

## 7 Threats to the Bojana-Buna Delta

### 7.1 Development of Tourism

Tourism is an important asset of natural areas. This is very clear for natural beaches and seascapes, such as those in the Bojana-Buna Delta. The Adriatic coast at the mouth of the Bojana river in Albania and Montenegro is important for the regional development of long-term economic benefit based on the natural resources of salt and sweet water, beaches and attractive Mediterranean landscape.

The actual development is very problematic since either the values have not been preserved in time or an authority to preserve them is lacking. This is especially true in Montenegro where the whole Velika Plaza beach is protected as a Natural Monument (DEG 2003), but illegal building and massive impacts, in particular hunting and the excavation of sand, are widespread. In Albania, the building of houses started in Velipoja is impacting on the seascape. Further impacts include off-road car running on beaches, new roads and trails built to reach remote parts of the dune landscape.

Attempts have been started in both countries to regulate this destruction. In early 2003, illegal houses at the beach in Velipoja were destroyed and removed by the regional government in Shkodra, the very first, but important, step. In Montenegro such a signal is still lacking. Appropriate action is urgently needed here to stop the illegal building along the beach, and especially at the left arm of the Bojana River and in the eastern part of Velika Plaza, which is designated as a protected area in all official documents in Montenegro.

It is important that, in both countries, there are recent plans to improve the physical planning. Albania is preparing a physical plan for Velipoja and has a good chance to develop a good tourist resort there, which will become more and more attractive in the future.

In Montenegro, strictly protected areas are lacking in the draft physical plan prepared to preserve and manage the coastal estate (“morsko dobro”). It is necessary to prepare a zoning for the whole coast, similar to examples of protected coastal areas in other countries. This is an ideal concept, comparable to successful tourist destinations in the Waddensee in Denmark, Germany and the Netherlands, which are based on clear definition of strictly protected core zones, landscape protected buffer zones, and touristic and urban areas (Common Waaden Sea Sekretariat 1994). The Regional Master Plan for Tourism (DEG 2003) proposes a development of components based on a detailed environmental assessment for each section of Velika Plaza. The whole development should start in the western part of Velika Plaza, where the seascape is already impacted. The eastern part should be strictly protected.

Based on our study, in a development similar to the Waddensee National Park, it is recommended to embed tourist resorts into a large-scale protected area with clear zoning and visitor management (Schneider-Jacoby 2000, Van Schagen 2000). With such a system, large and growing numbers of tourists can be handled without losing the attractive seascape while, at the same time, improving the conditions for rare or sensitive species of flora and fauna. A first proposal to integrate the local population of villages into tourism has been prepared in this assessment based on the experience in the Nature park Lonjsko Polje / Posavina (Engel & Schneider-Jacoby 2003). Euronatur proposed to the Ministry of Tourism of Montenegro that the protection of Ada Island should be integrated into plans for restoring the tourist resort (Euronatur in lit.). The value of an ecologically highly dynamic and very well protected seascape, with sand dunes and almost undisturbed beaches, cannot be ranked too highly for touristic development:

*“Coastal recreation is still growing, although the growth is flattening. Tourism and recreation is important for the economy of the island of Texel. ...The Dunes of Texel are also highly appreciated and an important reason why people come to the island. The facilities for the visitors are well rated, except for the number of benches. And finally, the demands of the visitors are expected to grow in the future.”*

Reference: Van Schagen, S. (2000): Coastal Guide on Dune Management - Tourism and recreation in the Dunes of Texel.

### 7.2 River regulation

The Ministry of Agriculture, Forestry and Water Management of Montenegro is planning a project “Regulation of the regime of Skadar Lake waters and the Bojana riverbed (Ministarstvo poljoprivrede, sumarstva i vodoprivrede RCG 2001). It is based on old plans that date from the 1980s.

For the Ministry, the “unfavourable” hydrological regime of Skadar Lake and the Bojana-Buna River is one of the important constraints for the rational use of the whole region’s potential.

- The aim of the Project is to bring down the lake level from 9.82 to 6.5 metres above sea level. Its lowest level will then be 4.5 metres above sea level.

- Montenegro and Albania have prepared more than 20 project documents in which this issue is elaborated in detail. In 1985 a joint committee was established to prepare the partial drainage of Skadar Lake.

- After the dam for the Komana hydro-electric power plant was built on the River Drin in 1985, the Albanian authorities

considered channelling surplus waters of the Drin into the Adriatic Sea, either by a new channel into the Viluni Lagoon or via channels into the Bojana-Buna River downstream from the current confluence of the Bojana-Buna with the Drin River in Shkoder. In the latter case, the confluence of the channelled surplus waters of River Drin and River Bojana would be located much further downstream on the Bojana-Buna than the current Drin - Bojana junction. With the erection of the Komana dam, the in-flow of drifting materials (sediments) from the Drin into the Bojana-Buna River ceased 30 years ago. Therefore, the material that is currently drifting into the Adriatic Sea with the Bojana-Buna River is the remnant of sediments which the Drin River brought in before the dam was built.

- The alternative is for Albania to build the Bushati Hydro Plant (location Beljaj) and to utilize the surplus water of the River Drin. The plant would be located to the south of the city of Shkodra/Skadar and the water would be channelled from the river Drin to the Hydro plant. The junction of the channels that would bring the water to the river Bojana would be located 5 km downstream from Shkodra, in line with Fraskanjel on Montenegrin side or in the location of Velipoje (Figure 25).



Figure 25: The planned Bushati hydro-electric plant (location Beljaj), and possible channels into the Bojana-Buna River or directly into the Adriatic Sea (Ministarstvo poljoprivrede, sumarstva i vodoprivrede RCG 2001)

By taking the water from the Drin River and canalising the Bojana-Buna’s riverbed, the level of Skadar Lake would be lowered with the creation of the arable (fertile) lands listed in Table 18.

Table 18: Size of arable areas created by permanent lowering of the water level of Lake Skadar up to a maximum of 6.5 or 4.5 m and additional embankments (Ministarstvo poljoprivrede, sumarstva i vodoprivrede RCG 2001)

Sea level	Without embankment		With embankment	
	6.5 m	4.5 m	ha partial	ha partial
Montenegro	4,500	14,529	7,528	12,028
Albania	300	1,500	-	300
<b>Total</b>	<b>4,800</b>	<b>16,029</b>	<b>7,528</b>	<b>12,328</b>

In the project report it is quoted that Albania has already found the financial support for building the hydropower plant Bushati.

The project would drain large areas of Lake Skadar, which play an essential role in the ecosystem for example as spawning ground of fish. The project would lead to not only to a loss of alluvial wetlands, but change the whole ecosystem of Lake Skadar as the water volume would be limited to the planned minimum of 6.5 to 4.5 m. In summer water would be lacking and higher temperature could be expected only as one impact of the alteration of the lake surface. The project would also impact the National Park and Ramsar Site Skadar Lake in Montenegro and the recently protected areas in Albania.

### 7.3 Hunting

Legal and illegal hunting is a huge problem throughout the Bojana-Buna Delta. Hunting impact already heavily impairs the suitability of almost all the wetlands for breeding and migrating birds. In addition, the value of the area for tourism and recreation is restricted because attractive species like pelicans and flamingos are not visible, and most birds that occur widely in coastal areas are very shy. While watching birds at close range is an attraction for tourists in the Camargue, the Waddensee and other coastal areas, this is currently only possible with the aid of scopes. Therefore urgent measures involving legislation and control of illegal activities are needed in both countries.

The first aspect is illegal hunting. Killing rare breeding birds like Oystercatcher during the breeding season is one of the key observations. In Albania, hunters were actively hunting birds through virtually the whole time of our fieldwork. As an example, on March 16, 2004, Italian hunting guests were seen hunting in the salina after the end of the hunting season and inside the hunting ban area.

The suitability of the area for wildlife, as well as hunting bags, is already impacted by this unsustainable bird shooting. In Montenegro most illegal hunting activities take place in Ulcinj salina, which is the key stop-over site for migrating waders in the delta. Montenegro’s national hunting laws state that hunting is prohibited in industrial zones, and thus in the whole salina. The older part of the salina is even designated, according to the Hunting Regulations of the city of Ulcinj, as a hunting ban area. Our observations, that the salina is one of the prime areas used for bird hunting, underline the necessity that these already existing regulations require

urgent implementation. The Management of Solana Ulcinj supports the hunting ban.

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The second aspect is the incredibly long hunting season in Montenegro, which starts on August 15 in the middle of the tourist season and ends on March 15. This hunting season is unsustainable as it starts during the breeding season, when juveniles of late breeders like Ferruginous Duck are still not able to fly, and when adults are moulting till September (Schneider-Jacoby 2003). In addition, many breeding birds are shot in the early spring according our observations. Besides strictly protected areas in which hunting is prohibited a maximum hunting season for waterbirds between September 15 and December 31 is recommended for preserving and improving the carrying capacity of the Bojana-Buna Delta as an Important Bird Area of global importance.

The impact during the legal hunting season is even greater, as according to our observations Italian hunters are killing many birds of protected or endangered species like Pygmy Cormorant *Ph. pygmeus*, Common Redshank *Tringa totanus*, Avocet *R. avosetta*, Whooper Swan *Cygnus cygnus*, Black-tailed Godwit *L. limosa*, Eurasian Curlew *N. arquata* and many others. Hunting along the coastline of Velika Plaza also has to be criticised. First, according to the Hunting Law of Montenegro, the sea is not a hunting area, and secondly, Velika Plaza is treated as a natural monument and is under the special administration of the state institution "morsko dobro" (Coastal Estate). Hunters were found to use playbacks, decoys, "bunkers" and night attraction methods for shooting.

## 7.4 Fishing

The key problems observed during the Bojana-Buna Delta study are:

- Closing the mouth of the Bojana in the Skadar Lake by two or more rows of nets, thus hindering migration of fish upstream and downstream at this crucial site. This unsustainable practice is endangering the existing population and the production of several species.
- Closing the estuary of the Viluni Lagoon by nets and building a new house directly at the nets on the open water surface. This unsustainable fishing practice limits the importance for reproduction of the last natural lagoon in the delta.
- The loss of large spawning areas in Montenegro when the salina of Ulcinj was built and the former lagoon enlarged, as well as pollution and inadequate management of the remaining wetlands and lagoon relics connected with Porta Milena (compare section 7.5.2 Waste Water).
- No protection of fish migration from the sea to Lake Skadar and vice versa. Measures are needed to stop over-fishing, especially at the mouth of the lake.
- Use of explosives for fishing was observed three times during the study, once at the Bojana-Buna River and twice at the sea in Albania. This shows that it is a major problem in the area.
- No protected areas for spawning exist. Nets have been

found all along the coast and inside wetlands, with the exception of the Velipoja Reserve.

- No information on fish stocks and their use is available.
- High pressure from outside the area on natural fish resources, in particular in the pro-delta, includes – exploitation by big ships and industrial fishing by foreign companies.
- The large number of local people who depend on fishing in the area.
- Growing numbers of restaurants and tourists, which have to be supplied with fresh fish from the area.

It has been reported by many experts that several species are probably already extinct, as for example all species of sturgeon. This impairs the long-term economy of the area. Projects like the World Bank and COOPI project have been started, but have still not managed to stop the illegal use of fish stocks in the Bojana-Buna River and Skadar Lake. Because fish constitute one of the most important natural resources of the area for the development of tourism, urgent measures are needed to stop the loss of species and the decrease of fish stocks. A network of protected areas in the Bojana-Buna Delta will help to save important fish resources. For some species an absolute fishing ban is needed for the next few years until their populations have recovered. This is a crucial task for international and national conservation programmes. The Bojana-Buna River and Lake Skadar have to be treated as one ecological unit and cannot be managed separately.

## 7.5 Pollution

### 7.5.1 Solid Waste

Solid waste is a problem in all the waters, as it is shifted with the currents. Solid waste is transferred through the tributaries to Lake Skadar and through the Bojana River to the sea. Banks and the large coastal dune and beach areas are covered with solid waste. Besides the organization of proper waste disposal sites, all one-way systems have to be abolished in both countries as a matter of urgency. It is not understood that in Western countries bottles and plastic bags are no longer distributed free – in Albania and Montenegro most packages are thrown into the landscape. This is especially true for the smaller villages, where waste is deposited in streams or nearby depressions. If people had to pay for plastic bags and bottles this would change quickly.

Connecting the solid waste issue with the tourism sector is important. One criterion of the "Blue Flag" for clean beaches is the absence of solid waste on land and floating in the water.

Most importantly, beach visitors bring their waste and packaging to the beaches and leave it at the spot where they have spent the day. Cleaning up before the tourist season, which is done between April and June, disturbs many rare coastal breeding birds nesting along the beaches. The most impacted species are Collared Pratincole, Stone Curlew and Kentish Plover. Many nests are destroyed or heavily disturbed

by large numbers of people collecting waste during the most sensitive time of the year.

## 7.5.2 Wastewater

The wastewater from Shkodra and Ulcinj impairs most tourist destinations at the coast. The lack of adequate facilities and improper management leads to increasing water pollution. The rapidly increasing local population and tourist numbers contribute to this impact.

### 7.5.2.1 Bojana – Buna River

During most of the year the water quality of the Bojana-Buna River is acceptable. But, during periods of high water levels in its tributaries, pollution increases and water quality worsens. This happens most frequently in summer during the tourist season. The natural riverbed and water flow of the Bojana-Buna River are essential for mitigating the impact of wastewaters from the city of Shkodra, because the river corridor has a high potential for self-purification. Preservation of the morphology of the riverbed, with riverine islands and adjoining alluvial forests and marshlands, is very important for this natural process.

In Montenegro, water samples are usually taken at hydrological stations, one of which is Fraskanjel on the Bojana-Buna River near Sasko Lake. This sampling is carried out by the Hydro-Meteorological Institute / Hidrometroloski Zavod Crne Gore in 4 to 6 series during the warmer season of the year at 0,5 m depth, usually from the river bank.

**1998** – Water quality from the Bojana-Buna is similar to that of Lake Skadar, and is below A1 class, which is water of very satisfactory quality. Some examples of other suspended matter, not categorised, are registered. The numbers of faecal bacteria led to classification as A2 class, and the numbers of coli bacteria, as A3 class. Solvency class is II. (by Libman)

**1999** – Water from the river is similar to the lake water; significant amounts of ammonia have been registered, as well as coli bacteria, and for that reason it was classified out of any class. Solvency class is II. (by Libman)

**2000** – Apart the ammonia, which is out of class, water quality for this year is reported as A3C, II. Solvency class is II. (by Libman)

**2001** – During this year, apart from ammonia and phosphates, the content of coli bacteria is greatly increased. Solvency class is II. (by Libman)

**2002** – Water from the River Bojana ranks between A1 – A2 classes, according to physical and chemical characteristics. The only thing emphasized is the increased content of ammonia. The number of faecal bacteria is as required by A2 classification, while the number of coli bacteria is increased and out of class. Solvency class is II - III. (by Libman)

This recent series shows an increasing impact of

wastewater, and the coli bacteria in particular being critical, as they impact on the Bojana estuary and the tourist resorts at Velipoja and on Ada Island. With regard to the international standards for beaches, according to the EU Bathing Directive, no information is available for Albania and, for Montenegro, only for the central western part of Velika Plaza ([www.blueflag.org/](http://www.blueflag.org/)). In addition the illegally built houses along the river, with a growing number of guests, contribute to the load of wastewater. Up to now the tourist resort on Ada Island has not been connected to the wastewater treatment facility of Ulcinj. According to the DEG Regional Touristic Master Plan, the bathing water on Ada in June 2002 was class I, but the numbers of coliform bacteria satisfied only class III in the Bojana River.

One of the key requirements for the restoration of the Ada Island tourist resort is a wastewater treatment system. It can be built in connection with artificial wetlands, which are integrated in the conservation project.

### 7.5.2.2 Porta Milena

The second big impact on water quality in the Bojana-Buna Delta is the unsolved contamination of Porta Milena, Ulcinj. "Due to the poor existing infrastructure and incomplete sewage water system, wastewaters are discharged, often directly, into the coastal water near attractive beaches" (DEG 2003, page 45, suppl. 1). The leaking of wastewater into Port Milena is a huge problem that urgently needs solving, for three reasons:

- The site itself is in the middle of New Ulcinj and the smell and view from the bridge is impacting on the life of local people and tourists.
- The wastewater is floating directly out of the mouth of Port Milena to the Western part of the beach where, in summer 2002, 15.000 people were counted.
- Porta Milena is still an important entrance for fish into the remaining parts of the former huge lagoon. A carefully considered plan is needed to restore this important function as a spawning ground as soon as possible.

In summer 2003 seawater was added to Porta Milena by pumping through the water supply system of the Solana Ulcinj, in an attempt to minimize the impact of the waste water and mud accumulation during the summer and the tourist season.