8 The Regional Development Concept for the Bojana-Buna Delta

8.1 Bojana-Buna Delta Marine Park

Many deltas in the Mediterranean region have been described as priority sites for establishing Marine Protected Areas, but information on the value of Albanian and Montenegrin coastal areas has been lacking (Kelleher, Bleakley & Wells 1995). No priority areas for protection have been proposed for Albania and Montenegro, although the coast of these two countries is of outstanding importance for the preservation of coastal lagoons, beaches and dunes, and deltas. An excellent example of a regional strategy for marine protected areas is in West Africa, where several deltas, lagoons and coastal wetlands have been protected in one programme to preserve the coastal zone and its resources. Small-scale fisheries and tourism are particularly important for the national economy for these states, as nearly 60% of the population lives along the coast (Anonymous 2003).

The creation of Marine Protected Areas and their effective management have lagged behind similar protected areas inland, but are just as important. IUCN has proposed the concept of ecosystem management as the overarching approach. All these approaches have two fundamental features in common (Kelleher 1999):

- They cover a large area;
- They take an ecosystem-based approach, which treats the land and the sea as a single integrated system.

The concept of Biosphere Reserves has been applied worldwide to the protection of marine and coastal habitats (Kelleher, Bleakley & Wells 1995, Table 6, pages 38 – 39) as zoning concepts provide excellent possibilities to combine different use and protection values. Generally Biosphere Reserves consist of three zones: core area, buffer and transition zone. In such reserves, areas protected according to different legal scales and categories in different countries are integrated into functional ecological units (compare http://www.unesco.org/mab/).

The Bojana-Buna Delta has a number of important features as a corridor (compare Consejeria de Medio Ambinete 2002):

- A migration corridor for fish, water birds and water bound animals (e.g. Otter Lutra lutra) from the Adriatic Sea to Lake Skadar and the hinterland
  - As a migration corridor for coastal species, especially dunes and lagoons along the Adriatic coast;
  - As a migration corridor for terrestrial species, such as large mammals, along the coastal zone south of Lake Skadar;
  - As a stepping stone for migrating birds crossing the Adriatic Sea (the Central European Fly Way);
  - As a migration corridor for birds migrating along the Adriatic coast as well as a wintering site and refuge area, depending on the temperature.

Based on international standards and recommendations and on national approaches, a first draft concept for a Marine Park Bojana-Buna Delta has been elaborated. It supports the decision of Albania to establish a protected area covering Lake Skadar and the Buna Delta and also the Regional Master Plan for Tourism (DEG 2003) which proposed protected areas in the Eastern part of Velika Plaza, including Ada Island.

As the Bojana-Buna Delta is a transboundary site, all plans and documents have to be prepared for both countries and adopted by both states. The Euronatur concept shows how, by zoning, the Bojana-Buna Delta could be made a transboundary-protected area, which would be the basis for long term sustainable development of tourism (Map 5).

8.2 The fifteen most important areas for Nature Conservation

A set of fifteen important natural and semi-natural sites of great value have been identified in the Bojana-Buna Delta. These areas, based on the Biosphere Concept and the proposed zoning of the transboundary site, are in need of special protection. Some are proposed as core areas, which means that they have to be strictly protected, some are already used and are in need of landscape protection. Each area has its own special value, which will be further described in the appropriate section, but the sum is much more: all 15 areas form the single, unique seascape, Bojana-Buna delta. Here are found all kinds of habitats which allow a great variety of species to survive and which can offer visitors an enjoyable and rewarding holiday.

Together with Lake Skadar the value of the area is even greater. It is the most important wetland system along the eastern coast of the Adriatic Sea and one of the best preserved in the Mediterranean and in Europe. There are only a few sites in the whole of Europe with the capacity for more than 200,000 waterbirds (compare Vasic et al. 1992). In the following, the 15 sites of international importance are briefly described (compare Maps 4.5 and 5).
8.2.1 Ada island and Velipoja Reserve, with the prodelta

8.2.1.1 Habitat description

The natural mouth of the Bojana-Buna river is a unique, dynamic Mediterranean habitat. Through its progressive formation in the Adriatic Sea, a unique set of habitats has been formed by deposition of sediments. The reliefs of Ada island (494 ha) and Velipoja reserve (639 ha) offer superb conditions for a mosaic of plant associations from submerged vegetation to old alluvial forest stands. The adjacent prodelta area, which covers some 800 ha and is up to 25 m deep, should be included in the core area of the Bojana-Buna Delta Marine Park.

The habitats originated by dynamic sedimentation processes and typical forms of all kinds of coastal habitat are clearly visible in the area’s reliefs. The estuary of the Bojana-Buna river in the proposed core area is a prime example of a natural river mouth in the Mediterranean that owes nothing to the intervention of human impact on the river morphology.

Naturalness is an important criterion for the development of protected areas. Ada and Velipoja are prime areas within the Mediterranean for nature conservation. Both parts, in Albania and in Montenegro, boast typical natural coastal vegetation and host a whole set of globally endangered bird species. The greatest value of the area lies in the natural dynamics triggered by both coastal and riverine processes, such as sediment transportation and flooding. The relief on both sides of the Bojana-Buna estuary incorporates a great variety of habitats, from fresh and salt-water bodies to open sand dunes and alluvial virgin forests.

The mouth of the Bojana-Buna river is most important for the protection of fish. It is the entrance to Lake Skadar and, with its prodelta, is an important feeding site. The three Sturgeon *Acipenser sp.* species are the key indicators of the high value of the riverine corridor. This part of the ecosystem, comprising Lake Skadar, the Bojana-Buna River and the Adriatic, has not been accessed for decades since World War II but has to be strictly protected, as, since being opened up, numbers of many species have decreased rapidly in it. Besides the various bird and fish species, the marine turtles are an important asset. In 2002, even egg-laying Loggerheads *Caretta caretta* were observed on Ada island.

Two mammals indicate the high natural value of Ada island. Three packs of Golden Jackal *Canis aureus* live in this, the only well protected area where hunting is prohibited, making it one of their key retreats in Albania and Montenegro. The second mammal is the Bottlenose Dolphin *Tursiops truncatus*, which enters this core area through the Bojana-Buna river and swims up-stream. During the research carried out in 2003 and 2004, the investigating team was not able to fully assess the value of the Ada-Velipoja core area. It is clear, however, that various human impacts have already affected the Spoonbill *Platalea leucorodia*, Heron and Pygmy Cormorant *Phalacrocorax pygmeus* colonies. Better protection would enable the real value of this natural site, and of the marine area as a whole, to be appreciated.

8.2.1.2 Conservation goal

Ada and Velipoja should become a strictly protected core area (1a) of the Bojana-Buna Marine Park, incorporating the 800 ha littoral zone (the prodelta) and the mouth of the river. Here both countries should take specific steps to preserve the marine habitats and the sustainable use of natural resources.

Velipoja is already protected as a nature reserve in Albania, but certain enforcements would be necessary. Quite often, hunters have been seen inside the reserve and, even in May, birds such as the globally endangered Ferruginous Duck *Aythya nyroca* were badly affected by their illegal activities. Further, extensive grazing should be practised in order to maintain some open areas inside the reserve (1b).

Ada island is protected by the community of Ulcinj, with a permanent hunting ban, and is also under the special law for preservation of the entire Montenegrin coast. The DEG regional master Plan for Tourism registers the values of Ada island in detail and proposes its protection around the tourist resort. The draft coastal belt development plan foresees only a small tourist area on Ada island, where the present tourist resort is situated.

The conservation goal includes a sophisticated network of trails and hides for the land areas at both sites, designed as part of the future interpretation system. Visitor management is important in linking natural values with the rapid development of tourism.

Boating on the Bojana has to be reduced to a minimum – e.g. by licensed tourist boats under the control of the nature protection authorities or park administration. Boat traffic should be restricted to a corridor in the middle of the river.
8.2.1.3 Management

Beside the part used as a tourist resort on Ada with its 750 m of beach, access has to be strictly limited and controlled over the entire area. Visitors are welcome in both parts to experience the area’s great natural value. For this purpose, a system of trails and hides has to be developed, with an information centre in the tourist resort on Ada island in Montenegro and, preferably, in the villa of Albania’s former leader, Enver Hoxha, on the Albanian side.

Interpretation includes the site’s history (border area, hunting ground for the former Party leaders, “Franz-Joseph Island”, land reclamation and formation processes of the delta. It is important to combine the marine ecology and the natural resources.

The management has to be based on an effective system of rangers, which will reduce the disturbance at both Ada island and Velipoja reserve. Everything should be done for suitable protection of bird colonies, regular functioning of this important migration corridor, and careful monitoring of the dynamic processes on the beach. Protection of the (small?) population of Loggerheads is an important task for the management of the core area in the proposed Bojana-Buna Delta Marine Park.

A small-scale restoration project needs to be carried out on the Albanian bank of the Bojana-Buna river, as here some embankments have been built to ease access to the border. On Ada Island and along the left branch of the Bojana, the illegal construction of buildings should be stopped. Extensive grazing by domestic breeds should be maintained to a small extent in the Velipoja reserve and Ada (benefiting e.g. Stone-curlew B. oedicnemus). The part of the embankments that cuts the small lateral branch of the Bojana-Buna on Ada island and provides free access for terrestrial predators to the mixed heron, cormorant and ibis colonies, should be removed.

Biosphere Reserve zoning: Core area 1a, b

8.2.2 Velika Plaza with prodelta

8.2.2.1 Habitat description

Velika Plaza – “the Great Beach” – is a large-scale coastal habitat with a highly dynamic coast formed by accumulation processes. The beach is growing in this part of the delta front, adding new sand barriers to the existing shore line. The whole Velika Plaza is a “barrier island” formed by the sediments of the Bojana and the wave energy of the Adriatic Sea. The floods and dry cycles depend on the sea level, the Bojana-Buna River and local rainfall. The gradient of habitats from the littoral zone, beach, dunes and depressions with alkaline and fresh water habitats, up to the remains of the indigenous Mediterranean Penduculate Oak (“Skadar Oak”) forest is of a great landscape value and should be protected.

Besides the natural habitats, the pastures and meadows spreading along the road to Ada near Bregvija and Stoj are very important habitats and have contributed semi-natural landscapes to the complex of marine coastal habitats.
The terrestrial part of Velika Plaza covers 1,235 ha, without the already heavily used area in the west, and is included in the Biosphere concept as a transition zone, together with 993 ha of the shallow Adriatic Sea – the prodelta.

8.2.2.2 Value

The seascape of Velika Plaza, with all its typical habitats and species, is a site of truly unique value on the Adriatic coast. Only in Albania have habitats of comparable size and naturalness survived the rapid development, but these have different species compositions. The unique observation of the Andalusian Hemipode Turnix sylvaticus has to be examined by a rarity committee that includes experts for this particular species. This extremely rare bird, which is known to breed only in Spain, is on the brink of extinction in Europe. Its presence in the area is a further excellent indicator for the uniqueness of Velika Plaza and the entire Bojana delta. It demonstrates that knowledge about the area's biodiversity is very poor, so that an environmental assessment and careful planning is still needed to make the development of tourism sustainable.

The alkaline marshes behind the first belt of dunes and the natural forest indicated on the map constitute a unique habitat in Europe. This single site already hosts 1 % of the population of the Baillon’s Crane Porzana pusilla, a rare waterbird in Europe. 16 species of birds that are on the European list of conservation concern (SPEC) and are used by the European Union and the Council of Europe to identify important habitats in need of protection, have been found as breeding or potential breeding birds only in this area, which has already been affected by the recently built road. This is a very large number, especially taking into account the short time of research. It qualifies the area as a unique coastal site at the Adriatic coast. The cultural, semi-natural landscape of pastures and lowland forests is characterised by species such as Nightjar Caprimulgus europaeus, Roller Coracias garrulus, Bee-eater Merops apiaster, Woodchat Shrike Lanius senator and Corn Bunting Miliaria calandra. The high value of Velika plaza derives from the zonation of different habitat types and the high numbers of endangered and rare breeding birds that are associated with different habitat types.

In addition, several species of great European conservation concern have been observed feeding in the area. They are indicators of the continuing existence of a habitat network in the Bojana Delta in both countries. Endangered water birds like Pygmy Cormorant, Night Heron Nycticorax nycticorax, Squacco Heron Ardeola ralloides and Purple Heron Ardea purpurea, as well as birds of prey such as Short-toed Eagle Circaetus gallicus and Bonelli’s Eagle Hieraaetus fasciatus, need intact, large-scale landscapes with a variety of feeding sites in order to survive. Examination of the site as a stepping stone for migrating and wintering birds has just started (compare 5.2.8 Hunting impact). In this context, it is important to know that during the winter a Great Bustard Otis tarda (SPEC 1) was recently shot (!) at Velika Plaza.

8.2.2.3 Conservation goal

According to the Nature Protection Act (SRN 36/77, 2/82), the beach covering some 500 ha is already protected as a “natural monument”. This proposal includes not only the beach but also the older parts of the barrier islands between the right branch of the Bojana and the new part of Ulcinj (Gornji and Donji Stoj). Clear zoning is needed for the most valuable areas to be strictly protected (Eastern Velika Plaza and the prodelta), with a surrounding buffer zone that will include the pasture and meadow system.

The DEG Master Plan for Tourism also proposes that the entire Eastern Velika Plaza should be protected. The building of tourist resorts in the western and central part of Velika Plaza (Donji Stoj) has to be dealt with by a careful Environmental Assessment study (compare DEG 2003: Environmental Impact Assessment for the Development of Module 2). The Euronatur study has confirmed the Regional Master Plan for Tourism as well as the area’s truly exceptional value.

The ban on hunting in the already protected part of Velika Plaza is most important – numerous hunters have been seen here, using all kinds of illegal weapons – as well as in the proposed protected area. It is impossible to combine tourism and hunting in this area. In addition, the rare habitat is very attractive to a large number of rare and endangered birds, which are doomed to be shot if hunting is not banned. Other dangerous activities that have to be strictly controlled are off-road cars, sand excavation and a whole set of leisure activities, if this area is to become a prime area for both tourism and nature conservation in Europe.

8.2.2.4 Management

Intensive tourism development should only take place in the western part of Velika plaza, and the natural habitats, such as dunes and wet depressions, should be maintained as special assets, not only for nature conservation but also for tourism (DEG 2003). Each new development project requires an environmental impact assessment based on international standards.

The central part of Velika Plaza should be used as a buffer zone between the intensively used beaches in the west and the strictly protected area in the East. The natural habitats, such as the wet depression, dunes and forests, have to be strictly protected. The new road, which has destroyed the water communication by cutting in two a 5 km long alkaline marsh, should be reconstructed with a wooden bridge. Meadows and pastures need to be managed as grassland areas and can offer some possibilities, such as riding, to the tourists. A good ranger service, with suitable information boards, is most important to guide the tourists.

The fact that the entire Velika Plaza and most of its hinterland is regularly flooded and has therefore to be treated as a wetland, must be taken into consideration (DEG/ERM 2003). Suitable water management is the key issue. As the area is very low, it will be the first to be affected by rising
8.2.3 Ulcinj salina »Solana Ulcinj«

8.2.3.1 Habitat description

Today the Ulcinj salina takes up a large part of the Zoganjsko jezero lagoon (“Bird Lake”), a famous place where even pelicans bred some 100 years ago. The 14.5 square kilometre large salina has developed in two phases. The old salina was built 75 years ago, and additional large basins were added to improve the crystallization process in the 1970s.

8.2.3.2 Value

Solana Ulcinj is the key site for breeding and roosting waterbirds in the Bojana-Buna delta today. This is clearly visible from the distribution maps during the breeding season, as well as during the winter and migration periods. The Solana is a unique site in Montenegro from the point of view of bird populations and halophyte vegetation.

The Solana is of global importance for the Dalmatian Pelican *Pelecanus crispus*. Birds from the small breeding colony at Lake Skadar feed and probably roost in the salina. In October 2003, we counted up to 56 Dalmatian pelicans there. For the worldwide endangered Pygmy Cormorant, the site is also one of the key feeding places during the breeding season, as well as during the migration period. The two mixed heron colonies of international importance use Solana Ulcinj as a feeding site.

According to the criteria of the Ramsar Convention in WPE3 (Wetlands International 2002), a wetland is considered to be of international importance if it regularly supports 1% of the individuals of the population of one species or subspecies of waterbird (Criterion 6). Applying this criterion to waterbird counts in Solana Ulcinj from 2003-2006, at least 15 species of waterbirds reach the Ramsar threshold.

The breeding population of the Collared Pratincole *Glareola pratincola* needs better management to regain its international importance. The population in 2003 and 2004

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**Table 19: Species of waterbirds in Ulcinj salina that reach the 1% threshold of the Ramsar Convention**

<table>
<thead>
<tr>
<th>Species</th>
<th>WPE3</th>
<th>Species</th>
<th>WPE3</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Phalacrocorax pygmeus</em></td>
<td>1%</td>
<td><em>Charadrius alexandrinus</em></td>
<td>1%</td>
</tr>
<tr>
<td><em>Pelecanus crispus</em></td>
<td>3%</td>
<td><em>Pluvialis squatarola</em></td>
<td>1%</td>
</tr>
<tr>
<td><em>Egretta garzetta</em></td>
<td>1.5%</td>
<td><em>Calidris alpina</em></td>
<td>1%</td>
</tr>
<tr>
<td><em>Ardea alba</em></td>
<td>1%</td>
<td><em>Limosa limosa</em></td>
<td>3%</td>
</tr>
<tr>
<td><em>Platalea leucorodia</em></td>
<td>1%</td>
<td><em>Numenius tenuirostris</em></td>
<td>1%</td>
</tr>
<tr>
<td><em>Tadorna tadorna</em></td>
<td>1%</td>
<td><em>Tringa erythropus</em></td>
<td>1.5%</td>
</tr>
<tr>
<td><em>Himantopus himantopus</em></td>
<td>1%</td>
<td><em>Tringa stagnatilis</em></td>
<td>1.5%</td>
</tr>
<tr>
<td><em>Glareola pratincola</em></td>
<td>1%</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
dropped due to the unfavourable breeding conditions, with irregular flooding of the ponds and overgrowing of levees with bushes.

8.2.3.3 Conservation goal

The salinas are important wetland habitats and of great importance for breeding birds and migrants (Sadoul et al. 1998). Maintenance of the Ulcinj salina should therefore be an important part of the conservation concept.

The conservation goal is to establish

- IUCN Category V
- a protected Landscape/Seascape:
  - protected areas managed mainly for landscape/seascape conservation and recreation.
  - an area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, cultural and/or ecological value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.

The area fulfils the criteria of the Ramsar Convention as a wetland of international importance. If hunting is strictly controlled (compare below), it will become a key site for waders in the Central European flyway (20,000 birds). Besides this, the conservation goal is to attract further species, such as the Greater Flamingo *Phoenicopterus ruber*, as breeding birds and to establish the area as an attractive asset for regional tourism.

8.2.3.4 Management

The old part of the Solana has been explicitly declared a hunting-free area in the hunting regulations of the County of Ulcinj. In addition, the entire Solana is, according to the same document, an industrial area, and thus not open to hunting according to the Hunting Law of Montenegro. Nevertheless, numerous hunters have been recorded inside the Solana, along the also protected Velika plaza (compare Map 4.8). The first and most important step for the preservation of the wetland of global importance is to enforce the hunting ban under strict control.

The Management Plan for the Solana will be prepared by a separate project. The main objectives are:

- to improve the breeding conditions for the colonial waterbirds and waders,
- to protect this area of international importance as a resting and wintering site for waterbirds,
- to include interpretation and tourism in the salt production process, and
- to develop guidelines and actions to make salt production as environmentally friendly as possible.

Part of the Solana (Jezero 1) will become a core area inside the salina and will be managed as a breeding area for waterbirds.

Biosphere Reserve zoning: Buffer zone 2c (special management)

8.2.4 Ulcinjsko and Zoganjsko polje (Ulcinj and Zoganje Fields)

8.2.4.1 Habitat description

The characteristic feature of the area is that of pastures and meadows divided by hedges. Separate trees or patches of floodplain forests and Mediterranean gardens interrupt them. The meadows are mown in June on some 30% of the surface area. Domestic animals then graze until spring. The Ulcinjsko and Zoganjsko poljes form an open landscape (800 ha) that is regularly flooded by heavy local rainfall. Large parts of the area are enclosed by up to half a metre high levees. The system of »polder meadows« thus formed retains water and fertilizes (with floating material sediments) the area in a natural way. The Ulcinjsko and Zoganjsko poljes have thus turned into a temporary wetland!

8.2.4.2 Value

In Western Europe, the manner of farming with a system of inundation and use of meadows by mowing and grazing has been abolished. The paradoxical value of the two Fields lies in the fact that insectivorous species breed here, such as Little Owl *Atene noctua*, Scops Owl *Otus scops*, Roller and Woodchat Shrike, together with the Black-headed Bunting *Emberiza melanocephala* while, on the other hand, herons, waders and Short-toed Eagle feed in the very same place. The meadows at Ulcinjsko Polje along the very edge of the Ulcinj salina are the key locality of the Black-tailed Godwits *Limosa limosa* (up to 500 birds in one flock) and other waders, which greatly contribute to the international value of the salina. Of great interest is the combination of orchids restricted, some to dry and some to wet, sites – *Ophrys* sp. and *Orchis laxiflora* only a metre apart! With the exception of some stalls and small farms, the settlements are concentrated on the northern margin of the area, i.e. along the Ulcinj-Zoganje road.
8.2.4.3 Conservation goals

The basic objective is conservation of the existing farm usage: guided flooding, mowing, grazing and extensive fruit growing and gathering. It is important that the industrial zone of Ulcinj does not spread into the area – already farming is being abandoned in some parts near Ulcinj. Residential areas should be planned along the Ulcinj-Zoganje road and care taken that the patches of floodplain forest are not cut down.

8.2.4.4 Management

An ideal area for the development of trekking and riding tourism lies around the town of Ulcinj itself. The unpaved roads at Ulcinjsko and Zoganje poljes are truly adventurous: one moment they are dry, then suddenly covered by shallow water! Conservation tasks include, apart from mowing and grazing in the meadows, care for fruit, vegetable and wine production with adapted old varieties (regional products!).

For this purpose, a garland of gardens north of the settlements along the Ulcinj-Zoganje road and right up to Darza (e.g. lemons, olives and chestnuts) should be included in the area management. Everything should be done, however, to preserve the landscape gradient of Mediterranean gardens, which decreases in the direction of the salina and disappears totally in front of them. In the Bojana-Buna delta, the Ulcinjsko and Zoganje Poljes are some of the hot spots of arable crop diversity. The latter has in fact not been studied as yet and requires an inventory of the area’s gardens and herbs. Persimmons, figs and mulberries are a very special feature of the area! In connection with gastronomy and tourism, such genuinely regional products are of the greatest interest. The same can be said of the endangered breeds of domestic animals. The area is certainly in need of landscape protection with special management.

Biosphere Reserve zoning: Buffer zone 2a (Zoganje Polje) and 2b (Ulcinj Polje)

8.2.5 Kneta marshes

8.2.5.1 Habitat description

There are three Kneta marshes in Montenegro: Mala Kneta (127 ha) and the connected complex of Curke and Darze Knetas (234 ha). The most characteristic feature of Mala Kneta is the association of Carex sp. and Juncus sp., which is grazed by cattle and even mown. It is surrounded by an extensive and sharply separated belt of Tamarix sp. In their deepest parts, the Curke and Darza Knetas are overgrown with reed Phragmites australis. The dominant association of both Knetas consists of Tamarix sp. The Knetas are the remains of the former lagoon of Lake Zogaj. The northern and western edges of Kneta Darze and Curke now form an extensive grazing area. The impact of grazing on vegetation decreases along the gradient from the settlements towards the centre of the Knetas and follows the natural flood line.

8.2.5.2 Value

Knetas (Albanian word for marsh) are the “extreme” habitat of the Bojana-Buna delta, forming a gradient between brackish and freshwater wetlands. The smaller part is permanently under water, while the larger part is intermittently inundated. Specialised bird species can be found here: at Mala Kneta, groups of Glossy Ibis Plegadis falcinellus are known to feed, numbering up to 50 or even 200 individuals. They normally select shallow water, where grazing or mowing is practised. One of the breeders here is the Baillon’s Crake. The Curke and Darza Knetas are the only nest-site of the Great Bittern Botaurus stellaris in the Bojana-Buna delta and one of the key areas for the wintering Spotted Eagle Aquila clanga. Also important is the exceptional density of the European Pond Terrapin Emys orbicularis. The Knetas are further known as an important fish spawning area. The water level oscillation offers good feeding possibilities to the nearby colonies of aquatic birds (with no feeding-bottleneck in the breeding season!). Grazing areas are good feeding localities with low vegetation (e.g. herons, ibises and waders) and are combined with impassable tamarisks, an important roosting site for herons, ibises and the local population of corvids.

8.2.5.3 Conservation goal

The core area should be conserved as a nature reserve.
Restoration of the ecological value of the Knetas requires some urgent steps to be taken. First of all, hunting should be abolished. The only surviving species among the breeders are those that hide in reeds, e.g. Water Rail *Rallus aquaticus*, Great Bittern. The species closely associated with open water surfaces, such as ducks, have been extirpated. The second step would be to preserve and maintain low-pressure grazing with adapted old breeds of domestic animals (Mala Kneta, Darza Kneta). Burning reeds in the Curke Kneta for duck hunting purposes should be immediately stopped! One of the attainable conservation goals would be restoration of the breeding population of Ferruginous Duck.

**8.2.5.4 Management**

In order to maintain the open character of the Mala Kneta, low-pressure grazing outside the breeding season would be necessary. Controlled single mowing in years with low water levels would be possible, and would form a feeding site for Glossy Ibis. Human activities should be reduced in the Curke Kneta. The edge of this Kneta along the Curke-Darza road should retain the function of a pasture (a scenic viewpoint and feeding habitat for waders, herons and the Roller). Management of the Curke Kneta should provide for restoration of the old reed-beds in which Great Bittern could breed. The same applies to the southern part of the Darza Kneta – the largest preserved kneta in the Bojana-Buna delta. The hillocks above the knetas offer a superb view over the southern part of the Bojana-Buna delta, and should be integrated into a system of cycle tracks and hiking trails within the delta. Cessation of grazing should be prevented with a development programme and new capacities offered: old breeds, horse riding, etc.

Biosphere Reserve zoning: Core area 1a – Curke Kneta, southern part of Darze Kneta, 1b – Mala Kneta, northern part of Darze Kneta

**8.2.6 The Bojana-Buna alluvial forest**

The Bojana-Buna floodplain forests cover 750 ha (Montenegro 670 ha, Albania 80 ha) and stretch no less than 9 km up-river from the island of Ada. Together with the floodplain forests of Ada, Velipoje and Velika plaza they form, behind the head of the delta, the largest complex of floodplain forests on the eastern side of the Adriatic coast. They are the canopy and trademark of the Bojana-Buna delta, which can be clearly seen, even on a satellite photograph. They consist mainly of softwood tree species with a series of different transitions down to hardwood floodplain forest. All types of transition can also be found in terms of land-use: from closed virgin forest to fragmented stands. Grazing and even mowing is practised in these forests.
8.2.6.2 Value

The ecological significance of floodplain forests lies in the rich genetic potential of flora and fauna, as well as in landscape-ecological functions as far as water balance, protection from floods, and climate are concerned. The Bojana-Buna floodplain forests annually transpire into the air about 2.5 million tons of water, purifying it at the same time. Apart from this, they have a significant impact on agriculture. The characteristic Mediterranean summer droughts are mitigated by the strong evaporation of water from floodplain forests. Through biomass growth, trees fix carbon dioxide (which is detrimental to the ozone layer) in their wood. The Bojana-Buna floodplain forests have another special role, apart from supplying wood for construction purposes: low-pressure grazing by adapted old breeds of domestic animals, or even forest-mowing, helps the locals and their animals to overcome the dry and hot summers!

The Montenegrin and Albanian Forest Managements should prepare a joint restoration programme. In view of the recent history, when the majority of floodplain forests in the Bojana-Buna corridor were destroyed, nature conservation interest should remain in the forefront. The forests should be replenished with indigenous tree species (plantations of hybrid excluded!). A wonderful example of a natural floodplain forest with predominantly softwood tree species on the former coastal sand wave can be found on Ada Island!

Most of the floodplain forests are today situated on the Montenegrin side, where they were cut off from the river by levees. However, due to the hilly hinterland on the Montenegrin side, they are still inundated. The situation is somewhat different on the Albanian side. Restoration of floodplain forests can be here carried out just by shifting the levees (see the proposed restoration area on Map 5).

Biosphere Reserve zoning: Core area 1a, 1b, 1c, Buffer zone 2b.

8.2.7 Sasko jezero (Lake Sasko)

8.2.7.1 Habitat description

This is an oligotrophic freshwater lake with 315 ha of water surface and maximum depth of 9 m. During the high-water level of the Bojana-Buna, the lake is connected with the river. Taking into account the inundated Fraskanjelsko and Brisko poljes, the lake's surface is increased by a further 380 ha. The water level oscillates by about 2 m, with temperatures ranging between 7.0 and 23.9 °C. The lake is supplied by the underground Bojana-Buna sources. A belt of reed surrounds Lake Sasko. Towards Brisko Polje, the lake joins the complex of developed floodplain forests (52 ha), while in the east it merges with the Kneta Fraskanjel (47 ha) which is overgrown with Carex and Juncus sp. Lake Sasko is a depression situated in between two karst chains (25 km²) and overgrown with maquis and open deciduous forests (see 8.2.15 Migration corridor).

8.2.7.2 Value

The key value of the lake is its size as well as its karst surroundings, which are completely natural, with no human impact. Together they form a fascinating virgin landscape. Access to the lake is possible only at one point – at the ruined military summer resort (today only Sas Restaurant is still functioning). The lake is inhabited by twenty fish species, including eel Anquilla anquilla, European seabass Dicentrarchus labrax, and two mullet species Mugilus cephalus et liza. The latter are present in the form of parent and open deciduous forests (see 8.2.15 Migration corridor).

8.2.7.3 Conservation goal

The lake, with its alluvial forests and Fraskanjel Kneta, should be protected as a nature reserve (Core area 1a, b). The main conservation objective is to preserve its original character and, according to the Ramsar Convention criteria (20,000 aquatic birds), the area should again be proclaimed a wetland of international importance.
8.2.7.4 Management

Non-indigenous herbivorous fish species have been introduced into the lake. Since they destroy macrophytes and other water plants, a plan for their removal should be prepared. The planned 1.6 km long channel for “a better fish communication” could drain Lake Sasko. During floods, the lake already regularly and effectively “communicates” with the Bojana-Buna river. Low-pressure grazing is desirable prior to the restoration of Lake Sasko and in the flood area of Fraskanjelsko Polje (Kneta Fraskanjel). Hunting birds on the water of Lake Sasko should be strictly prohibited! According to personal communications by the locals, “whole carpets” of water birds used to winter here. The currently much practiced fishing with nets should be stopped, since, in the long run, it may destroy the migration corridor for fish. In the eastern part of the lake, only traditional fishing is possible outside the cold part of the year.

8.2.8 Bojana-Buna braided zone

8.2.8.1 Habitat description

One of the characteristics of the braided zone is the medium drop and strong transport of gravel and sand. As in many other middle courses of rivers, large islands and branches are quite common in this part of the Bojana-Buna river which classifies this section as river braided zone type with sinuous channels with anabranching. The strength of the river’s course is so strong that it can make smaller boulders roll, particularly during floods. The result is a dynamic, some 16 km long section of the river, with bare gravel islands, sand walls and branches, and with all successive stages of the floodplain forest in a surface area of 400 ha! From lake Skadar, the Bojana-Buna carries only floating particles and is basically a lowland river with (natural) levees. Most probably, the characteristic braided zone began to form only with the breakthrough of the gravel-carrying Drinisa River (branch of Drin River). The Bojana-Buna’s transport of floating matter was joined by the transport of bed load, for the villages along the left bank of the Bojana-Buna still stand immediately by the river on natural levees, surrounded by a mosaic of fields (dry and strained ground). The river has already partly reshaped the right bank, and today pastures, meadows and small-scale agriculture (inundated area) are spreading there.

8.2.8.2 Value

Braided zones of European rivers have been totally destroyed owing to the numerous regulations and use of power-supply. The dynamic sections of the rivers here are thus among the most endangered natural environments on the Old Continent. As long as a quarter of a century ago, the European Council called for conservation of the large riverine forests. The Bojana-Buna furcation zone is an area of European concern but, combined with the Drinisa furcation zone, it certainly deserves to be inscribed on the UNESCO’s world natural heritage list. This is confirmed by the presence of several bird species characteristic of the river dynamics: Sand Martin *Riparia riparia* with 3,000 pairs, the large
population of the Common Sandpiper *Actitis hypoleucos*, the Kingfisher *Alcedo atthis* (nesting in the Bojana-Buna Delta), and Stone Curlew, which breeds in primary habitats of the gravel islands. Caspian Terns, *Sterna caspia*, are of special value in the area; they were seen carrying food in the 2003 breeding season, but no colony was located (Lake Skadar?). The value of this section of the river has also been well illustrated by people themselves: in the summer, up to 10,000 inhabitants of Shkodra bathe here every day. The furcation zone is at the same time a natural biomechanical filter for the town’s sewage, an important fishing area for the local population, and a spawning area for the sturgeon *Acienser* sp. On their way to the braided zone, schools of fish are even followed by Bottlenose Dolphins.

8.2.8.3 Conservation goal

The riverine islands and remains of floodplain forests should be protected as a nature reserve (Core area 1a, 1b). Some smaller regulated sections should be restored (core area 1c). The main objective is to preserve and to give firm support to the processes of the natural river dynamics. The river’s environs are in need of landscape protection (buffer zone 2a). Humane activities should be spatially and temporally zoned. Access to the islands, which is the basic reason for the absence of colonial species, such as terns, should be also stopped. As some greater regulations in the Bojana-Buna furcation zone are yet to be carried out, the priority task would be to implement some modern water management and nature conservational measures.

8.2.8.4 Management

Due to the Drinisa’s gravel deposits reaching the Bojana-Buna river immediately after its discharge from Lake Shkodra/ Skadar, there is a real possibility that the braided zone will be deepened and channelled. Gravel digging should be replaced by measures promoting the river dynamics. This would also be important for the growth of the delta head in the future. No channeling of the river! These would be possible...
only for eventual protection of the villages. Organised transport over the river is not problematic, e.g. a river taxi between the villages. Fishing and hunting from boats as well as water recreational activities should be restricted. A system of management and fishing control, to conserve, for example, Acipenser, should be established. Bathers should be directed to selected sections of the river. In addition to sensitizing people about the significance and economic role of the river and about measures for its improvement, a wide alliance, in particular with the inhabitants of Shkodra, could be formed for its protection. A system of cycle tracks could be built between the villages, where direct contact with the river would also be possible (Derragjati, Mushani, Dajci, Muriqani, Zuesi). The inundated area on the right side of the river should in no way be built up!

8.2.9 The extensive pastures of Gjo-Lulit and Gjeratit

8.2.9.1 Habitat description

This is an important open landscape in the Bojana delta, used as pasture land (2200 ha). The grassland is situated at the foot of the Karst chain. During the fieldwork, some 10,000 sheep were recorded. Most of the animals migrate with the shepherds from the villages south of Shkodra to the pastures. Only a few stay in pens made of reed and wood near the road. The area is regularly flooded and overgrazed on at least 75% of its surface. Some 25% of the area is mown and then grazed for nine months. The network of small to medium size channels has an open character (without trees and with few hedges).

8.2.9.2 Value

The pastures are the key habitat in the entire delta for species that depend on an open landscape. Here geese and cranes would be able to rest if hunting were better controlled. The area is today important as a large-scale habitat for resting and feeding birds, such as herons, Spoonbill, waders and gulls. In the delta, large-scale pastures are most important breeding sites for the Yellow Wagtail and the large population of farm birds like the Corn and Black-headed Buntings. The area is the key Mediterranean wintering site for Wood Larks, with 1% of their European population. It is also rich in amphibians and European pond terrapins (in channels), and an important spawning ground for fish. The shepherd tradition/culture still persists. The area is regularly used as a feeding and hunting site for birds of
prey, including the Golden Eagle, since open landscapes of this type and size are very rare on the Adriatic coast.

8.2.9.3 Conservation goal

The preservation of pastures and open landscape is the main conservation goal. The area qualifies as a protected landscape and should not be affected by roads, buildings and (medium and high voltage) power lines. Flooding of the area is important, not only for conservation, but also for the quality of the pastures. The conservation goal is to link the traditional use of the area with measures to improve the water regime and, if possible, spawning and living conditions for fish and amphibians.

8.2.9.4 Management

Preservation of the pasture and the flooded area, with partial restoration if possible, to improve wetland character and increase reproduction of fishes. The most important task is to assist the farmers in selling their products – riding tourism is possible (e.g. on old breeds). Where necessary, the dangerous up-turned insulators should be replaced. Breeding boxes for insectivore birds (Roller, Hoopoe *Upupa epops*, Lesser Kestrel *Falco naumanni*) should be placed on poles.

Biosphere Reserve zonation: Buffer zone 2c (landscape protection with special management)

8.2.10 Kneta Gjeratit and liq. Murtemes marshes

8.2.10.1 Habitat description

The tightly knit complex of these two wetlands covers 246 ha (see 8.2.15 Migration Corridor). The central part of Kneta Gjeratit, with its periphery serving as a periodical pasture, is overgrown by extensive reed beds. Liq. Murtemes is a lake with developed zonation of water and riparian vegetation. The carpet of macrophytes is quite remarkable; during the period of low water level in the vegetation season, it covers the water surface. The water regime of both wetlands has been affected by land reclamation carried out in their vicinity in the recent past. At that time, the largest Casi Kneta (283 ha) was also drained. The view of both wetlands from the panoramic road is still magnificent, and creates an impression of a high degree of naturalness.

8.2.10.2 Value

These are the most important standing freshwater wetlands on the Albanian side of the Bojana-Buna delta. Liq. Murtemes is a breeding place and migration site of the globally threatened Ferruginous Duck. The Common...
Pochard *Aythya ferina* and Garganey *Anas querquedula* also breed here. Both wetlands are important feeding places for Pygmy Cormorants and Squacco Herons from the Paratuk colony. The only known breeding site of the Little Bittern *Ixobrychus minutus* in the Bojana-Buna Delta spreads along the Velipoja Reserve.

This is one of the key areas for understanding the geography (the intersection of karst chains) and ecology (flooding) of the Bojana-Buna Delta. One of the greatest points of interest is the country road leading along the edge of flooded pastures to the Gjeratit Kneta, for from it you can see numerous herons, ibises and waders feeding among endangered breeds of domestic animals. The Mt. Kolaj Pass offers a superb view of the northern and southern part of the Bojana-Buna Delta.

### 8.2.10.3 Conservation goal

The never-ending pressure exerted in the area by hunters is indeed tremendous and reduces the wetland’s value to a very considerable extent. In the long run, even grazing domestic animals are likely to be poisoned with lead. Fishing from boats on Lake Murtemes is also problematic, since nets simply prevent fishes migrating along their migration routes. The first conservation goal is thus to protect the area as a reserve (a 134 ha core zone (1a) would be needed for the species living in reeds, such as Rallidae and Great Bittern, and a 112 ha core zone (1b) for the species whose feeding habitat is flooded pastures and open water surfaces). The second conservation goal is to present to the visitors the area’s nature and culture, as seen from the country road itself. For this purpose, however, information boards would be required, grazing by domestic animals adapted to flooding should be enabled at all times (care of nuclei *in situ*), and regional products made available to visitors. The third long-term goal is restoration of the 283 ha Casi Kneta. One of the most significant aims, in view of the size of their former habitats (the Via Mortemza «channel» linking Lake Murtemes on the map from 1918), is to create suitable feeding habitats for pelicans.

### 8.2.10.4 Management

Due to the fact that the areas of Gjeratit and Lake Murtemes can be reached easily by anybody, rangers and guides should be regularly employed there. The locals need access only along the edge of the two wetlands in order to take care of their grazing animals. A number of scenic points and lay-bys along the roads are already available to the visitors and only need to be suitably marked. A special attraction could be a visit to the many military bunkers of the former communist regime cut into rocks, and direct contact with grazing animals at Stalla. The locals should be supported in making, as well as selling, the regional products which could be offered to the visitors along the road directly from their homes! The unused area (core area 1a) should be protected from burning, grazing and riding (with no boats!).

Biosphere Reserve zonation: Core area with no use (1a) and low pressure grazing (1b)
8.2.11 Reci Fishponds

8.2.11.1 Habitat description

The production of fish stopped some years ago. The aqueduct, the system of channels and associated buildings have been destroyed. Most of the basins of the 114 ha large fishponds are still filled with shallow water of underground and meteoric character. Emergent and floating vegetation is still present here, although not in all basins due to the grazing animals. The levees and bottoms of dry basins are full of pigs, sheep, goats, cattle and horses. The greater the distance from the bridge used by the villagers of Reci, the greater the overgrowth on the levees and in the basins. The extreme end of the fishponds at the Bojana-Buna river is thus already a secondary alluvial forest. The 30 m wide oxbow-like channel along the southern edge of the fishponds is particularly attractive.

8.2.11.2 Value

The position of the fishponds between the three colonies of cormorants, herons and ibises demands notice, given that the fishponds constitute the only larger wetland that remains after the area was drained in this part of the delta. The fishponds are the most important feeding habitat in the delta for the Squacco Heron, where feeding groups number up to 40 birds! Among the waders, species such as Black-winged Stilt *Himantopus himantopus* and even a small colony of the Collared Pratincole breed here. Domestic animals are attended by herdsmen or are tied to poles with long ropes on the levees. The proportion of endangered indigenous breeds is quite high – about 50 % - and comprises a truly wide range of domestic animals.

8.2.11.3 Conservation goal

The fishponds are in need of landscape protection with special management (buffer zone 2c). Revived production would have a double role: it would reduce the pressure exerted by man on the river, and create new possibilities for both birds and people. Within the development concept everything should be done to revive production in the eastern quarter of the area, to implement nature conservation management in its central half, and to restore the western quarter of the fishponds. The objectives regarding the channel, as well as the central and western parts of the fishponds, are levees overgrown with trees; removal of the latter would restore the open character of the landscape. Target birds for conservation should be species like Collared Pratincole and Squacco Heron (feeding together with the endangered breeds of domestic animals!). No hunting should be allowed at the fishponds.

8.2.11.4 Management

The area has high educational potential: with a nature trail leading along the fishponds, suitable boards and guides, the visitors could become acquainted with, for example, the
ecological demands of aquatic birds, fishes and reptiles, and the impact of grazing on the area's vegetation. They would also have the chance to meet the locals selling their regional products of fish, cheese and meat. The area would thus be suitable for an international youth naturalist centre. It would also be of great importance for the young from the village of Reci and their perspective in the countryside. Provision for the Collared Pratincole's colony would be possible, without high costs, just through grazing by domestic animals; the latter would also protect the levees from overgrowing.

Apart from the revival of fish production, an important, international role would be played by caring for the nesting-site of colonial breeders: terns, waders, Sand Martin and Bee-eater. The permanent tasks would be local management and formation of nest-sites, guidance, control, and monitoring.

Biosphere Reserve zonation: Buffer zone 2c (landscape protection with special management)

8.2.12 Velipoja and Fusha e Pentarit small-scale agriculture and pastures

8.2.12.1 Habitat description

The production of food without the use of fertilizers and biocides is a characteristic of the drained areas on the Albanian side of the delta. Setting aside land and grazing, following crop gathering is widespread over the entire area. This small-scale agriculture creates a mosaic of arable crops and pastures enclosed by hedges. Wet depressions are utilised exclusively as pastures that constitute a truly soft and warm landscape of open type. Even though both areas have been drained, they are still regularly inundated! The exceptional size and extensive farming in this cultural landscape are the key values of the area. Velipoje covers no less than 2,500 ha (small scale agriculture - 2100 ha, pastures – 400 ha), Fusha e Pentarit 850 ha (pastures – 500 ha, small scale agriculture – 350 ha). In Central Europe, the types of farming present at Velipoje and Fushe e Pentarit disappeared a century ago. Even though both areas have been drained, they are still regularly inundated!

8.2.12.2 Value

Land-use in the delta area places the severest demands as far as the protection of consumers and nature is concerned. It is in fact a cultural landscape with very few parallels in Europe! The densities of breeding and overwintering farm bird birds are exceptional. The area of Velipoje and Fushe e Pentarit is crucial for the endangered European populations of farm birds in the Bojana-Buna Delta, such as Corn Bunting and Black-headed Bunting.

8.2.12.3 Conservation goal

The main goal is to protect the existing land-use! The area is suitable for landscape protection (buffer zone 2a, c). Significant subordinate goals are to regulate hunting, by stipulating areas where this activity is allowed (particularly along the depressions), and to restrict visitor access to the marginal roads and to close off the central area (large scale
Figure 37: Fusha e Pentarit (Photo: B. Stumberger)

habitat of birds!), especially as far as Fusha e Pentarit is concerned.

8.2.12.4 Management

One of the most urgent tasks would be to carefully register the various manners of land-use and methodically to collect the old varieties of grain and root crops. A seed bank should be founded and a catalogue of regional products of the endangered varieties of arable crops and indigenous breeds of domestic animals prepared. Various marketing concepts and trademarks for the marketing of regional products are implicit. If a development programme that would give a support to the area is prepared quickly, there are realistic possibilities for economic development of the countryside that will be as successful as those realised elsewhere in Europe.

Biosphere Reserve zonation: Buffer zone = small scale agriculture (2a) and pastures (2c)

8.2.13 Viluni lagoon

8.2.13.1 Habitat description

This typical coastal lagoon is separated from the parent sea by the two longshore barrier bars. The lagoon is characterized by shallow water and active sea–lagoon water exchange (isthmus). A large, periodically flooded hinterland (300 ha) and natural dune landscape at the seaside are interesting features. The open water surface, covering some 390 ha, is truly remarkable and is the largest water body in the Bojana-Buna delta. The natural zonation of vegetation at the lagoon’s northern part begins with floodplain forests, followed by tamarisks and Carex-Juncus sp. association. The edge of the open water surface consists mainly of a belt of reed. On the southern edge of the lagoon, mainly halophilous plants Salicornia sp. thrive. A levee spreads along the western edge of the lagoon with, in the depression behind it, a small area of psammo-halophytes. Low pressure grazing is characteristic of the marshy areas along the northern as well as southern edges of the lagoon.

8.2.13.2 Value

Viluni is the only remaining natural lagoon in the Bojana-Buna Delta! With the karst chain of Mount Kolaj in the background, the lagoon offers a magnificent wild natural landscape. Free roaming Busha cattle and Albanian horses in the tidal, brackish marshes only intensify the impression of this indeed primeval countryside. The lagoon is a natural nest-site of the Kentish Plover Charadrius alexandrinus and the only natural breeding ground in the delta of the Common Redshank Tringa totanus. It is an important feeding ground for the Pygmy Cormorant and Sandwich Tern Sterna sandvicensis, and a significant locality for water birds, especially during the winter. The 300 m long wooden pedestrian bridge across the narrowest part of the lagoon is quite simple but architecturally wonderful – a symbol of the area’s tourist development without roads and cars!
8.2.13.3 Conservation goal

The area has very high value as an important habitat for waterbirds. The persistent, uncontrolled fishing and hunting, together with the blocking of the lagoon’s entrance with nets, have heavily devalued the significance of the lagoon for waterbirds and prevented migration of fishes. The goal is to re-establish fish migration and conditions for undisturbed feeding, resting and overwintering of aquatic birds. Construction of illegal fishermen’s cottages along the narrowest part of the lagoon will also devalue the tourist attraction of the area, which should therefore be protected as a reserve: the central and northern parts of the lagoon (290 ha) should be free of any human pressure (core area 1a). For the remaining areas, low pressure grazing (core area 1b) would be most suitable, and also for the 42 ha large depression with psammo-halophytes cut by dam, which should be incorporated into the lagoon’s management. The lagoon is suitable for forming a nest-site (islet) for colonial species of waterbirds.

8.2.13.4 Management

The area should be taken care of by rangers. This need is well illustrated by the January waterbird count (IWC): in the early 1990s there were 7,000, but their numbers have since continually decreased until, in 2004, only 1,677 individuals were counted. Hunting from the lagoon’s banks, boats and hunting hides should be immediately stopped and the nets the entrance to the lagoon. The protection management’s tasks could be given firm support by guided tourism: in combination with visits to the wooden bridge (subjects: the lagoon’s ecology, rural architecture of the bridges, migration of fishes), a wonderful path along the levee on the western side of the lagoon is available to the visitors (subject: waterbirds and grazing in the marshes).

Biosphere Reserve zonation: Core area: 1a – central and northern parts of the Viluni lagoon, 1b – southern part of the Viluni lagoon and brackish marshes

8.2.14 Bax-Rrjolli with prodelta

8.2.14.1 Habitat description

Bax-Rrjolli offers a unique combination of habitats along
the 11 km long coast: mountain karst galleries and slopes, sand dunes, alluvial forest, tamarix marshes, temporary lakes in combination with sandy beach (together 1200 ha) and shallow prodelta (2,200 ha). There are no villages or infrastructure in the area! It is a dynamic natural landscape. The wind has recently formed a landscape with up to 50 m high active sand dunes on the slopes of Mount Kolaj. The impact on the endangered old breeds is low although clearly visible. It is an important virgin landscape with a very high naturalness in which large herbivorous species have been replaced by free roaming domestic animals.

8.2.14.2 Value

This is a truly spectacular Mediterranean site, with Brown bears still crossing the beach, Dolphin groups feeding in the prodelta, and the Golden Eagle breeding on karst galleries. The area is a unique combination of wetland (brackish and fresh water), marine and arid karst habitats.

8.2.14.3 Conservation goal

Naturalness, supported by low-pressure grazing and a fishery ban, is the prime criterion for development of the protected area.

8.2.14.4 Management

Low intensity grazing, with old breeds like Albanian Horses, Busha Cattle, Karakachan Sheep, Asses and pigs, plays an important part in preserving this landscape. Riding is possible on the other side of the sand dunes (rural tourism!). In the prodelta, fishing with trawl-nets causes quite a problem. Hunting of birds should be stopped. The peninsula of Plazhi i Bax-Rrjolli (50 ha) near the outlet of the Viluni lagoon must be free of human impact (Oystercatcher’s breeding site). Military bunkers should be transformed into breeding sites for birds such as Hoopoe and Little Owl, and bats. Climbing is not practiced and should not be allowed in the future.

Biosphere Reserve zonation: Core area: 1a – peninsula of Plazhi i Bax-Rrjolli, 1b – rest

8.2.15 Migration Corridor

8.2.15.1 Habitat description

The migration corridor between Klezna (Montenegro) and Shengjini (Albania) has been formed by two parallel tectonic karst chains. Inside this beautiful landscape there are several wet depressions, such as Sasko jezero, Fusha e Pentarit, Kneta Gjeratit and Fusha e Kakarriqit. The mountain range is intersected at three localities: Fraskanjel/Pentari at the Bojana, Gjo Lulit, and Lezhe (which lies outside the project area). The Karst chain is 35 km long and 2 km wide on average, covering some 7,145 ha of shrub and rock
vegetation like maquis, garigga and patches of deciduous forests (e.g. oak) interspersed with bare rocks.

Large mammals need corridors to migrate. Between the Adriatic Sea and Lake Skadar, a link between Albania and Montenegro is needed for animals such as the wolf and the bear, as well as some other species, such as roe and red deer. As Shkodra is already a large town spreading out to the south along the Bojana river, the most ideal place to cross the Bojana is between Fraskanjel/Pentari and Sv. Dorze.

8.2.15.2 Value

In the past karst chains have been natural bridges for large carnivores and other terrestrial animals to cross the delta. The brown bear still uses this migration corridor. This must continue. The protected landscape is also an important hinterland for the Bojana-Buna delta. The wild mountains areas are important retreats for several endangered species and highly significant for landscape value. These totally unpopulated areas are rarely used and could be incorporated in the tourist concept as places for hiking and observation points. This important natural site is used by several species of birds of prey.

8.2.15.3 Conservation goal

To preserve the migration corridor, the mountain fringes from Klezna (Montenegro) and Shengjini (Albania) should be maintained as forest and pasture areas, free from major obstacles for wandering animals. As this corridor is important on the European scale for endangered animals such as the brown bear, it should be preserved as a protected landscape. The goal is to make it a landscape protected area without settlements and roads, and to provide trails ands for path tourists.

8.2.15.4 Management

Low-pressure grazing with old breeds is needed. Access has to be limited to the viewpoints. Most attention should be dedicated to the corridor bottleneck sites: the river breaking through the place would need protective management in view of the increasingly spreading settlements and infrastructure (e.g. new quarry on the edge of Gjeratit).

Biosphere reserve zonation: Buffer zone: 2b

8.3 Rural development concept

A concept involving integrated development of settlements and rural areas in the Bojana-Buna delta is important, since the proposed protected area for the transboundary area promotes the use of the natural and cultural values that have been preserved throughout the area. Tourism is often the sector that can provide the greatest added value to a Marine Protected Area in the long term, but there are other sectors, such as fisheries, can be important too (Kelleher 1999). The fundamental criterion for success is to bring in, from the very beginning, every significant sector that will affect, or be affected by, the new protected area.
The Euronatur Rapid Assessment has been only a pre-phase but, as one result, a set of ideas is presented for the communities and villages in the Bojana-Buna Delta. This list of ideas, based on the field work of the Euronatur-team, is a contribution to rural development and tourism based on the natural and cultural resources in the region. It could lead to an integrated rural development project for each settlement. The most important goal is to give each community a place and an identity in the tourism and rural development scheme. The idea is a draft only, and has to be discussed with the local people, and to tap into their own ideas for promoting their own environments (compare DEG 2003 for the Posavina and the nature park Lonjsko Polje in Croatia).

The aim is to establish, for example, bicycle trails for guests arriving with the ferry from Italy or Slovenia. A possible circle would reach Ulcinj – Shkodra – Velipoja, with boat transfer to Sv. Nikola – Pulaj and Muriquani – Dajci. View points are also important for guests in the region. Up to now, tourists have only visited the beaches, but excursions and visits to the hinterland will also be important in future for the international tourist market.

8.3.1 Montenegro

Ulcinj – old town:  Topic: history and culture
- „Sea-Wolves“ - name of the town, harbour, and festival (summer)
- Old houses and castle
- Tourism in historic places (real estate)
- Sea watching (Marine Birds, dolphins, fishermen)
- Special attraction: Old olive yard near the town
- Swift colonies, including swallows and other birds
- View point: Terraces of the old Castle

Ulcinj – new town:  Topic: Life by the Adriatic Sea and salt production
- Market with regional products
- Markets and coffee shops
- Sheep race
- Information Centre “Solana Ulcinj”
- Salt festival „Berba soli“ (August/September in the Solana Ulcinj)
- View points: inside the salinas and from the bicycle trail around them.

Gornji Stoj/Spatula:  Topic: Pastoralism and Shepherd tradition
- Meat and cheese production
- Traditional garden and wooden fences
- Old breeds
- Rural architecture

Figure 40: The depression of Fraskanjelsko polje (Montenegro) lies between two karst chains. This photograph was taken during the flooding in November 2003 from the southern chain called Briska gora, looking towards the northern chain called Sulani (Photo: B. Stumberger)
• Bird watching (Bee-eater colonies, Stone Curlew, Roller)
• View Point: from trails parallel to the road along Velika Plaza and Gornji Stoj to the pastures, from Stoj to Spula (behind the alkaline marshes) and the „Copacabana” road (which intersects one of the most pleasant landscape areas). The whole Velika Plaza already has an existing trail system that can be carefully developed for riding, hiking and walking.

Sveti Nikola:  
**Topic: Life at the River**

• Traditional fishing and fish market
• Rural architecture
• Ferry for bicycle and nature tourist (Solar boat)
• View point: River Bojana-Buna

Rec/Sutjel:  
**Topic: Village and Nature Tourism**

• Ideal for visitor groups
• Pastures in the alluvial forests
• Old breeds of Busa cattle
• Attractive landscape (Sutjel hills)
• Riding and hiking
• Bird watching at the unique bird colony in the Bojana River (Herons, ibises, roost for over 1000 cormorants in winter on Paratuk islet)
• Dolphin watching by the river (May - September)
• View point: above the village Rec on the mountain:
• The old military point (part of the history and the story) is the best viewpoint in the delta: Bird migration, river ecology, and Iron curtain

Curke/Darza:  
**Topic: Life between Karst and Swamp**

• „Kneta festival” - special wetlands or “Tamarisk festival” (Mid April)
• Old breeds (Mala Kneta and Kneta Darze)
• Regional products
• Transhumance (seasonal domestic animal migration)
• Karst garden culture (olive yards and kaki)
• View point: at the end of the village Sutjel, there is a good place to watch the marshes (Mala Kneta).
• Kneta Curke can been seen from the small road
• For Kneta Darze, viewpoints on the hill have to be established
• Imposing Mediterranean alluvial landscape

Sveti Dorde:  
**Topic: Open air museum**

• “Life at the Iron Curtain” (hedgerows for border control)
• Natural and cultural landscape (Sasko jezero)
• Nature and group tourism
• Rural architecture and gardening
• Fishing in the river
• Hiking
• Dolphin festival (June 20th)
• View point: at the end of the village following the cattle trail you reach an impressive place from where you can view the landscape with the river, Fraskanjeljsko polje and Lake Sasko (Sasko jezero), a Karst depression and the pasturelands in Albania.

Fraskanjel:  
**Topic: Svac – remains of the mediaeval town**

• Interesting cultural landscape (hedgerow, “dehesa”)
• Viewpoint: Border control tower at the top of the Karst hill at the great Bojana break through the mountain fringe. View on the upper part (old part) of the Bojana-Buna delta with hedgerow landscape in Montenegro and pastures in Albania.

Dolnja Klezna:  
**Topic: Meadows**

• Rural architecture
• Mowing culture and “Orchid Festival” (May 10th)
• Sasko jezero
• Old breeds
• View point: road from Saske crkve (via Vladimir) with a good view over Brisko polje, the alluvial forests and Sasko Jezero

Vladimir:  
**Topic: Sasko Jezero**

• Rural centre for the upper Bojana Delta in Montenegro
• Fish market and rich cultural life
• Entrance to Sasko Jezero (Lake Sasko)
• Ruins of mediaeval town (trails and parking missing)
• Visit to the former Iron Curtain
• Restaurant at the lake and bird watching
• Viewpoint: From old town on Sasko Jezero and cultural landscape

8.3.2 Albania

Bax-Rrjolli:  
**Topic: Noah’s Arc – agro-diversity**

• All kind of old breed varieties from Shkodra sheep, Busha cows and Albanian horses to pigs and donkeys
• Rural architecture
• Pastoralism at the coast and mountains
• Use of tree branches as fodder (selective cutting of trees)
• Life at the Sea without a road
• Building a new bridge (assistance for the village and the guests)
• Special kind of farm tourism
• Riding (along the dunes on special trails)
• Fishing with traditional wooden boats (shrimps!) without engines
• Bird watching and Sea watching
• Picnic for tourist from Velipoja (fireside, songs, local food)
• Protection of bunkers as historic sites and for bats
• View point: From the mountains (needs to be signposted): a fascinating natural coastal landscape of 11 km to the East.

Velipoja:  
**Topic: Delta Museum for National and Natural History**

• Museum in the Enver Hodza villa for local people and visitors
• Centre for coastal tourism in North Albania (beach)
• Long season including bird watching, riding and hiking
• Regional products (farmers’ market)
- Velipoja Reserve with visitor management (trails, hides, guide tours)
- Pasturing in the alluvial forests
- View points: from the edges of the reserve (towers) on the sea and the Bojana river and from Pulaj (mountains)

Reci:  
Topic: Fish farming and water birds

- Excursions and group visits
- Rural architecture
- Fish farming, including rare birds
- Old breeds and meadows
- Fishermen’s festival (for example when emptying the ponds)
- View point: From the village near the church over the pastures and the fishponds with the Bojana river (e.g. birds of prey)

Gjo-Lulit (Stalla):  
Topic: Pastures and Pastoralism

- Production of meat and cheese
- Old breeds
- Geology: Buna/Drinisa breaks through the mountains
- Rural architecture (Stalla!)
- Reed harvesting and use
- Restoration potential and wetland use
- View point: from the road

Shirqi (Dajci):  
Topic: Agriculture at the riverside

- Boat – taxi or bicycle trail to Shkodra
- „Centre of bicycle tourism“ with G. Stoj
- View point: from the road/trail along the river

Derragjati:  
Topic: Living at the river

- Rural architecture (e.g. garden walls)
- Poplar as an important garden tree
- Colonies of Spanish Sparrow
- Old bunkers with different animals like little owl and bats
- River- and Bird watching (islands)
- View point: down stream and up stream of the community there are pleasant places on the rivers banks from which to view the riverine landscape.

Shkodra  
Topic: History and Nature

- Highlight: Rosafa Castle
- Promenade at the lake (needs to be developed!)
- Great view on Drinisa, Drim (Drin) and Buna as well as Lake Skadar
- Bathing in the River
- Typical local food (Restaurants at the lake and the river)
- Historic building with interesting natural and cultural heritage
- “Sturgeon” (!) or Fishing festival
- Direct observation of big numbers of waterbirds in the town as for example at Lake Constance (D, CH, A)
- View point: Rosafa Castle – from this place the whole ecosystem can be explained by viewing Lake Skadar, the rivers Bojana-Buna, Drini, Drinisa and the landscape. One of the best places – if not the best – to learn river ecology in Europe.

8.4 Proposal for a Bojana-Buna Delta Marine Park

The results of the Rapid Assessment are summarised in Map 5. Using the UNESCO methodology for Biosphere Reserves and based on landscape analysis and ecological value, Euronatur proposes the establishment of core, buffer and transition zones. It is most important that an administration is formed in both countries as soon as possible, which can lead the regional development of the coastal area. As the coast is already a tourism destination, the creation of offers for guests in spring and autumn has to be one of the key objectives. During the summer, the numbers of guests are already high and their impact has to be limited, as already endangered and rare birds are being disturbed at the coast.

The key to developing sustainable tourism is preservation of the ecological values. A set of flagship species can help in promoting the region, including bear, jackal, dolphin, loggerhead turtles, flamingo and Dalmatian pelican. The proposed park scheme with the 15 core areas will help to develop an attractive tourism destination, which offers great recreation potential for more than six months of the year. Euronatur has already identified some key ideas for each settlement in the Bojana-Buna Delta to stimulate rural development (compare Engel & Schneider-Jacoby 2003).

The name Marine Park Bojana-Buna Delta is a working title, pointing out the connection between the marine protected area (pro-delta) and the terrestrial part, formed mainly by delta processes. The transboundary protected area would form a unique system together with the already protected areas at Lake Skadar. Similar large scale protected areas are the key to rural and tourism development in other countries (Schneider-Jacoby 1996, 2000).