 2006, but public consultation and adoption of the Strategy had not occurred before the proclamation of the National ecological network in October 2007 (Regulation on the Proclamation of the Ecological Network). Entering into force, this Regulation created the preconditions for a comprehensive and systematic protection of species and habitats outside protected areas, integration of measures of protection and sustainable use of nature into all relevant sectoral and cross-sectoral regulations, plans, programs and strategies, the compatibility of nature protection in Croatia with protection of nature in developed countries of Europe and the

world, and for the inclusion of Croatia into European integration processes and easier implementation and fulfilment of current and future obligations that derive from them.

Report on the Status of Nature, on which the new Strategy is based, included the overview of the status from 2000 to the end of 2007. The new Strategy reviews the status for the period ending in June 2008, which includes changes in the institutional, legislative and enforcement framework of the nature protection which occurred because of the proclamation of National ecological network, as well as by adoption of large number of new regulations by mid 2008.

The Final Draft of the Strategy was available on the web pages of the Ministry of Culture from June 30 to September 3, 2008, for the purpose of collecting comments, suggestions and opinions of the interested public. Also, from June 30, 2008 the Proposal of Report on the Status of Nature was available on the web pages of the State Institute for Nature Protection. On September 3, 2008 a public presentation of the Final Draft of the Strategy was held, as well as the presentation of a Proposal of the Report. Working groups have examined the incoming observations and reached a consensus on the text of the individual chapters, goals, guidelines and action plans. Following that consensus, the Ministry of Culture established a Final Draft of the Strategy and addressed it to the relevant government authorities for manifestation, prior to the Government and parliamentary procedures. The Ministry of Culture also affirmed the final version of the Report on the Status of Nature and Nature Protection in the period 2000 – 2007. The Final drafts of the Strategy and the Report were submitted to the Government of the Republic of Croatia at the end of September, 2008 and then during October, in the parliamentary procedure. The Committee for Environmental Protection of the Croatian Parliament carried out an additional discussion on the final draft of the Strategy and the Report on its 12th meeting held on October 22, 2008. It was attended by representatives of public institutions for the management of national parks, nature parks and protected natural values of counties, as well as the representatives of NGOs. At that meeting, the recommendation for the adoption of the Strategy and the Report was given. The new Strategy and Action Plan for the Protection of Biological and Landscape Diversity of Croatia as well as the Report on the Status of Nature and Nature Protection for the period 2000 – 2007, were adopted at the 7th session of the Croatian Parliament held on November 28, 2008.

Given that the strategy was recently adopted, with extensive participation of the professional public, it was not necessary to include so many different groups of interested parties into the making of the fourth National Report of Croatia to the Convention on Biological Diversity. However, the elaboration of the Fourth National Report of Croatia on Biological Diversity also included experts from sectors of transport, energy, environmental protection, agriculture, forestry, and representatives of NGOs, in addition to experts in the field of nature protection.

APPENDIX II. FURTHER SOURCES OF INFORMATION

APP.II.1. THE LIST OF MAJOR REGULATIONS

Year of adoption	Title
Laws	
2003	Law on Fund for Environmental Protection and Energy Efficiency
2003	Food Act
2005	Nature Protection Act
2005	Act on Genetically Modified Organisms
2005	Water Act
2005	Forestry Act
2005	Hunting Act
2005	Freshwater Fisheries Act
2005	Marine Fisheries Act
2007	Environmental Protection Act
2007	Act on Physical Planning and Construction
2008	Amendments to the Nature Protection Act
2008	Law on Agricultural Land
2008 (2004)	Law on Air Protection
Regulations	
2007	Regulation on the Proclamation of the Ecological Network
2007	Regulation on Monitoring of Greenhouse Gas Emissions in the Republic of Croatia
2008	Regulation on the Environmental Impact Assessment
2008	Regulation on Environmental Protection information system
2008	Regulation on Strategic Environmental Assessment
2008	Regulation on Method of Identifying Damage to the Environment
2008	Regulation on the Procedure of Establishing Combined Environmental Conditions
Ordinances	
2004	Ordinance on the Special Habitats of Fish and Other Marine Organisms and the Regulation of Fishing
2005	Ordinance on Conditions of Keeping, the Manner of Marking and Keeping Records of Protected Animals in Captivity
2006	Ordinance on the Habitat Types, Habitat Map, Threatened and Rare Habitat Types, and on Measures to Preserve Habitat Types
2006	Ordinance on Proclamation of the Wild Species as Protected and Strictly Protected
2006	Ordinance on Cross-Border Traffic and Trade in Protected Species
2006	Ordinance of Risk Assessment for the Deliberate Introduction of Genetically Modified Organisms into the Environment
2007	Ordinance of Wildlife Crossings
2007	Ordinance on Nature Impact Assessment
2007	Ordinance on the Content and Manner of Implementation of Measures for the Removal of Uncontrolled Spread of Genetically Modified Organisms into the Environment
2007	Ordinance on the Content and Manner of Applying for the Intentional Introduction of Genetically Modified Organisms into the Environment
2008	Ordinance on the Collection of Protected Wild Plants for the Purpose of Processing, Trade and Other Traffic
2008	Ordinance on the Environmental Pollution Registry
2008	Ordinance on the method of preparing and implementing risk assessment studies with respect to introduction, reintroduction and breeding of wild taxa

APP.II.2. THE LIST OF INTERNATIONAL AGREEMENTS TO WHICH REPUBLIC OF CROATIA IS A CONTRACTING PARTY

International agreement	Legal status in the Republic of Croatia	Announcement in the Official Gazette
Convention on Biological Diversity, Rio de Janeiro, 1992	Entered into force for Croatia: October 7, 1996	Law on the Approval of United Nations Convention on Biological Diversity, Official Gazette – International Agreements 6/96
Protocol on Biosafety (Cartagena Protocol) to the Convention on Biological Diversity, Montreal, 2000	Entered into force for Croatia: September 11, 2003	Law on the Confirmation of the Protocol on Biosafety (Cartagena Protocol) to the Convention on Biological Diversity, Official Gazette – International Agreements 7/02
Convention on Wetlands (Ramsar Convention), Ramsar, 1971	Croatia is a party to the Convention based on notification of succession dated October 8, 1991	The Decision on Releasing the Multilateral International Treaties of which Croatia is a Party on the Basis of Notification of Succession, Official Gazette – International Treaties 12/93
Convention for the Protection of The Mediterranean Sea Against Pollution, Barcelona, 1976	Croatia is a party to the Convention based on notification of succession dated October 8, 1991.	The Decision on Releasing the Multilateral International Treaties of which Croatia is a Party on the Basis of Notification of Succession, Official Gazette – International Treaties 12/93
Protocol on Specially Protected Areas and Biodiversity in The Mediterranean, Geneva, 1982	Entered into force for Croatia: May 12, 2002	Law on the Confirmation of the Protocol on Specially Protected Areas and Biodiversity in the Mediterranean, the Official Gazette – International Treaties 11/01
Convention on the Protection of World Cultural and Natural Heritage, Paris, 1972	Croatia is a party to the Convention based on notification of succession dated October 8, 1991	The Decision on Releasing the Multilateral International Treaties of which Croatia is a Party on the Basis of Notification of Succession, Official Gazette – International Treaties 12/93
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Washington, 1973	Entered into force for Croatia: June 12, 2000	Law on the Confirmation of the Convention on International Trade Endangered Species of Wild Animals and Plants (CITES), Official Gazette – International Treaties 12/99
Convention on the Conservation of Migratory Species of Wild Animals, Bonn, 1979.	Entered into force for Croatia: October 1, 2000	Law on the Confirmation of the Convention on the Protection of Migratory Species of Wild Animals (Bonn Convention), Official Gazette – International Treaties 6/00

Agreement on the Conservation of Populations of European Bats (EUROBATS) London, 1991	Entered into force for Croatia: September 7, 2000	Law on the Confirmation of the Agreement on the Conservation of Populations of European Bats (EUROBATS), Official Gazette – International Treaties 6/00
Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), Bonn, 1996	Entered into force for Croatia: September 7, 2000	Law on the Confirmation of the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), Official Gazette – International Treaties 6/00
Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and Contiguous Atlantic area (ACCOBAMS), Monaco, 1996	Entered into force for Croatia: June 1, 2001	Law on the Confirmation of the Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS), Official Gazette – International Treaties 6/00
Agreement of Understanding on Protecting and Managing the Central European Population of Great Bustard (<i>Otis tarda</i>)	Signed: 2002	
Agreement of understanding relating to the safeguards slender-billed Curlew (<i>Numenius tenuirostris</i>)	Signed: 1994	
Convention on the Conservation of European Wildlife and Natural Habitats, Bern, 1979	Entered into force for Croatia: November 1, 2000	Law on the Confirmation of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), Official Gazette – International Treaties 6/00
European Landscapes Convention Florence, 2000	Entered into force for Croatia: March 1, 2004	Law on the Confirmation of the European Landscapes Convention, Official Gazette – International treaties 12/02
International Convention for the Regulation of Whaling, Washington, 1946	Entered into force for Croatia: January 10, 2007	Law on the Confirmation of the International Convention for the Regulation of Whaling, Official Gazette – International Treaties 6/06

APP.II.3. THE LIST OF MAJOR STRATEGIC DOCUMENTS

Year of adoption	Title
1999	Strategy and Action Plan for the Protection of Biological and Landscape Diversity of Croatia
1999	State Plan for Water Protection
1999	Plan of Intervention in Environmental Protection
2002	National Environmental Protection Strategy
2003	National Forestry Policy and Strategy
2004	Wolf Management Plan in Croatia
2004	Linx Management Plan in Croatia
2005	Bear Management Plan in Croatia
2008	Bear Management Plan in Croatia (revised)

2008	Strategy and Action Plan for the Protection of Biological and Landscape Diversity of Croatia
2008	Water Resources Management Strategy
2008	Plan for Protection and Improvement of the Quality of Air in the Republic of Croatia for the Period 2008 – 2011.

APP.II.4. THE LIST OF MAJOR PUBLICATIONS

Published	Title	Publisher
1999	Review Of the Status of Biological and Landscape Diversity of Croatia with the Strategy and Action Plans of Protection	State Directorate for Protection of Nature and Environment
2003	Red Data Book of Birds of Croatia	Ministry of Environmental Protection and Physical Planning
2004	Red List of Threatened Plant and Animal Species of Croatia	State Institute for Nature Protection
2005	National Ecological Network - Important Bird Areas in Croatia	State Institute for Nature Protection
2005	Red Book of Vascular Flora of Croatia	Ministry of Culture/State Institute for Nature Protection
2006	Red Book of Freshwater Fish of Croatia	Ministry of Culture/State Institute for Nature Protection
2006	Red Book of Amphibians and Reptiles of Croatia	Ministry of Culture/State Institute for Nature Protection
2006	Red Book of Mammals of Croatia	Ministry of Culture/State Institute for Nature Protection
2006	Biological Diversity of Croatia - Handbooks for Inventorying and Status Monitoring	Ministry of Culture/State Institute for Nature Protection
2006	Biological Diversity and Assessment of the Status of Grasslands – A manual	Fauna & Flora International
2008	Red Data Book of Dragonflies of Croatia	Ministry of Culture/State Institute for Nature Protection
2008	Red Book of Croatian Fungi	Ministry of Culture/State Institute for Nature Protection
2008.	Red Book of Marine Fish of Croatia	Ministry of Culture/State Institute for Nature Protection
2008	Forest Habitats And Forest Communities In Croatia, The National Ecological Network	State Institute for Nature Protection

APP.II.5. THE LIST OF MAJOR WEB PAGES

Institution/Project	WEB page
Ministry of Culture	www.min-kulture.hr
State Institute for Nature Protection	www.dzpz.hr
Ministry of Environmental Protection, Physical Planning and Construction	www.mzopu.hr
Ministry of Agriculture, Fisheries and Rural Development	www.mps.hr
Ministry of Regional Development, Forestry and Water Management	www.mrrsvg.hr
Croatian Environmental Agency	www.azo.hr
Official Gazette	www.nn.hr

State Institute for Nature Protection - Phare 2005	www.natura2000.hr
State Institute for Nature Protection - Life	www.life-vuk.hr
State Institute for Nature Protection - GMO	www.gmo.hr

APP.II.6. THE LIST OF MAJOR NATURE PROTECTION PROJECTS

Project topic	Source of financing	Project bearer (CRO)	Period
Preservation and conservation of important and endangered species of forest trees in Europe	EUFOGEN	Forest Research Institute	1993
Biodiversity strategy, action plans and national report	GEF	State Directorate for Nature and Environment	1997-2000
Project of management the wetland area of the Kopački rit Nature Park	GEF, State budget	EKONERG Ltd.	1998
AdriaMed – Scientific Cooperation to Support responsible Fisheries in the Adriatic Sea	FAO	Institute for Oceanography and Fisheries, Split	1999
Protection and revitalization of the Đurđevački peski reserve	Dutch government	State Directorate for Nature and Environment	1999
Preparation of the “Karst Ecosystems Preservation Project” (KEC)	GEF	Ministry of Environment and Physical Planning	1999-2000
Restoration of Orlinci pastures	EURONATUR, EECONET, Lonjsko polje Nature Park	Lonjsko polje Nature Park	1999-2005
Protection of the endangered species of the blue butterfly in the wet grassland habitat Zovje at Đelekovec	Dutch government	Ministry of Environment and Physical Planning	2000
Promoting Cross-linking and exchange of experiences in the countries of SE Europe – the Neretva delta	Swiss government	REC	2000
Development of national standards for certification of management of forests	Dutch government, WWF World Bank	Ministry of Agriculture, Forestry and Water Management	2001
Conservation and sustainable use of biodiversity of the Dalmatian coast COAST	GEF State budget	UNDP	2001
Possibility of conservation and revitalization of Kolansko blato	Dutch government	Ministry of Environment and Physical Planning	2001
Preparation of cross-border management plan for the lower Neretva (initial activity)	Ramsar convention		2001
National capabilities of collecting data about the environment	IDF grant	Ministry of Environment and Physical Planning	2001
Towards the reasonable exploitation of the Lonjsko Polje Nature Park	EU LIFE III State budget	OIKON Ltd.	2001-2004
Project of management the wetland area of the Kopački rit Nature Park	GEF-MSP	Ministry of Environment and Physical Planning	2002

“Restoration of the Educational Path of the Kalnik Protected Landscape”	Dutch government	Ministry of Environment and Physical Planning	2002
Monitoring and Management of Demersal Resources along the Eastern Adriatic Coast – Croatian Territorial Waters (DEMMON)	Norwegian government	Institute for Oceanography and Fisheries, Split	2002-2004
Emerald Network – Pilot Project	Council of Europe	Ministry of Environment and Physical Planning	2002-2003
Establishment of a national ecological network as part of a Pan-european ecological network and network NATURA 2000 (CRO-NEN)	European Commission – LIFE III State budget	Ministry of Environment and Physical Planning State Institute for Nature Protection OIKON Ltd	2002-2005
CORINE Land Cover Database for Croatia	European Commission – LIFE III State budget	OIKON Ltd GIS DATA Ltd	2002-2005
Conservation of karst ecosystems – KEC	GEF	Ministry of Environment and Physical Planning Ministry of Culture IBRD Agriconsulting Institute for International Relations	2002-2007
Development of model of flooding of the Lonjsko polje Nature Park with reviewed impact on vegetation	RIZA University of Delft Dutch government		2003
Inventory of wetlands in Croatia	Ramsar convention	State Institute for Nature Protection	2003-2004
National Capacity Needs Self-Assessment for Global Environmental Management (NCSA)	GEF	Ministry of Environment and Physical Planning Environmental Protection Agency	2003-2004
Protection of the Čambina protected landscape	Dutch government	Ministry of Environment and Physical Planning Ministry of Culture	2003-2004
Pan-European Ecological Network Pilot Project Danube-Drava National Park – Kopački rit Nature Park Phase I & II	ECNC, DDNP		2003-2005
Protection and Management of Wolves in Croatia – CRO-WOLF	European Commission – LIFE III, State budget	Ministry of Environment and Physical Planning State Institute for Nature Protection	2003-2005
Development of a national framework for biosafety in the Republic of Croatia	GEF State budget	State Institute for Nature Protection	2003-2005
Development of model for the conservation of Croatian grasslands and their biodiversity	Fauna and flora international IGER	Žumberak – Samoborsko gorje Nature Park	2004
Establishing institutional capacities for protection of the river Mura landscape	European Commission – LIFE III	Ministry of Environment and Physical Planning	2004

Protection and revitalization of the Saplunara protected landscape on the island of Mljet	Dutch government	Ministry of Culture Mljet National Park	2004-2005
Ensuring appropriate conditions for the work of Center for the care of seized and hurt protected wild animals (AWAP)	Dutch government	Ministry of Culture AWAP	2004 -2005
Green belt of Velebit – second phase	WWF	The Green Action	2004-2005
Development of sustainable tourism in the Vransko lake Nature Park and its surroundings	CARDS State budget	Vransko jezero Nature Park Local turist boards	2005
Development of an ecological network along the Sava River	PIN MATRA – Netherlands State budget	State Institute for Nature Protection	2005-2006
Communication in nature conservation: institutional strengthening and pilot project	Norwegian government	State Institute for Nature Protection, ECNC	2005-2006
Institutional Strengthening of the State Institute for Nature Protection	CARDS State budget	State Institute for Nature Protection	2005-2006
Elaboration of the Third National Report on Biological Diversity	GEF State budget	State Institute for Nature Protection UNDP	2005-2006
Management of forests close to nature	Dutch government Medvednica Nature Park	Ministry of Culture Medvednica Nature Park	2005-2006
Guidelines for management of forests in order to protect birds	Dutch government	Ministry of Culture Papuk Nature Park	2005-2006
SEENET – Implementation of a Pan-European Ecological Network in Southeastern Europe and Black Sea area	Dutch government BBI-Matra 2005 – 2008		2005-2007
Establishment of geoinformation system (GIS) for the national parks and cultural heritage in the national parks	State budget Fund for Environmental Protection and Energy Efficiency	Ministry of Culture State Institute for Nature Protection National Parks	2006
Implementation of Natura 2000 in Croatia	PHARE	State Institute for Nature Protection	2006
Grassland orchards with high-trunk trees as an element of biodiversity conservation and aesthetic value of landscape	INTERREG III A	Žumberak – Samoborsko gorje Nature Park Croatian Institute for Agricultural Extension Service	2006
Emerald network – continuation of the project	Council of Europe	State Institute for Nature Protection	2006
Communication in nature conservation	Norwegian government State budget	State Institute for Nature Protection	2006-2007
Protection of species through communication on Biological Diversity – the campaign against removing animals from the natural environment and holding wild animals in captivity	MATRA KNIP – Dutch government, State budget	State Institute for Nature Protection	2006-2007
Knowledge of the ecological networks – involving stakeholders in the implementation of the National Ecological Network	Dutch government, State budget	State Institute for Nature Protection	2007-2008
Protection of ecosystems along the Mura and Drava rivers as a biosphere reserve	UNESCO State budget	State Institute for Nature Protection	2007-2008

The Green belt - the protection and evaluation of the longest habitat system in Europe	CARDS State budget	State Institute for Nature Protection	2007-2008
Cross-border cooperation in the management, protection and research of the Dinaric lynx population	INTERREG III A State budget	State Institute for Nature Protection	2007-2008
The Emerald_Network – third phase	Council of Europe State budget	State Institute for Nature Protection	2007-2008
COAST – the conservation and sustainable use of biological and landscape diversity on the Dalmatian coast through the sustainable development of coastal areas	GEF State budget	Ministry of Environment and Physical Planning	2007-2008
Strengthening civil society sector for the protection of the sea in Croatia	CARDS State budget	"Sunce" – Association for Nature, Environment and Sustainable Development "Blue World" - Institute for Research and Protection of Sea	2007-2008
Capacity building for implementation of EU legislation on the protection of nature and environment in agriculture	CARDS State budget	Ecologica	2007-2008
Biological diversity – Kornati national park	Dutch government	Argonauta	2007-2008
Protection of biodiversity of flooding areas along the river Sava	LIFE III Swiss SDI State budget	State Institute for Nature Protection	2007-2009
Implementation of NATURA 2000 in Croatia	PHARE State budget	State Institute for Nature Protection	2007-2009
WWF Dinaric Arc Ecoregion – 2012 Protected Areas Program	GEF State budget	UNDP	2007-2011
Danube Regional Project – Phase 2	GEF European Commission	The Green Action – The Danube forum for the environment	
Ecosystem dynamics, chemistry, aquaculture and management in the Adriatic and the North Norwegian coastal zone	Norwegian government	The Ruđer Bošković Institute	
Implementation of environmental acquis concerning the protection of wild species by trade regulation	MATRA KNIP – Dutch government	Ministry of Culture	2008-2009
PAMS – Protected areas management system – Phase I, II and III	Norwegian government	Ministry of Culture	2006-2009
Development of a network of Mediterranean marine and coastal protected areas by encouraging the creation and management of protected areas in the Mediterranean within the national jurisdiction of third countries – MedPAN	European Commission (EuropeAid) Fond Français pour l'Environnement Mondial"(FFEM) MAVA foundation	Ministry of Culture State Institute for Nature Protection	2009. – 2012
Strengthening the capacity of county public institutions for managing protected natural values in the light of harmonizing regulations with the EU legislation	Swedish government	Ministry of Culture	2008
Development of the faunistic and speleological database (CRO-fauna and	IPA 2007 TAF	State Institute for Nature Protection	2009-2010

CRO-speleo)			
Identification and establishment of the Natura 2000 network in the sea in Croatia	IPA 2007 TAF	State Institute for Nature Protection	2009-2010

APPENDIX III. PROGRESS TOWARDS TARGETS OF THE GLOBAL STRATEGY FOR PLANT CONSERVATION AND PROGRAMME OF WORK ON PROTECTED AREAS

APP.III.1. GLOBAL STRATEGY FOR PLANTS CONSERVATION

For the purpose of implementation of the Global Strategy for Plant Conservation, work is currently in progress in Croatia on a comprehensive proposal for the 'Important Plant Areas – IPA Croatia' project. The main objective of this programme is to identify the best measures of protection and management of the IPA areas in order to secure the further survival of species and habitats. IPA areas in Croatia are mostly related to the karst area (the Dinarides, islands, extrazonal karst areas in the continental part of Croatia) and the specific types of habitats as wetland habitats (swamps, flooded lawns, etc), prairie areas, continental sand, and sand and salty coastal habitats. Ninety-six areas that are important for flora have recently been defined and some areas will be included in the proposal of the ecological network NATURA 2000 in Croatia.

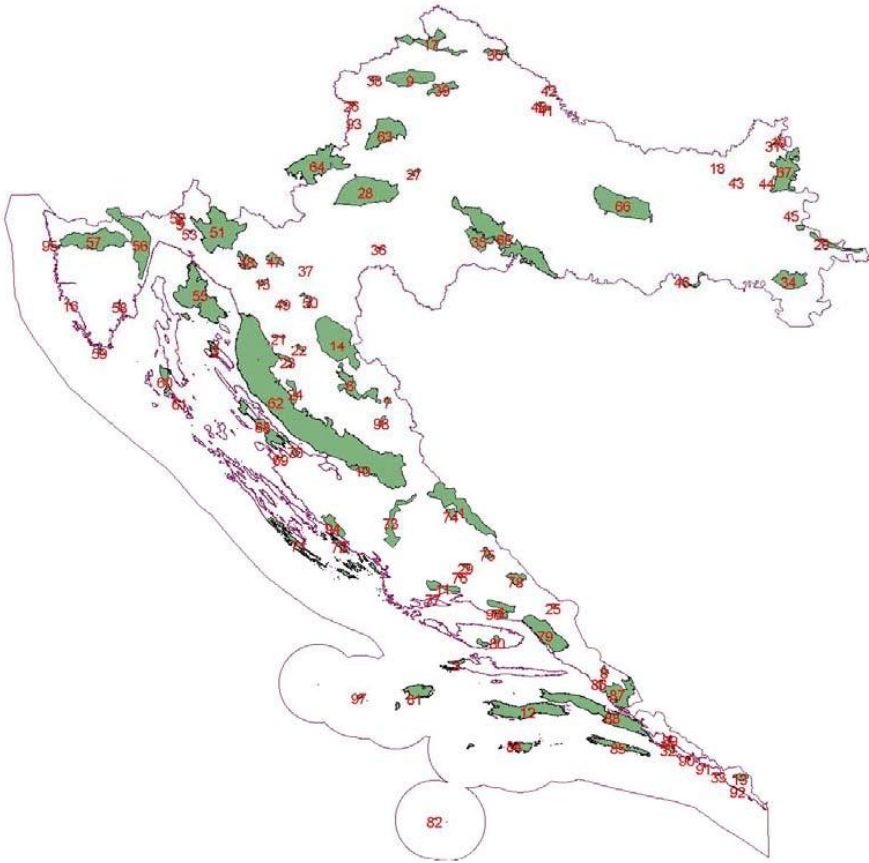


Figure APP.III.1-1. Preliminary map of Important Plant Areas (IPA) in Croatia.

Table APP.III.1-1. The progress of the Republic of Croatia in achievement of goals for the Global Strategy of Plants Conservation.

CBD GSPC targets	National indicator	Progress assessment	Future activities
<p>Target 1: A widely accessible working list of known plant species, as a step towards a complete world flora</p>	<p>BR07-BR09</p>	<p>Indexing</p> <ul style="list-style-type: none"> list of all known Croatian vascular plants is developed (since edition 1994-2000) and continuously upgraded. Upgrading is related to nomenclatural changes, synonyms, intervention to the taxonomic contents in accordance to the new scientific results and related revisions and to the new findings in the field. The list follows all international standards regarding nomenclature, authors' abbreviations, etc. the already available information on plant vernacular names is significantly increased by publishing the book «Nomenclator Botanicus Croaticus» in 2008. <p>Mapping</p> <ul style="list-style-type: none"> additional data have been collected in the previous reporting period about the distribution of vascular flora. data are derived from the individual and unsystematic contributions from various parts of Croatia and systematic complete or partial charting of particular areas the distribution of flora in the protected areas Paklenica National Park, Plitvice Lakes NP, Risnjak NP, Sjeverni Velebit NP, Nature park Velebit, area of Ogulin and Kupa valley was entirely charted (within the project of karst ecological system conservation – KEC, 2002-2007), Nature park Lastovo (inter-disciplinary research project Islands of Lastovo 2007), City of Zagreb (project 	<p>Indexing</p> <ul style="list-style-type: none"> to continue with the constant critical evaluation and upgrade of the list of the national flora and the accompanying data. Critical evaluation should be primarily directed to taxonomic modifications in compliance with new scientific and professional knowledge and revision of certain groups. Data upgrade should primarily be directed to chorology (from literature and collections, photo documentation, descriptions, etc.) Systematic upgrade of FCD should be directed at the enhanced GIS support and complete web functionality. to digitize the content of 'Nomenclator Botanicus Croaticus' and make it available at World Wide Web to create, organize and finance the beginning of the project First analytical flora in Croatia – contains the keys of determination of all taxa and classification levels, photo documentation and drafts, data about distribution, ecology, variability, descriptions of sorts, etc. <p>Mapping</p> <ul style="list-style-type: none"> to create, organize and finance the systematic charting of the national flora distribution starting from the priority areas or taxa. The priority areas and taxa should be defined in compliance with the government authority responsible for the conservation of nature, professional associations and

		<p>Biodiversity of the City of Zagreb, 2007)</p> <ul style="list-style-type: none"> the flora on the island of Pag, South Dalmatian offshore islands (Biševo, Vis, Jabuka, Palagruža, Sušac, Svetac), Mljet and the peninsula of Pelješac, wider area of the underflow of the river Krka and the river Cetina valley (UNDP/GEF project COAST, 2007) is partially charted for the 36 areas exceptionally important for flora (project Important Plant Area, 2007 – 2008). the majority of the public institutions of the national parks and nature parks has inventorized the flora especially in the part needed for the network project NATURA 2000. <p>Databasing</p> <ul style="list-style-type: none"> Flora Croatica Database is constantly used for collection, update, input, edit and publishing of different data about national flora at the World Wide Web with the complete public access. the publishing of the second edition of the printed version 'List of flora in Croatia 2009' is currently underway. 	<p>scientific institutions. Possible criteria are for example species in Annex II of Habitats Directive important for the establishment of the national ecological network and the network NATURA 2000 and Habitats Directive, insufficiently known species (DD category according IUCN)</p> <p>Databasing</p> <ul style="list-style-type: none"> to continue maintaining and developing the Flora Croatica database. Provide a permanent source of funds for FCD integrate FCD into the national information system of the nature conservation
<p>Target 2: A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels</p>	<p>BR07-BR09</p>	<ul style="list-style-type: none"> the Ordinance on Proclamation of the Wild species as Protected and Strictly Protected was adopted the red list and the red book of vascular flora were made and published (2005) Red Book – Online for the continual update of data about threatened flora was made and Red Book content is available at WWW the new amount of data about distribution of the special threatened species was collected within the 	<ul style="list-style-type: none"> to continue with the maintenance of the Red Book – Online to translate the entire re-evaluation of the threatened national flora by using the last version of the IUCN criteria at the latest up to 2010 (5 years passed from last evaluation) and integrate it in the FCD Red Book – Online to continue with the intergovernmental cooperation of producing the nomenclature and taxonomic harmonised regional red lists

		<p>general implementation of the flora charting</p> <ul style="list-style-type: none"> national experts participated in the preparations of the regional red lists (Mediterranean threatened species with the accent on hydrofits, the red list of the Balkan peninsula) 	
<p>Target 3: Development of models with protocols for plant conservation and sustainable use, based on research and practical experience</p>	<p>BR07-BR09</p>	<p>Models & Protocols</p> <ul style="list-style-type: none"> Handbooks for inventorying and monitoring the status of flora and habitats (CARDS project 2007) were made as complete user guides in implementation of optimal protocols. They are published as hard copies and PDF files available on the Internet Manuals for the selection of areas especially important for flora (IPA Site Selection Manuals) were translated and adapted Selection model of specifically BD valuable areas was created for the priorities of the protection in the coastal area and islands (COAST Project) Nature Impact Assessment Protocol was created at the principle level, and the relevant regulations were adopted. Preliminary instructions for the implementation in line with European directives were created. <p>Plant conservation</p> <ul style="list-style-type: none"> Management plans for Risnjak NP, Plitvice lakes NP, Northern Velebit NP, Paklenica NP and Nature Park Velebit were made within the project of the World bank, 'Conservation of Karsting Ecological Systems' (KEC) Management plans for two nature reserves were drafted – Đurđevac 	<p>Models & Protocols</p> <ul style="list-style-type: none"> to elaborate NIA protocol providing practical instructions for implementation <p>Plant conservation</p> <ul style="list-style-type: none"> to prepare Management plans for all strict nature reserves, national parks, nature parks, special reserves and special landscape as they have not been elaborated yet. They will contain the active conservation of species, habitats and landscapes. to elaborate action plans for the conservation of the threatened species and the international lists species (Bern convention, HD) to start pilot monitoring of the selected species to implement the demo NIA in the selected area to monitor the effects of the sustainable development in the specific valuable BD areas of the coastal areas and islands (within the COAST project) to integrate the IPA area in the NEN and NATURA 2000 in compliance with the decision and activities of the government authority responsible for nature conservation

		<p>sands and Dubravica Cret (within the CARDS project, Institutional Strengthening of the State Institute for Nature Protection)</p> <ul style="list-style-type: none"> • Management plan for Lonjsko polje Nature Park was developed • Management plans for nature parks Učka, Žumberak – Samobor mountains, and Kopački rit are about to be finished • A project for defining Important Plant Area has been implemented in Croatia. The preparation of the publication is nearing completion. Cooperation involving the integration of the national data in the European IPA database (CDDA) and the regional publication was implemented. • Ex-situ propagation of the threatened species <i>Degenia velebitica</i> was made and the population was cultivated. • the wooden vegetation in the botanical reserve Cret Dubravica is being systematically removed and mowed since 2000 	
<p>Target 4: At least 10 per cent of each of the world's ecological regions effectively conserved</p>	<p>BR01-BR06 BR12 BR14 BR16</p>	<ul style="list-style-type: none"> • Protected areas are situated in the surface area of 6.408,24 km² which is 11,32% of the Croatian territory. The largest part of the protected area refers to nature parks and regional parks. • The total nationally protected area was recently enlarged for the Lastovo Archipelago NP (in 2006 with 19,583 ha), Turjak-Mališčak-Pliš-Lapjak special floral reserve (within the borders of the Papuk NP) (in 2006, 190 ha), Karišnica and Bijela, important landscape (in 2006, 360 ha), Cres- 	<ul style="list-style-type: none"> • NBSAP anticipate expert evaluation and potentially legal protection for the area of Elafiti islands, the Mrežnica River, Bjelolasica, Hrvatsko zagorje, Lička Plješivica, Čičarija, the Dinara and Kamešnica Massif, the Island of Cres, the area of Obruč and Paklen, the Una River Canyon, the Mirna River, the Upper Kupa River, the complete course of the rivers Cetina and Snježnica • to propose new wetlands for registration in the list of the international valuable wetlands of the Ramsar

		<p>Lošinj special nature reserve (under sea surface) (in 2006, 52,576 ha), Savica special ornithological reserve (in 2006, 79 ha), Moslavačka gora Regional Park (in 2007, 15,296 ha), Platana Brsalja – Dubrovnik, park architecture monument – an individual tree (in 2007), Mura – Drava regional park (in 2008, 144,695 ha), Crnika Geological – paleontological special reserve (in 2008, 41 ha).</p> <ul style="list-style-type: none"> The National Ecological Network area covers 47% of Croatia's territory (core area 9,7%). 	<p>convention (Vransko Lake, Lika Field and Ogulin – Plaški area)</p> <ul style="list-style-type: none"> to nominate new areas for registration to the UNESCO World Heritage list and finish the nomination process for areas that are on the tentative list to finish the process of the results proclamation of the biosphere Mura – Drava and work on proclamation of new biosphere reserves
Target 5: Protection of 50 percent of the most important areas for plant diversity assured	BR01-BR06 BR12 BR14 BR16	<ul style="list-style-type: none"> The project ' Important Plant Area – IPA Croatia' with 99 identified IPA areas was successfully implemented. The production of the final publication is underway. Out of the total surface of all IPA areas, 481,517 ha is situated within the borders of the nature and national parks and is therefore directly protected. Proposal was prepared for the national programme for the establishment of the integrated fire fighting supervisory system in the national and nature parks of the Republic of Croatia for that period. The first telemetry platform with infra red and video control for early detection of fire was set in order to improve the system of the fire fighting protection in the protected area of NP Paklenica. 	<ul style="list-style-type: none"> to maintain the Register of the Protected Nature Values at the Ministry of Culture
Target 6: At least 30 per cent of production lands managed consistent with the conservation of plant diversity	BR01-BR09 BR11-BR14 BR16 BR18	<ul style="list-style-type: none"> a small number of professional and scientific papers regarding this topic was published without systematical and organized efforts 	<ul style="list-style-type: none"> to carry out an analysis of the proportion and the types of the agricultural practice in Croatia in view of sustained diversity of flora

		<ul style="list-style-type: none"> the draft of the Strategy for Ecological Agriculture Development was made for 2005 with the main goals: (1) Improving the natural resources used in agriculture especially at the border and sensitive areas with the aim of nitrates, phosphates and pesticides pollution reduction and protection of the biodiversity and ecosystems. (2) Promoting sustainable rural development through diversity of agricultural activities, employment and revenue growth and decrease in the rural population. (3) Development of the domestic market and easy access of the Croatian ecological products to the EU and other export markets through improvement of safety and quality of certified ecological products and increase of the production quantity the pilot programme for stimulating specific agricultural activities and technologies with the aim of sustaining biological diversity in the coastal area and on the islands (the COAST project) was supported by small grants 	<ul style="list-style-type: none"> to develop an action plan with the aim of reaching 30% of sustainable agricultural surface that is managed regarding to the conservation of the plants diversity to implement the action plan at the demonstration level on several sites (herbicides quantity reduction, maintenance of natural hedges, diffusion of water flows, introduction of innovations in management that contribute to conservation of diversities)
Target 7: 60 per cent of the world's threatened species conserved in situ	BR01-BR03 BR05-BR09 BR12	<ul style="list-style-type: none"> in compliance with the analysis of the threatened species in Croatia (in the categories CR, EN and VU) about 56% of the species are covered with some ways of in situ protection (by laws at the level of the species and areas, i.e. the part of the areal in the protected areas in the national and nature park categories) 	<ul style="list-style-type: none"> to carry out an analysis of all threatened species regarding the available data about distribution due to the identification of the degree of the protection within the preserved areas, creating action plans for protection for those species that don't meet the criteria of the minimal in situ protection
Target 8: 60 percent of threatened plant species in accessible ex situ collections, preferably in the country	BR07-BR08 BR12	<ul style="list-style-type: none"> unsystematic ex situ protection of a small number of species; threatened species belong to the plant resources 	<ul style="list-style-type: none"> to design, finance and implement an action plan for systematical conservation of the threatened species

of origin, and 10 per cent of them included in recovery and restoration programmes		of certain botanical gardens, but as a result of sporadic collection at the natural sites and not as a result of systematic cultivation of the threatened plants due to their conservation (with rare exceptions, for example <i>Degenia velebitica</i>)	in the botanical gardens with the accent on CR category of 10 % of threatened species
Target 9: 70 per cent of the genetic diversity of crops and other major socio-economically valuable plant species conserved, and associated indigenous and local knowledge maintained	BR12	<ul style="list-style-type: none"> • Nature Protection Act proscribes the protection of cultivated species • Under the patronage of the Government of the Republic of Croatia a conference with international participation was held about native breeds and varieties as a part of the natural and cultural heritage • Faculty of Agriculture of the University of Zagreb launched the implementation of the project 'Croatian Bank of the Plants Genes (HBBG)' • Database of the plants genes resources is to be established within the project SEEDNet • the collected plants genes resources are available to all domestic and foreign scientific and professional employees 	<ul style="list-style-type: none"> • to make the unique, standard nomenclature and taxonomic list of the autochthonous plants species that are traditionally cultivated • to make a red list of threatened autochthonous varieties and their habitats • to legally protect threatened plants species and conduct individual high priority action plans for critically threatened autochthonous varieties • to maintain and develop the Croatian Bank of the Plants Genes • to elaborate the system of stimulation of the cultivation and usage of the autochthonous varieties • to develop the programme of including the autochthonous varieties in the touristic offer of national and nature parks
Target 10: Management plans in place for at least 100 major alien species that threaten plants, plant communities and associated habitats and ecosystems	BR11	<ul style="list-style-type: none"> • the legislative frame for the issues of invasive species exists • the preliminary list of the invasive vascular plants in Croatia is compiled and standard national classification scheme of the autochthonous species is developed • within the 'Flora Croatica Database' the model on allochthonous vascular flora was made which also analyses the invasive species (descriptions, 	<ul style="list-style-type: none"> • to find the existing situation of the invasive species and make their list (black, grey and white lists) • to establish the technical and legislative working group which will advise and help the state bodies and agencies • to develop the National strategy on invasive alien species • to strengthen the information system and education of the general public about the invasive alien species

		<ul style="list-style-type: none"> effects, time of entry and distribution) the removal of the invasive alga <i>Caulerpa racemosa</i> is systematically done Management plans for natural resources include nature protection measures and requirements for prevention of entering the allochthonous species National workshop for invasive alien species was held. The conclusions for further action and treatment of invasive alien species were brought during this workshop. under the patronage of the Ministry of Transport and Communications a working group for solving the problems of waste waters was founded. It consists of the members of the supervisory bodies and scientific institutions. 	<ul style="list-style-type: none"> to make programmes of solving the most problematic invasive species to make necessary legal acts that will arrange handling of waste waters from ships
Target 11: No species of wild flora endangered by international trade	BR08-BR09	<ul style="list-style-type: none"> there are no official indications on direct international trade of allochthonous plants commercial residence of foreign tourists and research groups was identified on the national territory with the programmes of the collection of the autochthonous flora and exporting it out of the country 	<ul style="list-style-type: none"> to increase the control of the foreign commercial 'botanical excursions' to improve the information system of the illegal work of botanical excursions within the work of tourist agencies
Target 12: 30 percent of plant-based products derived from sources that are sustainably managed	BR12 BR15-BR16	<ul style="list-style-type: none"> The state owned 'Hrvatske šume' company is responsible for managing the biggest forest areas in Croatia. The company received the FSC accredited certificate (SA-FM/COC-001212) which means that the forest is managed according to the strict ecological, social and economic standards. 	<ul style="list-style-type: none"> to start monitoring of the share of the certified products in the market to start monitoring the effects of the FSC at the selected site

		<ul style="list-style-type: none"> The 'Ecological Product of Croatia' certificate was initiated (2007) 	
Target 13: The decline of plant resources, and associated indigenous and local knowledge innovations and practices, that support sustainable livelihoods, local food security and health care, halted	BR09 BR12-BR14	<ul style="list-style-type: none"> Croatia, a candidate country for the entrance to the EU has started the elaboration of 'Agricultural and Environmental Programme' (POP) The pilot project of the agricultural and environmental programme for the Žumberak Nature Park and Samobor mountains was made 	<ul style="list-style-type: none"> To elaborate the national programme of monitoring of the exploitation and trade of plants species collected at the natural sites.
Target 14: The importance of plant diversity and the need for its conservation incorporated into communication, education and public awareness programmes	BR09 BR11-BR12 BR17	<ul style="list-style-type: none"> publishing of the Botanical library series (Flora of Medvednica, Flora of the Adriatic Coast and Islands) as an elementary educational tool about introducing the flora diversity to the general public the educational programmes and the infrastructure for visitors of national and nature parks was developed many info-points, information centres and eco educational tracks were arranged and visitors centres are going to be arranged 	<ul style="list-style-type: none"> to provide financial support and continue with editing the 3 additional titles of the Botanical library series (Mountain flora, Water and Swamp Habitats Flora, Endemic Flora of Croatia) to raise awareness about the value of wild species by systematical education and information and implementation of the protection of nature in schools
Target 15: The number of trained people working with appropriate facilities in plant conservation increased, according to national needs, to achieve the targets of this Strategy	BR07-BR09 BR18	<ul style="list-style-type: none"> handbooks for inventorying and monitoring the status of flora and habitats with the description of methodology and the descriptions of certain species with the aim of increasing the number of educated amateurs data collectors were published educational workshops were held for the volunteers about inventorying and monitoring of the vascular flora state, the monitoring of <i>Fritillaria meleagris</i> L. was established in elementary and high schools 	<ul style="list-style-type: none"> to estimate data share that educated botanical amateurs collect to increase the number of the amateurs for 20 % to implement GTI (Global Taxonomy Initiative) in compliance with the aims according to the national report to start with the systematical monitoring in the areas of the ecological network to continue with the implementation of the national system of monitoring the biological diversity, especially education of the amateurs and development of the cooperation with the institutions ,

			associations and other subjects which make part in collection of data about biological diversity
Target 16: Networks for plant conservation activities established or strengthened at national, regional and international levels	BR07-BR09 BR12 BR18	<ul style="list-style-type: none"> • within the CARDS project ' Institutional Strengthening of the State Institute for Nature Protection' the handbooks for inventorying and monitoring the status of flora and habitats with the description of methodology and descriptions of certain species were made 	<ul style="list-style-type: none"> • creating a public database of the projects directly or indirectly connected to the protection of nature and biodiversity with all the relevant data and ensuring the mechanisms for the constant update

APP.III.2. THE PROGRAMME OF WORK ON PROTECTED AREAS

National protected areas – The protected areas make the frame of the total biological and landscape diversity of the Republic of Croatia and they are the key points of the national ecological network due to their special values. In spite of the fact that Croatia has not established the special programme of the work on protected areas, a great number of activities at the area of protection of biological and landscape diversity have to be connected with the realization of the objectives regarding the Programme of the work on protected areas of the Convention. In the recent period, the eco-system protection and managing of the protected areas were accepted and implemented.

Nature Protection Act determines nine national categories of the protected areas, the aims of their protection and the ways of managing. The national categories correspond to the largest extent to one of the internationally accepted IUCN categories of the protected areas. The category of the regional park in Croatia was introduced by the Nature Protection Act in 2003 and the other categories already existed in the 1994 Act. All categories were moved to the current Nature Protection Act.

On 23rd June, 2008 according to the Register of the Protected Natural Values of the Ministry of Culture, in Republic of Croatia 459 nature sites were protected in different categories, of which 9 are under preventive protection. The protected areas cover 8.51% of the total surface out of which 11.32% belong to the continental territory and 3.38% to the Croatian maritime area. The largest part of the protected surface are the nature parks (3.71% of the total state territory).

Table APP.III.2-1. An overview of the protected areas of the Republic of Croatia (including preventively protected areas) PA- protected areas, PP – areas under preventive protection, TP – total protected areas

Category	Number			Land (km ²)	Sea (km ²)	Total (km ²)
	PA	PP	TP			
Strict nature reserve	2	0	2	23,95	0	23,95
National park	8	0	8	742,60	218,75	961,35
Special nature reserve	79	4	83	323,49	529,85	853,34
Nature reserve	11	0	11	4.063,15	179,00	4.242,15
Regional park	0	2	2	1.478,44	121,47	1.599,91
Nature monument	116	0	116	2,46	0	2,46
Important landscape	78	1	79	880,75	0	880,75
Forest park	35	1	36	88,99	0	88,99
Park architecture monument	121	1	122	9,56	0	9,56
Total	450	9	459	7.613,39	1.049,07	8.662,46
Protected areas in other protected areas				1.205,15	0	1.205,15
Total corrected surface				6.408,24	1.049,07	7.457,31
Percentage share of the protected areas at the territory of the Republic of Croatia				11,32%	3,38%	8,51%

Larger protected areas are situated in all four biogeographical regions of Croatia (alpine, continental, mediterranean and pannonian). Both strict nature reserves are in the mountain area. All national parks are in the karst area of the Republic of Croatia. The nature parks are allocated in all biogeographical regions.

Protected areas of the international importance – Certain areas of Croatia enjoy the

international legal protection due to their exceptional biological and landscape diversity. The Plitvice Lakes National Park was registered as a natural value at the UNESCO World Heritage List in 1979. There are other two additional suggested natural sites that were added to the tentative list in 2008: the Kornati National park with the Telašćica Nature Park, and the Velebit Mountain; and one mixed natural and cultural site, the Lonjsko Polje Nature Park. The Kopački Rit and Lonjsko Polje Nature Parks, the Crna Mlaka ornithological reserve and fish ponds, and the Neretva River delta are registered as internationally valuable wetlands at the Ramsar list. The Velebit Mountain was added to the UNESCO international network of the biosphere reserves in 1978. The nomination of the transboundary biosphere reserve Mura – Drava – Danube is under preparation. In 2007, the Papuk Nature Park was added to the UNESCO network of the GEO parks for a period of four years.

Table APP.III.2-2. Protected areas of international importance in the Republic of Croatia

	UNESCO, World Heritage sites	UNESCO, MaB Biosphere reserves	Ramsar Convention sites	European Geoparks Network
Designated sites /year	Plitvice Lakes National park /1979, 2000	Velebit Mountain /1978.	Kopački rit Nature Park /1993. Lonjsko polje and Mokro polje /1993. The Neretva River Delta /1993. Crna Mlaka /1993.	Papuk Nature park /2007 – 2011.
Nominated /year	Lonjsko polje Nature park/2008			
Planned	Velebit Mountain Kornati National Park Telašćica Nature Park	Mura – Drava – Danube	Vransko jezero Nature Park	

Ecological network of the Republic of Croatia – Although the implementation of the ecological network was regulated by the Nature Protection Act since 2005, the implementation of LIFE III project CRO-NEN already resulted in elaboration of the proposal of the National Ecological Network in 2002 which is the basis for elaboration of the Regulation on the Proclamation of the Ecological Network of the Republic of Croatia. During 2007, the analysis was made for the elaboration of Ordinance on the Nature Impact Assessment and the Regulation on the Proclamation of the Ecological Network of the Republic of Croatia which was adopted in October 2007. Areas of ecological network in Croatia in compliance with the ecological network of the European Union NATURA 2000 are divided to internationally important ornithological areas and other areas important for wild species and habitat types.

Every area contains conservation objectives, the list of species and habitat types because of which it was added to the ecological network. The influence of the intervention as well as the plans has to be observed in process of Nature Impact Assessment. In addition, every area of the ecological network consists of directions for the protection measures which are applied to all physical and legal persons who use the natural resources and make different activities in the ecological network areas.

The ecological network of the Republic of Croatia covers 47% of the continental and 39% of the maritime territory and two corridors: the corridor for the sea turtles and the Palagruža-Lastovo-Pelješac corridor (an area important for the bird migration).

The Emerald Network – The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and the legislation of the European Union regulate the protection of the threatened species and habitat types which are emphasized in the biogeographical regions on the state territory (pannonian, continental, alpine and mediterranean). The Emerald Network consists of areas of special interest for the protection (ASCI) which should be established by the member countries present of the Bern Convention. For the EU member countries, the Emerald Network is similar to the NATURA 2000 network.

The making of the Emerald Network started in 2002 with the Pilot project of creating the first phase of the Emerald Network in Croatia which was implemented by the Ministry of Environmental Protection, Physical Planning and Construction in cooperation with the Council of Europe and Croatian experts. During 2006, the second phase of the project was conducted, in which data were collected and the standard forms were completed for 80% of the Emerald Network area in the Republic of Croatia. During 2008, the third phase was implemented in which data were collected for the remaining 20% of the ASCI areas in Croatia.

NATURA 2000 – Since 2004, the extended activities for the mobility and inclusion of scientists and experts were undertaken so that the Republic of Croatia could fulfil the obligation to the European Union within the given deadlines. A significant part of work in processing existing published and unpublished data about distribution of the NATURA species and habitat types in Croatia was finished. The proposal of the NATURA 2000 ecological network was prepared for the Republic of Croatia, including the corresponding GIS database. During 2008 the activities related to the extended field work of collecting new data was continued so that the database could be the qualitative base for the further implementation of the obligations related to this programme (monitoring, evaluation of the acceptability of intervention in nature, management plans, etc).

The Dinaric Arc Ecoregion – This project is a part of the WWF programme of the protected areas for the planet where the main goal is to help the members of the Convention in the implementation of the CBD programme of Work on protected areas. The three main components of the project are:

- analysis of the lack of ecological knowledge and data,
- increased efficiency of protected areas management,
- demonstration of the sustainable financing of protected areas with the elaboration of the business plan for the selected pilot area.

The project area consists of five countries belonging to the Dinaric Mountains area (Albania, Bosnia and Herzegovina, Montenegro, Croatia and Slovenia) and it is implemented by the WWF Office for Mediterranean programme (MedPO) in cooperation with the ministries competent for the nature protection in each of the mentioned states. In addition, Croatia takes part in the initiative Big Win for the Dinaric Arc, which resulted in signing of the mutual declaration about the cooperation of the Dinaric ecoregion protection by the Ministers of the five above mentioned neighbour countries (including Serbia) and the State Secretary of the Ministry of Culture of the Republic of Croatia at the high-level segment of the ninth meeting of the Conference of the Parties to the CBD, held in Bonn in May 2008.

The so-far accomplished results include:

- an evaluation of the progress in the management of protected areas,
- an overview of institutions authorized for the implementation of the CBD Programme of work on protected areas,

- an evaluation of the necessary education where the Quick evaluation and prioritization of managing protected areas were made. A workshop for national and nature parks in which recommendations for further improvement were given, was held from 27th to 29th October 2008. Workshop for the counties public institutions authorized for protected areas will be held in the first quarter of 2009,
- education of the Ministry representatives and professional directors of the selected pilot parks and elaboration of business and financial plans of the protected areas which was organized by the Academy for Protection of Nature and financed by the Ministry of Environment of the Republic of Germany (4th – 8th December 2008),
- action plans for implementation of the national priorities in management of the protected areas (the Big Win for Dinaric Arc initiative).

Expected results include:

- analysis of the lack of ecological knowledge and data in the ecoregion (deadline: first quarter of 2009),
- an education plan in the ecoregion (deadline: second and third quarter of 2009),
- workshops about private and public partnership in managing the protected areas (deadline: third and fourth quarter of 2009),
- draft of the Northern Velebit National Park business plan, the making of which will serve as a model for the remaining protected areas in the Republic of Croatia (deadline: 2011).

Table APP.III.2-3. The Big Win commitments of the Republic of Croatia.

Commitments
Proclamation of the Neretva Nature Park and the Mreznica Regional Park
Developing Management Plans for 5 Marine Protected Areas (MPAs): National Parks of Brijuni, Kornati and Mljet, Nature Parks of Telascica and Lastovo Archipelago by 2012
Strengthening capacities of the 5 Croatian MPAs management bodies on issues related to MPA management, also, including some of marine protected areas at the SPAMI List
Improvement of a system of effectively managed and representative network of MPAs in the Mediterranean by 2012
Strengthening institutions at national and regional levels, through assessing protected areas management effectiveness (RAPPAM)
Ensuring stakeholder participation in management planning of protected areas based on the model successfully implemented in the Karst Ecosystem Conservation Project
Creation of a functional ecological network – system of protected areas and corridors in marine and coastal habitats (Natura 2000 marine sites)
Examining possibilities for creation of transboundary cooperation between Risnjak National Park (Croatia) and Notranjski Regional Park (Slovenia)
Examining possibilities for transboundary cooperation between Plitvice Lakes National Park (Croatia) and Una National Park (Bosnia and Herzegovina)
Transboundary cooperation between Croatia and Bosnia and Herzegovina in examining possibilities for protection of the Dinara Mountain

Other activities – Detailed list of other activities and projects is added in the Appendix II.

Table APP.III.2-4. Progress in achieving the goals of the Programme for work on protected areas in Croatia.

Main objectives	Objectives	Evaluation of progress
1.1. To establish and strengthen national and regional systems of protected areas integrated into a global network as a contribution to globally agreed goals.	By 2010, terrestrially, and 2012 in the marine area, a global network of comprehensive, representative and effectively managed national and regional protected area system is established as a contribution to (i) the goal of the Strategic Plan of the Convention and the World Summit on Sustainable Development of achieving a significant reduction in the rate of biodiversity loss by 2010; (ii) the Millennium Development Goals – particularly goal 7 on ensuring environmental sustainability; and (iii) the Global Strategy for Plant Conservation	<ul style="list-style-type: none"> • by the end of 2008 management plans were finished for Paklenica NP, Plitvice Lake NP, Risnjak NP, Northern Velebit NP, Velebit Nature Park and Lonjsko polje Nature Park; while Učka Nature Park, Žumberak Nature park, Samoborsko Gorje, and Kopački Rit Nature park are about to prepare them soon. • parks that will develop the management plans using their own assets are: Krka NP, Biokovo Nature Park, Medvednica Nature park and Papuk Nature park • The WWF MedPO project supports development of management plans for the coastal and island parks: Brijuni NP, Kornati NP, Mljet NP, Telašćica Nature Park and Lastovo Archipelago Nature Park. • The objective of the national parks and nature parks is to adopt the management plans by the end of 2010.
1.2. To integrate protected areas into broader land- and seascapes and sectors so as to maintain ecological structure and function.	By 2015, all protected areas and protected area systems are integrated into the wider land- and seascape, and relevant sectors, by applying the ecosystem approach and taking into account ecological connectivity and the concept, where appropriate, of ecological networks.	<ul style="list-style-type: none"> • ecological analysis of deficiencies in the Dinara ecoregion (the WWF PA4LP DAE project) • networking of the Croatian coastal and seascape parks' directors, together with authorized institutions in the MedPAN network (the MedPAN South Project)
1.3. To establish and strengthen regional networks, transboundary protected areas (TBPAs) and collaboration between neighbouring protected areas across national boundaries.	establish and strengthen transboundary protected areas, other forms of collaboration between neighbouring protected areas across national boundaries and regional networks, to enhance the conservation and sustainable use of biological diversity, implementing the ecosystem approach, and improving international cooperation.	<p>The possibility of establishing the following priority transboundary areas was examined:</p> <ul style="list-style-type: none"> • Risnjak NP (Croatia) and Notranj Regional Park (Slovenia) • Plitvička jezera NP (Croatia) and Una NP (Bosnia and Herzegovina) • Area of the Mountain Dinara area (Croatia and Bosnia and Herzegovina) • (Big Win Initiative) • Mura – Drava (Croatia and Hungary) Biospheric reserve (UNESCO)
1.4. To substantially improve site-based protected area planning and management.	All protected areas to have effective management in existence by 2012, using participatory and science-based site planning processes that incorporate clear biodiversity objectives, targets, management strategies and monitoring programmes, drawing upon existing methodologies and a long-term management plan with active stakeholder involvement.	<ul style="list-style-type: none"> • In compliance with the Nature Protection Act, all new management plans for protected areas are based on the scientific data of the specific area, clear aims of the biological diversity, strategic planning and programmes of monitoring with the active cooperation of the participants in the managing process. • Model of the management plans defined in the KEC project was adopted as a standard at the national level.
1.5. To prevent and mitigate	By 2008, effective mechanisms for identifying and	<ul style="list-style-type: none"> • Implementation of the network of the NATURA 2000 areas has been

the negative impacts of key threats to protected areas.	preventing, and/or mitigating the negative impacts of key threats to protected areas are in place.	initiated
2.1. To promote equity and benefit-sharing.	Establish by 2008 mechanisms for the equitable sharing of both costs and benefits arising from the establishment and management of protected areas.	<ul style="list-style-type: none"> • Elaboration of the business plan for NP Northern Velebit which will involve the cooperation of the local communities in the management of parks is under preparation.
2.2. To enhance and secure involvement of indigenous and local communities and relevant stakeholders.	Full and effective participation by 2008, of indigenous and local communities, in full respect of their rights and recognition of their responsibilities, consistent with national law and applicable international obligations, and the participation of relevant stakeholders, in the management of existing, and the establishment and management of new protected areas.	<ul style="list-style-type: none"> • Respecting the local communities' rights, their cooperation in park management and participation of the key members are implemented in the legislation of nature protection in the Republic of Croatia.
3.1. To provide an enabling policy, institutional and socio-economic environment for protected areas.	By 2008 review and revise policies as appropriate, including use of social and economic valuation and incentives, to provide a supportive enabling environment for more effective establishment and management of protected areas and protected areas systems.	<ul style="list-style-type: none"> • The nature protection legislation is to a large extent harmonized with that of the EU.
3.2. To build capacity for the planning, establishment and management of protected areas .	By 2010, comprehensive capacity-building programmes and initiatives are implemented to develop knowledge and skills at individual, community and institutional levels, and raise professional standards.	<ul style="list-style-type: none"> • Efficiency of managing the protected areas was estimated by the method of quick evaluation and prioritization of managing 11 nature parks and 8 national parks (RAPPAM) during 2008 and 2009.
3.3. To develop, apply and transfer appropriate technologies for protected areas.	By 2010, the development, validation, and transfer of appropriate technologies and innovative approaches for the effective management of protected areas is substantially improved, taking into account decisions of the Conference of the Parties on technology transfer and cooperation.	<ul style="list-style-type: none"> • Guidance and manuals for the plan of managing the protected areas were prepared.
3.4. To ensure financial sustainability of protected areas and national and regional systems of protected areas.	By 2008, sufficient financial, technical and other resources to meet the costs to effectively implement and manage national and regional systems of protected areas are secured, including both from national and international sources, particularly to support the needs of developing countries and countries with economies in	<ul style="list-style-type: none"> • Almost all public institutions for management of national and nature parks have their own sources of income through entrance tickets' sale, tourist and catering services, concessions, sale of souvenirs, promotion materials and other services. • In 2004, the Fund for Protection of the Environment and Energy Efficiency was established in order to provide additional funds for financing of projects, programmes and similar activities in the area of

	transition and small island developing States.	<p>conservation, sustainable use, protection and improvement of environment</p> <ul style="list-style-type: none"> • The Nature Protection Act provides financial stimulation for management that implements and manages measures for protection of biological and landscape diversity • A system of stimulation was established for successful managing of the ecological network areas and the future Croatian part of the ecological EU NATURA 2000 network through the future agricultural and environmental programme.
3.5. To strengthen communication, education and public awareness.	By 2008 public awareness, understanding and appreciation of the importance and benefits of protected areas is significantly increased.	<p>The Republic of Croatia is a party of the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (the Aarhus Convention). The obligation of informing the public and participation of the public in decisions is regulated by the Environmental Protection Act, Nature Protection Act and Exterior Design and Construction Act while the procedures of the participation of the public are regulated by regulations and directives.</p> <ul style="list-style-type: none"> • During 2006, a working group for education, information and public participation was established. • General strategic objective is proscribed in the NBSAP - to encourage improvement of institutional and non institutional means of education about biological diversity and public participation in decision making. • Informing the general public and the target groups on the biological and landscape diversity protection was made in different nature protection projects and by celebrating important dates, such as Nature Protection Day, Earth Day, World Wetlands Day, promotion of scientific publications, temporary organisation of the thematic round tables, press conferences, etc.
4.1. To develop and adopt minimum standards and best practices for national and regional protected area systems.	By 2008, standards, criteria, and best practices for planning, selecting, establishing, managing and governance of national and regional systems of protected areas are developed and adopted.	<ul style="list-style-type: none"> • Guidelines and manuals on how to manage the protected areas were defined and prepared. • A system of Nature Impact Assessment for the National Ecological Network area was introduced.
4.2. To evaluate and improve the effectiveness of protected areas management.	By 2010, frameworks for monitoring, evaluating and reporting protected areas management effectiveness at sites, national and regional systems, and transboundary protected area levels adopted and implemented by Parties.	<ul style="list-style-type: none"> • The RAPPAM method of efficiency evaluation of protected areas was introduced in 2008.
4.3. To assess and monitor	By 2010, national and regional systems are	<ul style="list-style-type: none"> • The Nature Protection Act defined a system of protection

protected area status and trends.	established to enable effective monitoring of protected-area coverage, status and trends at national, regional and global scales, and to assist in evaluating progress in meeting global biodiversity targets.	<p>proclamation, management, cultivation and control over certain protection categories.</p> <ul style="list-style-type: none"> • Collection of data was institutionalized by establishing and starting the work of the State Institute for Nature Protection in 2003, where prerequisites for creating a central database within the information system of nature protection were created. • Regarding the evident lack of data, the accent is on the project financing of inventorying and monitoring of threatened species and habitats conditions. • handbooks for inventorying and monitoring the status of flora, partly fauna, continental, freshwater and seascape habitats were created. These handbooks are the first step in standardization of the collecting data methodology as a basis for establishment of system monitoring. • Croatian Environmental Agency delivers data about protected areas to the EU Environmental Agency for the <i>Common Database on Designated Areas (CDDA)</i>. • Environmental Protection Information System was established as a series of connected electronic databases and sources of data conditions, demands on certain environment components, pressure on the environment, site indications and other data and information important for monitoring of the environment conditions at the national level. • Elaboration project of the National Indicators List was introduced with respect to the biodiversity protection indicators that were defined at the Convention on Biological Diversity and European Commission (SEBI 2010 – Streamlining the European Biodiversity Indicators), but also taking into account the Government of Croatia needs for information required for the politics planning of environmental protection policies with purpose of sustainable development.
4.4 To ensure that scientific knowledge contributes to the establishment and effectiveness of protected areas and protected area systems.	Scientific knowledge relevant to protected areas is further developed as a contribution to their establishment, effectiveness, and management.	<ul style="list-style-type: none"> • A lot of scientific researches were recently conducted in majority of protected areas in order to make an inventory of biological diversity, especially in the part necessary for making the NATURA 2000 network.

APPENDIX IV. A DRAFT OF NATIONAL BIODIVERSITY INDICATORS

APP.IV.1. METHOD OF DEVELOPMENT OF THE NATIONAL BIODIVERSITY INDICATORS LIST OF THE REPUBLIC OF CROATIA

During 2006, a project of development of National list of indicators was set forward in order to establish a system for collecting and processing data and reporting on the state of the environment at national and European level. Based on the Environmental Protection Act, the National list of indicators presents a list of indicators which prescribe the time dynamics of data collection, format, source and mode of data flow. The first draft of the National list of Indicators of biodiversity was developed by the commission composed of relevant national institutions representatives. In the continuation of the process, four indicators that were originally included in the list of agro-environmental indicators and two indicators from the list of proposals for forestry, were added on the biodiversity list. In addition, the proposal of the list was coordinated with European indicators of biodiversity, which was defined by the European Environment Agency (EEA) in 2007, through the SEBI 2010 program (Streamlining European Biodiversity Indicators).

Table APP.IV.1–1. Method of development of individual national indicators of biodiversity of the Republic of Croatia.

Name	<p>Code – label assigned to a thematic area of environmental protection under the first letter of the thematic area</p> <p>Serial number – the number assigned by the growing order of the indicators within a single category</p> <p>Name of indicator</p>
Definition	<p>Definition of indicators – provides concise information about what indicator monitors/displays and information on the purpose and objective monitoring of specific areas/environmental state by given indicator</p> <p>Subindicator – an indicator which is defined as a fundamental part of creating a base of indicators in terms of data and/or specific display of base indicator</p> <p>Related indicator – an indicator or subindicator of the same or other areas that share the same or derivative data</p>
Legal coverage	<p>Legal coverage defines obligations of measurement, collection and data delivery by:</p> <ul style="list-style-type: none"> – the EU regulations and international regulations – regulations of the Republic of Croatia
Position	<p>The indicators in the DPSIR system: Activator (D), Pressure (P), Condition (S), Impact (I) Replies of the society (R)</p>
Degree of priority for establishing a flow of data	<p>Defines the degree of priority for establishing a flow of data required for the calculation of the indicators over a specific time interval, and thus the availability of data:</p> <p>Established (U) – data flow is established – data are available</p> <p>Short-term available (K) – data flow will be established within 1 – 2 years from the date of announcement of the national list of indicators in the Official Gazette – information will be available within 1 to 2 years</p> <p>Medium available (S) – data flow will be established within 2 – 5 years from the date of announcement of the national list of indicators in the Official Gazette – information will be available within 2 to 5 years</p> <p>Long-term available (D) – data flow will be established within 10 years from the date of announcement of the national list of indicators in the Official Gazette – information will be available in the period up to 10 years</p>
Procedure methods	<p>Name of method, a brief description of the procedure for the calculation of the indicators (formula), tracking trends.</p>

Review methods	<p>Defines the display of indicators in 5 ways:</p> <ul style="list-style-type: none"> a) descriptive b) numerical c) table d) chart e) cartographic <p>It is necessary to specify units that express the indicator, sizes that are placed in relation (graph, table) and, when needed, other data for the description of review methods.</p>
Source (A) and potential source (B) of data	<p>Gives a list of institutions that are recognized as:</p> <ul style="list-style-type: none"> A – Sources of information (already existing) B – potential (assumed, expected) sources of data required for calculation of indicators
Periodicity of data collection	<p>Period of time within which the data necessary to create indicators (level of information aggregation) is collected.</p>
Data set	<p>List of data required for the calculation of the indicators (indicator 1, 2, 3 ...), with the label of source or potential sources of information (– A1, A2 ... or – B1, B2 ...). For the transparency of data flow, this way of reviewing links sources/potential sources of data with each set of listed data that the named source collects.</p>
Obligations of reporting	<p>Defines the obligations of the Republic of Croatia and its institutions for the delivery of data/indicators and reports in national and international frameworks, according to legislation of the Republic of Croatia, the EU and international regulations.</p>
Data availability	<p>Determines the availability of (full and partial) and the lack of data with the explanation of determined status. Along with the status of data, indicates the names of documents (reports, monographs, collections, etc.), databases, and the list of projects within which the mentioned data are collected, and the name of the authorized institution.</p>

APP.IV.2. REVIEW OF NATIONAL BIODIVERSITY INDICATORS

Table APP.IV.2-1. Proposal of national biodiversity indicators in the Republic of Croatia.

Biodiversity indicator	Definition	Interconnected indicators
BR 01 Protected areas under the Nature Protection Act	Indicator shows a change in the number and area of protected areas under the Nature Protection Act through the years. Establishment of protected areas is a direct response of the society concerning threats to nature. Increase in the number and area of protected areas over time indicates the care of society for the protection of nature. Possible lifting of the protection of some areas indicates loss of attributes for which the area was protected. Nature Protection Act stipulates 9 categories of protected areas: strict nature reserve, national park, special nature reserve, nature park, regional park, nature monument, important landscape, forest park, park architecture monument.	BR02 Areas in the ecological network of the Republic of Croatia BR03 Areas of interest for the EU BR17 Number of visitors in protected areas BR18 Funding of biodiversity protection and conservation
BR 02 Areas in the ecological network of the Republic of Croatia	Indicator shows the number and surface of areas in the ecological network of Republic of Croatia, based on the Nature Protection Act. Establishment of ecological network in Croatia is a direct response of the society concerning the loss of biodiversity (species and habitat types). Maintaining the existing number and surface areas in the ecological network through time indicates the concern of society for biodiversity conservation. Possible deletion of some areas from the ecological network would point out on increasing pressures and unsuccessful enforcement of conservation measures. The following categories of ecological network are listed by the Regulation on proclamation of ecological network: important areas for birds, important areas for wild taxa and habitat types, ecological corridors (migratory paths).	BR14 Agricultural areas of high natural value
BR 03 Areas of interest for the EU	Indicator shows the number and area of potential areas of EU ecological network NATURA 2000. Maintaining the number and surface of sites in the NATURA 2000 through time indicates the concern of society for biodiversity conservation. Possible deletion of some areas of the network would point out at increased pressures and unsuccessful enforcement of conservation measures.	BR13 Share of agricultural area in the areas of interest for the EU BR14 Agricultural areas of high natural value
BR 04 Representation of certain class of habitat types	Indicator shows the trends in representation of individual classes of habitat types through changes in the representation and reuse of surface of appropriate class of land cover in ten year periods. Classes of land cover corresponds to classes of habitat types of highest order, according to the National classification of habitats, with specific living community that are related to it. Reduction of the surface of classes indicates the threat to biodiversity associated with it. Land cover classes are defined in accordance with the appropriate SEBI indicators.	BR13 Share of agricultural area in the areas of interest for the EU BR14 Agricultural areas of high natural value BR16 Fragmentation of natural and semi-natural areas
BR 05	Indicator shows the trends in the representation of certain classes of endangered and rare	BR06 Representation of habitat types

Representation of threatened and rare habitat types in Croatia	habitat types in Croatia, according to the National Classification of Habitat, which is prescribed by Ordinance on the types of habitat types, habitat map, threatened and rare habitat types, and on measures to maintain habitat types. Decrease in the representation of each class indicates the pressure and unsuccessful enforcement of protection measures.	of interest to the EU
BR 06 Representation of habitat types of interest to the EU	Indicator shows the trends in representation of habitat types that are vulnerable on the European level and protected by Habitats Directive (Annex I) and changes in their state of conservation.	BR05 Representation of threatened and rare habitat types in Croatia
BR 07 State of conservation of endangered wild species from the Croatian Red List	Indicator shows the trend of the status of endangerment of wild species from the Red List of Croatia by taxonomic groups through the four year period. Status categories and endangerment of specific wild taxa are determined according to internationally accepted criteria of IUCN (EX – extinct, RE – regionally extinct, CR – critically endangered, EN – endangered, VU – vulnerable, NT – near threatened, LC – least concern, DD – insufficiently known). Changes in threat status of each species indicate the state of conservation. Switch to the category of greater threat or inclusion of new species on the lists, point out to increased pressure and unsuccessful enforcement of protection measures.	BR08 State of conservation of species of interest to the EU M22 Accidental catch: sea turtles, marine mammals and birds
BR 08 State of conservation of species of interest to the EU	Indicator shows the changes in the state of species that are threatened at European level and protected by the Habitats Directive (Annex II, IV and V). It shows the success of implementation of the Habitat Directive and the NATURA 2000 ecological network. Indicator is based on the number of species in specific state categories and changes between categories over time. Adverse state of conservation of some species indicates pressures and unsuccessful protection enforcement.	BR07 State of conservation of endangered wild species from the Croatian Red List M22 Accidental catch: sea turtles, marine mammals and birds
BR 09 Abundance and distribution of the selected species	Indicator shows the trends in abundance (numbers) and the distribution of common birds (except birds in agricultural areas) and butterflies through time. Change in abundance and distribution of common species of birds and butterflies, which are very good indicators of habitat status, points to changes in the environment and the success of implementation of policy and regulations. Common birds and butterflies are in many countries already well documented, easily recognizable and beloved throughout the public, which allows inclusion of large number of amateurs in the monitoring. In Croatia such monitoring has not yet started, for the common birds the preparations are under way, and for the butterflies the proposal has to be developed.	BR10 Population trends of birds in agricultural areas
BR 10 Population trends of birds in agricultural areas	Indicator shows the trends in abundance and distribution of common birds in the agricultural areas through time. Group of 23 species of birds breeding in agricultural habitats are selected for monitoring in the whole of Europe. Changes in abundance and distribution of these species are good indicators of the state of the habitat and the environment in general and they indicate a change in the environment and the success of implementing environmental policies.	BR09 Abundance and distribution of selected species PO01 The areas under agri-environmental incentives PO10 Consumption of pesticides PO20 Intensification/extensification TZ01 Systems of agricultural production

		TZ02.2 Change in agricultural land cover
BR 11 Invasive alien species	Indicator shows the trend in introduction and spreading of non-native (allochthonous) and invasive species in nature in Croatia. Upward trend of introduction and their spreading indicates increased risk of biodiversity loss. In accordance with the SEBI indicator 10, the data are recorded from 1900 by ten year periods. Especially noted is the most dangerous invasive alien species according to the European list of most dangerous invasive alien species that threaten biodiversity in Europe.	M16 Introduction of the invasive alien species
BR 12 Conservation of genetic resources in agriculture	Indicator shows the status of conservation of domesticated native animal breeds and plant varieties.	
BR 13 Share of agricultural area in the areas of interest for the EU	Indicator shows the trend of the representation of the NATURA 2000 sites, which is covered by habitat types who depend on maintaining the extensive forms of agriculture.	PO01 The areas under agri-environmental incentives BR03 Areas of interest for the EU BR14 Agricultural areas of high natural value
BR 14 Agricultural areas of high natural value	This indicator shows the trend in the share of agricultural areas of high natural value of the total utilized agricultural areas. Certain methods of agricultural management encourage large biodiversity associated with agricultural habitats. These production systems and areas together provide large areas of agricultural natural values (HNV). Greater share of HNV arable land encourages greater biodiversity.	BR02 Areas in the ecological network of the Republic of Croatia BR07 State of conservation of endangered wild species from the Croatian Red List BR13 Share of agricultural area in the areas of interest for the EU
BR 15 Dead trees in the forests	Indicator shows the amount of dry standing and fallen trees in forests, which represent an important habitat for a large number of species related to them. Larger quantities of these trees in the forest support greater biodiversity of forest habitats.	Š01 Surface area of forests and forest land
BR 16 Fragmentation of natural and seminatural areas	Indicator shows a change in the average size of natural and seminatural areas on the basis of maps of land cover CLC database. Decrease in the average size of plot points to the conversion of natural and seminatural areas (forests, pastures, agricultural mosaics, seminatural areas, freshwater and wetlands) in the artificial or their fragmentation by the road construction.	BR04 Representation of certain class of habitat types T01 Permanent conversion of land cover
BR 17 Number of visitors in protected areas	Indicator follows the trend of the number of visitors to national parks and nature parks, which can negatively affect the natural values. By increasing the number of visitors, the need for tourist facilities and utilities (transport infrastructure, drainage, energy, and construction) also increases and this can have a negative effect on biodiversity.	BR01 Protected areas under the Nature Protection Act T04 Number of visitors in national parks
BR 18 Funding of biodiversity protection and conservation	Indicator shows the trend of funds used for the protection and biodiversity conservation in Croatia per year, which represents a direct response to the pressures of society on biodiversity. Funding for projects of protection of nature and environment, and indirect	

	financing of data collection, employee salaries, etc. have a direct impact on biodiversity conservation	
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APP.IV.3. THE LIST OF INDICATORS OF OTHER THEMATIC AREAS RELATED TO BIODIVERSITY INDICATORS

Table APP.IV.3-1. Sectoral indicators related to biodiversity indicators.

Thematic area	Code and serial number	Name of indicators
Air	Z13	Exposure to acidification, eutrophication and ground – level ozone pollution
Freshwater quality	KV05	Quality of ground water
	KV06	Ecological state of inland waters of rivers/lakes
	KV07	Ground water eutrophication of rivers/lakes
	KV09	Hazardous substances in mainland waters
Maritime	M07	TRIX – Trophic index
	M09	Hazardous substances in sediment of transitional, coastal and marine waters
	M11	Release of hazardous substances in transitional and coastal waters
	M13	Ballast water
	M17	Capacity of fishing fleet
	M18	Catch of fish and other marine organisms
	M20	Mariculture production
Agriculture	PO01	The areas under agri-environmental incentives
	PO02	Level of implementation of codes of good agricultural practices
	PO04	Areas under organic agricultural production
	PO07	Water use in agriculture for irrigation purposes
	PO09	Nitrate contamination of water in agriculture
	PO10	Consumption of pesticides
	PO12	Levels of surface waters
	PO14	Nutrient balance
	PO15	Release of methane and nitrogen oxides
Soil/land cover	TZ01	Permanent conversion of land cover
	TZ02	Erosion of agricultural land
	TZ03	Quality of agricultural land
Forestry	Š01	Surface area of forests and forest lands with respect to the designation, method of management and ownership
	Š07	The impact of climate on the growth and development of plants (phenological observations)
	Š10	Using of pesticides in forestry
Tourism	T10	Water use in tourism
Industry	I01	Extraction of natural resources: sand, clay, gravel, stone and marl

EXECUTIVE SUMMARY

The Republic of Croatia is a country in transition. This is why the growing and very complex system of protection and conservation of biological and landscape diversity is changing almost daily. In a very short period of its independence, within its capabilities, Croatia has developed and extremely improved the overall system of protection and conservation of natural values and resources and the sustainable use of natural (biological) stocks. To this end, important progress was made both in the area of inventory and evaluation of biological and landscape diversity as well as in development of legislative and institutional framework and improvement of system of protection of the natural values and management of natural resources.

Adjoining the Convention on Biological Diversity in 1996, the Republic of Croatia has committed to protect the overall biological and genetic diversity in the manner prescribed by the Convention. Based on the Convention, the first National Strategy and Action Plan for the Protection of Biological and Landscape Diversity of Croatia was adopted in 1999, indicating a turning point in the approach towards protection of natural values in the Republic of Croatia. This strategy is the fundamental document for protection of nature, which determines the long-term goals and guidelines for preserving biological and landscape diversity and protected natural values, and ways of its implementation, in line with overall economic, social and cultural development of Croatia.

Based on the Strategy, 2005 (with amendments in 2008.) enacted a new, modern Nature Protection Act in which all the provisions of international agreements in the field of nature protection, including the Convention on Biological Diversity, and the relevant regulations of the EU were transferred into national legislation.

From 2000 – 2008, significant changes have taken place in the field of nature protection in the Republic of Croatia. The most significant turning point for the development of nature protection were activities associated with preparations of the Republic of Croatia to join the EU, especially after the receipt of the official opinion of the European Commission on candidacy in April, 2004. This provided guidelines for further development of sector of nature protection in Croatia, in order to meet the European Union standards.

From the achievements in the period 2000 – 2008, the following should be mentioned: institutional strengthening at national and regional/local level; administrative strengthening at all levels; joining all international agreements in the field of nature protection; establishment of a national legislative framework in the field of nature protection and use of genetically modified organisms; proclamation of 33 new protected areas; adoption of management plans for 4 national parks and 1 nature park; proclamation of the ecological network of the Republic of Croatia; establishment of a systematic process of inventory of biological diversity; creation of habitat map; successful implementation of a large number of international projects funded from various funds, including EU funds.

Bearing in mind the major changes in the concept of nature protection and the establishment of new legislative and institutional framework as a result of accession to international conventions and agreements in the field of nature protection and the process of joining the European Union, it was necessary to approach the audit of the 1999 Strategy. Based on the analysis and on the National report on biodiversity, the need of a new Strategy and action plan for the protection of biological and landscape diversity of Croatia was identified and it was adopted in the Croatian Parliament in November 2008. Strategic objectives and guidelines of the new Strategy were considered at a completely new basis, and in addition to biological and landscape diversity, the new Strategy included protection of geodiversity, which was already an integral part of the Nature Protection Act.

Analyzing the existing conditions and reasons for threats and problems of protection of biological and landscape diversity in Croatia, as well as the progress achieved in relation to the Strategy from 1999, it was found that Croatia still has great wealth and diversity and a very high level of value of biological and landscape diversity, especially within the framework of the Western and Central Europe. However, the trend of loss of biological and landscape diversity caused by globally recognized causes such as: excessive exploitation of natural resources, infrastructure construction, agricultural activities (soil, concentration of agricultural land or abandoning grassland area), introduction of non-native (allochthonous) species in ecological systems, environmental pollution, urbanization and the global climate change is still present.

Analysis of the situation pointed out that the Republic of Croatia is trying to follow the European legislation and practice in the sector of nature protection, but more efforts should be directed to the implementation of action plans, and it is necessary to work further on strengthening the institutional framework and the allocation of significantly more resources for the nature protection from State and regional/local budget.

Priorities for the coming period are strongly associated with the process of accession of the Republic of Croatia to the European Union. In the nature protection it relates to the harmonization of legislation including the establishment of enforcement mechanisms, effective monitoring and especially the contribution of the Republic of Croatia to the ecological network of the European Union –NATURA 2000.