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BIODIVERSITY ASSESSMENT UPDATE FOR CROATIA

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Photo by: USAID Croatia

1. Introduction

The first USAID Croatia biodiversity assessment was done in December 2000 in support of its five year strategy covering the period 2001-2005. This strategy was modified at the end of 2003 to incorporate USAID's close-out plan scheduled for 2007. A new biodiversity assessment is necessary because it has been five years since the last one and a significant amendment has been made to the country assistance strategy - a close out plan:

Conducting an updated biodiversity assessment will:

- Meet the Foreign Assistance Act (FAA) sections 117 and 119.d (1) & (2) requirements related to the preparation of country development strategies or other country plans including close-out/graduation amendments to strategies.
- Prepare the Mission to address issues arising under Sections 117 and 119 of the FAA by providing information on biodiversity and status of biodiversity conservation.
- Provide analyses and evaluate the impact of the Mission's present activities on biodiversity conservation as well as suggests actions that USAID could support to improve the status of biodiversity conservation and that could be incorporated in the Mission's current programs and activities, factoring in the close-out status of the program.

The first biodiversity assessment was contracted out to Chemonics International, Inc. This assessment has been conducted by USAID/Croatia's Environmental Officer.

The first biodiversity assessment for Croatia conducted in 2000 coincided with the compilation of the first Government of Croatia's (GoC) biodiversity analysis that translated into National Strategy and Action Plan for Protection of Biological and Landscape Diversity (NSAP). This document was the source of much of the biodiversity data used in the first USAID/Croatia Biodiversity Assessment.

Although NSAP called for an update in five years, the lack of GoC funds prevented a new NSAP to be issued. Therefore, as a new, updated, comprehensive biodiversity GoC document was not available during the preparation of this USAID/Croatia Biodiversity Assessment, its Status of Biodiversity portion will complement the previous study and perhaps highlight different information.

However, two red books, on birds, and plants and animals were issued since the last NASAP and therefore, the chapter on flora and fauna will be more current and detailed as new information is available. New maps illustrating biodiversity are also available and few will be included as an annex.

Much progress has occurred on the legislative and institutional portions - a new law on Nature Protection has been passed, a number of new sectoral strategies were developed and a number of new institutions established including the State Institute for Nature Protection. Details will be provided in the Legislative and Institutional Framework portion.

Finally, recommendations for USAID/Croatia's activities addressing biodiversity and environmental concerns will be substantive and responsive to the overall Mission priorities, the needs identified will be within the context of program close-out and the Mission's sensitivity to the environmental agenda.

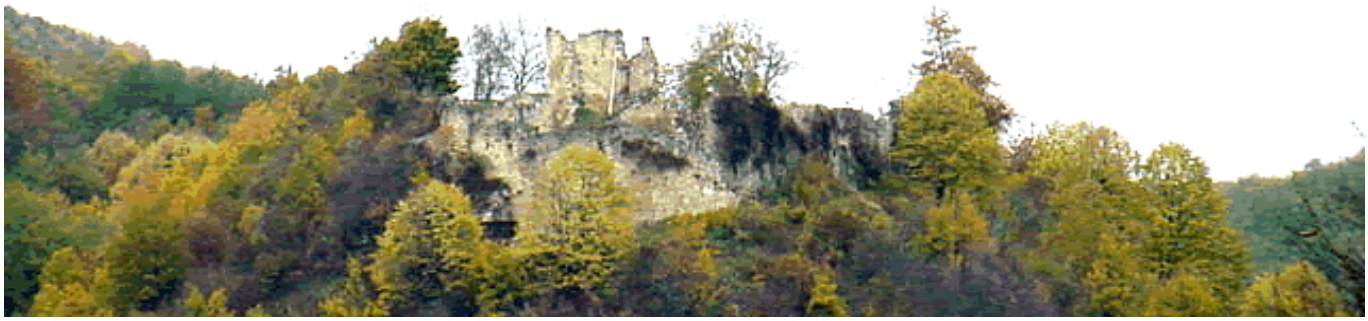

Photo by USAID Croatia

2. Status of Biodiversity – Landscapes, Ecosystems and Habitats

Croatia remains rich in varied landscapes characterized by a great diversity of ecosystems and species. There are a large number of unique endemic species as a result of the karst and karst underground - a globally significant peculiarity of this part of Europe. The diversity of forests is reflected in the vast mountain forests with large, stable mammal populations to alluvial forests with important breeding birds. Velebit remains one of the most important forest areas of the Mediterranean bio-geographic region. Various marshland and aquatic habitats include some of the largest internationally recognized wetland areas in Europe.

2.a. *Forests*

Croatia is a medium forested country with forests covering the surface of 2,490,000 hectare, some 44% of the total land in Croatia.

The phytogeographical border crosses Croatia dividing its forests into forests specific to the Mediterranean region and forests specific to the European sub region of Eurosiberian and North American region. The thermofiolic evergreen and deciduous forest (Dinaric Alps oak) occupy approximately 800,000 hectares and the Eurosiberian and North American littoral beech slopes and the entire continental Croatia occupy 1,200,000 hectares.

In European terms, the state of Croatia's forests may be considered good. As many as 95% of the forest components show a material composition, which, is rare in global proportions. The wooded areas have not decreased in the course of the last hundred years. Forests are highly threatened by industrial development, transportation and modern agriculture. The common fir is at greatest risk with over 70% permanently damaged, followed by durmast oak, common oak, common ash, black pine, and common spruce and sweet chestnut. As far as degradation of forest, Croatia ranks above average in Europe due to excessive degradation of fir. The increased construction of roads and highways has resulted in decreased woodlands and in fragmentation and disruption of woodlands balance and biological unity with significant adverse effect on its flora and fauna.

2.b. *Karst*

The karst (area of limestone terrain characterized by sinks, ravines and underground streams) occupies 54% of Croatia's territory, representing a part of the relief that can be found in no other part of Europe but the Balkans. Further adding to its uniqueness is that it stretches along the entire Adriatic coast and reaches deeply into the lowlands where isolated karst patches can be found. The karst phenomena and forms have developed primarily in limestone. Croatia's karst is characterized also by phenomena and forms in

marl and sandstone rocks; or rather flysch series that are rare even in global proportions.

Among vegetation communities particularly prominent is mountain vegetation growing in rock cracks, vegetation of coastal limestone rocks and, above all, the vegetation of screes. One of the rarest and most threatened Croatia's plants - Velebit Degenia - is associated with screes. A great number of relict taxa originating from the tertiary period survived in Croatia's karst region due to no ice formation. Some of the more important animal taxa of above ground karst habitats are, for example, the relict Martino's snow vole, endemic Dalmatian garden dormouse, the locust, and Medora and Delina snails.

Karst rivers are rich in waterfalls and known for travertine phenomenon resulting in formation of characteristic geomorphologic forms. The penetration of water into stony substratum created caves, abysses, ice-pits including underground springs and estrevelle. There are many threats to the karst rivers and underground waters as many of the sewers are discharged directly into the rivers. Caves are used as landfills and some are open to tourists without previously conducting biospeleological studies. Intensive agriculture is taking place in the areas where the ground allows for penetration of pesticides into underground rivers.

2.c. Wetlands and Waters

The longest Croatian rivers are Sava, Drava and Danube. The rivers flow into the Black Sea (62% catchment area) and the Adriatic (38% catchment area). The rivers belonging to the Black Sea catchments are lowland rivers along with numerous flood forests, grasslands, still backwaters with respective habitats can also be found. The stretch of the river Drava between the mouth of Mura to Barc in Hungary forms steep landslide along its unfortified banks in which sand martins and kingfishers make their nests. In the sandbanks nesting birds such as small tern and little ringed plover can be found.

Due to their limestone base, rivers of the Adriatic catchment areas are short with frequent rapids and waterfalls, including sections of canyons. Numerous sink rivers flow through karst fields creating systems of underground water circulation, that are abundant with endemic fish species.

Lakes in Croatia are few but extremely valuable. The most well known are Plitvice Lakes that are formed by the Korana River flowing into 16 cascading lakes with numerous travertine downstream beds in a vivid biodynamic process. This is one of the most well known Croatian National Parks and the only one included on the UNESCO World Cultural and Natural Heritage list. Vransko Lake near Pakostane is the greatest natural lake in Croatia with a surface area of 30.7km². Vransko lake on the island of Cres is much smaller but fairly deep (74m) and the Blue and Red lakes near Imotski are unique as well.

Croatia has an outstanding wealth of wetland habitats, four of which are by today included in the Ramsar list: Lonjsko Polje (50.5 hectares), Kopacki Rit (17.7 hectares), Lower Neretva (11.5 hectares), and Crna Mlaka fishponds (625 hectares).

Lonjsko Polje, in the central course of Sava, is a flood area with wide, wet flood forests of common oak, flood meadows and pastures and numerous backwaters. The habitats of numerous threatened species such as the white tailed eagle, lesser spotted eagle, black stork, spoon bill, white stork, spoonbill, white stork, blackbird and others are located here.

Kopacki Rit situated where the Drava flows into Danube is full of lakes, ponds and canals including fishponds. It is where the largest population of white eagles resides and the location for 90% of Croatia's nesting white geese. It is also the only place in Croatia where the great cormorant is known to nest. Kopacki Rit is particularly valuable as a resting and feeding place for migratory waterfowl. During migration, flocks of several tens of thousands ducks and geese may be met there.

Another Ramsar site is the Neretva valley with wide wetland habitats including the largest and richest reed species in entire Mediterranean Croatia. This is the only place in Croatia where

the bearded tit nests, and also one of the last nesting localities for bittern, little bittern, marsh harrier, crake, warbler, and other European threatened bird species.

Vransko Lake in Dalmatia is a huge ornithological reserve. The reserve accommodates a small colony of pulp heron and purple cormorants. However, the Government remains unable to find common ground with the local hunting community. Also, a recent suspected arson destroyed a large portion of the reserve with consequences yet unknown.

The biggest threat to the wetland areas are changes in water regulations specifically pollution from discharge and pesticides into the rivers. The construction of hydropower plants and formation of storage lakes have considerably affected the river flows and the karst. The wetlands are often drained and turned into marshy meadows and agricultural land.

2.d. Sea

The Adriatic Sea is a gulf of the Mediterranean Sea with a total surface of 138,595km². The Adriatic's average depth is 173m. A depth exceeding 200m can be found around the island of Jabuka and in the southern Adriatic. The Adriatic, possessing low levels of nutritious salts, phosphorus and nitrogen in particular, is considered to be a sea that is low in productivity. However, considering the large number of endemic flora and fauna, the Adriatic stands out as a special biogeographical unit of the Mediterranean. Two areas are, in that respect, of particular importance - western Istria and parts of Kvarner, and around islands of Jabuka, Brusnik, Svetac, Vis and Plagruza. Some 6000-7000 plant ands animal species have been found in the Adriatic. A number of groups, especially invertebrates are insufficiently explored, making the basic data on their diversity, in most cases, not available.

The threats to the Adriatic are numerous especially to the shallow coastlines where uncontrolled development including backfilling, solid waste disposal and particularly discharge of unpurified waste water, both municipal and industrial is occurring. Excessive and uncontrolled fishing is adversely affecting various algae/ genus cystoseria including settlements of the endemic brown algae/Adriatic wrack that has almost completely disappeared from some polluted parts of the Adriatic (western Istria). In the shallow coastal parts particularly threatened are communities of photophilous algae and meadows of Posidonia oceanica, while in the deeper waters communities of detrial surfaces are in peril and also the communities of muddy surfaces due to excessive trawling.

2.e. Coast and islands

Geological, climatic, physical and anthropological influences have combined to create unique coastal and marine biodiversity along the Croatian coastline. It is about 5,780 km long and the costal area has some 1,750,000 inhabitants. There are over a thousand cliffs and islands, of which only 45 have approximately 126,000 permanent inhabitants.

The biogeographical position, limestone as a dominating geological base and distinctly karst relief, its indentation and the fact that it has been a sanctuary for plants and animals during the Ice Age, resulted in outstanding diversity and peculiarity.

Species are particularly numerous on Velebit, Cres and Krk. The Neretva basin is famous for a number of fish species. Endemic forms can be found mostly on Velebit and Biokovo mountains, in caves and pits, underground stream and river waters, karst springs and streams. The centers of endemism are isolated mountain peeks, screes, cliffs of the islands of Cres, Krk and Prvic exposed to the north-eastern wind, the cliffs of Dalmatia's islands facing south and south west, the external archipelago of Palagruza, Jabuka, Sv. Andrija,

Susac, Lastovo and Mljet. The biological diversity of the mainland is further increased by numerous wet oases on the dolomites and flytch, wet habitats along karst rivers, streams, lakes and sea shores, river mouths and periodically flooded karst fields.

The development of tourism is changing the native's habits and lifestyles along the coast and on the islands. Population abandons traditional cattle breeding and agriculture. As a result, landscapes and ecosystems are being changed. Tourism is also putting a burden upon the limited water reserves on the islands.

Sewage and industrial effluents are discharged untreated into the karst underground and sea. The pollution is of a local nature so far but with the anticipated development of tourism this, unless addressed, may result in far more serious damage.

Excessive hunting and fishing, including the excessive use of pesticides have to a high degree affected a number of fauna. Many species died locally, such as the common otter and the griffon vulture, some disappeared from the entire coast such as the white tailed eagle and Dalmatian pelican.

2.f. Grasslands & Arable Lands

Although created mostly by human interventions, the grasslands, as such semi-natural habitats enrich biological and landscape diversity to a large degree. One can distinguish dry grasslands and rocky ground pastures along the coast, mountain grasslands, wet and marshy grasslands. They are inhabited by a unique mixture of species originating from other habitats as well as by polymorphous species specific to grasslands. With the depopulation and reduced cattle breeding the mountain grasslands are turning into thickets. The greatest part of the littoral dry grassland and rocky ground pastures suffers a similar fate. Lowland, especially wet and marshy grasslands have been converted into grasslands.

Arable land and land under different crops cover nearly one quarter of the entire Croatian area. This is expected to increase during Croatia's EU candidacy process; once Croatia joins the EU there will be a limit on arable land expansion. The other factor currently limiting expansion is contentious land ownership issues, which once sorted out may result in substantial increase in agricultural production.

2.g. Species and subspecies / FLORA & FAUNA

Croatia ranks high in the number of different species especially in contrast to groups known or to its surface area.

As reported in the last USAID biodiversity assessment, Croatia does not yet have a full and comprehensive inventory of its flora. A fair amount of progress has been made as two red books have been published; The Red Book of Endangered Birds of Croatia (2003) and the Red Book of Endangered Plants and Animals of Croatia (2004) providing a basic inventory of plant and animal species which will be followed by additional red books on fungi, remaining groups of plants (mosses, lichens and algae) and animals (marine fishes and invertebrates). The Red Book on Endangered Plants and Animals of Croatia provides an inventory on vascular flora, mammals, birds, reptiles, amphibians, freshwater fish, butterflies, and underground fauna. This is just the initial inventory tables whereas future red books on each of these species will be addressed in separate issues that will provide more detailed information. The Red Book on Vaskular Flora is to be published next.

The red list includes 1171 threatened plant and animal taxa (out of the analyzed groups), 94 of which are steno endemic. The inventory lists 101 mammals out of which 101 are threatened (231 bird taxa out of which 76 are threatened), 38 reptiles taxa out of which 4 are threatened, 20 amphibians out of which 4 taxa is threatened, 145 freshwater fishes out of which 66 are threatened, 5360 vascular flora taxa out of which 223 are threatened, 180 butterflies out of which 11 are threatened and 41 underground fauna out of which 28 are threatened.

When Croatia's threat percentage is compared to respective European threat percentages, Croatia's are lower except for amphibians and birds. These are more threatened in Croatia than in rest of the Europe, especially when compared to the even higher world threat percentages.

It needs to be noted, however, there is a significant number of taxa especially under vascular flora (46%), mammals (19%), reptiles (32%), amphibians (22%), butterflies (45%) and underground fauna (23%) that are classified as Data Deficient (DD), meaning there is a lack of sufficient data on population and distribution required to assess the risk of extinction. The deficiency of data is a large problem. Estimates are that some 30% of plant and fungi species are known while as much as 70% remain to be discovered or acknowledged. Fungi remain by far the least explored group in Croatia. The number is estimated at 15-25,000 species. There are 925 lichens registered in Croatia out of which 82 are endemic). Estimates are that 60% of fauna remain unknown. Out of the discovered number, the largest remain invertebrates (21,000). Among vertebrates, marine fish and birds are the richest in species. They are followed by freshwater fish, mammals and particularly reptiles and amphibians. By far the best explored are sea fish and birds that since 2003 have a separate Red Book.

The Red Book of Endangered Birds of Croatia showed not only how rich Croatia is in bird species but also revealed a high level of threat, especially in the case of breeding birds. Out of 375 bird species recorded in Croatia, 180 are on the Red List. One hundred forty six are breeding and 49 are non-breeding birds, whereas for 15 species both populations are threatened. The detailed descriptions are given only for species that fall into greater threat categories, according to IUCN (RE, CR, EN, VU, and DD). For each bird the following data is given: Photograph, Croatian, English and Latin name, IUCN category, size of the threatened population, and main threats, its global distribution (World, Europe and Croatia), map of the distribution in Croatia, description of habitat and conservation, both measures and status. All together, there are 88 such species, 77 breeding populations and 18 non-breeding populations (while for seven species both populations) are threatened.

The great majority of species is affected by hunting, both commercial and illegal. Hunting is most intense on the coast, especially in Dalmatia and more so in the Neretva Delta. Reduction of wet areas affects a small number of species but it is fairly alarming in the loss of habitat. It is the main threat for 43.2% of the species. Intensification of agricultural activities is the next important factor affecting a number of species. Tourism follows as it brings too many people to specific habitats. Destruction of low sandy and muddy beaches irreversibly affects some 12.5% of species, mostly wardens. Shell collection affects wardens as well. Forest management practices do not take birds into consideration when it comes to reduction and removal of layers of dead trees. River management affects birds as well as the regulation of river banks prevents creation of wet lands. As water birds are the most threatened group of Croatian ornithofauna, wet areas dominate among important sites for protection of threatened species, especially the last of the remaining great wet areas in Croatia: Podunavlje including the Nature Park Kopacki Rit, where there are 22 endangered species including the most critically endangered Pygmy Cormorant, Saker, Short Eared Owl; Posavina including the Nature Park where a total of 21 species are endangered including Pygmy Cormorant, Glossy Ibis Saker and Red-crested Pochard.

Photo by: Branko Stefanovic

3. Threats to Biodiversity – Update

The biggest threats to biodiversity include habitat changes (destruction, degradation and fragmentation); water, soil and air pollution; over exploitation (poaching, cutting, collection); and introduction of foreign species. Some of these threats were partly addressed under respective ecosystems.

One of the major threats to biodiversity remains to be water pollution from urban agricultural and industrial sources. Only 40% of the population has access to sewage systems and only 12% of the water is being treated. Less than 5% receives secondary treatment. Waste management is the single biggest problem to the environment in Croatia. Not only does the current Croatia legislation not comply with EU standards, even existing regulations are not yet implemented. Most waste is disposed of in landfills and unauthorized sites outnumber official sites by approximately eight to one. Recovery, recycling and disposal facilities are in scarce supply and fall considerably short of EU standards. There are no hazardous waste disposal sites in Croatia and Croatia does not have a national waste management strategy. Pollution also remains a serious threat to the biota of the Adriatic Sea. Discharge from rivers and coastal towns are causing serious deterioration of ecosystems along the coast. Although the Adriatic Sea is not polluted, some parts of the Croatian coast may be irreparably devastated such as the bay of Bakar, industrial Sibenik and Kastela Bay.

Over-harvesting marine fish and excessive trawling are additional problems for biodiversity in the Adriatic. At the end of 2004, Croatia introduced the Fishing and Environmental Protection Zone in an attempt to prevent the better equipped Italian and Slovenian fishing boats from over-harvesting Croatian waters. Due to the lack of the enforcement capability, the excessive fishing nevertheless continues.

The introduction of the tropical green algae caulerpa to the northern Adriatic in 1984 represents another threat to the sea's biological diversity as the algae has spread rapidly ever since. The only effective way of controlling or removing it is by hand. The problem of introducing foreign/exotic species will further intensify should the Government of Croatia go forward with the Druzba Adria project. This project implies increased tanker traffic involving numerous exchanges of tanker ballast waters. The effects of a possible oil spill on the Adriatic's biodiversity balance would be irreparable.

In the past few years, the Adriatic experienced a dramatic increase in yacht tourism that has neither been regulated nor have standard drain and tank requirements been imposed on yacht owners/operators. Numerous boats with open drains cruise along Adriatic for several summer months and empty tons of sewage and litter into the sea.

Increased road construction in Croatia in the past few years is taking its toll and fragmenting forests and other ecosystems. Green corridors have not been sufficient to ensure safe movement of large mammals. Several bears were run down on the newly built highways.

Photo by: USAID/Croatia

The national ecological network, currently being developed will establish broad bands of forest to run uninterrupted and link forests in Croatia with protected and managed forests in neighboring countries as traditional strictly delineated protected areas are no longer sufficient to conserve biodiversity.

Forests are still not sufficiently managed for biodiversity and predominantly regarded as a profitable renewable natural resource.

Indiscriminate poisoning continues to have unwanted effects. A major disaster involved the recent poisoning of 17 extremely rare Eurasian Griffons who were found dead. Although the investigation has not been concluded, the assumption is that a local shepherd applied poison to dead sheep carcass. The poison was aimed at wild bores that were introduced to some of the islands by hunting associations and have caused damage to herds of sheep ever since.

Rivers are not managed for biodiversity. They are managed for flood control only. This is why flood control dams as well as electric hydropower plants continue to have an adverse effect on the ecosystems. Nevertheless, HEP (Croatia Electric Utility) announced the construction of two new hydro power plants including the one on the Dobra river near Lesce, a rich karst area. The Croatian Waters are often accused of permitting construction companies to dig rivers for gravel, sand and other materials.

Excessive use of pesticides and fertilizers is becoming quite a problem in the Baranja region and especially in wet land areas like the Neretva Delta. Farming in large agricultural areas of the Delta has become highly unregulated in recent years and is now a major threat to biodiversity, water resources, and long term sustainability of the Delta as an economic way of life in the region.

Agriculture is currently a major source of income for a majority of households in the Delta. Market prices and vast fertility of the area are real incentives to further increase production. Unclear land ownership conditions and unregulated responsibilities of land resource users have resulted in a “quick profit” approach to farming in the Delta. This approach does not consider conservation values or the longer term sustainability of farming. Unsustainable intensification, the uncontrolled use of pesticides and mineral fertilizers, uncontrolled land reclamation, and soil degradation due to improper irrigation practices are all acute problems and damage the natural resource base of the area.

4. Status of Biodiversity Conservation - Update

Croatia is still regarded as a country with a high level of preserved nature and biodiversity. This notion implies a high level of protection which does not yet exist. Croatia is still struggling to complete numerous inventories that would serve as a basis for the development of more comprehensive conservation. Limited protection currently exists only in protected areas whereas protection measures outside of protected areas, although under discussion, have not yet been introduced.

4.a Protection in Protected Areas

The biodiversity conservation is driven by the Nature Protection Act 2002. It specifies nine categories of nature protection:

strict nature reserve –IUCN I,
special nature reserve IUCN I or IV,
national park IUCN II,
nature monument IUCN III,
nature park IUCN V,
protected landscape – IUCN V,
park forest IUCN V,
park architectural monument, individual plant and animal species.

The national parks and nature parks are proclaimed by acts of the Croatian Parliament. An individual plant or animal species was determined protected previously by the Ministry of Physical Planning, Environment and Construction but since January 2004, the Ministry of Culture makes this protection determination.

All other categories are proclaimed by the respective county assemblies. Currently some 10% of the land is protected (5,845km²) compared to the EU average of 15-20%. Although there are standing proposals to add the river valleys of Neretva, Mreznica, Zrmanja, Kupa, Krupa, the mountains of Pljesivica (the one in Lika), and Bjelolasica to the list of nature parks, this has not yet happened. One reason is that the national government has failed to convey to the local populations the benefits of being up-graded to a nature park. Many of the local residents see the nature park status as a set of limitations rather than opportunities. However, the most advanced are the preparations for the proclamation of the Lastovo archipelago as a nature park. The State Institute for Nature Protection is taking the lead in this process, doing the necessary expert work and preparing a study that will serve as a basis for the proclamation. The second candidate is the Mreznica River. It is rich in karst biodiversity and for the most part, fairly well preserved. Authority over the Mreznica is shared by the Croatian Waters, Croatian Forests and Military management. Proclaiming it a nature park would ensure a more coordinated and centralized management including biodiversity conservation.

As already mentioned the current Act on Nature Protection does not regulate the preservation and protection of the entire biological and landscape diversity. The Act concentrates predominantly on the protection and management of specially protected areas and species.

The following protected areas are internationally recognized:

National Park Plitvicka Jezera – World Natural Heritage (UNESCO)
Nature Park Velebit – Biosphere reserve (MAB)
Nature Park Kopacki Rit Ramsar Site
Nature Park Lonjsko Polje Ramsar site
Special Reserve – ornithological reserve Crna Mlaka – Ramsar site
The lower Neretva river area with five special reserves – Ramsar site.

The management of national parks and nature parks is more efficient than the management of lower categories of protected areas that are under the authority of county and municipal levels. The management of national and nature parks is overseen by specially formed public institutions operated by Management Boards. The Ministry of Culture monitors these public institutions.

The management of individual National and Nature Parks continues to vary tremendously. Many of the parks are getting management plans from the World Bank's Karst Ecosystem Conservation (KEC) project: National Parks Risnjak, Plitvice Lakes, Northern Velebit, Paklenica and Velebit Nature Park. Other parks such as Nature Park Lonjsko Polje and Zumberak have management plans in place as a result of the efforts of their respective park managers. At the moment, the first management plan developed under the KEC project is undergoing a public hearing. There is an ongoing dispute with the Ministry of Physical Planning, Environment and Construction as to the authoritative delineation of the physical plans and the management plans. In the absence of management plans the physical plans assumed a partial management role as well. Hopefully this will soon be harmonized and the work on the remaining management plans for four additional parks will progress faster.

The new Act on Nature Protection, to be issued soon, envisages development of management plans for strict nature reserves, special nature reserves, national parks and nature parks as well as regional parks in addition to the physical plans that are by now more or less completed for most of the national and nature parks.

Once the KEC project is completed, there will be a huge discrepancy between parks that were included in the program and parks that were not. Also, some parks with capable management may succeed in their individual efforts and access more of the EU pre-accession funds, whereas the others may be left behind.

The local park population continues to display poor understanding of biodiversity conservation and not much is being done by the management institutions to promote community based conservation. In that sense the KEC project is valuable as it takes into consideration the needs of the local community and promotes entrepreneurial activity while protecting biological and landscape diversity of the Karst ecosystems. Under the management plans, tourism plans are being developed. The program also aims at improving the parks infrastructure and interpretation skills. The KEC program builds on USAID's Jobs in the Parks program that helped develop park interpretation and interpretation materials for five parks (Plitvice, Paklenica, Krka, Lonjsko Polje and Mljet). Lonjsko Polje and Kopacki Rit nature parks are the most successful in encouraging eco-tourism and entrepreneurships within their parks. Two years ago there were only two eco-tourism lodging places within Kopacki Rit whereas today there are over a dozen.

4.b Protection Outside of Protected Areas

There are still no direct mechanisms for ensuring nature protection outside of designated areas. At the moment, only some nature protection requirements are incorporated into the procedures for issuing of zoning and construction permits. Environmental Impact Assessment (EIA) studies are required only for a limited number of capital investments. Even this requirement is often omitted in the case of capital investments, e.g. the GoC signed a deal with Russia that would involve transporting Russian oil through the island of Krk via a pipeline and on oil tankers. It was only after considerable pressure initiated by Eco Kvarner (NGO) that the deal was conditioned with a valid EIA. The first EIA failed to address the potential worse case scenario (oil spill into the Adriatic, or leakage from the pipeline that will traverse Lika, home to the largest Croatian water reserves) and was found overly accommodating to the government's wish to proceed with the deal. Eco Kvarner in the meantime managed to solicit wide spread public support resulting in an amendment to the EIA. The other example is the fact that ski slopes and the support facilities on Sljeme (within Nature Park of Medvednica) have been expanded to comply with requirements of the World Cup that was held there for the first time without an EIA.

Once the Law on Nature Protection is adopted it will have incorporated mechanisms and provisions of the EU Council Directive 92/43/EEC on the conservation of natural habitats, wild flora and fauna.

The Red lists of endangered species and GIS maps of all habitat types (scale 1:100000) of the whole territory are being prepared. Also, a preliminary ecological network has been drafted and the National Ecological Network and NATURA 2000 program (financed under LIFE - third countries) is underway. The establishment of the Ecological Network will help create a system of functionally connected areas valuable for threatened species and habitats, aimed at completing the biodiversity protection beyond the protected areas and allowing communication of plants and animals between the fragmented habitats. All such areas included in the national ecological network would be examined for acceptability before any potential intervention takes place. Since 43% of the territory of Croatia are forests and the country has a high level of biodiversity, determining the National Ecological Network sites will pose a major challenge.

Photo by: www.azo.hr

The Croatian Forests have been certified by the Forest Stewardship Council (FSC) for management of the entire forested Croatia during the period of October 2002 to October 2007. Forest fires are a problem for biodiversity management both inside and outside of the protected areas. A recent decision by Croatian Forests to build over 150 km of roads into Velebit forests as fire corridors and into intact forested island areas has been severely criticized by environmentalists. These roads will disrupt the habitats and increase tourist traffic. Investing in fire fighting plans instead of roads may have been a wiser decision.

International treaties have been signed involving all riparian countries of the Sava and Danube rivers and their basins. Under these treaties a number of activities and projects are being developed that would ensure a comprehensive approach to the environmentally sound management and development of these rivers.

Along the coast, policy makers, planners and entrepreneurs have little concept of biodiversity and landscape diversity or of its role as an economic asset. As a consequence, developments in tourism continue to threaten the very natural landscape and biodiversity on which tourism depends. In addition the “make money fast” mindset with little regard for regulations and long term impact prevails.

Ecotourism, involving small authentic farms and estates is becoming a focus of more mature tourism areas of Croatia. The process is led by the Istria region.

There are many speleological sites that are available to tourists although their biodiversity balance is not yet explored, documented, and where necessary protected. Recently there were reports of intensive speleological investigations of the Cetina River springs. The investigations were conducted by a multinational team of speleologists from Croatia, Switzerland and Italy. They reported on a wealth of underground spaces and water and discovered four additional endemic species.

5. Strategic and Policy Framework Update

5.a NSAP Update

The Parliament of Croatia adopted the National Strategy and Action Plan on Biological Protection and Landscape Diversity (NSAP) in 1999. During the development of the strategy, a preliminary inventory of the biological and landscape diversity was taken for the first time in the Republic of Croatia. It showed that Croatia, compared to other countries of central and western Europe, distinguished itself with a high degree of preserved nature and that it belongs to a category with several leading European countries rich in bio-diversity (diversity of species and habitats in relation to the size of the national territory). The development of the NSAP was based on an analysis of threats to the biological and landscape diversity in Croatia, and on the existing problems in environmental protection. NSAP defines general and specific national, strategic aims and principles of the biological and landscape diversity. For each strategic goal guidelines are developed along with a plan of individual protection actions including a stamp of urgency and possible financial sources.

The analysis of the collected data points to the following priorities of protection:

- The karst ecological systems are unique and rich with recognized global value ascribed;
- The most endangered ecological systems are wetlands and aquatic ecosystems;
- The most endangered habitats are small areas, due to anthropogenetic factors (sandy and gravel beaches, island pools, small marshes, etc.) or very rare habitats outside their usual area of distribution (moors, sand vegetation);
- There are priority species and subspecies that are globally, European, or nationally endangered, endemic taxa and those with economic and/or educational significance.

NSAP stated that the fundamental obstacles to its implementation are the lack of finances and the insufficient institutional framework for nature protection. Additionally the concept of preservation and sustainable use of the biological and landscape diversity in the Republic of Croatia is in its nascent stage, and a "conservative" approach favoring protection of individual valuable areas in relation to the protection of the whole still prevails.

The following main problems have been identified in NSAP regarding the protection of nature:

1. Insufficient institutional framework for the protection of nature at the administrative, professional and scientific level;
2. Lack of quality data on bio-diversity, which is a necessary prerequisite for comprehensive protection;
3. The absence of special financing mechanisms outside regular budgetary funds;
4. Deficiencies in the existing laws and disharmony among various laws;
5. Insufficient co-ordination and co-operation among the sectoral bodies of state administration;
6. Insufficient general public information on issues regarding the protection of biological and landscape diversity;
7. Insufficient field implementation of protection laws on biological and landscape diversity, and insufficient inspection; and
8. The lack of integration and coordination with the business sector in the protection of biological and landscape diversity;

There has been significant progress regarding issues 1, 2 and 4, while others still need enforcement and support.

The following important achievements are to be recognized:

1. The adoption of a new Environmental Protection Act which has incorporated all the provisions of the relevant international acts and EU Directives (2003);
2. The foundation of the Department for Nature Protection Institute (2003) which has taken over the tasks of expert nature protection from the Ministry of Environmental Protection and Physical Planning and begins systemically inventorying and monitoring biological and landscape diversity;
3. The establishment of the National Ecological Network, the development and expansion of the Red List and Red Data Books of endangered animal and plant species; and
4. The creation of habitat maps for the entire territory of the Republic of Croatia (map 1:100.000) as a basis for the development of spatial plans, natural resources management plans, and plans for the management of protected areas.

NSAP was originally planned to be updated every five years. During 2003, the Ministry of Physical Planning, Environment and Construction began work on its first revision. Due to the lack of funds and the shift of responsibility to the Ministry of Culture, the work on the revision has stalled.

5.b. Other relevant strategies

The integration of environmental aspects into other policies is one of the basic principles of the **National Environmental Strategy**, which was adopted in **2002**, together with its implementing document National Environmental Action Plan. The strategy was developed under the umbrella document **"Croatia in the 21st Century"** as one of several sector strategies.

In an attempt to transform the growing awareness of nature protection in Croatia into a clear, comprehensive document for environmental protection, the National Environmental Strategy outlines its two underlying themes 1) the principle of sustainable development; and 2) full alignment with EU.

The strategy contains general and long term national objectives taking into consideration principles of sustainable development. It critically examines the state of the environment as well as the overall institutional and legislative framework for environmental protection.

The National Environmental Action Plan (NEAP) was drafted with the technical and financial assistance of the World Bank. It contains detailed action plans for the following sectors: industry and mining, energy, agriculture and forestry, tourism, transport, hunting and fisheries. It also addresses air quality, water management, protection against noise, biodiversity and landscape conservation and geological heritage, coastal and island zone management, urban areas, rural areas, risk and accident management, civil protection and the environment and health. Each action plan contains the following: concrete objectives, measures for accomplishing these objectives, it also assigns responsibility for actions and determines the time frame and possible sources of finance. References to relevant EU directives have been specified alongside the measures in each area. The part on biological diversity, landscape conservation and geological heritage lists the following objectives as to biodiversity:

- Comprehensive inventorying and mapping;
- Identification and assessment of threats;
- Elaboration of Action Plans to address these threats;
- Implementation of Action Plans and monitoring the effect of the Action Plan mechanisms;
- Development of implementation mechanisms, including legislative, and institutional framework, financing mechanisms, scientific support, flow of information, education.

The following were pointed out as the most essential standards for prioritization of plans and projects: sustainability, socio-economic and environmental benefit, financial and technical feasibility and also urgency to fulfill the priority obligations from the White Paper. The document contains a rough assessment of the overall costs of implementation for three sectors: solid waste, wastewater treatment and air protection for a ten year period and a total of investments that should amount to 4-5% GDP each year, which is significantly more than the 0.2-0.3% amount in the budget of the past few years. The National Environmental Plan includes instruments for its implementation, improvement and monitoring. The Environment Agency was set up as a central body to lead and monitor the implementation of the NEAP (see more below).

"Croatia in 21st Century" included elaboration of several other strategies including "Energy Development Strategy of the Republic of Croatia", "The Strategy of Agriculture and Fisheries" and National Forestry Policy and Strategy" all in 2002.

The Energy Development Strategy (also from **2002**) points out the need for sustainable development principles to be introduced into energy policies, particularly recognizing the environment as an invaluable Croatian resource. Further, the strategy's goal is in full alignment with EU regulations in both the environmental and energy sectors. It is also in full adherence to international obligations.

The Strategy of Agriculture and Fisheries (also from **2002**) has two basic goals - rational use of natural resources, and sustainable ecological agriculture. This is also regulated by the **Act on Ecological Production of Agricultural Products and Foodstuffs** that was passed by Parliament in **2002**.

Photo by: www.dzzp.hr

The National Forestry Policy and Strategy (2003) stipulates protection and preservation of biodiversity and sustainable management of forest resources as its basic principles. One of the objectives of the Strategy is Implementation of the national inventorying of non-wood forest products and their use according to the principle of sustainable management, as well as promotion of new ways of forestation in karst regions with the purpose of biodiversity conservation and protection of forest ecosystems. Forest protection activities aimed at the achievement of the economic maximum include:

- Protection and promotion of habitats' stability, health of forests and their productive capacity;
- Introduction of 4E (ecological, ergonomic, economic and energy) technology into forestry;
- Improvement of the Karst management systems; clearance of mines and inclusion of these areas into regular management (12% of forest surface remains mined).

The long awaited **Waste Management Strategy** was adopted in **2004**. The action plan linked to that strategy has not yet been adopted.

In conclusion, the integration of environmental aspects into other policies is a basic principle of the National Environmental Strategy and its implementing document, the National Environmental Action Plan. Many other sectors incorporate environmental protection into their basic goals, however it remains to be seen how these strategies will translate into protective and practical measures.

The National Strategy for Sustainable Development does not yet exist.

6. Institutional and Legislative Framework Update

6.a Institutional Framework (Government, Academic, NGOs, Banks)

The **Ministry of Environmental Protection and Physical Planning** was established in **2000** as a central body of State administration. Under the new Government's reorganization in 2004, it became the Ministry of Environmental Protection, Physical Planning and Construction. The Ministry's staffing levels for environmental protection remain considerably lower than in the physical planning and construction sections of the Ministry.

In **2002** the **State Environment Agency** was created as a central environmental information collection and management institution that would assure environmental protection and at the same time promote sustainable development. The Agency together with the Ministry for Physical Planning and Environmental Protection is to lead the legislative changes that are to take place during the approximation process with the EU aquis. The Ministry of Environmental Protection, Physical Planning and Construction will have to be strengthened, especially the technical capacity of the responsible policy unit within the Ministry.

The **Fund for Environmental Protection and Energy Efficiency** was established in **2004** as a funding mechanism for the preparation and

implementation of projects addressing conservation, sustainable use, protection and upgrade of the environment as well as projects that address energy efficiency or promote renewable energy sources. The Fund's income is derived from fee collection from polluters, different users, fees for garbage disposal and a special fee on motor vehicles. This was all regulated by the Act on Fund for Environmental Protection and Energy Efficiency that entered into force January 2004. The same act together with the Act on Energy passed in 2001 provided a legal basis for the establishment of the Fund. The Fund focused on remediation of official municipal waste landfills to EU standards in its first year of operation.

An **Inspection Directorate** has been created within the Ministry of Environmental Protection, Physical Planning and Construction organized into regional inspection departments. However there is an insufficient number of inspectors available to cover sectors other than water quality, physical planning and noise. The level of fines for breaches of the environmental law do not offer adequate deterrent and collection rates remain low. There is little evidence that the judicial system sufficiently supports enforcement of the environmental law.

State Institute for Nature Protection was founded in **2003** and took over the expert nature protection function from the Ministry of Environmental Protection, Physical Planning and Construction. The State Institute for Nature Protection has assumed the lead in documenting and mapping the biodiversity.

In **2000**, the **Croatian Center for Cleaner Production** was established in an attempt to access available expertise within Croatia and beyond, establishing basic preconditions for cleaner production.

The **Fund for Regional Development** was established in **2001** to support balanced regional development of Croatian counties and offer funding for selected infrastructure projects including waste and waste water. The Fund is also meant to be a coordinating body for international assistance related to regional development including the EU funded Community Assistance for Reconstruction, Development and Stabilization (CARDS).

The new government also shifted the responsibility for nature protection from the Ministry of Environmental Protection to the Ministry of Culture, deviating from the common practice. The State Institute for Nature Protection, founded in 2002, was also shifted to the Ministry of Culture. This had considerable financial repercussions, since the Culture budget was unable to meet its own cultural demands and had few resources to devote to nature protection as well.

The Department for Coast and Sea protection at the Ministry of Physical Planning, Environment and Construction remains understaffed and inefficient. The Department's role and responsibilities remain undefined.

According to the EU Avis on Croatia, environmental administration should be substantially strengthened to implement the environmental legislation and to ensure adequate planning and preparation of financing strategies. Additional efforts will be needed to ensure that regional and local administrations have the necessary resources to implement their share of responsibilities. There is an apparent weakness at county and local government levels to implement the delegated functions, the most important being development of physical plans and associated processes for permits. By now, most plans have been completed, however many of the completed plans have not suffficienlty taken biodiversity into account, due to the lack of resources and adequate expertise.

The academic and research institutions in Croatia remain a critical part of the institutional support for biodiversity protection. Although there is an apparent shortage of biologists in the country, the Faculty of Science fails to recruit and train the necessary number of biologists to inventory species, conduct environmental impact assessments, assist with preparing and evaluating physical plans and management plans (e.g. under the KEC program, an insufficient number of biologists were identified to conduct the inventories, so Slovenian biologists were hired and non biologists were trained to assist in this task). The number of students enrolled in biology, approximately 150 determined annually by the Ministry of Science, Education and Sports, has remained samestable in spite of the pressing need. Lack of expertise in the environmental

sector has been addressed. The University of Zagreb, in cooperation with the American Chamber of Commerce, designed a graduate Environmental Management program in 2004. The program's curriculum is geared towards filling the gap in graduate education in environmental management.

Environmental NGO initiatives and influence are increasing in Croatia. For instance, Rijeka-based NGO "Eco Kvarner" successfully lobbied against the already mentioned "Druzba Adria" project of shipping Russian oil to the island of Krk. "Eco Kvarner" was able to highlight the potential high risk on the environment and tourism that transporting oil by tankers would entail as opposed to the economic gain. As a result, an environmental impact study, that should have been commissioned before the initial agreement was signed, was initiated by the Croatian Government. Once completed, Eco Kvarner lobbied for the study to be made available the public. It received a fair amount of both expert and public criticism including the lack of a worse case scenario and as a result returned for a more comprehensive version. The Government agreed to re-examine the proposed project based on the results of the final version of the environmental assessment study. This is an example of how NGOs can contribute to the preservation of biodiversity and increase public awareness.

There is evidence of greater cooperation and support, including environmental NGOs, by the private sector and the Government. With the UNDP-led Corporate Responsibility initiative promotes this cooperation. This activity is also supported by USAID's CroNGO program.

Zagrebacka Bank, a leading bank in Croatia, adopted a policy on Environmental Protection and Sustainable Development in November 2002. The bank has since supported a number of environmental projects - revitalization of the botanical gardens in the National Park of Northern Velebit, support for eco agriculture at Mavrovic estate, and support for promotion of figs in Istria to name a few. Apart from Zagrebacka Bank, no other bank offers credit lines for biodiversity investment. Generally, the banks do not include environmental risk as a factor in their loan approval processes.

6.b. Legislative framework

Nature protection legislation was updated through a new **Nature Protection Act in September 2002**. This law has still not been fully aligned with the EU Aquis nor has it been sufficiently linked to other related laws such as Physical Planning Act. It protects nature as a whole only in provisions of principle, whereas the majority of provisions refer to protected areas and species. As the 2002 Act does not regulate protection of endangered species and habitats outside protected areas nor does it contain measures for protection of biological diversity through other sectors, another law, currently in its final draft stage, is to be passed. The new law will be based on the new nature protection concept providing the preservation of the aggregate biological and landscape diversity. It will also fully integrate adequate mechanisms of treaties and EU directives into the nature protection field. It will lay out the basic mechanisms for the establishment of a national ecological network, stipulate red lists of endangered species, require use of habitat maps as a basis for any type of land-use planning and natural resources management, as well as require inclusion of nature protection conditions and measures into all physical plans. The new Law will be shorter. A number of specific subparts have been separated and are to be aligned with respective EU directives introduced as separate legislative measures. Articles addressing Genetically Modified Organisms (GMO) will be eliminated and covered under separate legislation that is due by the end of 2005.

Most importantly, the new Act will stipulate future use of the Natura 2000 habitat maps for land use planning (physical plans) and inclusion of biodiversity conservation measures. However, by the time it takes effect, the country will be already covered by physical plans.

The **Act on Physical Planning (2002 & 2004**) and the **Act on Construction (2002 & 2004**) were amended recently to accommodate increased regulation of spatial planning, zoning and construction permits in an attempt to stop spatial devastation of valuable areas with illegal

construction and to simultaneously expedite the issuance of less complicated permits. The latest amendment to the Act on Physical Planning, July 2004, introduced the protected coastal belt in an attempt to end the uncontrolled construction of the past decade. The physical coastal plans developed by cities and municipalities are to be reexamined and are subject to greater scrutiny and control. The urban inspection authority expanded and associated fines were made more severe.

Revisions continue to be needed to bring Croatian legislation in line with the EU aquis on Environmental Impact Assessment.

Also, provisions related to public participation in environmental decision making are transposed through the existing Croatian regulation but none of the regulations are yet fully in line with the EU aquis.

Progress was made in waste management. The **Waste Act** was adopted in **December 2004** and a regulation transposing the European waste catalogue and a list of hazardous wastes in April 2005.

The **Act on Environmental Protection and Energy Efficiency Fund of 2003** introduced fees for the emission of CO2, SO2, and NO2, for environmental load caused by waste and hazardous waste and ”environment user fees” for selected buildings. This Law and fees are meant to increase investments in Environmental Infrastructure in Croatia.

Regarding financial resources, 0.46% of the 2004 State budget was allocated for environmental protection. The 2005 State budget provides for the similar level of expenditures. The 2005 budget of the State Institute for Nature Protection is at one third of its 2003 level.

6.c. International Conventions

Croatia is a party to the United Nations Framework Convention on Climate Change and has signed, but not ratified, the **Kyoto Protocol**. The GoC has not ratified the protocol since base line emissions were determined during the war years when they were lower, as the country’s economy was in the state of collapse. The Ministry of Environmental Protection and Physical Planning and Construction claim that base line levels need to be increased; otherwise it would be hard for Croatia to continue economic development not exceeding the allowed emissions’ levels. Green Action, the leading environmental NGO, however, claims that this is only an excuse as the increase has been due solely to traffic emissions. Further efforts are needed to limit the growth of greenhouse emissions in order to meet Croatia’s Kyoto target for the period 2008-2012.

The Republic of Croatia ratified the **Protocol on Biosafety** (Cartagena Protocol) in August 2002 along with the Convention on Biological Diversity.

Croatia also signed **Aarhus Convention** on access to information, public participation in decision-making and access to justice in environmental matters, but in practice, it is not widely used. The convention is not ratified. In addition, the Environmental Protection Act has not been yet aligned with the convention.

6.d. Major International Projects

Karst Ecosystem Conservation (KEC) is funded by Global Environment Facility (GEF) through the World Bank in the amount of $5 million and by the Croatian Government Fund with $3.3 million. The project began in 2002 and is expected to continue through 2007. It is implemented by the World Bank and the Ministry of Culture. Its purpose is the conservation of selected karst biological and landscape diversity (see the attached map) through an orchestrated set of activities that would involve improvement of the legislative and institutional framework; inventorying and mapping of biodiversity; providing training activities for different stakeholders (GIS training for park management, park interpretation and management, local NGO training and similar); concrete small scale infrastructure and equipment upgrades for selected parks; and activities on

raising of public awareness and providing incentives for cross border cooperation with the karst regions in neighboring countries.

Under the inventorying and mapping component, a map 1:100 000 of all the habitats is being completed as well as the **BIO NATURA** net that will serve as a basis for ICN categories. In addition, five selected karst parks Risnjak, Plitvice, Paklenica, two on Velebit and the Ogulin Region are getting detailed maps 1:25000 and individual management plans. The program also has a small grants component that supports rural tourism activities, and works on public information and education.

Croatia is taking part in "**Building-up the National Ecological Network**" as a component of the **Pan-European Ecological Network (PEEN) & NATURA 2000 Network (CRO-NEN)** financed by the European Commission LIFE III Fund. Implementation of the project has been assigned to the State Institute for Nature Protection that operates under the Ministry of Culture. The implementation of this project is one of the obligations Croatia has to meet, in order to comply with the EU accession process. Based on the EU Directives on conservation of wild birds, habitats and wild fauna and flora, all EU member states are under obligation to identify areas that are important for conservation of threatened European species and habitats so they become an integral part of the overall EU integrated ecological network NATURA2000. As habitats are exposed to fragmentation, they are connected within functional systems of core areas, corridors and restoration areas that ensure communication between threaten species. The Croatian Law on Nature Protection of 2003 requires the development of **National Ecological Network** (NEN) to be included into PEEN. A very important component of this project is the establishment of the **National Biodiversity Monitoring Program**. This will ensure systematic gathering of data and biodiversity monitoring in Croatia.

Another **LIFE III** funded project implemented by the State Institute for Nature Protection is **LIFE CRO WOLF** project. It is a three year project that will enhance the mechanisms necessary for long term conservation of wolves and their successful cohabitation with people. The project involves institutional strengthening (two field management offices have been established, one for Gorski Kotar and Lika and the second one for Dalmatia), monitoring wolf population, activities aimed at reducing the damage wolves cause to cattle, information and education of the population, and strengthening the interest groups (cattle breeders, hunters, NGOs local governments, etc.) in decision making. Under this program a comprehensive Wolf Management Plan is in the process of being developed.

The Ministry of Physical Planning and Environmental Protection signed a **Memorandum of Understanding with UNEP and GEF** on the development of a national biodiversity safety framework for the Republic of Croatia. The project is meant to provide the legislative, administrative and professional environment for the implementation of the Cartagena Protocol. The purposes of this project are:

- Assessment of current technological capacity for bio safety management;
- Strengthening of national capacity for the bio safety legal framework development;
- Strengthening of the National Capacity for GMO related decision making, including the establishment of administrative procedures
- Support for regional and sub regional cooperation including harmonization of national regulations;
- Raising public awareness and improvement of flow of information with regard to GMOs;

Since January 2004, the State Institute for Nature Protection has been assigned the implementation of this project. A database has been established on the procedures and quality standards in biotechnology, an overview of the available experts, the existing national programs for research and development of biotechnology, the capacity building potential, a summary of the announcement of and the effect of the current legislation assessment.

The COAST Project, another mayor biodiversity-related project, which will start in the summer of 2005, will address conservation and sustainable use of biodiversity on the Dalmatian coast through green costal development. The objective of this project is to transform the actions, practices and approaches of private sector operations in the tourism, agriculture, and fisheries sectors in four

coastal counties, thereby mainstreaming biodiversity conservation into these sectors. The project will address the banking sector, EU accession process, and the planning system and protected area management system. The COAST Project is GEF funded ($ 6.5 million) and implemented by UNDP.

The World Bank's **Coastal Cities Pollution Control Project** is another project dealing with the Croatian Coast. Its purpose is to improve the quality of Croatia's Adriatic coastal waters to meet European Union ambient quality standards in participating cities, in a financially operationally sustainable manner. The project has three main components: 1) Coastal Environmental Infrastructure Component, finances investments in the construction and expansion of sewerage networks, main collectors pumping stations, wastewater treatment plants and submarine outfalls, 2) Institutional Strengthening and Program Management Component, finances equipment, technical assistance, training and studies and, 3) strengthening of the Coastal Waters Monitoring Network, finances equipment, civil works and technical assistance.

Croatia is taking part in several regional activities and programs initiated by the Stability Pact for South-East Europe under the title **REReP (Regional Environmental Reconstruction Program)** and coordinated by the Regional Environmental Center (REC). Croatia currently holds co-chairmanship position. These activities include the Project on the Improvement of the Environmental Information Network, Implementation of the Aarhus Convention, improvement of the environmental impact assessment capacity, elaboration of the Adriatic Sea Environmental Master Plan.

There are other regional projects that address the issue of harmonization of legislation with EU legislation, cooperation of financial experts for environmental inspections **(BERCEN –Balkan Environmental Regulatory Compliance)**, and development of investment projects in the area of environmental protection.

Under the regional program CARDS 2002, the Ministry of Environmental Protection and Physical Planning is taking part in the strengthening capacities in the Balkan countries in environmental reporting and developing the **EIONET** network. The project is worth 2 million EUR and involves Croatia, Albania, Bosnia and Herzegovina, Serbia and Montenegro and Macedonia.

Croatia is also among 15 members of the **Mediterranean Environmental Technical Assistance Program (METAP)**. Within METAP donors include WB, EIB, UNDP and others. Numerous studies and programs have been funded out of METAP funds including Environmental Management Plan of Cres and Losinj Islands, the Waste Management System in Kvarner and Istria region, Waste Management Study for Krka National Park and entire Krka basin and surrounding areas.

Croatia is taking part in another UNDEP/GEF funded project on the Danube River that was initiated by the **International Commission on the Protection of Danube River**. It is a complex cross-sectoral project involving riparian countries. Since the end of 2002, Croatia holds a chairmanship of the "Nature Protection" Group.

Croatia continues to play an active role in the **Danube-Black Sea (DABLAS)** initiative and hosted the 2005 annual meeting of the Danube-Black sea Task Force.

Another GEF-funded initiative involves the protection and integrated management of Neretva and Trebisnjica river basins and ecosystems.

Under the Stability Pact, the treaty on the permanent **Sava River Basin Commission** went into force at the end of the 2004. Through the Regional Environmental Center, USAID is supporting the Commission's Secretariat. USAID/Washington is also supporting preparation of infrastructure projects through its implementing partner Booz Allen Hamilton.

The **Regional Marine Pollution Emergency Response Center for the Mediterranean Sea (REMPEC)** funded a Sub Regional Contingency Plan in case of accidental marine pollution in the Adriatic Sea, involving Croatian, Italian and Slovenian Commission.

6.e. *EU Accession*

EU environment policy aims to promote sustainable development and protect the environment for present and future generations. It is based on preventive action, "the polluter pays" principle, fighting environmental damage at source, shared responsibility and the integration of environmental protection into other EU policies.

After examining Croatia's application for EU membership, the EU in 2004, issued the Avis on Croatia. The Avis contains EU expert opinion on the level of effort needed for Croatia to align with EU standards and so called *aquis communitaire* in a number of key sectors.

With regard to the environment, the EU aquis is comprised of over 200 legal acts covering horizontal legislation, water and air pollution, management of waste and chemicals, biotechnology, nature protection, industrial pollution and risk management, chemicals and genetically modified organisms (GMOs), noise and forestry. For environment, the EU avis stated that significant efforts are needed, including substantial investment and strengthening of administrative capacity for the enforcement of legislation. Full compliance with the aquis in this sector can be achieved only in the long term and would necessitate increased funding. The estimates are that 12-13 billion USD will be needed in order for Croatia to fully conform to EU laws and regulations.

A strong and well-equipped administration at national and local level is imperative for the enforcement of the environment aquis. Unlike any other sector, only the environment sector was ranked as "very significant" on the effort scale.

In its Progress Report for Croatia of November 2005, the EU reported on Croatia's progress in the areas of air quality, waste management and water quality sector in terms of the alignment of legislation. The same report states that as far as the transposition of the aquis is concerned the field of nature protection is relatively advanced, but is currently experiencing delays. The EU accession process creates opportunities. However, experience from recently acceding countries suggests that the pressure for economic development, the lack of capacity and the imprecise nature of environmental obligations mean that acceding countries do not always meet environmental obligations linked to EU accession.

Middle photo by: www.croatia.hr

7. Summary of Findings

- Croatia remains rich in biodiversity with a relatively high level of maintained preserved nature.
- Over the past few years progress has been made documenting and mapping biodiversity. The State Institute for Nature Protection founded in 2003 took a lead in this process and would have done even more but funds were insufficient. Two red books were issued, several other editions are being prepared and preparations for a NSAP update have commenced. The State Institute for Nature Protection is also in the process of preparing a new State of Environment report (the last one was in 1998). Mapping of biodiversity has also progressed. A map 1:100000 of selected habitats is being developed including the BIO NATURA net. Additional efforts need to be put into surveying and documenting. The State Institute for Nature Protection's resources and staffing levels would need to increase. The lack of trained biologists remains a problem. This lack has not been addressed in the development of an upgraded biology curriculum nor through an increase in enrollment levels at the Ministry of Science Education and Sports at the University of Zagreb.
- The major threat to biodiversity is water pollution from urban agricultural and industrial sources. However, the impacts of industrial pollution are mostly localized. Sewage treatment systems serve only 40% of the population and only 12% of water is being treated. Less than 5% of wastewater receives secondary treatment. Waste management is the single biggest problem in the environment sector in Croatia. The current Croatian legislation does not comply with EU standards and existing regulations have not yet been implemented. Out of 126 official waste disposal sites, only eight complied with all the current standards. This is why the newly established Environment Protection and Efficiency Fund, allocated grants for co-financing 151 municipal waste landfills in 2004.

  Draining wetlands for agriculture as well the expansion and modernization of agricultural methods especially in wet land areas and sensitive karst regions remain a big problem.
- The management of national parks and nature parks is more efficient than management of lower categories of protected areas that are under the authority of counties and municipalities. The five karst parks included will benefit tremendously from the WB KEC Project in terms of documenting their biodiversity and developing management plans. The other parks may be left behind unless the Ministry of Culture takes a more proactive role and succeeds in its efforts to introduce a degree of standardization across national parks including a standard for documenting and managing biodiversity.

  The protection of non-protected areas will be better regulated once the soon to be expected new Law on Nature Protection takes effect. However, implementation mechanisms for both lower categories of protected areas and non-protected areas,

involving community based conservation and community based resource management, would yet need to be established.

At the moment, only some nature protection requirements are incorporated into the procedures for issuing of zoning and construction permits. Environmental Impact Assessment (EIA) studies are required only for a limited number of capital investments.

- Coastal management is poor and not integrated. Tourism, fisheries and agriculture industries are having an increasingly negative impact on biodiversity. This includes habitat destruction, unsustainable consumption of biodiversity and natural resources and a growing generation of waste and pollution. Tourist policy makers, planners and entrepreneurs have little concept of biodiversity and landscape diversity or of its role as an economic asset. Insufficiently regulated yacht tourism is a growing problem. Although there are attempts to strengthen inspection system of no-take zones, illegal, unregulated and unreported fishing continues as well as legal over-fishing. Although some initiatives exist, there is little understanding of biodiversity in agriculture sector and an inability to integrate agricultural development with tourism development.

  The Department for Coast and Sea protection at the Ministry of Physical Planning, Environment and Construction remains inefficient and its role undefined.

  Ministry of Physical Planning, Environment and Construction introduced the protected coastal belt in order to stop unregulated over-development. For some parts of the coast this regulation came too late.

- In the last five years, improvements to the legal and institutional framework have been considerable. New laws have been adopted and a degree of harmonization between different laws has been attained. New laws are being developed in order for Croatia to fully align with the EU aquis. A number of new institutions have been established, including the Agency for Nature Protection and State Agency for Environment.

  However, separating Nature Protection (Ministry of Culture) from environmental protection (Ministry of Environmental Protection and Physical Planning) was a major set back further exacerbating the lack of coordination in the environmental sector. The Institute of Nature Protection, although growing, remains understaffed and with insufficient funds.

  The situation at the county and municipal level is even worse. The counties have a maximum of one or two persons responsible for environmental issues, while the situation in the cities is perhaps somewhat better, the municipalities generally have no environmental officials.

  To conclude there is inadequate organization and human resources in all parts of environmental protection. The sphere of environmental protection is regulated by different administrative bodies, with strictly delineated authorities which prevent an integrated/sustainable approach.

  Additionally, the quality of personnel is recognized as a problem at the national and local administration level and particularly in the multidisciplinary field of environmental protection since this sector has neither an educational nor administrative tradition.

  Donor organizations have invested considerable funds in the environment sector including nature protection. Although donors are doing their best to coordinate with each other, there is no coordinating entity among the donors or within the GoC.

- Croatia still does not have a sustainable development strategy that could assemble (cross-sector) a number of sector specific strategies--economic development strategy, biodiversity strategy, environmental strategy, tourism development strategy and others. Many of these sector specific strategies give prominence to environmental protection but have not yet translated into practical measures. At the moment there are still serious weaknesses in implementation and enforcement of the existing strategies due to the lack of human, institutional and financing capacity. The Action plan to the recently

adopted Waste Management Strategy needs to be adopted.

- General awareness on importance of biodiversity and protection of environment remains very poor. Although there have been some isolated attempts such as the campaign against consumption of data shells led by the former Ministry of Environmental Protection, Physical Planning and Construction. Environmental awareness is little understood throughout the government with the exception of a handful of experts and specialized institutions.

- Investments in the environmental infrastructure remain low. Comprehensive planning and development of financing strategies needs take place. The establishment of the Fund for Regional Development and the Fund on Environmental Protection and Energy Efficiency represents progress. Under the WB's Coastal Cities Pollution Control Project a number of sewerage networks, collectors and treatment plants along the coast are being financed. However, major efforts in waste management, waste water treatment and drinking water are needed. Croatia, in that respect, does not yet seem to be taking full advantage of available EU accession funds nor does it seem to be opening up to Private Public Partnerships in infrastructure.

- EU environmental policy is based on the integration of environmental protection into other sector policies, preventive actions, the polluter-pays principle, fighting environmental damage at the source and shared responsibility. The EU aquis is comprised of over 200 legal acts covering horizontal legislation, water and air pollution, management of waste and chemicals, biotechnology, nature protection, industrial pollution and risk management, noise and radiation protection. Meeting the EU environmental standards and aquis requirements will be an enormous undertaking for Croatia. The EU Avis on Croatia foresees the highest degree of efforts (very significant) unlike any other sector. To date, this fact has not been given the necessary attention by the GoC or the Croatian public. Further, the distribution and fragmentation of responsibilities within the administration is hampering efforts to align with the aquis.

- Significant efforts have been made in the past few years toward the completion of county and municipal physical plans. However, biodiversity information has not been adequately incorporated into the recently completed plans. The new Law on Nature Protection, currently in the draft stage, will require the physical plans to be based on habitat maps and nature protection conditions and measures.

  In addition, these recently completed plans failed to represent a cross-sectoral perspective combining the work of planners, economists, environmentalists and experts from other relevant sectors. Instead, they were a one-dimensional planning exercise with the sole purpose of satisfying the legal requirement of having a spatial plan. In addition, these plans face further revisions and profanation once they are put for adoption by respective municipal and city councils. The adoption process often gets stranded as it is hard to reconcile proper spatial planning with local interests.

  Related procedures for issuing zoning and construction permits incorporate some nature protection requirements. Environmental Impact Assessment (EIA) studies are required only for a limited number of capital investments.

- Environmental NGO initiatives are increasing as well as their influence. The corporate social responsibility concept was recently introduced and already resulted in improved cooperation and support for NGOs by the private sector and by the GoC. However, there are only isolated initiatives on the part of the banking sector and very few credit lines for biodiversity investments. Environmental risk is not made a factor in any loan approval process.

Photo by: USAID/Croatia

8. Recommendations for Improved Biodiversity Conservation

- Continue inventorying and mapping of biodiversity. Considerably more biologists - inventorying experts need to be trained and the Institute for Nature Protection should be given sufficient staff and resources to complete the inventorying. Once the information is compiled, comprehensive management and conservation plans could be developed.
- Adequately address the most outstanding threats to biodiversity, primarily pollution from waste water and waste. Although, with the WB' Coastal Cities Pollution Control Project, EU' CARDS and ISPA programs, Environmental Fund and Regional Development Fund investments into waste facilities and waste water treatment plants have increased, the pace still remains too slow. Croatia needs to make sure that it takes full advantage of first the accession and afterwards structural EU funds. Private Public Partnerships need to be considered as they could help resolve a number of infrastructure needs.
- Establish integrated coastal management system. The GEF Coastal management project will certainly make a difference. However, not the entire coast is included in this initiative. The Department of Protection of Coast and Sea at the Ministry of Physical Planning, Environment and Construction should be redesigned and enhanced and given the mandate to take a lead in that respect. It could take a lead in enabling environment that appreciates, supports, institutionalizes and disseminates biodiversity friendly development in coastal areas. The Croatian coast needs new regulations pertaining to yacht tourism, marinas, cruise ships, no-fishing zones, and protection of cartilaginous fish, small pelagic fish, demersial species. Fishery operators need to use smart gears, fishing by tourists needs to be regulated, fish farms and shell fish farms need to comply with Croatian and EU regulations. Inspections need to be regular and effective.
- Improve physical plans and develop management and sustainable development strategies. Use habitat maps as under layers. Add a "cross sectoral" dimension. Delineate physical plans from management plans.
- Introduce biodiversity and environment aspects across sectors - translate into practical measures biodiversity and environment aspects that are among the basic goals of several sector strategies (tourism, transport, energy) but are not yet fully implemented. The links between integrated planning and development need to be strengthened. Investments need to be compliant with development and spatial plans. Require EIAs for a wide range of investments.
- As Croatia does not yet have a sustainable development strategy and all other strategies

are somewhat fragmented, the development of a Sustainable Development Strategy could represent an umbrella document that could unite all existing sector specific strategies and documents. The National Strategy for Regional Development recently put together by the Ministry of Sea, Tourism, Transport and Development under EU CARDS may represent the basis for respective county sustainable development plans and actions.

- Improve mechanisms for protection of lower categories of protected areas and establish mechanisms for protection of non-protected areas. Support the Ministry of Culture in its efforts to introduce standardization across national parks. The lessons learned under the WB's KEC Project need to be shared with other parks. Integrate protected areas into the local socio-economy. Promote community-based conservation and community-based resource management. Conservation is best achieved by enabling local communities to derive benefits from the sustainable use of these resources.
- Actively promote sustainable tourism and environmentally sound agriculture. Croatia, being so rich with natural beauty and cultural uniqueness, should choose sustainable tourism and ecotourism as its strategic orientation. Tourist policy makers, planners and entrepreneurs need to recognize biodiversity and landscape diversity as an economic asset. Agriculture development needs to be integrated with tourism development. Environmentally sound agricultural production that builds upon healthy ecosystems and biodiversity resulting in healthy food products would complement Croatian tourism. The Croatian coast tourist "destination" will have expanded to include agricultural, gastronomic and biodiversity components.
- Increase and strengthen implementation, enforcement and inspection mechanisms. The environmental administration needs to be strengthened at the national level but particularly at the county and municipal level in order to ensure that regional and local administrations have sufficient resources to successfully implement their share of responsibilities. Return biodiversity (now Ministry of Culture) and environment programs (Ministry of Environmental protection and Physical Planning) to the same institutional umbrella. GoC needs to improve Donor coordination.
- Further improve environmental investment mechanisms and increase investments in environmental mechanisms. Engage the private sector in environmental infrastructure financing. The Ministry of Physical Planning, Environment and Construction should take a lead in preparation of environment infrastructure projects, including feasibility studies and environmental impact studies as only with such fully prepared projects different International Funding Institutions as well as EU accession funds can be successfully accessed for funding.
- Put together a team of environmental "think tanks" that would work out a step-by-step action plan including a timeline on how and over what period of time Croatia will achieve what EU describes as "very significant efforts" needed in order for Croatia to become EU aquis compliant on environmental issues. It is of utmost importance that the key government departments manage the entire EU accession process in a biodiversity friendly manner.
- Continue building a strong environmental NGO sector that will help raise awareness among the public and the GoC on importance of biodiversity conservation. Knowledgeable NGOs could assist Croatia in taking full advantage of pre-accession EU funds. Encourage private sector to fully embrace social corporate responsibility concept. Offer tax exemptions for private sector's support of environmental protection and biodiversity conservation initiatives. Encourage banks to offer credits for biodiversity investments and to include environmental risk as a factor in any loan approval process.

Middle photo by: USAID/Croatia

9. USAID/Croatia

9.a Strategy 2001-2003

USAID's Strategy 2001- 2003 contained activities under 4 SOs:

- **Growth of Dynamic and Competitive Private Sector**
- **More Effective Citizens Participation and Improved Governance**
- **Accelerated Return and Sustainable Reintegration of War-Affected Populations**
- **Mitigation of Adverse Social Conditions and Trends**

The environment was addressed as a cross-cutting issue together with information technology, corruption and training.

Through the implementation of the above Strategy, USAID/Croatia addressed biodiversity conservation through the following activities:

The activity, "Jobs in the Parks Program" addressed five National Parks (Plitvice Lakes, Krka, Paklenica, Mljet and the Nature Park at Lonjsko Polje. The project involved the U.S. Department of Interior and the Croatian Ministry of Physical Planning, Environmental Protection and Construction. The activity provided training in park interpretation and conservation to young unemployed people, including returnees. As a result, over 50 young people received training, interpretative materials produced were embraced by the parks, helping them to improve visitor's understanding of the parks and their unique value.

The Program achieved the following:

- At the Paklenica National Park, the trail designed by the program participants, later was built with park resources.
- The interns at Lonjsko Polje assembled a teacher's guide, including games, which could be introduced to children before, during and after their visits to parks. The Park embraced the concept and made a live version of a "stork adventure" game in Cigoc-stork village. The Park took the lead in obtaining the necessary approvals from the Ministry of Education that allowed for the guide to become part of the official curriculum in all the local schools.
- A number of posters produced by the training participants were displayed in Paklenica, Plitvice Lakes and Krka national parks.

The Jobs in the Parks activity was complemented by the World Learning (WL) Participant Training program. Two groups of participants, Jobs in the Parks program participants and park officials, were sent to study and examine similar activities in several U.S. parks. A proposal by one of the training participants and the Nature Park Medvednica, was funded by USAID's Participant Training Program and included placing posters next to dead or decaying trees explaining to visitors the importance of trees and the role they play in biodiversity world.

The "Jobs in the Parks" activity was given credit by the World Bank and provided a basis for the development of the 5 million USD GEF funded Karst Ecosystems Conservation program. Zoran Sikic, former Park Manager at Paklenica National Park, was recently appointed Assistant Minister for Nature Protection at the Ministry of Culture. Mr. Sikic is determined to apply the knowledge and experience he gained while participating in the "Jobs in the Parks" activity across all Croatian national parks. He is planning on standardizing the parks' visual identities, presentation and interpretative skills.

The USAID CroNGO Small Grants Program supported numerous community development activities including environmental projects, ranging from well cleaning in Eastern Slavonia, support for firefighting activities on Hvar, the construction of platforms supporting colonies of pygmy cormorants and purple herons in the Vransko Jezero Nature Reserve, and waste pick up on the island of Vis.

Under the Community Infrastructure Revitalization Program (CIRP) that involved around 100 small scale infrastructure projects, USAID's implementing partner developed best management practices that became a model for the region.

Under the regional Ecolinks program, 13 grants were awarded to Croatian projects, aimed at promoting environmentally sound solutions to economic problems. The projects included introduction of environmentally friendly (low waste) processes in leather production, using the model of the Slunj tannery, feasibility for using a small scale, combined heat and power plant at the Clinical Hospital of Osijek, cleaner production training in Osijek, Baranja County and several other locations.

A seminar was held on cost savings under the Croatian Enterprise Promotion activity and included a day-long session on Environmental Cost Management.

10.b. Closeout Strategy 2003 -2007

As the Mission approaches close-out, USAID Croatia has two remaining strategic objectives for the period 2003-2007:

- **Growth of Dynamic and Competitive Private Sector (Economic Growth) with an emphasis on agriculture development, and**
- **More Effective Governance with Increased and Better-Informed Citizens' Participation (Democracy and Governance). Improved local governance is central to this objective with a strong civil society component.**

The impact of the programs on biodiversity under these two remaining objectives differs; it is positive in some cases or neutral in others. There are no activities that negatively impact biodiversity. Nevertheless, there are some opportunities for positive impact that should be considered. Recommendations to these opportunities will be provided in the following chapter.

Under Economic Growth strategic objective, the Agriculture Competitiveness Enhancement (ACE) and Raising Income of Economically Distressed Areas (RIEDA) activities promote good agricultural practices related to milk, meat, fruit and vegetable production through workshops and interventions that include:

- Reducing Water Usage - drip irrigation techniques reduced water usage by 40% in targeted project sites (40 hectares) while production increased by 25%.
- Reducing Fertilizer Usage - by promoting precision fertilization – fertilizer usage was decreased by 20% in the targeted project sites while production increased by 15%.
- Integrated Pest Management for Apples - grower guidelines to reduce pesticide use were developed and a mechanism for certification of such production has been established. The apples produced following these guidelines are available at one of the mayor food stores.

In addition, ACE and RIEDA support "niche products" such as cheese and meat that are often derived from livestock breeds or plant growers that would otherwise be marginalized.

Enhancing Small and Medium Enterprise (SME) Performance (ESP) works with over 30 partners promoting economic growth to improve the profitability of 4,000 enterprises and create 20,000 new jobs. Croatia's preparations for EU accession provide specific environmental directives and issues that affect a wide range of ESP activities and programs. Following are some key areas of the project where environment and biodiversity are addressed:

- **Tourism:** ESP works to improve small and family owned hotels, tourism service providers and local, regional and national governments that promote tourism. ESP conducted a study to identify niche project areas for Croatia in an attempt to preserve the "tourism product" by moving toward higher value tourism expanded to include agricultural and archeological components. Given the Mission's previous work with the National Parks, further opportunities exist in facilitation of additional linkages between the small hotels and protected areas and sites.
- **Agribusiness and Specialty Foods:** ESP promotes food safety standards and regulations that comply with export requirements for the EU. ESP and ACE/REIDA are working with private firms and the Ministry of Agriculture to improve food safety systems and assist firms to develop biodegradable packaging, environmentally friendly processing, and growing techniques. ISO 22000 Food Safety Management Systems are promoted and Croatia's Association of Management Consultants is being assisted in establishing its own ISO certification expertise.
- **Manufacturing:** ESP introduced operations management methods through training and consulting services that reduce costs and increase efficiencies and are more environmentally friendly. ESP promotes voluntary standards for manufacturing that meet EU requirements. For example, Gummimpex d.o.o invested in environmentally friendly-technology for rubber-based products for play ground surfaces and road construction material.
- **Regional Development and Foreign Direct Investment Facilitation:** ESP works with local and regional governments to develop infrastructure and services related to industrial development and special economic zones. ESP is helping the EU filter numerous requests for business zones and recommending only the viable ones, while taking into consideration the country's overall capacity for such zones. Twelve development agencies are assisted by ESP to develop environmentally-compliant free zones for foreign and local investors. In addition, ESP is facilitating foreign investment that requires the latest technology and management systems for environmental and food safety standards for agriculture, agribusiness and manufacturing. For example, ESP facilitated a $35.6 million investment by an Italian company in underwear and hosiery that included a $3.6 million investment into environmental standards and waste water system compliant with EU requirements and including state-of-the-art technology to manage effluents and other risks.
- **Policy and Regulatory Reform:** ESP is working on regulatory reform to improve the business environment. The "Regulatory Guillotine" is being suggested in order to help Croatia remove obsolete regulations and introduce a new set of EU compliant standards.

It needs to be noted that different EU standards incorporate environmental standards so when ESP is helping Croatia adopt and comply with EU standards it is helping Croatia advance towards environmentally sound SME development.

Under the Democracy and Governance strategic objective the Local Government Reform Program (LGRP) is in the best position to assist local governments to meet their obligation with respect to environmental protection in terms of both policy and practice and thus respond to the fact that levels of protection delegated to local governments are basically non-existent. The project encourages compliance with environmental protection policies, raises awareness of environmentally sensitive service delivery and infrastructure investment and informs policy makers of the environmental standards to which the Croatian public sector will be held accountable in the course of EU accession.

Under its Policy component, LGRP recently issued a publication on "Implications of European Union Accession for Local Government in Croatia:

Regional Policy and Environment" and made it available to hundreds of local governments and central government officials. The document assesses the impact of convergence towards EU environmental policy on Croatian local governments and made recommendations for funding sources and reforms that could facilitate sustainable environmental protection at the local and regional level. It also highlighted a need for comprehensive development strategies at all levels and noted a lack of personnel capable of fulfilling complex tasks ahead.

Under LGRP's EDSP (Economic Development Strategic Plan) component, 48 local governments devised economic development plans. These plans did not provide any scope for environmental considerations and items the Mission missed the opportunity to promote. The component that will be brought to completion by the end of 2005, focused on assisting economic development rather than taking a more comprehensive approach that would encourage cities and counties in the preparation of sustainable development plans addressing multiple issues including the biodiversity management and conservation.

The LGRP, under its decentralization agenda has been advocating zoning and construction permits be delegated from the counties to the cities and municipalities. Most of the cities and municipalities neither possess environmental maturity nor the expertise needed to take on this responsibility. The Croatian Government passed such legislation only with regard to larger cities (above 35,000 inhabitants) that were ready for such a shift in responsibility and authority (a total of 16 cities out of over 500 cities and municipalities).

Other examples of LGRP's approaches to supporting environmental protection in policy and practice include:

- LGRP investment packaging guidelines for local governments that raise awareness of potential environmental cost and externalities in choosing infrastructure investments and council local officials to incorporate an environmental assessment study in each project feasibility study.
- As a part of the Directory of Service Providers for Local Governments, 27 Croatian vendors and organizations delivering ecological protection and environmental mitigation services are listed.
- By the end of the project, 100 local governments will use LGRP's E-government system to create a paperless workplace and access to electronic forms used by citizens in applying for public services.

The CroNGO Program has worked to increase the capacity and sustainability of a number of non-governmental organizations including two environmental networks (Green Forum and Balkan Eco Villages Network). For example, under a grant to Balkan Eco Villages Network, six trainers were trained by a Swedish expert on permaculture and nature-friendly lifestyle. These trainers will continue educating the Network's nine member villages.

The CroNGO Program supported a variety of activities through community development actions. Recent Community Partnership grants included seven projects linked to biodiversity conservation or other aspects of environment protection such as recycling, environment-themed television shows, community clean-up and ecotourism.

USAID/Croatia is taking part in the Regional Energy Activity that is helping the establishment of Southeast Europe's Regional Electricity Market (REM). The activity is primarily focused on policy development and capacity building. It is meant to help the Government of Croatia to amend its legislation and bring it in conformity with the EU Directives and to ensure that energy related activities are efficient and have no adverse impact on the environment. Among other things this activity will help minimize the associated growth in greenhouse emissions and reduce vulnerability to climate change.

USAID provided support for the first Master's Degree program in Environmental Management Studies (EMS) in Croatia. The program was applauded for its multidisciplinary and comprehensive approach to the varied and difficult environmental issues that might be covered under different curriculums and faculties. The Mission, through its Participant Training Program, provided four professors from U.S. universities to teach in Croatia. The program will develop a cadre of trained environmental experts who will be able to respond to the needs of the Croatian

environmental field, as identified under previous sections.

The Mission is also very supportive of other donors' activities – USAID's Jobs in the Parks provided a basis for larger WB's Karst Ecosystems Conservation Project. Most recently, the Mission was instrumental in providing comments to the Department of Treasury on the UNDP's proposed Coast Project, currently awaiting approval. Both projects are GEF funded.

10.c. Recommendations

Given USAID's closeout program and declining funding levels, opportunities for integrating more biodiversity management and conservation into the Mission's program are limited. Nevertheless, the following efforts should be considered to ensure that remaining USAID activities are more sustainable:

Democracy and Governance:

- Include environmental elements into slected LGRP's Public Administration Courses.
- Include basic Green Public Procurement principles into LGRP's Public Procurement Manual.
- Introduce promotion of biodiversity preservation and environmental protection into LGRP's E-Government component by listing environmental information including greatest threats to biodiversity and links to relevant laws.
- Design a training for local government officials that would build upon LGRP's publication – Implications of EU Accession for Local Governments: Regional Policy and Environment, and expand their understanding of EU accession implications as to environmental protection.
- Continue CroNGO program support for further institutionalization of environmental NGOs.
- Use the social corporate responsibility initiative to disseminate best environmental management practices by the private sector.

Economic Growth:

- Continue to employ greater scrutiny when supporting new business development as the GoC permit and screening processes do not in most cases involve environmental assessments.
- Encourage SMEs to adopt environmentally sound policies and to use technologies that minimize pollution.
- Encourage businesses and industries to comply with ISO 9000, 14000 and 22000 environmental management standards.
- Include biodiversity friendly modules in selected trainings such as "Operations Management for SMEs or "Market Segmentation and Positioning for SMEs". Alternatively, a separate model to address different environmental issues of interest to SMEs could be designed.
- Support and promote environmentally and socially responsible and sustainable tourism by raising awareness on the importance of natural assets, mitigation of tourism impacts and partnerships with protected areas and sites. Given the Mission's previous work with the national parks, opportunities exist in facilitation of additional linkages between the small hotels and protected areas and sites.
- Conduct workshops on reducing fertilizer usage for agriculture producers in the most endangered river basins and wetland areas such as Neretva Delta.
- Maintain and encourage traditional agricultural practices where these are important for biodiversity. Some of the Croatian islands are perfect for development and production of organic "indigenous" food species.
- Under Banking Sector assistance – encourage banks to include environmental risk into the credit scoring and loan approval processes.

The Mission can take advantage of USAID Washington-funded regional environment related activities. The APSes that have been recently issued provided some opportunities for potential Croatian applicants. In addition, some small but well targeted initiatives like the one on Environmental Management Studies could continue until the end of the Mission's lifetime.

Annexes:

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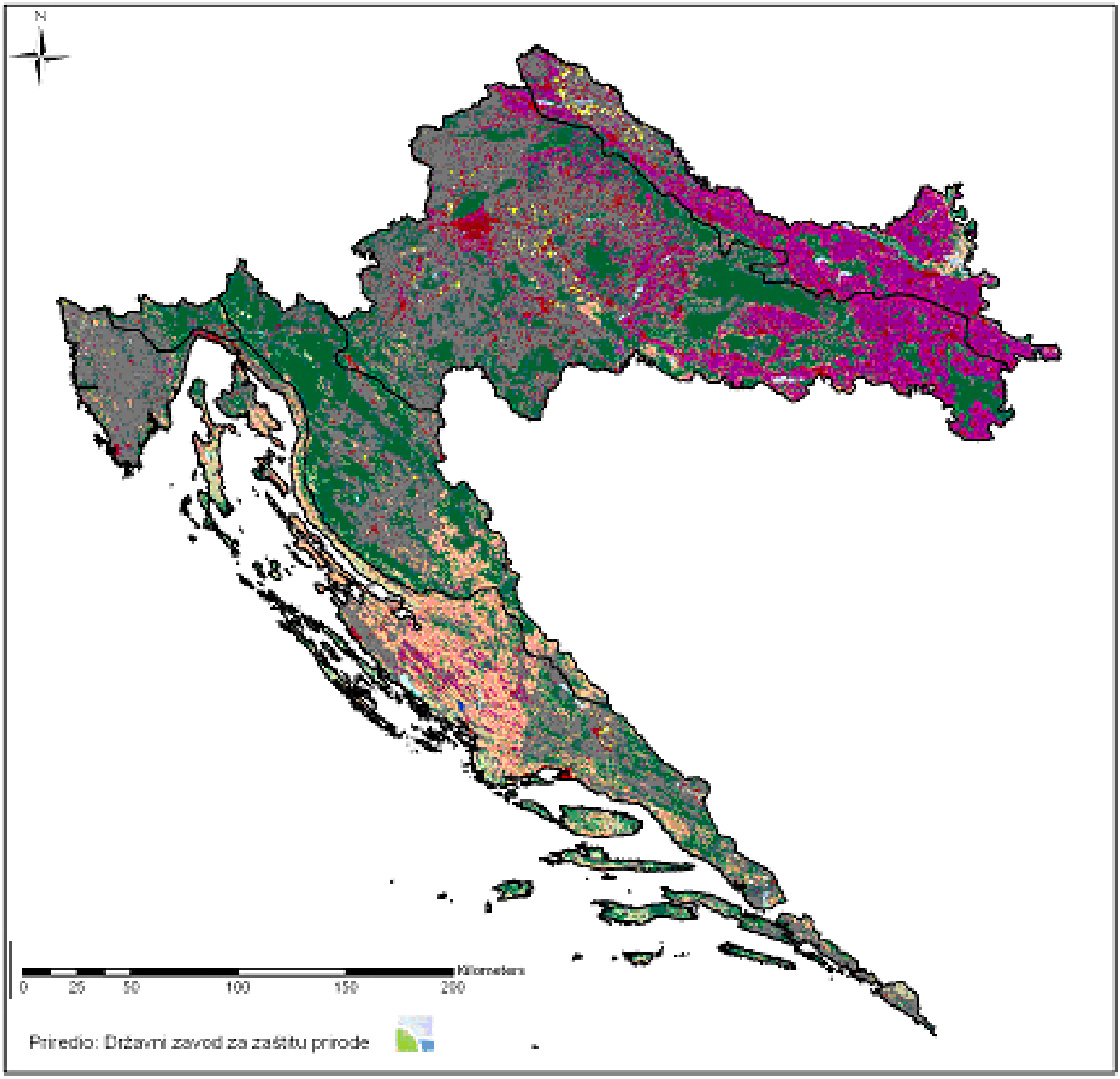
Brad Wallach, Economic Growth Team Leader, USAID Croatia

ANNEX 2: Habitat Map



ANNEX 3: EU Avis – Chapter 22. Environment

EUROPEAN COMMISSION

Opinion

on the application of Croatia for membership of the European Union

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Chapter 22: Environment

Community environment policy aims to promote sustainable development and protect the environment for present and future generations. It is based on the integration of environmental protection into other Community policies, preventive action, the polluter pays principle, fighting environmental damage at source and shared responsibility. The *acquis* comprises over 200 legal acts covering horizontal legislation, water and air pollution, management of waste and chemicals, biotechnology, nature protection, industrial pollution and risk management, noise and radiation protection.

Ensuring compliance with the *acquis* requires significant investment, but also brings significant benefits for public health and reduces costly damage to forests, buildings, landscapes and fisheries. A strong and well-equipped administration at national, regional and local level is imperative for the application and enforcement of the environment *acquis*. The 1994 Environmental Protection Act as amended in 1999 provides the **legal framework** for environmental protection. It needs to be further aligned with the *acquis*. The environmental sector was included in the National Programme for Integration into the EU in 2004 for the first time. Given the amount of environmental legislation in the *acquis*, significant extra priority needs to be given if approximation of legislation is to be timely. Regarding **administrative capacity**, the Ministry of Environmental Protection and Physical Planning was established in 2000 as a central body of State administration. Under the new Government's recent re-organisation it has become the Ministry of Environmental Protection, Physical Planning and Construction. Staffing levels for environmental protection are low with a significant percentage of staff working on physical planning and construction. A number of other bodies are also responsible for aspects of environmental protection and in 2002 two new institutions (the Environment Agency and the State Institute for Nature Protection) were created but these are not yet fully operational. The environmental administration will need to be strengthened to implement the *acquis*, as well as to ensure necessary planning and preparation of financing strategies. Particular efforts will be needed to ensure that regional and local administrations have the necessary resources to effectively implement their responsibilities. An Inspection Directorate has been created within the Ministry of Environment; it is organised into regional inspection departments and almost half of the 461 staff of the Ministry were assigned to this directorate in late 2003. Inspection duties are also given to other 100 government departments with environmental responsibilities. However, only 32 inspectors are available to cover sectors other than water quality, physical planning and noise, which is clearly insufficient. The number of prosecutions for breaches of environmental law indicates that enforcement levels are low. This can be attributed to various factors, such as the lack of human and financial resources attached to this activity, the weaknesses in Croatia's legal system and judiciary, and deficiencies in the legislation that prevent efficient enforcement. Public awareness of environmental issues is starting to grow but public participation in environmental decision-making and public access to environmental information remains weak.

On a regional level, Croatia is participating in and currently holds co-chairmanship of the Regional Environmental Reconstruction Programme (REReP). Croatia also participates in activities of the European Environment Agency financed through CARDS and in the LIFEthird countries programme.

Investment in environmental infrastructure in Croatia is low. Significant investments need to be secured to ensure implementation of the environmental *acquis*. Recent work on prioritizing environmental projects should prove useful in this regard.

Integration of environmental aspects into other policies is one of the basic principles of the National Environmental Strategy, which was adopted by the Parliament in 2002, and its implementing document, the National Environmental Action Plan. The environmental strategy is one component of Croatia's overall development strategy and many other sectors (tourism, transport, energy etc.) incorporate environmental protection into their basic goals. It remains to be seen, however, how these strategies will translate into practical measures. On a practical level, indications are that the environment is still not given due

consideration when development takes place in other sectors. A national strategy for sustainable development has not yet been developed.

Regarding **horizontal legislation**, Croatia is a party to the United Nations Framework Convention on Climate Change and has signed but not yet ratified the Kyoto Protocol. Various legal provisions exist to ensure access for the public to environmental information, although the Environmental Protection Act is not yet fully in line with the Aarhus Convention that Croatia has signed. Regulations on Environmental Impact Assessment (EIA) contain provisions on public participation but in practice this right is not widely used. Whilst Croatia has an ordinance on EIA dating from 1984, revisions are needed to bring it into line with the *acquis*. Together with the implementation of the *acquis* on Strategic Environmental Assessment (SEA), this will need to be pursued as a priority. Croatia will need to ensure provisions for public participation in environmental decision making across a range of different areas, including permit procedures and the drawing up of plans in waste, air quality and water pollution by nitrates. This is likely to pose a major challenge.

Air pollution levels have fallen since 1990 due to the decline in heavy industry. Limit values and monitoring systems are being developed to align with the *acquis*. The National Environmental Action Plan outlines measures for improving air quality and the inclusion of deadlines offers the possibility to monitor progress. Air quality plans and programmes as required by the *acquis* need to be prepared.

Waste management is the single biggest problem in the environment sector in Croatia. Not only does the legislative framework need to be aligned with EU requirements and standards, but existing Croatian regulations are not yet being implemented. A waste management plan 101 needs to be adopted. Recovery, recycling and disposal facilities are in scarce supply and fall considerably short of EU standards. Return and collection systems need to be established. Most waste is disposed of in landfills and unauthorised sites outnumber official sites by at least eight to one, while even many official sites do not operate in line with the Waste Law. There are no hazardous waste disposal sites. This sector poses a major challenge for Croatia and will require major efforts to align with the *acquis*. The existing **water quality** legislation provides a good basis for alignment with the *acquis* although at local level by-laws are often missing. Necessary inventories, action programmes and designation of vulnerable and sensitive areas need to be ensured. Croatia is party to the International Convention for the Protection of the Danube River Basin and is drawing up a River Basin Management Plan. The sewage system serves 40% of the population with only 12% of waste water being treated (less than 5% receives secondary treatment). In order to align with the *acquis* Croatia will have to make significant investments in waste water collection and treatment as well as in drinking water supply.

Nature protection legislation has been updated through a new Nature Protection Act. Currently 10% of the land area is protected, although there are proposals to increase this to a figure nearer the EU average (15-20%) in the future. With 43% of the territory of Croatia being forested and given the high level of biodiversity, the definition of the network of Natura 2000 sites will represent a major challenge. Whilst the legislative framework for nature protection exists, implementation measures, and particularly the management of protected areas, need to be strengthened. In this context, the recent shift of the competence for nature protection from the Ministry of Environment to the Ministry of Culture appears to deviate from common practice in EU Member States. The protection of endangered species outside protected areas is not currently ensured. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) entered into force in 2000. Croatia has cooperated with the Visegrád countries in building national ecological networks. Regarding **industrial pollution and risk management** there is no system of integrated pollution prevention and control (IPPC). Although air pollution levels in general have fallen in recent times, Croatia would currently be unable to meet the EU emission limits required for large combustion plants and needs to elaborate measures to comply with national emission ceilings. Whilst a legal obligation exists for operators of industrial sites to establish contingency plans, it is unclear to what extent they have been put into effect. Croatia has ratified the UNECE Industrial Accidents Convention. For **chemicals and genetically modified organisms (GMOs)** it remains to be seen whether the new system restricting GMO use is compatible with the *acquis* on the free movement of goods. Legislation concerning chemical substances is incomplete, there is no

register of chemicals on the market and identification of "new" chemicals is not a current requirement. Major efforts will therefore be needed to align with the *acquis* in the chemicals sector. Legislation concerning biotechnology is not yet in place. The issue of **noise** is dealt with in the National Environmental Strategy and National Environmental Action Plan and legislation has been developed to align with the *acquis*. However the deadlines for specific actions under the Action Plan have been postponed for up to four years. Regarding **nuclear safety and radiation protection**, Croatia has established a legal framework for different aspects concerning the basic safety standards, medical exposure and emergency preparedness. However, the transposition of the directives laying down the basic 102 safety standards and on health protection in relation to medical exposure remains to be completed and further developed. The *acquis* concerning the operational protection of outside workers, on informing the public in case of radiological emergency, and on the control of shipments of radioactive waste still has to be transposed. The Ministry of Economy is responsible for nuclear safety, the licensing of nuclear facilities including fuel and waste treatment facilities, and implementation of nuclear safeguards. Currently, Croatia operates two storage facilities for used radiation sources and low level waste. The Act on Nuclear Safety, adopted in October 2003, provides for the establishment of a State Institute for Nuclear Safety. Due to the lack of administrative capacity, the direct implementation of Articles 33 to 37 of the Euratom Treaty and of the arrangements for emergency preparedness would pose significant problems. Croatia therefore needs to establish appropriate regulatory bodies, competent radiation protection authorities and special independent advisory committees.

Conclusion

The basic elements of a legislative framework are in place to enable Croatia to pursue alignment with the *acquis*, although a significant increase in the priority given to environmental protection is necessary. This will require enhanced planning and preparation of financing strategies. At present, the various strategies give prominence to environmental protection, but they need to translate into practical measures and environmental aspects need to be taken into account in other sectors. There are serious weaknesses in implementation and enforcement that need to be addressed before the *acquis* can be effectively applied. Overall, Croatia will have to make considerable and sustained efforts to align its legislation with the *acquis* and to effectively implement and enforce it in the field of environment in the medium term. However, effective compliance with a number of pieces of Community legislation requiring a sustained high level of investment and considerable administrative effort (e.g. waste management, waste water treatment and drinking water) could be achieved only in the long term and will require a significant increase in environmental investment.

ANNEX 4: Letters from Croatian Ministry of Culture Listing Biodiversity Related International Activities

REPUBLIC OF CROATIA
MINISTRY OF CULTURE

Klasa: 612-07/05-01/542

Urbroj: 532-08-02-1/8-05-2

Zagreb, 26 August 2005

U.S. Agency for International Development [USAID]
Thomasa Jeffersona 2
10 010 Zagreb

Ms. Zeljka Zgaga

Dear Ms. Zgaga,

Based on your letter, regarding biological diversification in the Republic of Croatia we provide you with the following information:

- a list of international treaties from the area of environmental protection

- Convention on the conservation of global cultural and natural heritages, National Gazette – International Agreements 12/93, adopted: PARIS, 1972
- Convention on swamps of international significance particularly as a habitat for swamp birds, National Gazette – International Agreements 12/93, adopted: RAMSAR, 1971
- Law on validation of the United Nations Convention on biological diversity, National Gazette – International Agreements 6/96, adopted: RIO DE JANEIRO, 1992
- Law on validation of the Protocol on biological conservation [Kartagena protocol] in addition to the Convention on biological diversity, National Gazette – International Agreements 7/02, adopted: MONTREAL, 2000
- Law on validation of the Convention on international trade of threatened species of wild animals and plants [CITES], National Gazette – International Agreements 12/99, adopted: WASHINGTON, 1973
- Law on validation of the Convention on protection of European wild species and natural habitats [Bern convention], National Gazette – International Agreements 6/00, adopted: BERN, 1979
- Law on validation of the Convention on protection of migratory species of wild animals [Bonn convention], National Gazette – International Agreements 6/00, adopted: BONN, 1979
- Law on validation of the Treaty on protection of Afro-Eurasian migratory swamp birds [AEWA], National Gazette – International Agreements 6/00, adopted: BONN 1996

- Law on validation of the Treaty on preservation of bats in Europe [EUROBATS], National Gazette – International Agreements 6/00, adopted: LONDON, 1991
- Law on validation of the Treaty on preservation of whales [Cetacea] in the Black Sea, Mediterranean Sea and adjacent Atlantic area [ACCOBAMS], National Gazette – International Agreements 6/00, adopted: MONACO 1996
- Memorandum of Understanding concerning preservation measures for the slender billed curlew [numenius tenuirostris], Signed: 1994
- Memorandum of Understanding on preservation and management of the Mediterranean population of great bustards [Otis tarda], Signed: 2002
- Law on validation of the Convention on European landscapes, National Gazette – International Agreements 12/02, adopted: FLORENCE, 200
- Convention on access to information, public participation in decision making and access to judiciary concerning the environment [Aarhus, 1998]

- a list of international activities concerning areas of environmental protection

International activities of the Agency for Environmental Protection are primarily focused on implementation of the stated conventions and treaties, and encompass regular client meetings, working group meetings, and workshops for specific areas, such as topics that are marked as priorities. A less significant element of international cooperation is conducted through bilateral or international cooperation on projects related to the conservation of biological diversity and environmental protection.

A new dimension of international activities concerns the approaching of the Republic of Croatia to the European Union; that is coordination of legislation with EU regulations.

- habitat maps

The Ministry of Culture possesses one [official] version of a habitat map of the RC dated 2004, which up until now has not been updated. Ceding information needs to be legally regulated, although it is possible for a reciprocal exchange of information within the framework of scientific projects or international projects on environmental protection in the Republic of Croatia.

- Natura 2000

Natura 2000 is yet to be created based on Directive 92/43/EEZ on conservation of natural habitats and wild fauna and flora, and implemented until EU accession. Through the LIFE project, which has just concluded, the State Bureau for Environmental Protection created a preliminary list of potential areas that satisfy criteria for Nature 2000. The Republic of Croatia is currently in the process of synchronizing regulations of the implementation of Nature 2000 and the speed at which it will be carried out will depend on financial mechanisms and the management model of these areas, therefore it is not possible to provide you with the map of Nature 2000 that you requested.

We hope that the information provided will assist in creating a document that also encompasses an overview of biological diversity in Croatia, and we ask that you, in so far as it is possible, provide us with a copy of the mentioned document when it is prepared.

Respectfully,
ASSISTANT MINISTER
Zoran Sikic

REPUBLIC OF CROATIA
MINISTRY OF CULTURE

Klasa: 612-07/05-01/542
Urbroj: 532-08-02-1/8-05-3
Zagreb 20 September 2005

U.S. Agency for International Development [USAID]
Thomasa Jeffersona 2
10010 Zagreb
Ms. Zeljka Zgaga

Dear Ms. Zgaga,
Following our telephone conversation and correspondence I am providing you with a detailed list of international activities concerning projects that were carried out or are being carried out within the framework of the Agency for Environmental Protection and State Bureau for Environmental Protection:

- European Union through the LIFE fund– the following projects were financed by other countries
  - "Maintainable use of natural resources in nature park Lonjsko polje" – Lonjsko Polje Nature Park [beginning of 2001]

  - CRO-NEN – "Establishing a national ecological network [NEN] as part of the European ecological network [PEEN] and Nature 2000 network – strengthening institutional capabilities for environmental protection and fulfilling obligations of Croatia as a country in the process of EU accession; defining areas that will become part of a national ecological network and Nature 2000; and development of the network for data collection related to environmental protection [2002-2005]

  - "Protection and management of wolves in Croatia" – strengthening institutional capabilities to protect and manage wolves at the state and local levels and establishing a mechanism that will ensure the preservation of wolves in Croatia in a peaceful coexistence with humans [2002-2005]

- Preparation for a cross border management plan for the Lower tide of the Neretva River [2001]
  The purpose of the activities carried out was to prepare a project proposal for a cross border management plan as the basis for initial and continued cooperation, and finding the necessary funds. As part of the project extensive documentation was prepared on the Lower tide of the Neretva River which was edited by MedWet 2000 software for inventarization of swamp areas.

- A cross border cooperation project with BiH on the conservation of the Neretva River delta, with support from the MedWet Initiative and Principality of Monaco the project is underway – a working group [commission] has been established for cross border conservation of the Neretva River delta

- European Green Belt – an initiative for establishing a pan European ecological corridor for the conservation of biological diversity, sustainable development and cross border cooperation of areas/countries on both sides of the former iron curtain from Barencova to the Black sea. The Republic of Croatia with a border area along the Drava and Danube rivers would be part of the South East European Green Belt

- "Karst ecosystem conservation" project [KEC project 2003-2007] – a program for the preservation of the ecological system detritus and subsoil, KEC encompasses the area of highland Croatia, which is five protected areas: Paklenica National Park, Plitvicka Jezera National Park, Sjeverni Velebit National Park, Risnjak National Park and Velebit Nature Park, a total area of approximately 8,000m². The KEC project is financed by the Global Environment Fund [GEF] through the World Bank and the Government of the RC.

- The project "Developing the framework for a national biological sanctuary in the Republic of Croatia" [2003-2004] – aims at preparing the Protocol on biological sanctuary [Kartagena protocol from the Convention on biological diversity] to come into force.

- Establishing a geo-information system for national parks within the RC and a Register of national resources - the "Geo-information system of Kornati National Park" project, which was run by the State geodesist authority in cooperation with JU "Kornati NP" and with financial support from the government of the Kingdom of Norway will serve as a model that will be applied to the other seven national parks of the RC.

- Projects carried out through bilateral cooperation with the Embassy of the Kingdom of Netherlands:
  - "Revitalization of Kolansko Blato" [2001]
  - "Reconstruction of the educational path of the protected Kalnik landscape" [2002]
  - "Conservation of the eminent Cambina landscape" [2003-2004]
  - "Conservation and reconstruction of the eminent landscape of Saplunara on Mljet" [2004-2005]
  - "Securing adequate operational conditions for the centre for the care of confiscated and injured protected wild animals [AWAP]" [2004-2005]
  - "Forest management close to nature" [2005-2006]
  - "Guidance for forest management in the aim of protecting birds in Papuk Nature Park" [2005-2006]

- The "Protection of biodiversity of the Sava River Basin Floodplains" project [2005-2005] – cooperation of the IUCN and countries that are divided by the Sava River – systematic usage and preservation of the Sava River.

- The "Inventarization of swamp habitats in Croatia" project [2004-2005] – preliminary inventarization of swamp habitats so as to create a GIS database on swamp habitats; creation of a map of swamp habitats in Croatia.

- Implementation of the Convention on international trade of endangered species of wild animals and plants [CITES]:
  - a commission for implementation of CITES has been established
  - rescue centers in the RC have been acknowledged/formed
  - education – CITES seminars for training employees of state administration bodies

- Implementation of the Convention on the protection of European wild species and natural habitats – creating and adopting management plans:
  - Management plan for wolves in Croatia
  - Management plan for lynxes in Croatia

- Observance of Environmental Protection day in Croatia and International Biological Diversification day
  - "FOOD, WATER AND HEALTH FOR ALL" and presentation of the results from the pilot project "COUNTING NESTS OF SWALLOW AND HOUSE MARTINS"
  - Round table on "BATS IN FORESTS – PLANS AND RECOMMENDATIONS FOR FOREST MANAGEMENT" – a round table was held for experts in the field of environmental protection and forestry.

- "MEMORANDUM ON WHITE STORKS [Ciconia ciconia]" – the Ministry of Culture, Office for environmental protection and Croatian HEP – securing the safe nesting of storks on electricity poles, a good example of setting measures for environmental protection in sectors.

- The "Emerald Network pilot project" – the project was implemented in 2001-2002 in cooperation with the Ministry of Environmental Protection, Physical Planning and Construction and the Council of Europe, and a

working group for implementation of the Emerald Network program was established. An extension of cooperation is the creation of an Emerald Network for the whole area of the RC [commenced 2006].

- In conjunction with the Institute for Oceanography and Fishery in Split a project on monitoring, expansion control and elimination of invasive algae of the Caulerpa family in the Adriatic Sea, primarily in protected areas was commenced. Cooperation is between the Ministry of Culture, Ministry of Environmental Protection, Physical Planning and Construction, Ministry of the Sea, Tourism, Transport and Development.

- PHARE program – from the submitted projects for PHARE 2005 the "Implementation NATURE 2000 in Croatia" project was accepted. The project aims at total takeover and application of EU directives on habitats and birds, via establishment and further implementation of NATURE 2000 in Croatia.

- Map of habitats in the Republic of Croatia – completed in 2004.

  The first version of the National classification of habitats in RC [NKS] was developed within the framework of the "Mapping habitats in the Republic of Croatia" project. National classification of habitats encompasses five levels and covers natural and semi-natural, but also manmade type habitats. At the first NKS level habitats are arranged into ten basic categories.

  Also developed is a system for recording National classification habitats in PHYSIS, EUNIS and CORINE Landcover classification systems and, for sea water habitats in the Barcelona convention classification system.

If you need additional information related to the Agency for Environmental Protection or State Bureau for Environmental Protection, please be free to contact us again.

Respectfully,

ASSISTANT MINISTER
Zoran Sikic

ANNEX 5: Red List

Latin Name	English Name	IUCN Category
Dianthus multinervis Vis.	**Jabuka pink**	EX (extinct)
Ammophila arenaria (L.) Link ssp. arundinacea H. Lindb.	**Marram grass**	RE (regionally EX)
Botrychium matricariifolium (Retz.) A. Br. ex Koch	**Matricary grape fern**	RE
Caldesia parnassifolia (L.) Pari.	**VVater-plantain**	RE
Cuscuta epilinum Weihe	**Flax dodder**	RE
Cyperus glaber L.	**Galingale**	RE
Drosera anglica Huds.	**Great sundew**	RE
Drosera intermedia Hayne	**Oblong-leaved sundevv**	RE
Eriophorum gradile Koch ex Roth	**Slender cottongrass**	RE
Eryngium planum L.	**Seahollv**	RE
Hippophae rhamnoides L.	**Sea-buckthorn**	RE
Aeluropus littoralis (Gouan) Pari.	**Coastal meadovvgrass**	CR critically endangered)
Agropyron cnstatum (L.) Gaertn. ssp. pectinatum (M.Bieb.) Tzvelev	**Crested vvheatgrass**	CR
Alopecurus bulbosus Gouan	**Bulbous foxtail**	CR
Alyssum montanum L. ssp. pluscanescens (Raim ex Baumg.) Trpin	**Samobor alyssum**	CR
Anemone si/lvestris L.	**Snowdrop vvindflovver**	CR
Anthemis tomentosa L.	**Woolly chamomile**	CR
Asplenium sagittatum (DC.) Bange	**Arrovv-headed spleenwort**	CR
Aster tripolium L. ssp. pannonicus (Jacq.) Soo	**Sea aster**	CR
Baldellia raminculoides (L.) Pari.	**Lesser water-plantain**	CR
Bassia laniflora (S. G. Gmel.) A. J. Scott	**Sand goosefoot**	CR
Beckmannia eruciformis (L.) Host	**Slough grass**	CR
Betula pubescens Ehrh.	**Downy birch**	CR
Bupleurum lancifolium Hornem.	**Lanceleaf thorow wax**	CR
Calla palustris L.	**Water arum**	CR
Calystegia soldanella (L.) R. Br.	**Seashore false bindweed**	CR
Camphorosma annua Pallas	**Annual camphorosma**	CR
Carex bohemica Schreb.	**Bohemian sedge**	CR
Carex pulicaris L.	**Flea sedge**	CR
Catabrosa acjuatica (L.) P. Beauv.	**Water whorl-grass**	CR
Chamaea/tisus ratisbonensis (Schaeff.) Rothm.	**Ragensburg broom**	CR
Consolida ajacis (L.) Schur	**Rocket larkspur**	CR
Consolida brevicornis (Vis.) Soo	**Short-horned larkspur**	CR
Consolida orientalis (Gay) Schrodinger	**Oriental larkspur**	CR

Convolvulus Hneatus L.	**Bindvveed**	CR
Corynephorus canescens (L.) P. Beauv.	**Gray hairgrass**	CR
Con/nephorus divaricatus (Pourr.) Breistr.	**Astraddled hairgrass**	CR
Cutandia tmritima (L.) Barbey	**Sea wheat**	CR
Cyperus capitatus Vand.	**Capitate clubrush**	CR
Delphinium halteratum Sm. in Sibth. et Sm.	**Larkspur**	CR
Digitalis lanata Ehrh.	**Wooly foxglove**	CR
Doronicum hungaricum Rchb. f.	**Hungarian false leopardsbane**	CR
Don/cnium rectum (L.) Ser.	**Upright dorycnium**	CR
Drosera rotundifolia L.	**Roundleaf sundew**	CR
Echinophora spinosa L.	**Prickly parnsnep**	CR
Eleocharis uniglumis (Link) Schult.	**Slender spike-rush**	CR
Elymus farctus (Viv.) Runemark ex Melderis	**Sand couch**	CR
Eriophorum angustifolium Honck.	**Common cottongrass**	CR
Eriophorum vaginatum L.	**Tussock cottongrass**	CR
Festuca vaginata Waldst. et Kit. ex VVilld.	**Frescue**	CR
Fimbristylis bisumbellata (Forssk.) Bubani	**Fimbry**	CR
Galium rubioides L.	**European bedstraw**	CR
Galium uliginosum L.	**Bog bedstraw**	CR
Gemnium dalmaticum (Beck) Rech. f.	**Dalmatian cranesbill**	CR
Heliotropium supinum L.	**Dvvarf heliotrope**	CR
Hierachim echioides Lumn.	**Hawkweed**	CR
Hydrocotyle vulgaris L.	**Marsh pennywort**	CR
Imperata a/lindrica (L.) Raeusch.	**Blady grass**	CR
Kitaibela vitifolia Willd.	**Kitaibela**	CR
Koeleria glauca (Schrad.) DC.	**Blue hairgrass**	CR
Lathyrus ochrus (L.) DC.	**VVinged vetchling**	CR
Ligularia sibirica (L.) Cass.	**Siberian rayflower**	CR
Limosella aauatica L.	**VVater mudwort**	CR
Lycopodiella inundata (L.) Holub	**Marsh clubmoss**	CR
Lythrum tribracteatum Salzm. ex Spreng.	**Threebract loosestrife**	CR
Mandragora officinarum L.	**Spring mandrake**	CR
Myosurus minimus L.	**Tiny mousetail**	CR
Myricaria germanica (L.) Desv.	**Tamarisk**	CR
Ophioglossum lusitanicum L.	**Least adder's tongue**	CR
Osmunda regalis L.	**Royal fern**	CR
Pancratium maritimum L.	**Sea daffodil**	CR
Papaver argemone L.	**Prickly poppy**	CR
Papaver hybridum L.	**Rough poppy**	CR
Pholiurus pannonicus (Host) Trin.	**Pannonian barbgrass**	CR

Pilularia minuta Durieu	**Pillvvort**	CR
Pinguicula vulgaris L.	**Common buttervvort**	CR
Plantago indica L.	**Branched plantain**	CR
Plantago tenuiflora VValdst. et Kit.	**Plantain**	CR
Pohjgonum arenarium VValdst. et Kit.	**European knotvveed**	CR
Potentilla palustris (L.) Scop.	**Marsh cinquefoil**	CR
Prunus tenella Batsch	**Dvvarf almond**	CR
Puccinellia distans (L.) Pari. ssp. distans	**Reflexed saltmarsh-grass**	CR
Puccinellia distans (L.) Pari. ssp. limosa (Schur) Jav.	**Reflexed saltmarsh-grass**	CR
Pulsatilla pratensis (L.) Miller ssp. nigricans (Storck) Zam.	**Blackish anemone**	CR
Rhynchospora alba (L.) Vahl	**White beak-sedge**	CR
Saccharum mvennae (L.) Murray	**Italian sugarcane**	CR
Scirpus cespitosus L.	**Tufted bulrush**	CR
Scirpus mucronatus L.	**Bog bulrush**	CR
Scirpus setaceus L.	**Bristle clubrush**	CR
Scirpus supinus L.	**Dwarf clubrush**	CR
Sporobolus pungens (Schreb.) Kunth	**Pointed bent**	CR
Tofieldia calyculata (L.) VVahlenb.	**False asphodel**	CR
Trifolium michelianum Savi	**Mike's clover**	CR
Triglochin bulbosa L. ssp. barrelieri (Loisel.) Rouy	**Bulbous arrovvgrass**	CR
Triglochin maritimum L.	**Sea arrowgrass**	CR
Triglochin palustris L.	**Marsh arrovvgrass**	CR
Typha laxmannii Lepech.	**Graceful cattail**	CR
Typha minima Funck	**Miniature cattail**	CR
Vaccaria hispanica (Miller) Rauschert	**Cow soapwort**	CR
Ventenata dubia (Leers) Coss.	**VViregrass**	CR
Veronica dillenii Crantz	**Dillenius' speedvvell**	CR
Adonis aestivalis L.	**Summer pheasant's eye**	EN (endangered)
Adonis annua L. emend. Huds.	**Blooddrops**	EN
Alisma gramineum Lej.	**Ribbon-leaved vvater-plantain**	EN
Allium angulosum L.	**Mouse garlic**	EN
Blackstonia peifoliata (L.) Huds. ssp. serotina (Koch ex Rchb.) Volim.	**Yellow-wort**	EN
Blysmus compressus (L.) Panz. ex Link	**Flat-rush**	EN
Carex davalliana Sm.	**Davall's sedge**	EN
Carex divisa Huds.	**Salt-meadovv sedge**	EN
Carex echinata Murray	**Star sedge**	EN
Carex extensa Gooden.	**Long-bracted sedge**	EN
Carexflava L.	**Large yellow sedge**	EN

Carex hostiana DC.		**Tawny sedge**	EN
Carex lepidocarpa Tausch		**Yellow sedge**	EN
Carex nigra (L.) Reichard		**Common sedge**	EN
Carei serotina Merat.		**Small-fruited yellow sedge**	EN
Crepis pyrenaica (L.) Greuter		**Hawk's beard**	EN
Cynanchum acutum L.		**Stranglewort**	EN
Cyperus rotundus L.		**Purple nut sedge**	EN
Cypripeđium calceolus L.		**Lady's slipper**	EN
Dactylorhiza incarnata (L.) Soo		**Early marsh orchid**	EN
Dactylorhiza majalis (Rchb.) P. F. Hunt et Summerh		**Broad-leaved marsh orchid**	EN
Daphne cneorum L.		**Garland flovver**	EN
Degenia velebitica (Degen) Hayek*	E N D E M I C	**Velebit degenia**	EN
Delphinium peregrinum L.		**Violet larkspur**	EN
Delphinium staphisagria L.		**Palmated larkspur**	EN
Deschampsia media (Gouan) Roem. et Schult		**Medium hairgrass**	EN
Eleocharis camiolka Koch		**Carnic spike-rush**	EN
Eleocharis ovala (Roth) R. et S.		**Ovate spike-rush**	EN
Eriophonim latifolium Hoppe		**Broad-leaved cottongrass**	EN-
Gentiana lutea L. ssp. symphyandra (Murb:) Hayek		**Yellow gentian**	EN
Gentiana pneumonanthe L.		**Marsh gentian**	EN
Glaucium flavum Crantz		**Horned-poppy**	EN
Hibiscus trionum L.		**Venice mallovv**	EN
Hippuris vulgaris L.		**Common Mare's tail**	EN
Hordeum secalinum Schreb.		**Meadow barley**	EN
Hottonia palustris L.		**VVater violet**	EN
Lemna gibba L.		**Fat duckweed**	EN
Leucanthemella serotina (L.) Tzvelev		**Giant daisy**	EN
Maha parviflora L.		**Egyptian mallovv**	EN
Marrubium peregrinum L.		**Horehound**	EN
Marsilea quadrifolia L.		**Upright water clover**	EN
Menyanthes trifoliata L.		**Bogbean**	EN
Moehringia tommasinii Marchesetti		**Tomasini's three-nerved sandwort**	EN
Ophrys apifera Huds.		**Bee orchid**	EN
Ophrys lutea (Gouan) Cav.		**Yellow bee orchid**	EN
Orchis italica Poir.		**Pink man orchid**	EN
Orchis lađea Poir.		**Milky orchid**	EN
Orchis spitzelii Saut. ex Koch		**Spitzel's orchid**	EN
Orlaya kochii Heywood		**Koch's orlaya**	EN
Pedicularis acaulis Scop.		**Stemless lousewort**	EN

Pedicularis hoermanniana K. Maly	**Hoermann's lousevvort**	EN
Periploca graeca L.	**Silk vine**	EN
Pseudolysimachion longifolium (L.) Opiz	**Garden speedwell**	EN
Ranuncidus lingua L.	**Greater speanvort**	EN
Ranuncidus ophioglossifolius Vili.	**Adder's-tongue spearvvort**	EN
Rhinanthus rumelicus Velen.	**Rattle**	EN
Salvia nemorosa L.	**Balkan clary**	EN
Selaginella helvetica (L.) Spring.	**Svviss clubmoss**	EN
Urtica membranacea Poiret in Lam.	**Membranous nettle**	EN
Urtica pilulifera L.	**Roman nettle**	EN
Vida onobn/chioides L.	**False sainfoin**	EN
Xeranthemum annuum L.	**Immortelle**	EN
Alopecurus aequalis Sobol.	**Orange foxtail**	VU (vulnerable)
Alopecurus geniculatus L.	**Marsh foxtail**	VU
Alopecurus rendlei Eig	**Rendle's meadovv foxtail**	VU
Arctostapht/los uva-ursi (L.) Spreng.	**Bearberry**	VU
Arnica montana L.	**Arnica**	VU
Campanula cohlearifolia Lam.	**Fairy's thimble**	VU
Cardaminopsis halleri (L.) Hayek	**Hallerova gušarka / Haller's rockcress**	VU
Carex panicea L.	**Carnation sedge**	VU
Carex riparia Curtis	**Great pond sedge**	VU
Cara: rostrata Stokes ex With.	**Bottle sedge**	VU
Cara* vesicaria L.	**Bladder sedge**	VU
Clematis integrifolia L.	**Simple-leaved clematis**	VU
Cyperus flavescens L.	**Yellow galingale**	VU
Cyperus fuscus L.	**Brovvn galingale**	VU
Cyperus glomeratus L.	**VVhirling cyperus**	VU
Cyperus longus L.	**Sweet cyperus**	VU
Cyperus michelianus (L.) Link	**Michelis cyperus**	VU
Cyperus serotinus Rottb.	**Fiat sedge**	VU
Daphne Uagayana Freyer	**Blagay's daphne**	VU
Desmazeria marina (L.) Druce	**Sea fern grass**	VU
Dianthus giganteus D' Urv ssp. croaticus (Borbas) Tutin	**Croatian pink**	VU
Dianthus integer Vis.	**Simple pink**	VU
Dianthus petraeus VValdst. et Kit.	**Rockpink**	VU
Digitalis ferruginea L.	**Rusty foxglove**	VU
Eauisetum hyemale L.	**Rough horsetail**	VU
Fritillaria meleagris L.	**Chequered lily**	VU

Fritillaria messanensis Raf. ssp. gracilis (Ebel) Rix	**Slender fritillary**	VU
Glyceria fluitans (L.) R. Br.	**Floating sweet grass**	VU
Glyceria plicata (Fr.) Fr.	**Pikate sweet grass**	VU
Hainardia cylindrica (Willd.) Greuter	**Common barbgrass**	VU
Helleborus niger L. ssp. macranthus (Freyn) Schiffrier	**Christmas rose**	VU
Hordeum marinum Huds.	**Sea barley**	VU
Ilex aquifolium L.	**Holly**	VU
Iris croatica Horvat et Horvat M.	**Croatian iris**	VU
Iris sibirica L.	**Siberian iris**	VU
Leontopodium alpinum Cass. ssp. krasense Derganc	**Lion's paw**	VU
Lilium bosniacum (Beck) Beck ex Fritsch	**Bosnian lily**	VU
Lilium bulbiferum L.	**Orange lily**	VU
Lilium carniolicum Bernh. ex Koch	**Carnic lily**	VU
Lilium martagon L.	**Martagon lily**	VU
Lindernia procumbens (Krock.) Philcox	**Common false pimpernel**	VU
Lythrum portula (L.) D. A. Webb	**VVater purslane**	VU
Ophry$ bertolonii Moretti	**Bertoloni's bee orchid**	VU
Ophrys bombyliflora Link	**Bumble bee orchid**	VU
Ophn/s fuciflora Haller	**Late spider orchid**	VU
Ophrysfusca Link	**Brovvn bee orchid**	VU
Ophrys insectifem L.	**Fly orchid**	VU
Ophn/s sphegodes Mili.	**Early spider orchid**	VU
Orchis coriophom L.	**Bug orchid**	VU
Orchis militaris L.	**Military orchid**	VU
Orchis pallens L.	**Bljedoliki kaćun / Pale orchid**	VU
Orchis papilionacea L.	**Pink butterfly orchid**	VU
Orchis provincialis Balb.	**Provence orchid**	VU
Orchis purpurea Huds.	**Lady orchid**	VU
Orchis quadripunctata Cirillo ex Ten.	**Four-spotted orchid**	VU
Orchis sirnici Lam.	**Monkey orchid**	VU
Orchis tridentata Scop.	**Toothed orchid**	VU
Orchis ustulata L.	**Burnt orchid**	VU
Parapholis incurva (L.) C. E. Hubb.	**Curly ryegrass**	VU
Platanthera bifolia (L.) Rich.	**Lesser butterfly orchid**	VU
Polygonatum latifolium (Jacq.) Desf.	**Broadleaf Solomon's seal**	VU
Salsola kali L.	**Prickly saltvvort**	VU
Salsola soda L.	**Saltvvort**	VU
Serapias vomemcea (Burm.) Briq.	**Long-lipped serapias**	VU

Stratiotes aloides L.		**VVater soldier**	VU
Suaeda maritima (L.) Dumort.		**Annual seablite**	VU
Suaeda vera J. F. Gmelin in L.		**Shrubby seablite**	VU
Adenophora liliifolia (L.) A. DC.		**Ladybells**	NT (near threatened)
Adiantum capillus-veneris L.		**Maidenhair fern**	NT
Aegilops cylindrica Host		**Jointed goatgrass**	NT
Aegilops neglecta Req. ex Bertol.		**Lily blue grass**	NT
Aegilops uniaristata Vis.		**One-avvned aegilops**	NT
Aethionema saxatile (L.) R. Br. ssp. scopulorum (Ronniger) I. A. Anderson, A. Carlstrom,.Franzen, Karlen et H. Nybom*		**Basket of gold**	NT
Agrostis canina L.		**Velvet bent**	NT
Allium horvatii Lovrić*	E N D E M I C	**Horvat's onion**	NT
Alyssum repens Baumg. ssp. transsilvanicum (Schur)		**Transilvanian madvvort**	NT
Alyssum tortuosum VVilld.		**Tortuous madvvort**	NT
Alyssum zuierzbickii Heuff.		**VVierzbick's madvvort**	NT
Ampelodesmos mauritanica (Poir.) T. Durand et Schinz		**Mauritanian grass**	NT
Anacamptis pyramidalis (L.) Rich.		**Pvramidal orchid**	NT
Anthyllis barba-jovis L.		**Jupiter's beard**	NT
Acjuilegia dinarica G. Beck		**Dinarian columbine**	NT
Aquilegia grata Zimmeter		**Grateful columbine**	NT
Aauilegia kitaibelii Schott		**Kitaibeli's columbine**	NT
Arbutus andrachne L.		**Eastern strawberry-tree**	NT
Arbutus x andrachnoides Link		**Strawberry-tree**	NT
Aristolochia croatica Horvatić*	E N D E M I C	**Croatian birthvvort**	NT
Armoracia macrocarpa (VValdst. et Kit.) Kit. ex Baumg.		**Large-fruited scurvygrass**	NT
Arum nigrum Schott		**Black arum**	NT
Arum orientale M. Bieb. ssp. longispathum (Rchb.) EngL*	E N D E M I C	**Oblong Lords-and-Ladies**	NT
Asparagus tenuifolius Lam.		**Thin-leaved asparagus**	NT
Asperula beckiana Degen		**Dinaric squinancy vvort**	NT
Asperula staliana Vis.*	E N D E M I C	**Stali's squinancy vvort**	NT
Asperula zvettsteinii Adamović*	E N D E M I C	**VVettstein's squinancy vvort**	NT
Asplenium hybridum (Milde) Bange*	E N D E M I C	**Kvarner spleenwort**	NT
Astragalus muelleri Steud. et Hochst.		**Mueller's milkvetch**	NT
Aubneta columnae Guss. ssp. croatica (Schott, Nyman et Kotschy) Mattf.		**Croatian lilacbush**	NT
Aurinia leucadea (Guss.) C. Koch		**White alyssum**	NT
Aurinia petraea (Ard.) Schur		**Goldentuft**	NT
Aurinia saxatilis (L.) Desv. ssp. saxatilis		**Basket of gold**	NT

Avellinia michelii (Savi) Pari.		**Micheli's avelinia**	NT
Berberis croatica Horvat		**Croatian barberry**	NT
Brachiaria eruciformis (Sibth. et Sm.) Griseb.		**Svveet signalgrass**	NT
Brassica botterii Vis.*	E N D E M I C	**Botteri's cabage**	NT
Brassica cazzae Ginzb. et Teyber*	E N D E M I C	**Sušac mustard**	NT
Brassica incana Ten.		**Shortpod mustard**	NT
Brassica rnollis Vis.*	E N D E M I C	**Soft mustard**	NT
Briza minor L.		**Little quakinggrass**	NT
Butomus umbellatus L.		**Flowering rush**	NT
Campanula carnica Schiede ex Mert. et Koch ssp. carnica		**Red bellflower**	NT
Campanula fenestrellata Feer		**Window bellflower**	NT
Campanula istriaca Feer		**Istrian bellflovver**	NT
Campanula justiniana VVitasek		**Justinian's bellflovver**	NT
Campanula portenschlagiana Schult.		**Portenschlagian's bellflower**	NT
Campanula poscharskyana Deg.		**Poscharskvan's bellflovver**	NT
Campanula tommasiniana C. Koch		**Tomasini's bellflovver**	NT
Campanula velebitica Borbas		**Velebit bellflovver**	NT
Campanula zvaldsteiniana Schult.		**Waldstein's bellflovver**	NT
Cardamine carnosa Waldst. et Kit.		**Mountain bittercress**	NT
Cardamine maritima Port. ex DC.		**Sea bittercress**	NT
Carex acutiformis Ehrh.		**Lesser pond sedge**	NT
Carex buekii Wimm.		**Buek's sedge**	NT
Carex ferruginea Scop.		**Kerner's sedge**	NT
Carex mucronata AH.		**Pointed sedge**	NT
Carex pihdifera L.		**Pili sedge**	NT
Carex pmecox Schreb.		**Early sedge**	NT
Carlina fiumensis Simonk.*	E N D E M I C	**Rijeka carline**	NT
Centaurea alpina L.		**Alpine knapvveed**	NT
Centaurea biokovensis Teyber*	E N D E M I C	**Biokovo knapvveed**	NT
Centaurea brachtii Rchb.		**Bracht's knapvveed**	NT
Centaurea crithmifolia Vis.*	E N D E M I C	**Glandy knapvveed**	NT
Centaurea cuspidata Vis.*	E N D E M I C	**Pointed knapvveed**	NT
Centaurea dalmatica A. Kern.*	E N D E M I C	**Dalmatian knapvveed**	NT
Centaurea friderici Vis.*	E N D E M I C	**Palagruža knapvveed**	NT
Centaurea glaberrima Tausch		**Bare knapvveed**	NT
Centaurea incompta Vis.*	E N D E M I C	**Derventa knapvveed**	NT

Centaurea jabukensis Ginzb. et Teyber*	E N D E M I C	**Jabuka knapvveed**	NT
Centaurea radichii Plazibat*	E N D E M I C	**Radic's knapvveed**	NT
Centaurea ragusina L.*	E N D E M I C	**Dubrovnik knapvveed**	NT
Centaurea spinosociliata Seenus		**Spiny knapvveed**	NT
Centaurea stenolepis A.Kern. ssp. joannis Karpati		**Narrovv-scaled knapvveed**	NT
Centaurea visianiana Plazibat*	E N D E M I C	**Visiani's knapvveed**	NT
Centaurea x pomoensis Teyber		**Knapvveed**	NT
Centaurea x velinacensis Degen et Lengyel		**Velinac knapvveed**	NT
Cephalanthera damasonium (Mili.) Druce		**White helleborine**	NT
Cephalanthera longifolia (L.) Fritsch		**Narrovv-leaved helleborine**	NT
Cephalanthera rubra (L.) Rich.		**Red helleborine**	NT
Cerastium dinaricum G. Beck et Szysz.		**Dinarian mouse ear**	NT
Chaerophyllum coloratum L.		**Coloured chervil**	NT
Chenopodium bonus-henricus L.		**Good King Henry**	NT
Convolvulus cneorum L.		**Silverbush**	NT
Corydalis acaulis (VVulfen) Pers.		**White fumevvort**	NT
Crypsis aculeata (L.) Aiton		**Spiny pricklegrass**	NT
Cn/psis alopecuroides (Piller et Mitterp.) Schrad.		**Foxtail pricklegrass**	NT
Cn/psis schoenoides (L.) Lam.		**Svvamp pricklegrass**	NT
Cijdamen purpurascens Mili.		**Savvbread**	NT
Cydamen repandum Sibth. et Sm.		**Spring sawbread**	NT
Daphne laureola L.		**Spurge laurel**	NT
Daphne mezereum L.		**Mezereon**	NT
Dianthus velebiticus Borbas op. Kulcz		**Velebit pink**	NT
Digitalis grandiflora Mili.		**Yellow foxglove**	NT
Doronicum orientale Hoffm.		**Leopardsbane**	NT
Dracuncidus vulgaris Schott		**Common dracunculus**	NT
Edraianthus pumilio (Schult.) A. DC*	E N D E M I C	**Dvvarf bellfkrvver**	NT
Edraianthus serpyllifoHus (Vis.) A. DC*	E N D E M I C	**Crawling bellflower**	NT
Elymus pycnanthus (Godr.) Melderis		**Sea couch**	NT
Ephedrafragilis Desf. ssp. campylopoda (C. A. Mayer) Asch. et Graeb.		**Mediterranean cypress**	NT
Ephedra major Host		**Mediterranean ephedra**	NT
Eranihis hiemalis (L.) Salisb.		**VVinter aconite**	NT
Festuca trachyphylla (Hack.) Krajina		**Hard fescue**	NT
Fibigia tric/uetra (DC.) Boiss. ex Prantl*		**Fibigia**	NT
Frankenia pulverulenta L		**European seaheath**	NT

Gentiana asclepiadea L.		**Willow gentian**	NT
Gentiana clusii Perr. et Song.		**Clusi's gentian**	NT
Gentiana dinarica Beck		**Dinaric gentian**	NT
Globularia alypum L.		**Shrub globularia**	NT
Goniolimon dalmaticum (C. Presi.) Reichb.		**Dalmatian starice**	NT
Helleborus hercegovinus Martinis		**Herzegovinian hellebore**	NT
Heracleum sphondylium L. ssp. orsinii (Guss.) H. Neumayer		**Orsini's hogvveed**	NT
Heteropogon contortus (L.) P. Beauv. ex Roem. et Schult.		**Tanglehead grass**	NT
Himantoglossum adriaticum H. Baumann		**Adriatic lizard orchid**	NT
Iberis pruitii Tineo		**Pruit's candvtuft**	NT
Inula salicina L. ssp. aspera (Poir.) Hayek		**VVillovvleaf yellowhead**	NT
Iris adriatica Trinajstic ex Mitic		**Adriatic iris**	NT
Iris variegata L.		**Hungarian iris**	NT
Leersia oryzoides (L.) Sw.		**Cut-grass**	NT
Limonium anfmctum (Salmon) Salmon		**Flexible sea lavender**	NT
Limonium vestitum (Salmon) Salmon*	E N D E M I C	**Coiled sea lavender**	NT
Linum capitatum Kit. ex Schultes		**Flax height**	NT
Lycium europaeum L.		**Box thorn**	NT
Matthiola incana (L.) R. Br.		**Hoary stock**	NT
Nardssus tazetta L.		**Cream nardssus**	NT
Neotinea maculata (Desf.) Stearn		**Dense-flowered orchid**	NT
Ophioglossum vulgatum L.		**Adder's tongue**	NT
Orchis laxiflom Lam.		**Loose-flowered orchid**	NT
Orchis mascula (L.) L.		**Early purple orchid**	NT
Orchis morio L.		**Green-winged orchid**	NT
Paeonia mascula (L.) Miller		**Peony**	NT
Paeonia officinalis L.		**Common peony**	NT
Peltaria alliacea Jacq.		**Garlic cress**	NT
Phalaris canariensis L.		**Annual canarygrass**	NT
Phlomis fruticosa L.		**Shrubby Jerusalem sage**	NT
Phyteuma pseudoorbiculare Pant.		**Round-headed Rampion**	NT
Pinus nigra Arnold ssp. dalmatica (Vis.) Franco		**Dalmatian black pine**	NT
Platanthera chlorantha (Custer) Rchb.		**Greater butterfly orchid**	NT
Poa palustris L.		**Marsh meadovvgrass**	NT
Polygala chamaebuxus L.		**Shrubby milkvvort**	NT
Polypogon maritimus VVilld.		**Mediterranean rabbitsfoot**	NT
Polypogon monspeliensis (L.) Desf.		**Annual rabbitsfoot grass**	NT
Primula auricula L.		**Bear's ears**	NT

Primula kitaibeliana Schott*	E N D E M I C	**Kitaibeli's primrose**	NT
Prinuda veris L. ssp. columnae (Ten.) Ludi		**Cowslip primrose**	NT
Puccinellia fasciculata (Ton.) E. P. Bicknell		**Borrer's saltmarsh-grass**	NT
Pulsatilla alpina (L.) Delarbre		**Alpine pasqueflower**	NT
Rhamnus intermedius Steud. et Hohst.		**Medium buchthorn**	NT
Rhododendron hirsutum L.		**Hairy azalea**	NT
Ruscus hi/poglossum L.		**Ruscus**	NT
Salvia brachyodon Vandas		**Serrate sage**	NT
Salvia fruticosa Mili.		**Greek sage**	NT
Salvia peloponnesiaca Boiss. et Heldr.		**Peloponesian clary**	NT
Salvinia natans (L.) AH.		**Floating watermoss**	NT
Scandix pecten-veneris L. ssp. pecten-veneris		**Shepherd's needle**	NT
Scilla litardierei Breistr.		**Italian squill**	NT
Scirpus cernuus Vahl		**Fiber optic bulrush**	NT
Scirpus holoschoenus L.		**Cluster headed clubrush**	NT
Scirpus litoralis Schrad.		**Bulrush**	NT
Scirpus maritimus L.		**Seaside clubrush**	NT
Seseli malyi A. Kern.		**Maly's moon carrot**	NT
Seseli tomentosum Vis.*	E N D E M I C	**Tomentose moon carrot**	NT
Sesleria sadlerana Janka		**Sadler's moor grass**	NT
Sibiraea altaiensis (Laxm.) C. K. Schneid. ssp. croatica		**Croatian sibirea**	NT
Silene retzdorffiana (K. Maly) H. Neumayer		**Retzdorfs campion**	NT
Silybum marianum (L.) Gaertn.		**Blessed milkthistle**	NT
Sorbus austnaca (Beck) Hedl. ssp. croatica Karpati		**Croatian vvhitebeam**	NT
Sternbergia lutea (L.) Ker Gawl. ex Spreng,		**Winter daffodil**	NT
Styrax officinalis L.		**Plain snovvbell**	NT
Teucriumfruticans L.		**Shrubby germander**	NT
Thlaspi dinaricum Degen et Janch.		**Dinarian penny cress**	NT
Thymelaea hirsuta (L.) Endl.		**Thymelaea fleshy-leaf**	NT
Trapa natans L.		**Water chestnut**	NT
Trollius europaeus L.		**Mountain globe-flovver**	NT
Tulipa praecox Ten.		**Early tulip**	NT
Tulipa sylvestris L.		**Wild tulip**	NT
Vemtrum lobelianum Bernh.		**VVhite false helleborine**	NT
Veronica agrestis L.		**Green field speedwell**	NT
Veronica opaca Fr.		**Dark speedwell**	NT
Veronica verna L.		**Spring speedvvell**	NT
Viola elegantula Schott		**Elegant violet**	NT
Vulpiafasciculata (Forssk.) Samp.		**Dune fescue**	NT

Vulpia ligustica (Ali.) Link	**Ligurian fescue**	NT
Aceras anthropophorum (L.) W. T. Aiton	**Man orchid**	DD (data deficient)
Achillea ptarmica L.	**Sneezeweed**	DD
Achnatherum calamagrostis (L.) P. Beauv.	**Silver spear grass**	DD
Aconitum angustifolium Bernh. ex Reichenb.	**Narrow-leaved monkshood**	DD
Adonis flammea Jacq.	**Burning pheasant's eye**	DD
Adonis vernalis L.	**Proljetni gorocvijet / Yellow**	DD
Agrostis alpina Scop.	**Alpine bent**	DD
Agrostis castellana Boiss. et Reut.	**Highland bent**	DD
Agrostis parlatoeri Breistr.	**Bent grass**	DD
Aira caryophyllea L.	**Silver hairgrass**	DD
Aira praecox L.	**Early hairgrass**	DD
Aldrovanda vesicidosa L.	**Waterwheel Plant**	DD
Allium suaveolens Jacq.	**Fragrant onion**	DD
Altheniafiliformis Petit	**Thread-like althenia**	DD
Alysswn montanum L. ssp. gmelinii (Jord.) Em. Schmid	**Mountain madwort**	DD
Andropogon distachyos L.	**Gamba grass**	DD
Angelica palustris (Besser) Hoffm.	**Marsh angelica**	DD
Anthoxanthum aristatum Boiss.	**Annual vernalgrass**	DD
Anthoxanthum ovatum Lag.	**Oval vernalgrass**	DD
Aphanes microcarpa (Boiss. et Reut.) Rothm.	**Slender parslev piert**	DD
Apium repens (Jacq.) Lag.	**Creeping marshvvort**	DD
Arenaria orbicularis Vis.	**Sandvvort**	DD
Artemisia santonicum L.	**Holly vvormvvood**	DD
Arundo plinii Turra	**Dvvarf reed**	DD
Asperula hercegovim Degen	**Hercegovinian vvoodraff**	DD
Aster sedifolius L. ssp. illyricus (Murb.) Merxm.	**Illvrian aster**	DD
Asteriscus aquaticus (L.) Less.	**Golden star**	DD
Avenafatua L.	**Wild oat**	DD
Avena strigosa Schreb.	**Lopsided oat**	DD
Biscutella laevigata L. ssp. gmcilis Mach.-Laur.	**Buckler mustard**	DD
Brachypodium phoenicoides (L.) Roem. et Schult.	**Thinleaf false brome**	DD
Brassica rupestris Raf.	**Mustard**	DD
Bromus commutatus Schrad.	**Meadovv brome**	DD
Bromus diandrus Roth	**Ripgut brome**	DD
Bromus pannonicus Kumm. et Sendtn.	**Pannonian brome**	DD
Bromus scoparius L.	**Broom brome**	DD
Cachn/s ferulacea (L.) Calestani	**Yellow cachrys**	DD

Callitriche brutia Petagna	**Pedunculate vvater starvvort**	DD
Callitriche cophocarpa Sendtn.	**Blunt-edged vvater starvvort**	DD
Callitriche hamulata Kiitz. ex Koch	**Intermediate vvater starvvort**	DD
Callitriche hermaphroditica L.	**Autumnal vvater starvvort**	DD
Callitriche obtusangula Le Gali	**Blunt-fmited vvater starvvort**	DD
Callitriche platycarpa Kiitz.	**Various-leaved vvater starvvort**	DD
Callitriche stagnalis Scop.	**Pond vvater starvvort**	DD
Callitriche truncata Guss. ssp. truncata	**Short-leaved vvater starvvort**	DD
Campanula Hercegovina Degen et Fiala	**Hercegovinian bellflovver**	DD
Campanula moravica (Spitzn.) Kovanda	**Moravian bellflower**	DD
Campanula thyrsoides L. ssp. carniolica (Siind.) Podlech	**Carnic bellflovver**	DD
Campanula trachelium L. ssp. trachelium	**Nettle-leaved bellflovver**	DD
Carduus pycnocephalus L. ssp. pycnocephalus	**Italian plumeless thistle**	DD
Carex appropinquata Schumach.	**Fibrous tussock sedge**	DD
Carex capillaris L.	**Hair sedge**	DD
Carex cespitosa L.	**Hassock sedge**	DD
Carex curta Gooden.	**VVhite sedge**	DD
Carex depaupemta Curtis ex With.	**Starved vvood sedge**	DD
Carex diandra Schrank	**Lesser tussock sedge**	DD
Carex dioica L.	**Dioecious sedge**	DD
Carex disticha Huds.	**Brovvn sedge**	DD
Carex elongata L.	**Elongated sedge**	DD
Carex ericetorum Pollich	**Rare spring sedge**	DD
Carex hordeistkhos Vili.	**Barley sedge**	DD
Carex limosa L.	**Bog sedge**	DD
Carex liparocarpos Gaudin	**Glossv sedge**	DD
Carex michelii Host	**Micheli's sedge**	DD
Carex rupestris Ali.	**Rock sedge**	DD
Carex strigosa Huds.	**Thin-spiked wood sedge**	DD
Carex supina VVilld. ex VVahlenb.	**Weak sedge**	DD
Carlina acanthifolia AH. ssp. acanthifolia	**Acanthus-leaved carline thistle**	DD
Cenchrus capitatus L.	**Capitate sandbur**	DD
Centaurea nicolai Bald.	**Nicolai's knapweed**	DD
Centaurea nigrescens VVilld. ssp. nigrescens	**Tyrol knapvveed**	DD
Centaurea spinosociliata Seenus ssp. tommasinii (A.Kern.) Dostal	**Tomasini's knapvveed**	DD
Centaurea triumfettii Ali. ssp. triumfettii	**Squarrose knapweed**	DD
Centunculus minimus L.	**Chaffvveed**	DD

Ceratocephala fakata (L.) Pers.	**Bur buttercup**	DD
Ceratocephala testiculata (Crantz) Roth	**Curveseed buttervvort**	DD
Cerinthe glabra Mili. ssp. glabra	**Yellow candy**	DD
Chenopodium ambrosioides L.	**Mexican tea**	DD
Chenopodium botrys L.	**Jerusalem oak goosefoot**	DD
Chenopodium capitatum (L.) Ambrosi	**Strawberry-spinach**	DD
Chenopodium chenopodioides (L.) Aellen	**Saltmarsh goosefoot**	DD
Chenopodium ficifolium Sm.	**Fig-leaved goosefoot**	DD
Chenopodium foliosum Asch.	**Leafy goosefoot**	DD
Chenopodium giganteum D. Don	**Tree spinach**	DD
Chenopodium multifidum L.	**Cutleaf goosefoot**	DD
Chenopodium murale L.	**Nettle-leaved goosefoot**	DD
Chenopodium opulifolium Schrader ex Koch et Ziz	**Seaport goosefoot**	DD
Chenopodium probstii Aellen	**Probst's goosefoot**	DD
Chenopodium rubnim L.	**Red goosefoot**	DD
Chenopodium schraderianum Schultes in Roemer et Schultes	**Schrader's goosefoot**	DD
Chenopodium strictum Roth	**Late flovvering goosefoot**	DD
Chenopodium suecicum J. Murr.	**Swedish goosefoot**	DD
Chenopodium urbicum L.	**Upright goosefoot**	DD
Chenopodium vulvaria L.	**Stinking goosefoot**	DD
Cicendia filiformis (L.) Delarbre	**Yellow centaurv**	DD
Cirsium brachycephalum Jur.	**Tiny thistle**	DD
Colchicum arenarium Waldst. et Kit.	**Sand saffran**	DD
Consolida incana (E. D. Clarke) Munz	**Sharp larkspur**	DD
Consolida uechtriziana (Panč.) Sod	**Uechtriz's larkspur**	DD
Corispermum canescens Kit. in Schultes	**Grey bugseed**	DD
Corispermum nitidum Kit. in Schultes	**Shiny bugseed**	DD
Crambe tataria Sebedk	**Tartarian sea kale**	DD
Crepis mollis (]acq.) Asch.	**Northern hawk's beard**	DD
Crepis pantocsekii (Vis.) Latzel	**Pantocsek's hawk's beard**	DD
Cymodocea nodosa (Ucria) Asch.	**Knotty seagrass**	DD
Cyperus difformis L.	**Variable flatsedge**	DD
Cyperus esculentus L.	**Chufa flatsedge**	DD
Dactylorhiza incarnata (L.) Soo ssp. cruenta O. F. Muli.	**Early marsh orchid**	DD
Damasonium polyspermum Cosson	**Thrumwort**	DD
Danthoniastrum compactum (Boiss. et Heldr.) Holub	**Compact oat**	DD
Deschampsia cespitosa (L.) P. Beauv. ssp. cespitosa	**Tufted hairgrass**	DD
Dianthus armeria L. ssp. armeria	**Deptford pink**	DD
Dianthus collinus VValdst. et Kit. ssp. collinus	**Hill pink**	DD

Dianthus serotinus VValdst. et Kit.		**Pointed leaved pink**	DD
Dianthus viridescens Clementi		**Greenish pink**	DD
Digitaria ciliaris (Retz.) Koeler		**Southern crabgrass**	DD
Vigitaria ischaemum (Schreb.) Muhi.		**Smooth crabgrass**	DD
Diphasiastnim complanatum (L.) Holub		**Issler's clubmoss**	DD
Dryas octopetala L.		**Mountain avens**	DD
Ecballium elaterium (L.) A. Rich.		**Squirting cucumber**	DD
Echinops ritro L. ssp. ruthenicus (M. Bieb.) Nyman		**Southern globethistle**	DD
Echinops sphaerocephalus L. ssp. albidus (Boiss. et Spruner) Kožuharov		**Great globethistle**	DD
Edraianthus dalmaticus (A. DC.) A. DC*	E N D E M I C	**Dalmatian rockbell**	DD
Edraianthus dinaricus (A.Kern.) Wettst*		**Dinaric rockbell**	DD
Elatine alsinastrum L.		**Waterwort**	DD
Elatine hexandm (Lapierre) DC.		**Six-stamened waterwort**	DD
Elatine hydropiper L.		**Eight-stamened waterwort**	DD
Elatine triandra Schkuhr		**Long stem waterwort**	DD
Eleocharis quinqueflora (Hartmann) O. Schwarz		**Few-flowered spike-rush**	DD
Elymus elongatus (Host) Runemark		**Elongated wheatgrass**	DD
Equisetum variegatum Schleich.		**Variegated horsetail**	DD
Eudidium syriacum (L.) R. Br.		**Svrian mustard**	DD
Euphorbia pamlias L.		**Sea spurge**	DD
Euphorbia rigida M. Bieb.		**Narrow leaved glaucous spurge**	DD
Euphorbia seguieriana Neck.		**Spurge**	DD
Festuca alpina Suter		**Alpine fescue**	DD
Festuca arundinacea Schreb. ssp.fenas (Lag~.) Arcang.		**Tali fescue**	DD
Festuca paniculata (L.) Schinz et Thell.		**Paniclose fescue**	DD
Festuca quadriflom Honck.		**Blue fescue grass**	DD
Festuca stenantha (Hack.) K. Richt.		**Narrovv-spiked fescue**	DD
Festuca stricta Host		**Tightened fescue**	DD
Festuca trichophylla (Ducros ex Gaudin) K. Richt.		**Thin-leaved fescue**	DD
Galium boreale L.		**Northern bedstravv**	DD
Genista holopetala (Koch) Bald.		**Entire-petalled gorse**	DD
Gentiana acaulis L.		**Stemless gentian**	DD
Gemnium palustre L.		**Marsh cranesbill**	DD
Geranium pratense L.		**Meadow cranesbill**	DD
Gladiolus palustris Gaudin		**Marsh gladiolus**	DD
Groenlandia densa (L.) Fourr.		**Opposite-leaved pondvveed**	DD
Gymnadenia odomtissima (L.) Rich.		**Short-spurred fragrant orchid**	DD

Gypsophilafastigiata L.		**Sand babvsbreath**	DD
Helianthernum canum (L.) Baumg. ssp. canum		**Hoary rock rose**	DD
Heliđotrichon sempervirens (Vili.) Pilg.		**Blue oatgrass**	DD
Herminium monorchis (L.) R. Br.		**Musk orchid**	DD
Hladnikia pastinacifolia Rchb.		**Hladnikia**	DD
Hordeum hystrix Roth		**Mediterraneanbarlev**	DD
Hyacinthella dalmatica (Baker) Chouard*	E N D E M I C	**Dalmatian hyacinth**	DD
Hymenolobus procumbens (L.) Nutt.		**Oval purse**	DD
Hymenophyllum tunbrigense (L.) Sm.		**Tunbridge filmy fern**	DD
Hyssopus officinalis L.		**Hyssop**	DD
Iberis linifolia L. ssp. linifolia		**Flax-leaved candytuft**	DD
Juncus acutiflorus Ehrh. ex Hoffm.		**Sharp-flowered rush**	DD
Juncus alpinoarticulatus Chaix		**Alpine rush**	DD
juncus anceps Laharpe		**Sharp-leaved rush**	DD
juncus capitatus VVeigel		**Dwarf rush**	DD
Juncus filiformis L.		**Thread rush**	DD
Juncus fontanesii Gay		**Spring rush**	DD
Juncus littoralis C. A. Mey.		**Coastal rush**	DD
Knautia illyrica Beck		**Illyrian scabious**	DD
Knautia pectinata Ehrend.		**Crested scabious**	DD
Knautia sarajevensis (Beck) Szabo		**Sarajevo Scabious**	DD
Knautia travnicensis (Beck) Szabo		**Travnik Scabious**	DD
Knautia velebitica Szabo*	E N D E M I C	**Velebit Scabious**	DD
Lactuca auercina L. ssp. quercina		**Oakleaf letruce**	DD
Lamarckia aurea (L.) Moench		**Goldentop grass**	DD
Lathyrus angulatus L.		**Angled pea**	DD
Lathyrus palustris L.		**Marsh pea**	DD
Lathyrus pannonicus Qacq.) Garcke ssp. pannonicus		**Pannonian pea**	DD
Leucanthemum chloroticum A. Kern. et Murb.		**Green daisy**	DD
Limonium oleifolium Miller		**Olive-leaved sea lavender**	DD
Linaria chalepensis (L.) Mili.		**VVhite toadflax**	DD
Linaria microsepala A. Kern.		**Tiny-sepaled toadflax**	DD
Linum elegans Spruner ex Boiss.		**Elegant flax**	DD
Liparis loeselii Rich.		**Fen orchid**	DD
Littorella uniflora (L.) Asch.		**Shoreweed**	DD
Lloydia serotina (L.) Rchb.		**Alp lily**	DD
Lolium remotum Schrank		**Hardy ryegrass**	DD
Lolium subulatum Vis.*	E N D E M I C	**VVimmera ryegrass**	DD

Ludiuigia palustris (L.) Elliott		Hampshire purslane	DD
Luronium natans (L.) Rafrn.		**Floating water-plantain**	DD
Malaxis monophyllos (L.) Sw.		**VVhite adder's mouth**	DD
Malus iflorentina (Zuccagni) C. K. Schneid.		**Florentine crabapple**	DD
Medicago marina L.		**Coastal medick**	DD
Medicago pironae Vis.		**Piron's medick**	DD
Melica altissima L.		**Siberian melicgrass**	DD
Melica bauchinii Ali.		**Bauchin's melicgrass**	DD
Melica transsilvanica Schur		**Transilvanian melicgrass**	DD
Micromeria kerneri Murb.		**Kerner's micromeria**	DD
Milium vernale M. Bieb.		**Spring milletgrass**	DD
Montia fontana L.		**Blinks**	DD
Myosotis incrassata Guss.		**Swallen forget me not**	DD
Myosotis ramosossima Rochel ssp. mmosossima		**Early forget me not**	DD
Nigella sativa L.		**Black cumin**	DD
Nigritella nigra (L.) Rchb.		**Black vanilla orchid**	DD
Nonea pulla DC.		**Rusonunna**	DD
Omalotheca norvegica (Gunn.) Sch. Bip. et F. W. Schultz		**Norvegian cudweed**	DD
Onosma arenaria Waldst. et Kit. ssp. arenaria		**Purple goldendrop**	DD
Ophn/s archipelagi Golz et H. R. Reinhard		**Island orchid**	DD
Ophn/s scolopax Cav.		**Woodcock orchid**	DD
Ophn/s sphegodes Mili. ssp. mammosa (Desf.) Soo ex E. Nelson		**Early Spider orchid**	DD
Ophnjs tetraloniae W. P. Teschner		**Small-flowered bumble-bee orchid**	DD
Ophrys zflavicans Vis.		**Yellow orchid**	DD
Orchis coriophora L. ssp. coriophora		**Bug orchid**	DD
Orchis laxiflora Lam. ssp. elegans (Heuff.) Soo		**Elegant orchid**	DD
Orchis laxiflora Lam. ssp. palustris (Jacq.) Bonnier et Layens		**Marsh orchid**	DD
Orchis morio L. ssp. morio		**Green-winged orchid**	DD
Orchis provincialis Balb. ssp. pauciflora (Ten.) Camus		**Few-flowered orchid**	DD
Orchis tridentata Scop. ssp. tridentata		**Trident orchid**	DD
Ornithogalum visianicum Tomm.*	E N D E M I C	**Visiani's star of Bethlehem**	DD
Oxytropis purpurea (Bald.) Markgr.		**Purple oxytropis**	DD
Parapholisfiliformis (Roth) C. E. Hubb.		**Thread-like hard grass**	DD
Parvotrisetum myrianthum (Bertol.) Chrtek		**Mnogocvjetna zobika**	DD
Pedicidaris friderici-augusti Tomm.		**Frederick-Augustus' lousevvort**	DD
Pedicularis palustris L.		**Marsh lousevvort**	DD

Petroselinum segetum (L.) Koch	**Corn parsley**	DD
Pencedanum coriaceum Rchb.	**Leathery Hog's fennel**	DD
Phalaris acjuatka L.	**Bulbous canarvgrass**	DD
Phalaris bmchystachys Link	**Shortspike canarygrass**	DD
Phalaris coerulescens Desf.	**Sunolgrass**	DD
Phalaris minor Retz.	**Littleseed canarvgrass**	DD
Phalaris paradoxa L.	**Hood canarygrass**	DD
Phleum alpinum L.	**Alpine cat's tail**	DD
Phleum arenarium L.	**Sand cat's tail**	DD
Phleum paniculatum Huds.	**British timothy**	DD
Physoplexis comosa (L.) Schur	**Ornamented rampion**	DD
Pilularia globulifera L.	**Pillvvort**	DD
Piptatherum paradoxum (L.) P. Beauv.	**Riče grass**	DD
Plantago schzvarzenbergiana Schur	**Schwarzenberg's plantain**	DD
Poa badensis Haenke ex Willd.	**Baden meadovvgrass**	DD
Poa cenisia AH.	**Cenisian meadowgrass**	DD
Poa chaixii Vili.	**Broadleaf meadovvgrass**	DD
Poa hybrida Gaudin	**Hybrid meadovvgrass**	DD
Poa minor Gaudin	**Little meadovvgrass**	DD
Poa perconcinna J. R. Edm.	**Meadovvgrass**	DD
Poa pumila Host	**Dvvarf meadovvgrass**	DD
Poa remota Forselles	**Meadovvgrass**	DD
Polycnemum arvense L.	**Field needleleaf**	DD
Pohjcnemum majus A. Braun	**Giant needleleaf**	DD
Pohjgala alpestris Rchb. ssp. croatica (Chodat) Hayek	**Croatian milkvvort**	DD
Pohjgonum salicifolium Brouss. ex Willd.	**Knotvveed**	DD
Polypogon viridis (Gouan) Breistr.	**Beardless rabbitsfoot grass**	DD
Posidonia oceanica (L.) Delile	**Mediterranean tapevveed**	DD
Potamogeton alpinus Balb.	**Red pondvveed**	DD
Potamogeton compressus L.	**Grass-vvrack pondvveed**	DD
Potamogeton polygonifolius Pourr.	**Bog pondvveed**	DD
Potentilla carniolica A. Kern.	**Carniolan rive finger**	DD
Primida carniolica Jacq.	**Carniolan primrose**	DD
Primida umlfeniana Schott	**VVulfen's primrose**	DD
Pseudognaphalium luteoalbum (L.) Hilliard et B. L. Burtt	**Jersey cudvveed**	DD
Pseudorchis albida (L.) A. Love et D. Love	**Small vvhite orchid**	DD
Puccinellia festuciformis (Host) Pari.	**Marsh alkaligrass**	DD

Pyrola rotundifolia L.	**Round leaved vvintergreen**	DD
Raphanus raphanistrum L. ssp. landra (Moretti ex DC.) Bonnier et Lavens	**VVild radish**	DD
Rumex maritimus L.	**Golden dock**	DD
Ruppia cirrhosa (Petagna) Grande	**Spiral tasselvveed**	DD
Ruppia maritima L.	**Beaked tasselvveed**	DD
Saccharum strictum (Host) Spreng.	**Narrovv plumegrass**	DD
Salicornia veneta Pignatti et Lausi	**Blue glassvvort**	DD
Salix daphnoides Vili.	**European violet-vvillovv**	DD
Salix hastata L.	**Halberd vvillovv**	DD
Sanguisorba officinalis L.	**Great burnet**	DD
Saxifraga exarata Vili. ssp. moschata (VVulfen) Cavill.	**Musky saxifrage**	DD
Saxifmga oppositifolia L.	**Purple saxifrage**	DD
Saxifraga sedoides L. ssp. prenja (Beck) Hayek	**Prenj saxifrage**	DD
Scheuchzeria palustris L.	**Rannoch rush**	DD
Scirpus lacustris L. ssp. tabernaemontani (C. C. Gmel.) Syme	**Glaucous bulrush**	DD
Scirpus radicans Schkuhr	**Creeping clubrush**	DD
Scorzonera purpurea L. ssp. rosea (VValdst. et Kit.) Nyman	**Purple viper's grass**	DD
Scrophularia bosniaca Beck	**Bosnian figvvort**	DD
Sempervivum dolomiticiim Facch.	**Dolomitic houseleek**	DD
Serratula lycopifolia (Vili.) A. Kern.	**Saw-wort**	DD
Sesleria argentea (Savi) Savi	**Silver moor grass**	DD
Sesleria caerulea (L.) Ard.	**Blue moor grass**	DD
Silene noctiflora L.	**Night-flowering catchflv**	DD
Sorbus aria (L.) Crantz ssp. lanifera (A Kerner) Jav.	**Common vvhitebeam**	DD
Sorbus borbasii Jav.	**Borbas' mountain ash**	DD
Sorbus velebitica Karpati	**Velebit vvhitebeam**	DD
Sparganium minimum Wallr.	**Little bur reed**	DD
Spartina maritima (Curtis) Fernald	**Small cordgrass**	DD
Spiraea cana Waldst. et Kit.	**Grey meadowsweet**	DD
Spiranth.es aestivalis (Poir.) Rich.	**Summer ladv's tresses**	DD
Stellaria alsine Grimm	**Bog stitchvvort**	DD
Stellaria palustris Retz.	**Marsh stitchvvort**	DD
Sternbergia colchiciflora VValdst. et Kit.	**Winter daffodil**	DD
Štipa capensis Thunb.	**Needle grass**	DD
Štipa capillata L.	**Feather grass**	DD
Štipa joannis Čelak.	**Needle grass**	DD

Suaeda maritima (L.) Dumort. ssp. maritima	**Annual sea blite**	DD
Succisella petteri (J. Kern. et Murb.) Beck	**Petter's succisella**	DD
Szvertia perennis L.	**Alpine bog svvertia**	DD
Teucrium arduini L.	**Arduin's germander**	DD
Thesium dollineri Murb. ssp. simplex (Velen.) Stoj. et Stef.	**Simple toadflax**	DD
Thymus serpyllum L. ssp. serpyllum	**Breckland garden thvmme**	DD
Trifolium cinctum DC.	**Coiled clover**	DD
Trifolium constantinopolitanum Ser.	**Turkish clover**	DD
Trifolium echinatum M. Bieb.	**Pricklv clover**	DD
Trifolium filiforme L.	**Suckling clover**	DD
Trifolium glomeratum L.	**Clustered clover**	DD
Trifolium incarnatum L. ssp. molineri (Hornem.) Syme	**Crimson clover**	DD
Trifolium leucanthum M. Bieb.	**VVhite-flovvered clover**	DD
Trifolium noricum VVulfen	**Noric clover**	DD
Trifolium physoides M. Bieb.	**Hard-rooted clover**	DD
Trifolium pignantii Fauche et Chaub.	**Pignanti's clover**	DD
Trifolium retusum L.	**Teasel clover**	DD
Trifolium sebastianii Savi	**Sebastiani's clover**	DD
Trifolium setiferum Boiss.	**Striped clover**	DD
Trifolium spumosum L.	**Mediterranean clover**	DD
Trifolium squarrosum L.	**Sea clover**	DD
Trifolium uniflorum L.	**Oneflovver clover**	DD
Trifolium velebiticum Degen	**Velebit clover**	DD
Trifolium vesiculosum Savi	**Arrovvleaf clover**	DD
Trisetum aureum Ten.	**Golden oatgrass**	DD
Turgenia latifolia (L.) Hoffrn.	**Broadleaf false carrot**	DD
Ti/p/za shuttlervorthii Koch et Sond.	**Shuttlevvorth cattail**	DD
Vaccinium uliginosum L.	**Bog bilberry**	DD
Vallisneria spiralis L.	**Tape grass**	DD
Veratrum album L.	**False helleborine**	DD
Verbascum chaixii Vili. ssp. austriacum (Schott ex Roem. et Schult.) Hayek	**Austrian mullein**	DD
V/ci« safr'raz L. ssp. amphicarpa (L.) Batt.	**Underground vetch**	DD
Vicw safrođ L. ssp. macrocarpa (Moriš) Arcang.	**Large-seeded vetch**	DD
Vida sativa L. ssp. sativa	**Common vetch**	DD
Viola palustris L. ssp. palustris	**Marsh violet**	DD
Viola uliginosa Besser	**Pond violet**	DD

Zostera marina L.	**Seaeelgrass**	DD

M A M M A L S

Latin Name	English Name	IUCN Category
Monachns momchiis (Hermarui, 1779)	**Mediterranean monk seal**	RE
Nannospalcuc leucodon (Nordmann, 1840)	**Lesser mole rat**	RE
Rhinolophus mehelyi Matschie, 1901	**Mehelv's horseshoe bat**	RE
Spermophilus citellus (Linnaeus, 1766)	**European souslik**	RE
Minlopterus schreibersi (Kuhl, 1817)	**Schreiber'sbat**	EN
Myotis capacdnii Bonaparte, 1837	**Long-fingered bat**	EN
Plecotus anstriacus (Fisher, 1829)	**Grey long-eared bat**	EN
Talpa cf. airopea (Linnaeus, 1758)	**European mole (Cres island only)**	EN
Tursiops truncatus (Montagu, 1821)	**Bottlenose dolphin**	EN
Myotis bechsteinii (Kuhl, 1817)	**Bechstein's bat**	VU
Rhinolophus blasii Peters, 1866	**Blasius' horseshoe bat**	VU
Rhinolophus eun/ale Blasius, 1853	**Mediterranean horseshoe bat**	VU
Canis lupus Linnaeus, 1758	**Wolf**	NT
Castorfiber Linnaeus, 1758	**European beaver**	NT
Chionomys nivalis (Martinis, 1842)	**Snow vole**	NT
Cricetus cricetus (Linnaeus, 1758)	**Common hamster**	NT
Dryomys nitedula (Pallas, 1778)	**Forest dormouse**	NT
Eliomys quercinus (Linnaeus, 1766)	**Garden dormouse**	NT
Lepus europaeus Pallas, 1778	**Brown hare**	NT
Lynx lynx (Linnaeus, 1758)	**Lynx**	NT
Micromys minutus (Pallas, 1771)	**Harvest mouse**	NT
Mus spicilegus Petenv, 1882	**Steppe mouse**	NT
Muscardinus avellanarius (Linnaeus, 1758)	**Common dormouse**	NT
Myotis emarginatus (M. Geoffrov, 1806)	**Geoffrov's bat**	NT
Myotis myotis (Borkhausen, 1797)	**Greater mouse-eared bat**	NT
Neomys anomalus Cabrera, 1907	**Miller's water shrew**	NT
Neomys fodiens (Pennant, 1771)	**Water shrevv**	NT
Nyctalus leisleri (Kuhl, 1817)	**Leisler's noctule**	NT
Rhinolophus ferrumequinum (Schreber, 1774)	**Greater horseshoe bat**	NT
Rhinolophus hipposideros (Bechstein, 1800)	**Lesser horseshoe bat**	NT
Rupicapra rupicapra Linnaeus, 1758	**Alpine chamois**	NT

Sdurus vulgaris Linnaeus, 1758	**Red squirrel**	NT
Ursus arctos Linnaeus, 1758	**Brovvn bear**	NT
Barbastella barbastellus (Schreber, 1774)	**Barbastelle**	DD
Delphirtus delphis Linnaeus, 1758	**Short-beaked common dolphin**	DD
Dinaromys bogdanovi (Martino, 1892)	**Balkan snow vole**	DD
Lutra lutra (Linnaeus, 1758)	**Otter**	DD
Myotis dasycneme (Boie, 1825)	**Pond bat**	DD
Nyctalus lasiopterus (Schreber, 1870)	**Greater noctule**	DD
Plecotus kolombatovici Đulić, 1980	**Kolombatovic's long-eared bat**	DD
Plecotus macrobidlaris Kuzjakin, 1965	**Alpine long-eared bat**	DD
Myoxusglis (Linnaeus, 1766)	**Edible dormouse**	LC (least concern)

B I R D S

Latin Name	English Name	IUCN Category
Aegypius monachus (L.)	**Black vulture**	RE-BP(breeding pop.)
Anas acuta L.	**Pintail**	RE-BP
Anas clypeata L.	**Shoveler**	RE-BP
Chlidonias niger (L.)	**Black tern**	RE-BP
Falco naumanni Fleischer	**Lesser kestrel**	RE-BP
Gelochelidon nilotica (Gm.)	**Gull-billed tern**	RE-BP
Geronticus eremita (L.)	**Bald ibis**	RE-BP
Neophron percnopterus (L.)	**Egvptian vulture**	RE-BP
Otis tarđa L.	**Great bustard**	RE-BP
Oxyum lencocephala (Scop.)	**VVhite-headed duck**	RE-NBP(non-breeding pop.)
Milvus milvus (L.)	**Red kite**	RE-BP
Pelecanus crispus (Bruch)	**Dalmatian pelican**	RE-BP
Pandion haliaetus (L.)	**Osprey**	RE- BP
Tetrao tetrix L.	**Black grouse**	RE- BP
Tetrax tetmx (L.)	**Little bustard**	RE -NBP
Acrocephalus melanopogon (Temm.)	**Moustached warbler**	CR-BP
Acjuila heliaca Savignv	**Imperial eagle**	CR-BP
Asio flammeus (Pont.)	**Short-eared owl**	CR-BP
Comcias gamdus L.	**Roller**	CR-BP
Falco biarmicus Temm.	**Lanner**	CR-BP

Falco cherrug Grey	**Saker**	CR-BP
Falco naumanni Fleicher	**Lesser kestrel**	CR-NBP
Gallinago gallinago (L.)	**Common snipe**	CR-BP
Gypsfulvns (Hablizl.)	**Griffon vulture**	CR-BP
Hieraaetus fasciatus (Vieill.)	**Bonelli's eagle**	CR-BP
Hieraaetus pennatus (Gm.)	**Booted eagle**	CR-/BP
Himantopus himantopus (L.)	**Black-winged stilt**	CR-BP
Mergus merganser L.	**Goosander**	CR-BP
Netta rufina (Pali.)	**Red-crested pochard**	CR-BP
Numenius tenuirostris Vieill.	**Slender-billed curlevv**	CR-FP
Plegadis falcinellus (L.)	**Glossv ibis**	CR-BP
Phalacrocorax pygmaens (Pali.)	**Pygmy cormorant**	CR-BP
Tn'nga totanus (L.)	**Redshank**	CR-BP,WP(wintering pop.)
Anas acHta L.	**Pintail**	EN - WP
Anas strepem L.	**Gadwall**	EN- BP, WP
Anser anser (L.)	**Grevlag goose**	EN-BP
Aquila chrysaetos (L.)	**Golden eagle**	EN-BP
Aquila pomarina Brehm	**Lesser spotted eagle**	EN-BP
Ardeola mlloides (Scop.)	**Squacco heron**	EN-BP
Botaurus stellaris (L.)	**Bittern**	EN-BP
Calidris alpina (L.)	**Dunlin**	EN-WP
Charadrius alexandrinus L.	**Kentish plover**	EN-BP
drcus aeruginosus (L.)	**Marsh harrier**	EN-BP
drcus pygargus (L.)	**Montagu's harrier**	EN-BP
Clamator glandarius (L.)	**Great spotted cuckoo**	EN-BP
Egrettaalba (L.)	**Great white egret**	EN-BP
Eremophila alpestris (L.)	**Shore lark**	EN-BP
Fafco columbarius (L.)	**Merlin**	EN-WP
Faico eleonorae Gene	**Eleonora's falcon**	EN-BP
Haematopus ostralegus L.	**Ovstercatcher**	EN-FP(flyway pop.)
Haliaeetus albicilla (L.)	**VVhite-tailed sea-eagle**	EN-BP
Himantopus hitnantopus (L.)	**Black-winged stilt**	EN-FP
Larus aiidouinii Payraudeau	**Audouin's guli**	EN-BP
Melanocorypha calandra (L.)	**Calandra lark**	EN-BP
Numenius arquata (L.)	**Curlew**	EN-WP
Numenius phaeopus (L.)	**Whimbrel**	EN-NBP
Panurus biarmicus (L.)	**Bearded tit**	EN-BP

Phylloscopus bonelli (Vieil.)		**Bonelli's vvarbler**	EN-BP
Phylloscopus trochilus (L.)		**Willow vvarbler**	EN-BP
Platalea leucorodia L.		**Spoonbill**	EN-BP
Plegadis falcinellus (L.)		**Glossv ibis**	EN-FP
Pluvialis scjuatarola (L.)		**Grey plover**	EN-WP
Podiceps nigricolis (Brehm.)		**Black-necked grebe**	EN-BP
Sterna albifrons Pali.		**Little tern**	EN-BP
Tetmo urogallus L.		**Capercaillie**	EN-BP
Actitis hypoleucos (L.)		**Common sandpiper**	VU-BP
Anas chjpeata L.		**Shoveler**	VU-WP
Ardea purpurea (L.)		**Purple heron**	VU-BP
Aythya nyroca (Guld.)		**Ferruginous duck**	VU-BP
Chlidonias hybridus (Pali.)		**VVhiskered tern**	VU-BP
Cicama nigra (L.)		**Black stork**	VU-BP
Circaetus gallicus (Gm.)		**Short-toed eagle**	VU-BP
Crex ere* (L.)	ENDEMIC	**Corncrake**	VU-BP
Egretta garzetta (L.)		**Little egret**	VU-BP
FflZco peregrinus Tunstall		**Peregrine**	VU-BP
Glaucidium passerinum (L.)		**Pygmy-owl**	VU-BP
Milvus migrans (Bodd.)		**Black kite**	VU-BP
Pernis apivorus (L.)		**Honey-buzzard**	VU-BP
Phalacrocorax carbo (L.)		**Cormorant**	VU-BP
Podiceps grisegma (Bodd.)		**Red-necked grebe**	VU-WP
Turdus pilaris L.		**Fieldfare**	VU-BP
Alcedo atthis L.		**Kingfisher**	NT-BP
Alectoris graeca (Meisner)		**Rock partridge**	NT-BP
Anas crecea L.		**Common teal**	NT-WP
Anas penelope L.		**VVigeon**	NT-WP
^4nflS querquedula L.		**Garganey**	NT-BP
Anser albifrons (Scop.)		**Greater white-fronted goose**	NT-WP
Anserfabalis (Lath.)		**Bean goose**	NT-WP
Anthns spinoletta (L.)		**Water pipit**	NT-BP
Athene noctua (Scop.)		**Little owl**	NT-BP
Aythya fuligirta (L.)		**Tufted duck**	NT-BP
Ayihya nyroca (Guld.)		**Ferruginous duck**	NT-FP
Bonasa bonasia (L.)		**Hazel grouse**	NT-BP

Bubo bubo (L.)	**Eagle-owl**	NT-BP
Calandrella brachydactyla (Leisel.)	**Short-toed lark**	NT-BP
Calidris alpina (L.)	**Dunlin**	NT-FP
Calidrisferruginea (Pont.)	**Curlevv sanpiper**	NT-FP
Calidris minuta (Leisl.)	**Little stint**	NT-FP
Calidris temrninckii (Leisl.)	**Temminck's stint**	NT-FP
Calonectris diomedea (Scop.)	**Mediterranean shearvvater**	NT-BP
Charadrius dubius Scop.	**Little ringed plover**	NT-BP
Chlidonias hybridus (Pali.)	**VVhiskered tern**	NT-FP
Ciconia ciconia (L.)	**White stork**	NT-BP
Circus cyaneus (L.)	**Henharrier**	NT-NBP
dsticola juncidis (Rafinesque)	**Fan-tailed vvarbler**	NT-BP
Coturnix coturnix (L.)	**Common quail**	NT -BP,FP
Emberiza hortulana L.	**Ortolan bunting**	NT-BP
Falco subbuteo L.	**Hobby**	NT-BP
Falco vespertinus L.	**Red-footed falcon**	NT-FP
Ficedula parva (Bechst.)	**Red-breasted flvcatcher**	NT-BP
Fulica atra L.	**Common coot**	NT-WP ON THE COAST
Gallinago gallinago (L.)	**Common snipe**	NT -NBP
Grus grus (L.)	**Eurasain crane**	NT-FP
Hirundo daurica L.	**Red-rumped swallow**	NT-BP
Ixobrychus minutus (L.)	**Little bittern**	NT-BP
Locustella naevia (Bodd.)	**Grasshopper v/arbler**	NT-BP
Motacilla flava L.	**Yellow wagtail**	NT-BP
Muscicapa striata (Pali.)	**Spotted flycatcher**	NT-BP
Nycticorax nydicorax (L.)	**Night heron**	NT-BP
Otus scops (L.)	**Scops-owl**	NT-BP
Pandion haliaetus (L.)	**Osprey**	NT-FP
Perdix perdix (L.)	**Grey partridge**	NT-BP
Phalacrocorax aristotelis (L.)	**European shag**	NT-BP
Philomachus pugnax (L.)	**Ruff**	NT-FP
Phoenicurus phoenicurus (L.)	**Common redstart**	NT-BP
Phylloscopus sibilatrix (Bechst.)	**Wood warbler**	NT-BP
Picoides leucotos L.	**White-backed vvoodpecker**	NT-BP
Picus viridis L.	**Green vvoodpecker**	NT-BP
Rallus acjuaticus (L.)	**VVater rail**	NT-BP

Riparia riparia (L.)	**Sand martin**	NT-BP
Scolopax rusticola L.	**VVoodcock**	NT -NBP
Sterna hirundo (L.)	**Common tern**	NT-BP
Sylvia borin (Bodd.)	**Garden warbler**	NT-BP
Thalasseus sandvicensis (Lath.)	**Sendwich tern**	NT-NBP
Tyto alba (Scop.)	**Common barn-owl**	NT-BP
Upupa epops L.	**Hoopoe**	NT-BP
Accipiter nisus (L.)	**Eurasian sparrowhawk**	LC-BP
Acrocephalus melanopogon (Temm.) .	**Moustached warbler**	LC-WP
Aegolius funereus (L.)	**Boreal owl**	LC -BP
Alauda arvensis L.	**Sky lark**	LC-BP
Anthus campestris (L.)	**Tawny pipit**	LC-BP
Aythyaferim (L.)	**Common pochard**	LC-BP
Bucephala clangula (L.)	**Goldeneve**	LC-/WP
Caprimulgus europaeus L.	**European nightjar**	LC-BP
Carduelis spinus (L.)	**Spruce siskin**	LC-BP
Certhia brachydactyla Brehm	**Short-toed treecreeper**	LC-BP
Certhia familiaris L.	**Common treecreeper**	LC-BP
Chlidonias niger (L.)	**Black tern**	LC-FP
Galerida cristata (L.)	**Crested lark**	LC-BP
Gavia arctica (L.)	**Black-throated diver**	LC-WP
Emberiza calandra L.	**Corn bunting**	LC-BP
Emberiza schoenidus (L.)	**Reed bunting**	LC -BP
Ficedida albicollis (Temm.)	**Collared flvcatcher**	LC-BP
Hirundo ništica L.	**Barn swallow**	LC-BP
Lanius minor Gm.	**Lesser grey shirke**	LC-BP
Larus ridibundus L.	**Common black-headed guli**	LC -BP
Lirnosa litnosa (L.)	**Black-tailed godwit**	LC-FP
Locustella luscinioides (Savi)	**Savi's vvarbler**	LC-BP
Lululla arborea (L.)	**Wood lark**	LC-BP
Mergus senator L.	**Red-breasted merganser**	LC-WP
Merops apiaster L.	**Bee-eater**	LC-BP
Oenanthe oenanihe (L.)	**Northern wheatear**	LC -BP
Picoides medius (L.)	**Middle spotted woodpecker**	LC-BP
Picoides minor (L.)	**Lesser spotted woodpecker**	LC-BP
Picoides syriacus (Hemp. & Ehr.)	**Svrian woodpecker**	LC-BP
Picoides tridactylus (L.)	**Three-toed vvoodpecker**	LC-BP

PfcMS conus Gm.	**Grey-headed vvoodpecker**	LC-BP
Podiceps cristatus (L.)	**Great crested grebe**	LC -BP
Prunella collaris (Scop.)	**Alpine accentor**	LC-BP
Pyrrhocomx graculus (L.)	**Alpine chough**	LC-BP
Saxicola rubetra (L.)	**Whinchat**	LC-BP
Saxicola torquata (L.)	**Common stonechat**	LC-BP
Streptopelia turtur (L.)	**Turtle-dove**	LC-BP
Sfnx uralensis (Pali.)	**Ural owl**	LC -BP
Tachybaptus ruficollis (Pali.)	**Little grebe**	LC-BP
Tn'rcga erythropus (Pali.)	**Spotted redshank**	LC-FP
Tringa glareola L.	**Wood sandpiper**	LC-FP
Tringa nebularia (Gunn.)	**Common greenshank**	LC-FP
Vanellus vanellus (L.)	**Lapvving**	LC-BP
Burhinus oedicnemus (L.)	**Stone-curlevv**	DD-BP
Columba oenas L.	**Stock dove**	DD-BP
Erithacus svecicus (L.)	**Bluethroat**	DD-BP
Hippolais icterina (Viell.)	**Icterine warbler**	DD-BP
Hippolais olivetorum (Strickland)	**Olive-tree warbler**	DD- BP
Lymnocryptes mininta (Brunn.)	**Jack snipe**	DD-NBP
Porzana parva (Scop.)	**Little crake**	DD-BP
Porzana porzana (L.)	**Sported crake**	DD-BP
Porzana pusilla (Pali.)	**Baillon's crake**	DD-BP
Puffinus yelkouan (Acerbi.)	**Yelkouan shearvvater**	DD-BP
Scolopax rusticola L.	**VVbodcock**	DD- BP

R E P T I L E S

Latin Name	English Name	IUCN Category
Vipera ursinii ci. ursinii (Bonaparte, 1835)	**Meadovv viper**	RE
Chelonia mydas (Linnaeus, 1758)	**Green sea turtle**	CR
Mauremys caspica (Gmelin, 1774)	**Caspian terrapin**	CR
Caretta caretta (Linnaeus, 1758)	**Loggerhead sea turtle**	EN
Vipera ursinii macrops Mehelv, 1911	**Karst meadow viper**	EN
Archaeolacerta mosorensis (Kolombatović, 1886)	**Mosor rock lizard**	NT
Emys orbicularis (Linnaeus, 1758)	**European pond terrapin**	NT
Lacerta (viridis) bilineata Daudin, 1802	**VVestem green lizard**	NT

Podarcis melisellensis melisellensis (Braun, 1873)*	ENDEMIC	**Dalmatian wall lizard**	NT
Podarcis melisellensis n. ssp. *	ENDEMIC	**Lastovo wall lizard**	NT
Podarcis sicula ragusae VVettstein, 1931		**Dubrovnik ruin lizard**	NT
Podarcis sicula adriatica (VVerner, 1902)*	ENDEMIC	**Adriatic ruin lizard**	NT
Testudo hermanni Gmelin, 1789		**Hermann's tortoise**	NT
Ablepharus kitaibelii Bibron et Bory, 1833		**Snake-eyed skink**	DD
Blanus strauchi (Bedriaga, 1873)		**Turkish amphisbaenian**	DD
Coluber caspius Gmelin, 1879		**Caspian whip snake**	DD
Elaphe situla (Linnaeus, 1758)		**Leopard snake**	DD
Natrix tessellata (Laurenti, 1768)		**Dice snake**	DD
Typhlops vermicularis Merrem, 1820		**European blind snake**	DD

AMPHIBIANS

Latin Name		English Name	IUCN Category
Proteus anguinus n. ssp.	ENDEMIC	**Istrian olm**	CR
Tnturus vulgaris meridionalis (Boulenger, 1882)		**Smooth newt - Krk Island population only**	EN
Proteus anguinus cf. anguinus Laurenti, 1768		**Olm - populations from Lika and Dalmatia only**	VU
Rana latastei Boulenger, 1879		**Italian frog**	VU
Bombina bombina (Linnaeus, 1761)		**Fire-bellied toad**	NT
Hyla arborea (Linnaeus, 1758)		**Europen tree frog**	NT
Triturus (cristatus) dobrogicus (Kiritzesku, 1903)		**Danube crested newt**	NT
Triturus vulgaris (Linnaeus, 1758)		**Smooth newt - Dalmatian populations only**	BD
Bombina variegata kolombatovici (Bedriaga, 1891)		**Dalmatian vellovv-bellied toad**	DD

FRESHWATER FISH

Latin Name	English Name	IUCN Catchment	Category Area
Acipenser gueldenstaedtii Brandt & Ratzeberg	**Russian sturgeon**	RE	D (DANUBE)
Acipenser nudiventris Lovetzkv	**Ship sturgeon**	RE	D
Acipenser stellatus Pali.	**Stellate (Starrv) sturgeon**	RE	D
Acipenser sturio L.	**Atlantic sturgeon**	RE	J (ADRIATIC)
Huso huso L.	**Beluga srurgeon**	RE	D
Phoxinellus metohiensis Steind.	**Karst minnow**	RE	J

Acipenser naccarii Bonap.		**Adriatic sturgeon**	CR	J
Chondrostoma phoxinus Heck.	E N D E M I C	**Minnovv nase**	CR	J
Gymnocephalus schraetser L.		**Sttriped ruffe**	CR	D
Knipoivitschia croatica Mrakov et al.*	E N D E M I C	**Vrgorac's goby**	CR	J
Leuciscus microlepis Heck.*	E N D E M I C	**Makal dace**	CR	J
Leuciscus polylepis Steind.*	E N D E M I C	**Croatian dace**	CR	J
Leuciscus turskyi Heck.		**Turskvi dace**	CR	J
Leuciscus ukliva Heck.*	E N D E M I C	**Ukliva dace**	CR	J
Sedmo dentex Heck.*	E N D E M I C	**Toothtrout**	CR	J
Salmo marmoratus Cuv.		**Marble trout**	CR	J
Salmothymus obtusirostris krkensis Kar.*	E N D E M I C	**Adriatic salmon**	CR	J
Salmothymus obtusirostris oxyrhynchus Steind.		**Neretva salmon**	CR	J
Alosafallax nilotica Lacep.		**Mediterranean shad**	EN	J
Aphanius fasciatus Cuv. and Val.		**Mediterranean toothcarp**	EN	J
Aulopyge huegelii Heck.		**Dalmatianbarbel gudgeon**	EN	J
Barbus plebejus Bonap.		**Italian barbel**	EN	J
Chondrostoma kneri Heck.*	E N D E M I C	**Dalmatian soiffe**	EN	J
Cottus ferrugineus Heck. & Kner		**Zrmanja bullhead**	EN	J
Cyprinus carpio L.		**Carp**	EN	J
Gasterosteus aculeatus L.		**Threespined stickleback**	EN	J
Hucho hucho L.		**Huchen**	EN	D
Knipoiuitschia mrakovcici Miller*	E N D E M I C	**Mrakovčić's goby**	EN	J
Knipoiuitschia panizzae Verga		**Lagoon goby**	IN	J
Lethenteron zanandreai Vladykov		**Po brook lamprey**	EN	J
Leuciscus soujfia muticellus Bonap.*	E N D E M I C	**Soufie**	EN	J
Padogobius bonelli Bonap.		**Marten's goby**	EN	J
Phoxinellus croaticus Steind.*	E N D E M I C	**Croatian minnovv**	EN	DJ
Phoxinellus fontinalis Kar.*	E N D E M I C	**Cave minnovv**	EN	J
Phoxinellus ghetaldii Steind.*	E N D E M I C	**South Dalmatian minnovv**	EN	J
Pomatoschistus canestrinii Ninni		**Canestrini's goby**	EN	J
Salmo truttafaroides Kar.		**Sea trout**	EN	J
Salmo visovacensis Taler*	E N D E M I C	**Visovac's trout**	EN	J
Sedmo zrmanjensis Kar.*	E N D E M I C	**Zrmanja trout**	EN	J
Umbra krameri Walb.		**European mudminnow**	EN	J
Acipenser ruthenus L.		**Sterlet**	VU	D
Alburnus albldus Costa		**Alborella**	VU	J
Aspius aspius L.		**Asp**	VU	D
Barbus meridionalis Bonap.		**Southern barbel**	VU	D
Camssius carassius L.		**Crudan carp**	VU	D

Chalcalburnus ehaleoides Gueld.		**Danubian bleak**	VU	D
Cobitis dalmatina Kar.*	E N D E M I C	**Dalmatian spined loach**	VU	J
Cobitis elongata Heck. et Kner		**Balcan loach**	VU	D
Cobitis narentana Kar.*	E N D E M I C	**Neretvan spined loach**	VU	J
Gymnocephalus baloni Holčik et Hensel		**Balon's ruffe**	VU	D
Leucaspius delineatus Heck.		**Sunbleak**	VU	D
Leuciscus cephalus albus Bonap.		**White ehub**	VU	J
Leuciscus idus L.		**Ide**	VU	D
Leuciscus illyricus Heck. et Kner*	E N D E M I C	**Illvric dace**	VU	J
Leuciscus souffia agassizi Cuv. et Val.		**Soufie**	VU	D
Leuciscus svallize Heck. et Kner*	E N D E M I C	**Adriatic dace**	VU	J
Leuciscus zrmanjae Kar.		**Zrmanja dace**	VU	J
Lota lota L.		**Burbot**	VU	D
Misgurnus fossilis L.		**VVeatherfish**	VU	D
Phoxinellus adspersus Heck.*	E N D E M I C	**Sported minnovv**	VU	J
Phoxinellus dalmaticus Žup. & Bogut.*	E N D E M I C	**Dalmatian minnovv**	VU	J
Pomatoschistus microps Krover		**Common goby**	VU	J
Sabanejeivia balcanica Kar.		**Golden loach**	VU	D
Salariafluviatilis Asso		**Freshvvater blennv**	VU	I
Salmo truttafario L.		**Brovvn trout**	VU	D,J
Salmo tmtta lacustris L.		**Lake trout**	VU	D
Salmothi/mus obtusirostris salonitana Kar.*	E N D E M I C	**Solin salmon**	VU	J
Thymallus thymallus L.		**Gravling**	VU	DJ
Vimba vimba L.		**Vimba**	VU	D
Zingel štreber Siebold		**Štreber**	VU	D
Zingel zingel L.		**Zingel**	VU	D
Rutilus basak Heck.*	E N D E M I C	**Basak**	VU	J
Abramis sapa Pali.		**Danubian bream**	NT	D
Eudontomyzon danfordi Regan		**Danubian lamprev**	NT	D
Eudontomyzon mariae Berg		**Ukranian lamprev**	NT	D
Gobio kessleri Dyb.		**Kessler's gudgeon**	NT	D
Gobio uranoscopus Ag.		**Danubian gudgeon**	NT	D
Lampetra planeri Bloch		**Brook lamprev**	NT	D,J
Proterorhinus marmoratus Pali.		**Tubenose goby**	NT	D
Rutilus pigus Lacep.		**Danubian roach**	NT	D
Scardinius hesperidicus Heck.*	E N D E M I C	**Dalamtian rudd**	NT	J
Alburnoides bipunctatus Bloch		**Schneider**	LC	D
Gobio gobio L.		**Gudgeon**	LC	D

Alosa pontica Eichw.		**Pontic shad**	DD	D
Gobio albipinnatus Lukasch		**Whitefin(ned) gudgeon**	DD	D
Pelecus cultratus L.		**Chekhon**	DD	D
Petromyzon marinus L.		**Sea lamprev**	DD	J
Phoxinellns alepidotus Heck.*	E N D E M I C	**Adriatic minnow**	DD	J
Phoxinellus pstrossii Steind.*	E N D E M I C	**South Dalmatian minnow**	DD	J
Sander volgense Gmelin		**Volga zander**	DD	D
Scardinius scardafa Bonap.*	E N D E M I C	**Adriatic rudd**	DD	

B U T T E R F L I E S

Latin Name		English Name	IUCN Category
Coenonympha oeđippus (Fabricius, 1787)		**False ringlet**	CR
Erebia oeme megaspodia Mladinov et Lorković, 1979*	E N D E M I C	**Bright-eyed ringlet Kupa vallev subspedes**	CR
Maculinea alcon (Denis et Schiffermuller, 1775)		**Alcon blue**	CR
Maculinea nausithous (Bergstrasser, 1779)		**Dusky large blue**	CR
Maculinea telejus (Bergstrasser, 1779)		**Scarce large blue**	CR
Erebia styrius gorana Lorković, 1985*	E N D E M I C	**Stvrian ringlet**	EN
Nymphalis xanthomelas (Denis et Schiffermuller, 1775)		**Yellow-legged tortoiseshell**	EN
Apatura metis Frever, 1829		**Frever's purple emperor**	VU
Maculinea rebeli (Hirscke, 1904)		**Mountain blue**	VU
Nymphalis vau-album (Denis et Schiffermuller, 1775)		**False comma**	VU
Parnassius apollo (Linnaeus, 1758)		**Apollo**	VU
Apatura ilia (Denis et Schiffermuller, 1775)		**Lesser purple emperor**	NT
Apatura iris (Linnaeus, 1758)		**Purple emperor**	NT
Glaucopsyche alexis (Poda, 1761)		**Green-underside blue**	NT
Heteropterus morpheus (Pallas, 1771)		**Large chequered skipper**	NT
Limenitis populi (Linnaeus, 1758)		**Poplar admiral**	NT
Lycaena dispar (Havvorth, 1802)		**Large cooper**	NT
Lycaena hippothoe (Linnaeus, 1761)		**Purple edged cooper**	NT
Parnassius mnemosyne (Linnaeus, 1758)		**Clouded Apollo**	NT .
Scolitantides orion (Pallas, 1771)		**Chequered blue**	NT
Zerynthia polyxena (Denis et Schiffermuller, 1775)		**Southern festoon**	NT
Boloria titania (Esper, 1793)		**Titania's fririllary**	DD
Erebia gorge vagana Lorković, 1954*	E N D E M I C	**Silky ringlet**	DD
Erebia medusa (Denis et Schiffermuller, 1775)		**VVoodland ringlet**	DD

Erebia styrius kleki Lorković, 1955*	E N D E M I C	**Styrian ringlet Klek Mt. subspedes**	DD
Euphydryas aurinia (Rottemburg, 1775)		**Marsh fritillary**	DD
Euphydryas maturna (Linnaeus, 1758)		**Scarce fritillary**	DD
Leptidea morsei major Grund, 1905		**Fenton's wood white**	DD
Lopinga achine (Scopoli, 1763)		**VVoodland brown**	DD
Lycaena thersamon (Esper, 1784)		**Lesser fiery cooper**	DD
Maculinea arion (Linnaeus, 1758)		**Large blue**	DD
Mellicta aurelia Nickerl, 1850		**Nickerl's fritillary**	DD
Mellicta britomartis Assmann, 1847		**Assmann's fritillary**	DD
Papilio alexanor Esper, 1799		**Southeren swallowtail**	DD
Proterebia afra dalmata (Godart, 1824)		**Dalmatian ringelt**	DD
Pseudophilotes vicrama (Moore, 1865)		**Eastern baton blue**	DD
Thymelicus acteon (Rottemburg, 1775)		**Lulvvorth skipper**	DD
Zen/nthia cerisyi dalmacijae Sala et Bollino, 1994*	E N D E M I C	**Dalmatian eastern festoon**	DD

U N D E R G R O U N D F A U N A

Latin Name		English Name	IUCN Category
Dendrocoelum subterraneum Komarek, 1919*	E N D E M I C	**Ogulin cave planarian**	EX?
Phoxinellusfontinalis M. Karaman, 1972*	E N D E M I C	**Krbava minnow**	CR
Proteus anguinus n. ssp.*	E N D E M I C	**Istrian olm**	CR
Acanthocyclops petkovskii Pesce et Lattinger, 1983*	E N D E M I C	**Podsused copepod**	EN
Congeria kusceri Bole, 1962		**Cave clam**	EN
Eunapius subterraneus Sket et Velikonja, 1985*	E N D E M I C	**Tounj cave sponge**	EN
Leuciscus polylepis (Steindechner, 1866)*	E N D E M I C	**Croatian daće**	EN
Monolistra pretneri pretneri Sket, 1965*	E N D E M I C	**Pretner's cave pill-bug**	EN
Monolistra velkovrhi Sket, 1960		**Velkovrh's cave pill-bug**	EN
Niphargus elegans zagrebensis S. Karaman, 1950		**Zagreb niphargid shrimp**	EN
Niphargus pectencoronatae Sket et Karaman, 1990*	E N D E M I C	**Kornat niphargid shrimp**	EN
Myotis capaccinii (Bonaparte, 1837)		**Long-fingered bat**	EN
Phoxinellus ghetaldii Steindechner, 1882		**Ghetaldicz's minnovv**	EN
Salmoneus sketi Fransen, 1991		**Sket's alpheid prawn**	EN

Troglocaris anophthalmus intermedia Babić, 1922*	E N D E M I C	**Babich's cave prawn**	EN
Velkovrhia enigmatica Matjašič et Sket, 1971		**Enigmatic cave hvdrozoan**	EN
Alpioniscus christiani Potočnik, 1983*	E N D E M I C	**Krk cave woodlice**	VU
Lola insularis Kratochvil, 1937*	E N D E M I C	**Hvar cave harvestman**	VU
Marifugia cavatica Absolon et Hrabe, 1930		**ave tube-vvorm**	VU
Monolistra pretneri spinulosa Sket, 1965*	E N D E M I C	**Spined cave pill-bug**	VU
Niphargus hrabei S. Karaman, 1932		**Woodland shrimp**	VU
Niphargus valachicus Dobreanu et Manolache, 1933		**Pannonian vvoodland shrimp**	VU
Proteus anguinus cf. anguinus Laurenti, 1768		**Olm - populations from Lika and Dalmatia only**	VU
Spelaeocaris pretneri Matjašić, 1958		**Pretner's cave pravvn**	VU
Sphaeromides virei mediodalmatina Sket, 1964*	E N D E M I C	**Dalmatian giant pill-bug**	VU
Theodoxus subterrelictus Schiitt, 1973		**Metkovich cave nerite**	VU
Travunia jandai Kratochvil, 1937*	E N D E M I C	**Mljet cave harvestman**	VU
Troglocaris agg. anophthalmus Kollar, 1848		**Cave pravvn**	VU
Chthonius jalzici Čurčić, 1988*	E N D E M I C	**Jalzic's cave pseudoscorpion**	NT
Monolistra caeca meridionalis Deeleman-Reinhold, 1971		**Kordun cave pill-bug**	NT
Monolistra sketi Deeleman-Reinhold, 1971*	E N D E M I C	**Lika cave pill-bug**	NT
Stalita pretneri Deeleman-Reinhold, 1971*	E N D E M I C	**Pretner's cave spider**	NT
Acroloxus sp. n. *	E N D E M I C	**Velebit cave limpet**	DD
Bogidiella sketi G. Karaman, 1989*	E N D E M I C	**Paklenica underground shrimp**	DD
Egonpretneria brachychaeta Strasser, 1966*	E N D E M I C	**Pretner's cave millipede**	DD
Protelsonia hungarica thermalis (Meštrov, 1960)*	E N D E M I C	**Podsused thermal water-louse**	DD
Monolistra hercegovinensis atypica Sket, 1965*	E N D E M I C	**Atipic cave pill-bug**	DD
Niphargus miljeticus Straškraba, 1959*	E N D E M I C	**Mljet niphargid shrimp**	DD
Oligopus ater Risso, 1810		**Sea-cave brotula**	DD
Orygoceras sp.		**Strange freatic snail**	DD
Saxurinetor sketi (Bole, 1960)		**Šipun's cave vvater snail**	DD

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