

PART 2.

Strategy and action plan for the protection of biological and landscape diversity of Croatia

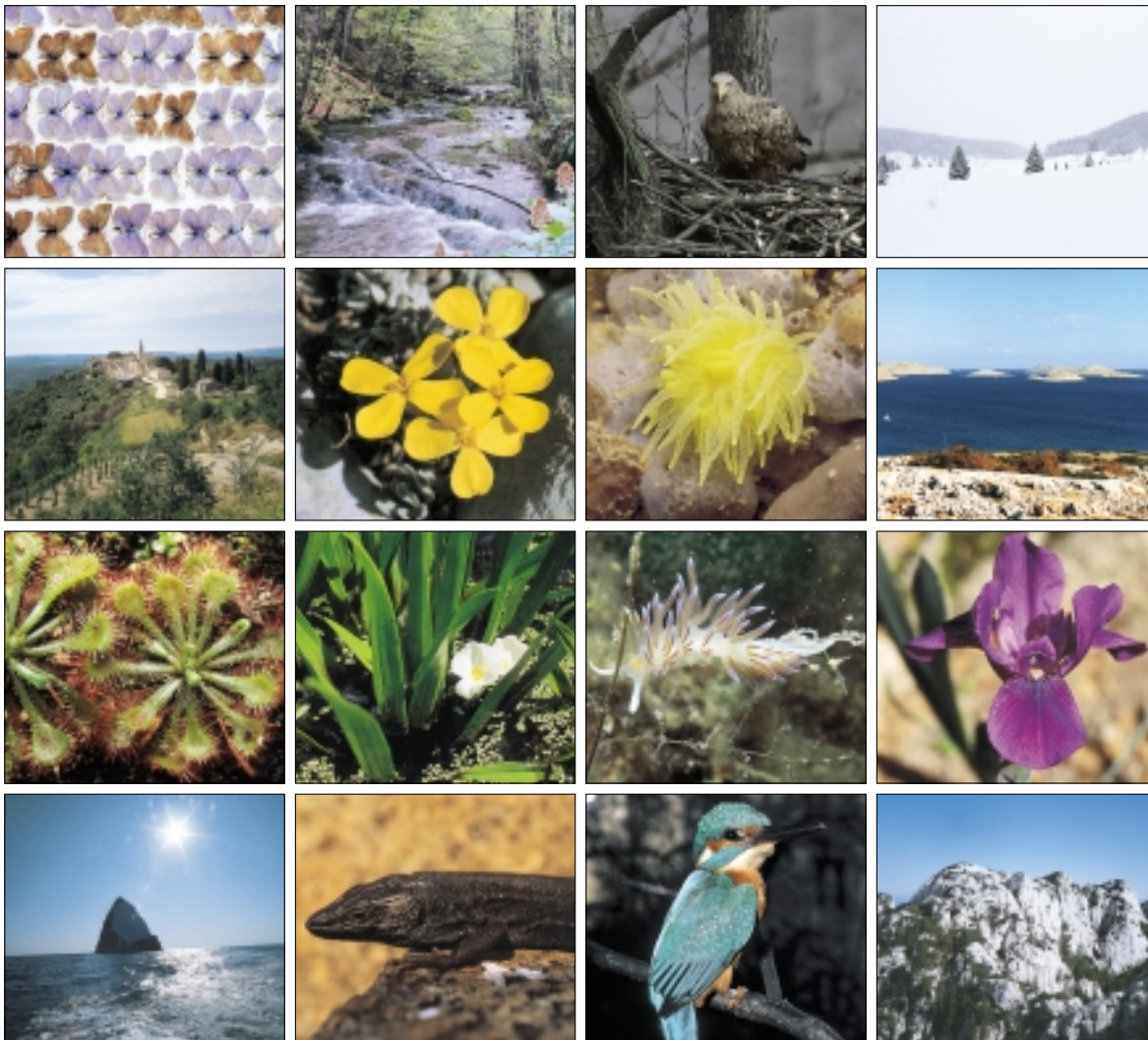




Figure 138. Brown toad in the safety of its home

(photo by M. Mrakovčić)

Strategy and action plan for the protection of biological and landscape diversity of Croatia

STRATEGY PRINCIPLES

The basic principles of the National Strategy and Action Plan for the Protection of Biological and Landscape Diversity are as follows:

1. The Republic of Croatia is aware that the overall biological and landscape diversity is its fundamental value and a major resource for further development
2. The Republic of Croatia is aiming at conservation and improvement of the existing biological and landscape diversity of the country and will take steps to bring back a part of the lost taxa and habitats wherever possible and justified
3. The Republic of Croatia will develop all appropriate measures to identify, conserve and improve the existing biological and landscape diversity
4. The national legislation will ensure the incorporation of measures for conservation and improvement of the overall biological diversity into all economic activities using biological resources;
5. The Republic of Croatia will systematically extend its efforts to protect the biological and landscape diversity from the national to the regional and local level
6. The Republic of Croatia will harmonize its efforts in the protection of the biological and landscape diversity with corresponding international activities taking into consideration the fact that the national biological and landscape diversity represents a unique and irreplaceable segment of the overall global diversity.

NATIONAL STRATEGIC OBJECTIVES

The National Strategy of the Biological and Landscape Diversity Protection is based on the above mentioned principles and consists of a number of strategic objectives relating each to a specific issue. For the purpose of accomplishing a certain strategic objective strategic guidelines are laid down demonstrating the commitments of the Republic of Croatia with the view to reach the strategic goal as defined.

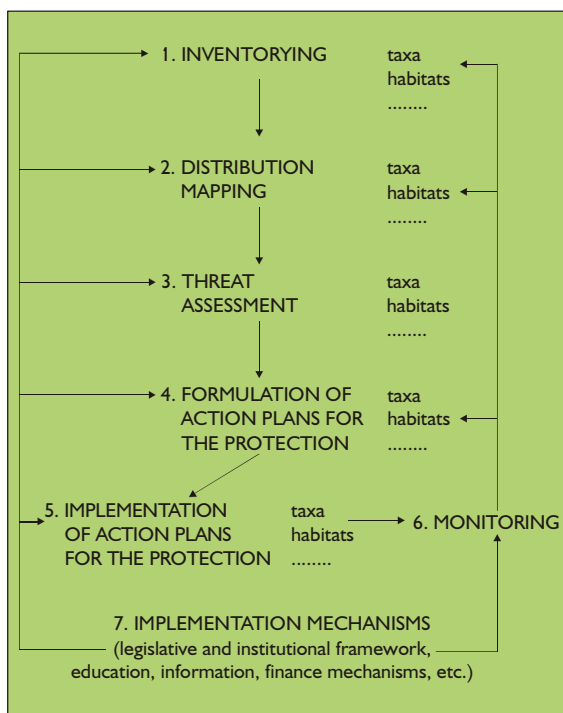
General strategic objectives

Viewing the lack of appropriate information on biological and landscape diversity of the Republic of Croatia, the Strategy has identified the following general strategic objectives:

1. to undertake an integrated inventorying of the parts of biological and landscape diversity
2. to map the distribution of the parts of biological and landscape diversity
3. to assess the state of endangerment of the parts of biological and landscape diversity
4. to prepare action plans for protection of the threatened parts of biological and landscape diversity
5. to implement action plans for the protection of the threatened parts of biological and landscape diversity
6. to monitor changes in the course of time and measure effects of the action plan implementation and
7. to develop implementation mechanisms (including legislative and institutional framework, education, development of scientific resources, information, financing mechanisms, etc.).

In the course of NSAP development the most complete data so far on taxa and landscapes found in Croatia have been collected. These data are to serve as a basis for inventorying and mapping the distribution of individual parts of the biological and landscape diversity, which would then be followed by high quality action plans for the protection (Graph 14).

Graph 14. A chart of General Strategic Objectives and General Action Plans with basic interrelations as recognized by the NSAP



ACTION PLANS

During preparation of the NSAP an action programme was elaborated that comprised individual action plans for the accomplishment of major strategic objectives and guidelines for the protection of biological and landscape diversity.

Depending on the urgency of their implementation the plans are divided into four groups:

1. priority plans (PR!) – implementation to start immediately
2. short-term plans (ST) – to start implementation within the following 5 years



Figure 139. Flora inventorying in the area of Medvednica, geopositioning as an important methodological step
(photo by T. Nikolić)

3. medium-term plans (MT) – to start implementation within the following 5 to 10 years
4. long-term plans (LT) – no pressing need.

The majority of them fall into the category of short-term plans, which is logical viewing the present lack of practical protection actions in Croatia.

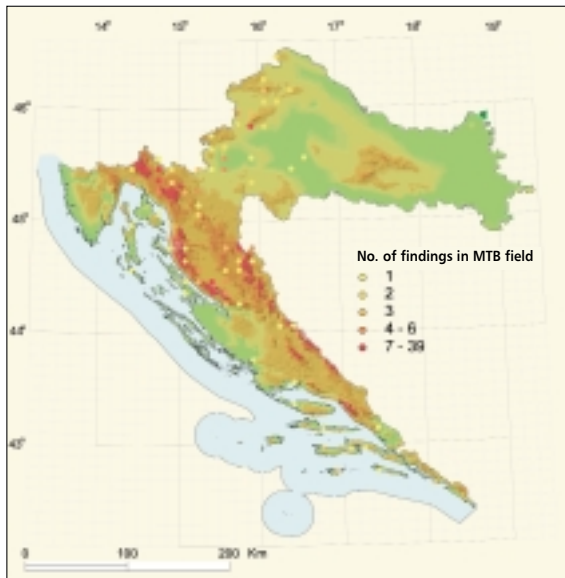
The plans also include information on possible sources of finance. For actions related to areas and taxa of international importance it is necessary to solicit co-financing from international funds (IF) earmarked for the protection of biological diversity. However, for the majority of plans the major source of financing will be the state budget (SB), through the Ministry of Environmental Protection and Physical Planning, and partly county budgets (CB). In projects that include research and inventorying it is necessary to involve the Ministry of Science. It is, moreover, necessary to prepare a joint programme of the Ministry of Environmental Protection and Physical Planning and the Ministry of Science in order to identify the studies important for the protection of biological diversity and give those the priority in financing. Some plans may be funded by the business sector sponsors (BS), i.e. the legal entities managing specific components of biological diversity to which the plan relates.

The action plans are to be implemented by numerous governmental and non-governmental institutions within their respective authorities and competence: the Ministry of Environmental Protection and Physical Planning and other government bodies, public institutions that manage protected nature parts, scientific institutions and non-governmental organisations.

For the purpose of a systematic presentation of the problem area, action plans are subdivided into several groups. Within each group the plans are listed according to priorities and the most pressing ones especially marked. In relation to previously stated general strategic objectives the general action plans have been defined as follows (Graph 14).

General action plans

1. Action plan for inventorying Croatian biological and landscape diversity
2. Action plan for mapping biological and landscape diversity distribution
3. Action plan for threat assessment
4. Development of action plans for the protection
5. Implementation of action plans for the protection
6. Action plans for monitoring and
7. Action plans for implementation mechanisms.



Map 25. Distribution map of the class Lycopside in Croatia based on data from literature and herbariums

(according to data by T. Nikolić)



Figure 140. Stagsborn clubmoss (photo by T. Nikolić)

The following groups of specific action plans have been also defined:

Specific action plans

1. Action plans for landscape protection
2. Action plans for ecological system and habitat protection
3. Action plans for the protection of species and subspecies (Box 80)
4. Action plans for the protection of genetic diversity of domesticated taxa

5. Action plans for protection trough sectors
6. Action plans for strengthening the legislative and institutional framework
7. Action plans for research and monitoring
8. Action plans for education and public information (Box 81).

Viewing the extensiveness and diversity of the problems in the course of NSAP development some action plans have been elaborated in great detail, including financial indicators, while others have merely been listed as indispensable actions to be elaborated subsequently.

Box 80. Management plan for the wolf (*Canis lupus*)

State

In the greatest part of Europe the wolf has been exterminated. Therefore there are complex on-going activities to return it to some of its former habitats. In this the natural wolf population in Croatia, evaluated as endangered (EN), is extremely important.

Problems

As a pure flesh-eating predator the wolf depends on natural populations of great herbivores. In this the conflict with human interests is reflected, regardless of whether it comes to domestic animals or hunting species. A permanent scientific monitoring makes it possible to react in time and, if necessary, influence the change of the state in terms of strengthening the protection of reducing conflict situations by intervening in a segment of the wolf population.

Past actions

- legal protection of the wolf in 1995
- education of experts in carrying out examinations in case of damages incurred to cattle
- payment of indemnity for cattle destroyed by wolves.

Objective

- management of the wolf as a threatened and “conflicting” species
- collecting data on distribution and population trends, on the number, size and living space of packs of wolves, reproduction, mortality (by causes), pathology and nutritional base
- proposing of protection measures.

Actions proposed

- radiotelemetric marking of individual specimens and collecting all data acquired by catching and monitoring; monitoring all mortality causes and conflicts with human interests and property
- legal regulation of wolf protection measures in individual zones
- encouraging cattle protection measures and education of population.

Agent

- the Ministry of Environmental Protection and Physical Planning and the Faculty of Veterinary Medicine in Zagreb.

Duration

- over 10 years.

Figure 141. Wolf (photo by J. Kusak)



Figure 142. Motives of flora, fauna and protected nature parts on commemorative stamps, phone cards, coins, postcards, etc. offering the possibility to inform a great number of people at the same time

(photo by S. D. Jelaska)



Box 81. Action plan for public information on biological diversity

Basic instruments

- slogan
- mascot (national and local/county level)
- songs and
- logotype.

Mass media instruments

PRESS

- advertisement
- large and common poster
- promotional texts
- special editions (journals)
- leaflets / depliants
- promotional maps (aggregate information) and
- latest reports.

RADIO

- commercials
- promotional broadcasts
- reportages and documentaries and
- prize games and quizzes.

TELEVISION

- commercials
- round tables
- popular-science broadcasts and
- prize games and quizzes.

WEB SITES

- presentation of all publications published
- audiovisually updated information and
- conferences (themes of the month).

MISCELLANEOUS 1

- post stamps
- audio chip-card(s)
- credit cards
- lotto
- coffee chats
- CD ROM
- video and audio cassette(s)
- performances (theatrical performances and plays audiorecords) and
- children's games.

MISCELLANEOUS 2 (to cover all ages and social structures)

- school accessories (rubbers, notebooks, pencil boxes)
- shirts, caps, rucksacks and jackets
- badges, labels, pendants
- pocket diaries and notepads
- exclusive gifts and
- prize games and albums.

The time schedule for elaboration of such action plans will depend on their urgency.

Extensive materials compiled by individual working groups have been stored at the Ministry of Environmental Protection and Physical Planning, and will be used as necessary in practical implementation of the NSAP.

As an illustration two examples of partly elaborated action plans are mentioned: the Management Plan for the Wolf (an example of an action plan for a threatened animal species) and the thematically elaborated Action Plan for Public Information on Biological Diversity (Box 80 and 81).

Figure 143. City of Motovun, Istria

(photo by T. Nikolić)



Specific strategic objectives and action plans

I. Landscape conservation

1. Strategic objective – landscapes

To ensure by all appropriate means conservation of the existing landscape diversity that reflects the wealth of the overall natural and cultural heritage of Croatia.

Strategic guidelines

1. to carry out a detailed evaluation of biological, geological and cultural properties of individual types of landscape, including the aesthetic features arising from their interactions, in accordance with the respective competencies of government bodies. These landscape elements are input data for the preparation of landscape plans and form a constituent part of physical plans. Pursuant to the Physical Planning Act the Ministry of Environmental Protection and Physical Planning, manages the space of the country through physical planning documents
2. on the basis of landscape evaluation of the Republic of Croatia to develop mechanisms with the aim to preserve the existing landscape diversity and key characteristics of individual types of landscape, especially through physical planning
3. to govern landscape protection by the existing regulations of the nature and environment protection in a more emphasised and specific manner

Action plans for landscape protection

Action plan	Priority	Possible source of funds
• Elaboration of the Basic Landscape Elements of Croatia as a physical planning basis for the assessment of major landscape values. The basis for the preparation of Basic Landscape Elements from the aspect of biological diversity is the background material and document for physical plan development	PR!	SB
• Adoption of regulations to establish the Basic Landscape Elements of Croatia as an obligation at the level of physical planning documents of counties, towns and municipalities	ST	SB
• Incorporation of landscape protection provisions into the legislation in the field of physical planning, transport, nature and environment protection	ST	SB
• Inventorying and elaboration of programmes for the protection of geological heritage of the Republic of Croatia	ST-MT	SB
• Inventorying and elaboration of programmes for the protection of cultural heritage segments important for preservation of the identity of individual landscape types	ST-MT	SB

4. to encourage the public, authorities and land owners and users to maintain regional and local landscape identity through understanding and protecting its natural and cultural features
5. to encourage programmes for rehabilitation and revitalisation of traditional architecture and to respect and include elements of traditional architecture when planning new construction works.

II. Protection of ecological systems and habitats

2. Strategic objective – wetlands and waters

To preserve the existing natural wetlands and, by means of adequate measures, to improve artificially created wetlands and protect waters against excessive pollution as the top-priority task in preservation of ecological systems.

Strategic guidelines

1. to list and evaluate all wetlands in Croatia and develop the national wetland conservation and management programme
2. to prevent the loss of the remaining natural wetlands and preserve mechanisms that enable their natural renewal, including the maintaining of the remaining natural watercourses



3. to ensure active protection of the rest of natural wetlands, including the adoption of plans for the protected area management and active protection measures for minor Mediterranean wetland sites
4. to ensure protection of watercourses against pollution
5. to renew the degraded natural wetlands and, wherever possible, to revitalise the depleted wetlands, especially in the Mediterranean part of Croatia
6. to improve artificial aquatic and wetland biotopes in terms of acquiring as many natural features as possible.

Figure 144. The mouth of River Neretva, a Ramsar site – halophilous communities
(photo by M. Mrakovčić)

Action plans for protection of wetland and waters

Action plan	Priority	Possible source of funds
Protection programmes		
• Setting up a National Wetlands Committee and adoption of the National Wetland Protection and Management Programme	PR!	SB
• Inventorying and evaluation of wetlands, including determination of potential new Ramsar sites and nationally protected areas	PR!	SB, IF
• Analysing and updating the National Water Protection Plan	ST	SB, IF
Protected area management plans		
• Preparation of the management plan for the Ramsar site of Lower Neretva	PR!	SB, IF
• Preparation of the management plan for the Ramsar site of Kopački rit	PR!	SB, IF
• Preparation of the management plan for the Ramsar site of Lonjsko polje	ST	SB, IF
• Preparation of the management plan for the Plitvice Lakes National Park – UNESCO WH	ST	SB, IF
• Preparation of the management plan for the Ramsar site of Crna Mlaka	ST	SB,IF,CB,BS
• Elaboration of protection and management measures for wetlands protected at the county level	ST	SB,CB
Protection		
• Legal and practical protection of the remaining moors	PR!	SB,CB
• Protection of aquatic and wetland habitats on islands	PR!	SB,CB
• Protection of small watercourses in the foothills of the Biokovo Mt.	PR!	SB,CB
• Rehabilitation of underground water pollution sources in the surroundings of Ogulin	ST	SB,CB,BS





Action plan	Priority	Possible source of funds
• Initiating the development of protection and action plans for all wetlands of special importance according to inventorying and evaluation procedures	ST	SB
• Legal protection of the most threatened karst watercourses (rivers Krka, Cetina, Zrmanja and Gacka as priorities)	ST	SB,CB
• Legal protection of the most threatened parts of the rivers Mura, Drava and Sava	ST	SB,CB
Development of protection action plans		
• Preparation of the action plan for the protection of small wetlands in the Mediterranean region	ST	SB,IFCB
• Preparation of the action plan for karst watercourses	ST	SB,CB
• Preparation of the action plan for the protection of Sava and Drava biodiversity	ST	SB,IF
• Preparation of the action plan for the protection of Odra and medium-sized rivers	ST	SB,IF
• Preparation of the action plan for the protection of all natural lakes	ST	SB,IF
• Preparation of regional (county) action plans for the protection of small wetlands and aquatic areas	ST	CB,SB
• Preparation of the action plan for creating new wetlands by rearranging gravel pits and similar excavation areas, including rearrangement of the sections of individual wet meadows and flood pastures	LT	SB,IF
• Preparation of the action plan for the improvement of storage lakes, gravel pits and other artificial aquatic habitats in terms of increasing the diversity of habitats	LT	SB

Figure 145. A colony of spoonbills in the wetland ornithological reserve of Krapje dol

(photo by M. Schneider-Jacoby)



Figure 146. Karst areas of northern Velebit – elaboration of the Velebit management plan is a priority action plan

(photo by T. Nikolić)

3. Strategic objective – karst and underground

It is necessary to preserve the existing values of the biological and landscape diversity of the karst region as an area of a global value and to ensure the co-ordinated management of all natural resources in this area.



Strategic guidelines

1. to make an inventory of and evaluate speleological phenomena in the whole of the karst area including proposals for their protection
2. to commence a systematic rehabilitation of the existing sources of pollution posing threat to underground and surface waters of the karst region including rehabilitation of waste disposal sites in the catchment area of caves in the karst region



Figure 147. Gathering of aquatic underground animals with a net in the Čekrk cave near Pucareva staja, Glušci – Metković

(photo by B. Jalžić)

3. to protect the existing layer or covering of humus in the karst zones and the areas between rivers
4. during elaboration of environmental impact studies for all activities in the karst region to pay particular attention to the protection of underground habitats and fauna, involving competent experts and institutions in elaboration of the studies
5. viewing the poor degree of exploration and the extraordinary wealth of relict and endemic taxa, to fill up the existing gaps in the knowledge of underground fauna and to make an inventory of all triglobionic and triglophyllous taxa with all respective morphological, taxonomic, biographical and ecological information
6. to raise public awareness of the karst as a specific phenomenon of importance on a global scale and to encourage participation of the public in processes of the protection of biological diversity of the underground.

Action plans for protection of karst and underground

Action plan	Priority	Possible source of funds
Protected area management plans		
• Preparation of the Velebit Mt. management plan – UNESCO MAB	PR!	SB, IF
• Preparation of the Biokovo Mt. management plan	PR!	SB, IF
Protection		
• Protection of the endemic <i>Degenia velebitica</i>	PR!	SB, IF
• Rehabilitation of major sources of karst underground water pollution, particularly in the Ogulin area	PR!	CB, SB, BS
• Rehabilitation of waste disposal sites in the catchment area of karst caves and ensuring the disposal of industrial and biodegradable wastes in the karst areas	ST	CB, SB, BS
• Establishment of an overall legal protection of karst including the protection of individual sites – representative and unique karst phenomena types	ST	SB
Inventorying		
• Inventorying and evaluation of speleological phenomena in the karst including proposals for the protection of individual sites, primarily the representative and unique “types” of karst phenomena	ST-MT	SB
• Inventorying of caves and pits particularly abounding in endemic fauna	ST-MT	SB
• Inventorying of significant bat colonies	ST-MT	SB

4. Strategic objective – forests

Considering the well-preserved biological diversity of Croatia’s forests in European proportions it is to maintain the existing state at any rate and seek to improve the same by incorporating additional measures for the protection of biological diversity of forests.

Strategic guidelines

1. to base forest management on the principles of natural composition and natural renewal accompanied by a structure that facilitates natural development of all members of the living community
2. to prevent decreasing of forest areas and to limit strictly all construction works in the same
3. to increase forest areas in those regions of Croatia where the density of woodland is below 10%
4. in various forest communities to ensure permanent protection of the most preserved subnatural forests and allow their natural development by creating conditions for the development of secondary virgin forests. Within thus protected secondary virgin forests it is to establish genetic forest reserves for conservation of genetic funds of the flora, microflora and fauna
5. to determine by law specific measures for improvement of biological diversity of forests, particularly the keeping of dead standing trees when felling and prolongation of rotation cycles of main tree species

Figure 149. Keeping the standing (1) and fallen (2) dead trees is one of the measures for the protection of biological diversity in forests

(1) photo by D. Grlica
(2) photo by T. Nikolić



Figure 148. The forest of Motovun in Istria is one of the most threatened forests in Croatia

(photo by J. Kralj)



Action plans for protection of forests

Action plan	Priority	Possible source of funds
Protection		
• Protection and rehabilitation of the Motovun forest sections including constant monitoring	PR!	SB
• Separation and protection of forest genetic reserves	ST	SB
• Adoption of regulations related to incorporation of measures for the protection of biological diversity into forestry (extending the rotation of major, commercially important tree species in certain areas, keeping the standing and fallen dead trees, defining the salvage felling, introduction of indigenous forest fruit and berry bushes, restricting the use of pesticides and heavy-duty machinery in forests)	ST	SB
Preparation of protection plans and programmes		
• Preparation of programmes for the improvement, protection and preservation of forests in protected nature parts	ST	SB, CB
• Establishment of "green corridors" in the framework of the international EECONET concept	ST-MT	SB, IF
Research and monitoring		
• Determination of the condition of field's elm, sweet chestnut and fruit-tree species populations	ST	SB
• Monitoring the wolf, lynx and brown bear populations and their impact on other animal species	ST	SB, IF
• Establishment of monitoring for threatened lowland forests	ST-MT	SB
• Establishment of monitoring for threatened alpine and subalpine forests	ST-MT	SB

6. to determine salvage felling procedures in detail, separately in commercial and in protected forests
7. to work out special management measures for forests pertaining to various categories of protected nature parts
8. to establish an integrated monitoring network to observe the negative trends in lowland forests highly affected by withering and changes; a network that is similar, but used for another type of monitoring is to be established for highland and subalpine forests
9. to conduct research of rare species with decreasing population trends (field's elm, sweet chestnut, fruit-tree species)
10. to organise forest areas so as to enable their incorporation into the European network of forest ecological systems according to the EECONET concept and to pay particular attention to transboundary forests
11. to take special care of animal species at the top of the feeding pyramid (predators) that have traditionally been in conflict with human interests, especially of hunters and cattle-breeders (wolf, lynx, etc.).

Figure 150. Javornik forest near Delnice – several hectares of the forest were destroyed in the explosion of the ammunition warehouse of the former Yugoslav Army during the Homeland War (6 May 1992)

(photo by A. Frković)



5. Strategic objective – sea

To manage the marine biological resources in a reasonable manner and reduce marine pollution caused by municipal and industrial wastewater and pollution from ships.

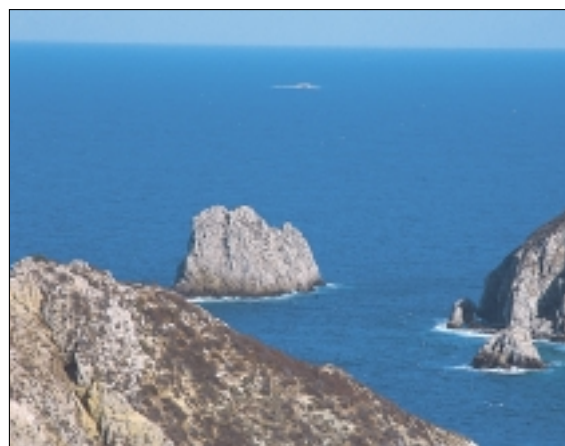


Figure 151. Southern Adriatic

(photo by D. Grlica)

Strategic guidelines

1. to base the future exploitation of renewable resources of the Adriatic on the principles of reasonable and considerate management which implies in the first line the estimates of fishing the available biological reserves and the optimum possible (permitted) levels of exploitation



Figure 152. Catch of deep-sea trawl net, trawlers

(photo by I. Jardas)