

7. The Lezha wetlands

Summary

The Lezha complex in the district of Lezha comprises more than 30 km² of wetlands, extending from Shengjini town in the northern part to the Mati delta in the south. The system covers the Kune-Vaini wetlands on both sides of the Drini delta and the Tale wetlands in the northern part of the Mati delta (Fig. 7-2).

Kune-Vaini was the first protected area in the history of nature protection in Albania; it was categorized in 1960 as Hunting Reserve by the Albanian Government. During the former regime the access to the Kune and Vaini area was very limited and strongly controlled. As in all other coastal areas these zones were considered as political borders and often controlled by military forces. Therefore, most parts remained fully preserved concerning their biodiversity, in particular the bird colonies. Recently (2010), the Albanian Government designated the enlargement of the Kune-Vaini-Tale zone (44 km²) as Managed Natural Reserve (IVth category after IUCN). On the international scale, Kune is registered as a Specially Protected Area and Biological Diversity in the Mediterranean (Barcelona Convention).

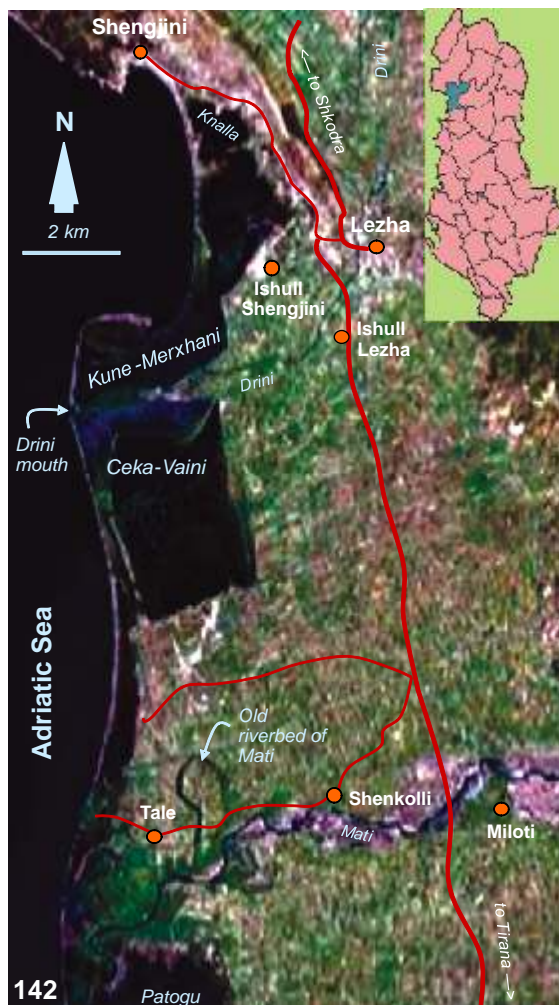


Figure 7-1: Kune wetlands (Photo: L. Kashta)

7.1. How to reach the area

The towns of Lezha and Shengjini (combined with about 30'000 inhabitants) are appropriate centers to start for wetland excursions to the Drini delta. Lezha is situated at the main road from Tirana to Shkodra and Shengjini town is about 8 km distant from Lezha towards the sea (Fig. 7-2). Both cities, especially Shengjini, offer a wide range of

accommodation, not only to visit the natural values of the region, but also as vacation site, especially in summer.



7.2. About the most important sites

All important sites are easily accessible (Fig. 7-2).

A visit in Lezha town with about 9000 inhabitants is highly recommended. The origin of the town goes back to an Illyrian settlement in the 6th century BC named Lissus.

Figure 7-2: Satellite map of the transitional wetlands of Lezha. The main inhabited centers, habitats and roads (red) are shown and drawn in the map (Google Maps, 2008, modified).



Figure 7-3: Above and middle: Skanderbeg Memorial situated inside of the remains of the Saint Nicholas Church (built 1240); **below:** old road and the main gate of the ancient Lissus (4th century BC) (Photos: A. Miho)





Figure 7-4: *Left:* the Illyrian castle of the ancient Lissus (4th century BC); *below left:* the new orthodox church; *below right:* the Franciscan church (built 1240) (Photos: A. Miho)



The Skanderbeg Memorial is situated inside the remains of the Saint Nicholas Church constructed in the 13th century within the archaeological centre at the Drini river banks (Fig. 7-3). The Franciscan church (from 1240) is witness of the first Franciscan convention of Saint Anthony in Albania and located on the top of the hill on the other side of the Drini. The Lezha castle is of Illyrian-Arber style and about 2.5 km distant from the memorial monument (Fig. 7-4). The village of Ishull Lezha is known for its ancient rests of the Burial Ground from the Skanderbeg period.

Marshes and black waters of Kenalla, as well as the beauty of fluvial ecosystem of the Drini are easily visited on the left side of the road Lezha-Shengjini, just before approaching Shengjini town.

The rural road directed to Ishull Shengjini village leads to Rivat e Drinit. One arrives at the Kulari line, Kashta marsh, Merxhani lagoon and Kune by following the road before approaching the Shengjini town in the direction to the southern part of the Shengjini beach. The road further guides the visitor to the Drini mouth. *Rana e Hedhun* (the Blown Sand) (see Fig. 6-20) is about 2.5 km north of Shengjini at the foot of the Rrenci mountain. The wetlands of Vaini, the Ceka and Zaje lagoons, the Vaini forest and the Drini delta are reached before approaching Lezha town.

The village of Ishull Lezha is situated just at the crossing of the road Tirana-Lezha. It is known for ancient rests of Burial Ground from the Skanderbeg period. Within the wetland system the Hunting Hotel is well known for its history and woody alpine architecture; it was built in 1930 by Cont Ciano, at the time Minister of Foreign Affairs of Italy. It was used by the Count and later by VIPs of the former regime as Guest Hotel during hunting.

The old riverbed of the Mati river in Tale village is reached from the national road Tirana-Lezha, about 9 km far from the main road, turning in the village Shenkolli (Shenkolli municipality), direction west before approaching Lezha town. A trip to the Mati valley offers a wonderful landscape with narrow canyons in limestone with the Shkopeti pass about 30 km southeast of Lezha (Fig. 7-5). Two dams with the



hydropower stations of Shkopeti and Uleza at the Mati river are witness of modern engineering but changing drastically the original flow regime of the river.

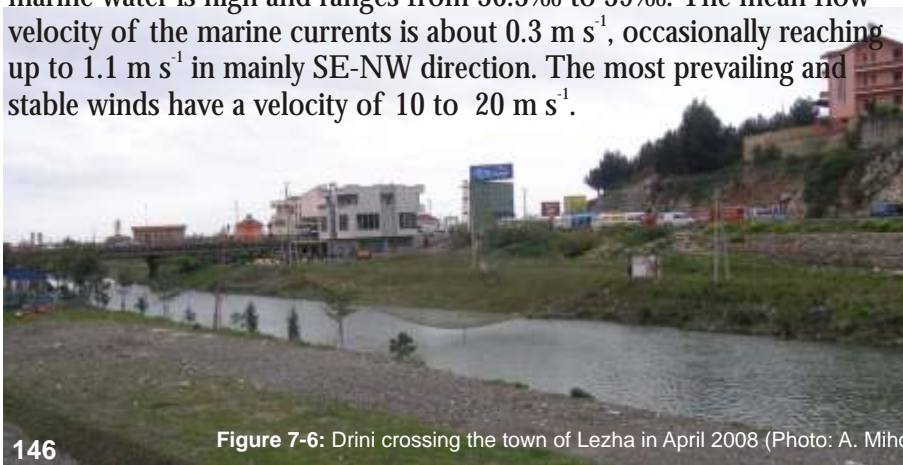
Figure 7-5: Shkopeti gorge in Mati river (Photo: A. Miho).

7.3. Physico-geographical characteristics

The Lezha wetland system is situated in the northern part of the Albanian Coastal Wetland in the western side of Lezha plain. It represents the northern part of the big depression between Tirana and the Ishmi. It continuously lowered during the quaternary and has been particularly active in the old delta of the river Mati. Marshy and marine depositions appear also in the upper fluvial layers of quaternary depositions of Lezha plain. Marshy layers are relatively low (0.1–0.2 m), meaning that the lagoons of Kune-Vaini are rather recent.

The whole region is strongly influenced by the Mediterranean plain climate. The input of solar energy reaches more than 1460 kWh y⁻¹, more than 2500 sunny hours or 230 sunny days are counted per year. The mean monthly temperatures range from 6.9°C in January to 24°C in August. The mean annual temperature in the period 1951-1980 was 16.8°C, the mean annual rainfall 1'464 mm. The precipitation has the typical Mediterranean character with a wet autumn and winter, a variable spring and a dry summer and about 117 rainy days y⁻¹. Snow is quite rare.

The multiannual mean temperature of the marine water in the Drini bay is 17.7°C, about 1°C higher than the corresponding value for the air. The temperature of the marine water encompasses 11.6°C in February and 23.7°C in July, typical for the Mediterranean climate. The salinity of the marine water is high and ranges from 36.3‰ to 39‰. The mean flow velocity of the marine currents is about 0.3 m s⁻¹, occasionally reaching up to 1.1 m s⁻¹ in mainly SE-NW direction. The most prevailing and stable winds have a velocity of 10 to 20 m s⁻¹.



The formation of the Lezha lagoon system has been provoked by the Drini and Mati rivers. The Drini river of Lezha was originally the largest river in Albania. Due to a big flood during winter 1854, the river split up at Vau Deja near Shkodra, one branch remained in the original bed towards the Lezha mouth while the other joined the Buna river 1.5 km downstream of Shkodra lake (see Figs. 6-3 and 6-6).

In summer 1963 the water of Drini river was fully diverted to the Buna river to avoid a flooding of the Zadrime plain and Lezha town. The remaining branch of the former famous Drini river became scaled down to a modest drainage channel (Fig. 7-6) of the Zadrime plains, named today the Drini of Lezha. The whole Drini watershed is 11'756 km² and of a mean altitude of 971 m a.s.l., the river is 295 km long and its mean water flow 352 m³ s⁻¹ (see Fig. 3-1 and 5-1; Tab. 3-3). The Drini of Lezha is only 48 km in length; it delivers 18.1 m³ s⁻¹. This gives a flow reduction of up to 19 times and in parallel an up to 13 fold decrease in the transport of solid materials.



During centuries, the solids transported by the Drini river have been deposited in the marine zone around the delta. In recent times the river was very active with many changes of the riverbed which resulted in the formation of coastal lagoons. As the Drini delta is flat and open, it is also strongly influenced by wind, waves, marine currents and other environmental factors. For that reason, the delta has often changed its littoral within a distance of several km. The decrease in transports of solid materials by the Drini river in the past decades has enhanced the erosion process in the southern part of the delta along about 2 km of the delta shoreline.

During the past 50 years the sea has moved about 400 m landwards (Fig. 7-7).

In contrast, in the northern part of the delta an accumulation process is observed over a distance of about 2 km. Beside the erosion, the urbanization of the coast from Shengjini to Kune accelerated continuously during the last decade, especially focused in tourism infrastructures. This pressure is with evident negative effect on the erosion of the coast, deforestation of the sandy dunes, pollution and biodiversity loss, decreased the heron colony (Fig. 7-25).



Figure 7-8: Detailed map of the Kune-Vaini complex (Google Maps, 2008, modified).

7.4. Description of the most important habitats

The Lezha wetland complex extends over an area of more than 30 km², of which 11 km² are covered with water, the remains are swamps, reed beds, forests and shrubs as well as cultivable land. The complex consists of three main sites, Kune and Knalla wetlands in the northern part of the Drini delta, and Vaini and Tale in the south (Fig. 7-8).

The Kune wetland and the Merxhani lagoon

The Kune wetlands in the north of the Drini delta (Fig. 7-8) border with Shengjini town and Ishull Shengjini village in the north and east, and the Adriatic Sea in the west. Its total surface is about 10 km², of which 2.5 km² are covered with water and the rest is agricultural land, marshes and reeds. It extends over 5.8 km, its maximal width is 0.95 km.

Merxhani lagoon is the most important aquatic water body (Figs. 7-1, 7-3 and 7-8) with a surface of 2.5 km², a mean and maximum depth of 0.75 m and 1.3 m, respectively. The exchange of water with the sea takes place through a channel in the central part. It is 500 m long, 40-70 m wide and 1-2 m deep. A flow of 5 to 10 m³ s⁻¹ allows a good water exchange. During winter powerful waves overflow the narrow littoral sandy cordon and seawater enters the lagoon (Fig. 7-10), a phenomenon enhanced by the sea erosion and by the damage of the sandy dunes by an uncontrolled expansion of tourist activities.



Figure 7-9: Merxhani wetland area (Photo: L. Kashta).



Figure 7-10: Left: Isthmus connecting to the Kune promontory (*in front*), on the left side is Merxhani lagoon, on the right the Adriatic Sea; **below:** traditional fishing in Kune wetlands (Photos: A. Miho)



Underground springs of karstic origin in the northern part, e.g. from the Knalla pond, six artificial artesian wells with a mean flow of 5 to 6 l s^{-1} and a pumping station feed the wetlands mainly during the wet season with freshwater. Compared to seawater with a high and more stable salinity of 37 to 39‰ , the Merxhani water is lower in salinity and varies from 20 to 36‰ . The salinity is generally higher than in Ceka, as less freshwater enters the lagoon and the exchange with the sea is more efficient.

The water temperature varies from 4 to 5°C during winter and 25 to 30°C in summer; the pH fluctuates between 7.6 and 8.3.

The most northern part of the lagoon is known as the Kulari water line. It allows only a limited exchange of water as the existing connecting channel is often blocked. It is 4.7 m deep and the water is stratified with a salinity gradient from 20‰ at the surface to 30‰ at the bottom. Kashta marsh represents a marshy lagoon in the Kune system. It is 800-850 m long and 300-400 m wide. The habitat is well known for its richness in flora and fauna. Rivat e Drinit is situated near Ishull Shengjini and represents a swampy habitat rich in animal species, some of them endangered. These two habitats rank on the checklist of Albanian Natural Monuments (as hydromonument).

The Kune promontory (Fig. 7-10 and 7-20) with an area of 1.5 km² is situated in the most western part of the Merxhani lagoon; it is the most famous part of the whole system and covered with a typical Mediterranean forest. Despite a strong human impact and the erosion by the sea, many special habitats with significant values remained well preserved. It is an important area for migratory birds (IBAs), especially for colonies of the Squacco heron and the Little egret (*Ardeidae*).

The Knalla wetland

The Knalla wetland (Fig. 7-8) with 2.2 km² of marshy surface, represents the eastern part of the Kune wetland. Large marshes are covered with dense helophytic (plants growing on submersed soil) reed vegetation (mainly *Phragmites*) (Fig. 7-11). The water body has a surface of 0.2 km² with a size of 750 m times 500 m. With a mean depth of 4.2 m and a maximum depth of 13.5 m, the lagoon is rather deep compared to other lagoons in the SE Adriatic. This leads to a meromictic ecosystem with permanently stratified water layers and a lack of oxygen in the bottom part. The system is continuously fed by submersed karstic springs from the limestone of the Rrenci mountain.



Figure 7-11: Knalla wetland with the town of Shengjini at the horizon
(Photo: A. Miho)

Knalla wetland communicates through artificial canals with the Merxhani in its southern part. During winter, the Knalla water shows a high mineral content, similar to the water of its karstic springs. During summer the salinity increases. The water temperature ranks from 10 to 12°C in winter to 23 - 25°C in summer. The pH values range between 7.3 and 8.3. Unfortunately, much urban wastes of Shengjini town are discharged into the Knalla pond. Even worse, a site for the transfer and the storage of fuels has been built in close to it.

The Vaini wetland and the Ceka lagoon

The Vaini wetland spreads in the southern part of the Drini delta (Fig. 7-8), between the Ishull Lezha village in the east and the Tale village in the south. Its surface is about 14.5 km², about 8.5 km² of it is water, and the rests are forests and marshlands. Most important of Vaini are the large and dense reed beds which are good places for bird nesting and feeding, especially in the migration period (Figs. 7-12 and 7-13).



Figure 7-12: Ceka-Vaini wetland (Photo: A. Mullaj).

Ceka lagoon consists of two main parts, Zaje (2.4 km^2) in the north and bordering with Drini riverbanks and Ceka (about 4.9 km^2) in the south (Fig. 7-8). The mean depth is about 0.7 m with a maximum of 1.3 m. A land belt separates the two lagoons, they communicate through two artificial underground channels with a flow rate of 1 to 2 m s^{-1} . Zaje is also connected with the Drini river by an artificial canal near the delta. Ceka exchanges water with the sea through a meandering, 1.5 km long, 1.5 to 2 m deep and 20 to 30 m wide channel in the old Drini riverbed. The water exchange amounts for 8 to $20 \text{ m}^3 \text{ s}^{-1}$. Some artesian wells with flow rates of 30 to 35 l s^{-1} feed the lagoon while the pumping stations at Vaini with a capacity of $30 \text{ m}^3 \text{ s}^{-1}$ discharge the surplus water of the Lezha plain into the lagoon and are also part of the hydrographic network. Therefore, there is a positive balance concerning freshwater input into the lagoon during the wet season and a negative one during the dry season in summer.

Generally, the salinity in the Ceka lagoon is lower than in the Merxhani water, due to the supply with freshwater from the Drini and from the Vaini pumping stations. Sporadic samplings show that the salinity in the lagoon is around 4 to 5‰ in its eastern part, 8 to 12‰ in the central-western part and up to 15‰ in the channel connecting to the sea. The salinity in Zaje increases from 9‰ in the channel to the Drini river to 23‰ in the eastern part. Water temperatures vary widely in the eastern part from 2 to 4°C during winter and 25 to 30°C during summer; in the western part the changes between the seasons are less pronounced. The pH stays between 7.6 and 8.7.

In the most western part of Vaini system a spot of the typical Mediterranean forest (Fig. 7-12) is found, stretched between the two lagoons and the sea coast.

The Delta of the Drini river represents the transitional system of the Drini estuary, with a surface of about 2 km² and situated between the Kune (north) and the Vaini (south) wetlands. It is reached from the river banks along Zaje or Merxhani wetlands or by the Kune promontory (Fig. 7-8).



The wetlands of Tale-Mati old riverbed extend in the south of Kune-Vaini system near Tale village in the municipality of Shenkolli (Fig. 7-2). They consist of the meanders in the former Mati riverbed (Figs. 7-14), which remained after the redirection of Mati river to Rodoni bay, close to Patogu lagoon (see Chapter 8). The wetland area is about 4 km² in size with the length of the former riverbed of 11 km; about 12 km of beach zone with dunes separate it from the sea. Many swamps covered with aquatic vegetation are continuously fed with water during the flooding period. In the Mati delta, the former small island Cabaku has been named Natural Monument due to its rich biodiversity, especially as a former nesting site of the Dalmatian pelican.



Figure 7-14: The delta of Mati river (Photos: L. Kashta)

7.5. Biodiversity of Kune-Vaini wetlands

Flora and vegetation

The Kune-Vaini region houses various habitats and climate conditions and belongs to the most typical coastal wetlands of Albania. The different types of vegetation, from submersed vegetation, reed, halophytes or psamophytes (sand dune plants) to aquatic shrubs and forests, all are present. More than 270 species of higher plants have been reported, most of them flowering plants. Endangered species are listed in table 7-1. The bottom of the lagoons is often occupied by submersed species, dominated by *Zostera noltii* and *Ruppia cirrhosa*, and often mixed with macrophyte algae like *Chaetomorpha linum*, *Cladophora* spp., *Cystoseira* spp., *Ulva intestinalis* and *Ulva* species. *Zostera noltii* is the most widespread species in all lagoons, often forming submersed prairies. *Ruppia cirrhosa* thrives in more protected habitats with calm and shallow water; it is accompanied often by the green algae *Chaetomorpha linum*. In the littoral parts with less salinity various *Potamogeton* species are found. In calm and fresh water floating duckweed grows, mainly *Lemna minor*; also *Spirodela polyrrhiza* is found in freshwater channels.

In a preliminary survey in 1993 and 1996 about 80 phytoplankton species, mainly diatoms (Fig. 7-15) and dinoflagellates have been recorded from the lagoons of Kune-Vaini. The Merxhani lagoon shows high plankton diversity and no blooms have been observed so far, indicating a good water exchange with the sea. The situation looks different for the Ceka wetland where in 1996 an algal bloom emerged, dominated by the diatom *Nitzschia reversa* and various dinoflagellates (Fig. 7-17). Some of the latter were found to be toxic. The bloom was a consequence of an inadequate water exchange with the sea as it is often seen during summer.

Figure 7-15: Common microscopic siliceous algae (diatoms) from the Lezha lagoons; 1: *Pleurosigma salinarum* (Merxhani); 2: *Pleurosigma* cf. *rostratum* (Merxhani); 3: *Nitzschia reversa* (Ceka); 4: *Melosira nummuloides* (Knalla); 5: *Grammatophora angulosa* (Merxhani) (Photos: A. Miho) »»»

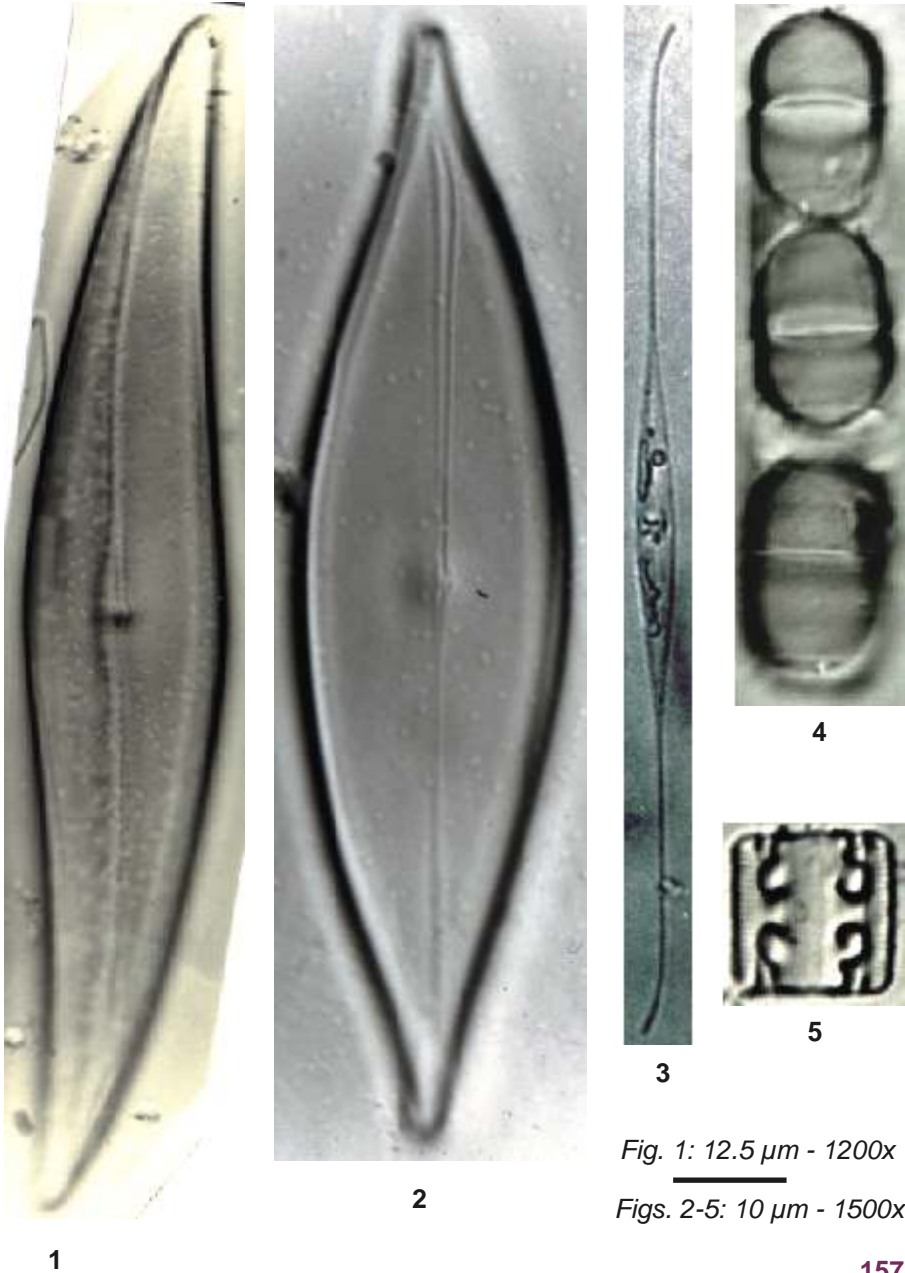


Table 7-1: Endangered plant species in the Kuni -Vaini wetlands.

Scientific name	Common name	Albanian name
<i>Adiantum capillus -veneris</i>	Southern maidenhair fern, Black maidenhair fern	Fieri i krojeve
<i>Agrimonia eupatoria</i>	Common agrimony, Church steeples, Sticklewort	Rodheza
<i>Ammophila arenaria</i>	European marram grass, European beachgrass	Amofila ranore
<i>Anacamptis pyramidalis</i>	Pyramidal orchid	Orkide, Anakampta
<i>Butomus umbellatus</i>	Flowering rush, Grass rush	Bulqini
<i>Cladium mariscus</i>	Saw sedge, Sawtooth sedge	Kladi fik i eger
<i>Desmazeria marina</i> (= <i>Catapodium marinum</i>)	Stiff sand-grass, Sea fern grass	Bar rere
<i>Elymus farctus</i>	Sand couch	Elimi
<i>Ephedra distachya</i>	Joint pine	Gjunjeza dykallinjeshe
<i>Hypericum perforatum</i>	Saint John's wort	Lulebasani, Lule ballsami
<i>Orchis coriophora</i>	Orchid	Salepi lekuror
<i>Origanum vulgare</i>	Oregano	Rigoni
<i>Otanthus maritimus</i>	Cottonweed	Otanti bregdetar
<i>Pancratium maritimum</i>	Sea daffodil	Zambaku i detit
<i>Quercus robur</i>	Pedunculate oak	Rrenja
<i>Sambucus nigra</i>	Black elder, European elder, European elderberry	Shtogu
<i>Serapias lingua</i>	Orchid	Serapia gjuhe, Orkide
<i>Stachys maritima</i>	Sea woundwort	Sarusha bregdetare



Figure 7-16: Ceka lagoon
(Photo: S. Beqiraj)

The plankton in the Knalla wetland was dominated by centric diatoms and filamentous blue-green algae (Fig. 7-17) suggesting eutrophic conditions as a consequence of the impact of untreated sewage discharge from Shengjini town).

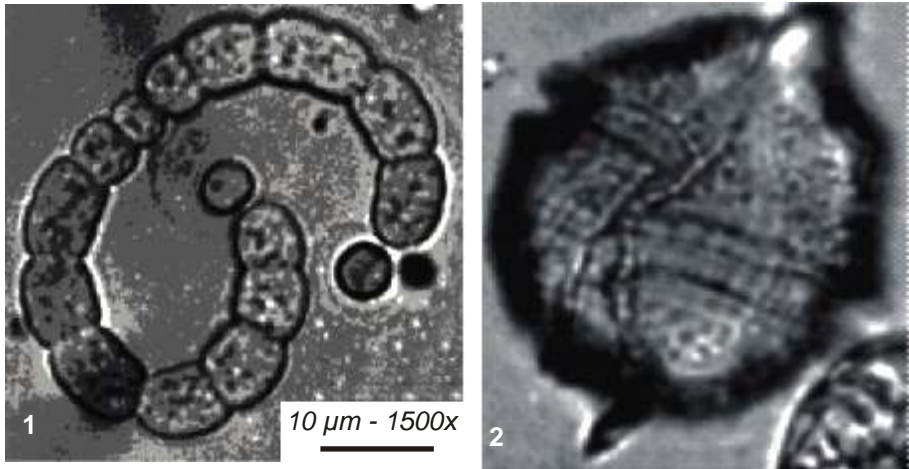


Figure 7-17: 1: Filamentous, heterocystous cyanobacterium, *Anabaenopsis circularis* (Knalla); 2: toxic dinoflagellate, *Gonyaulax spinifera* (Ceka) (Photos: A. Miho).

A large area of the complex is covered by reed, dominated by the hydro-hygrophyte species *Phragmites australis*, *Typha angustifolia* and *Scirpus* spp. Reed beds with *Phragmites* extend widely into the littoral parts of the lagoons (Fig. 7-16), especially in Ceka along the riverbanks of the Drini or the drainage channels. *Phragmites* seems well adapted to habitats with varying salinity. In contrast, the accompanying halophytes and hygrophytes select the sites with their proper salinity level in each habitat. Nevertheless, the reed plants are less vital at increased salinity. During the last decades the influence of the sea had intensified due to an increased water exchange. Reed beds with *Typha* are more confined along the Drini river banks and channels (Figs. 7-16 and 7-18).

Small spots covered only seasonally with water during the wet period are spread over the whole region, they are dominated by *Scirpus maritimus* and *S. lacustris* growing mainly in the depressions of the dunes.

Some forests reach a surface of 2 km², especially in Kune and Vaini region. The most important but also the most sensitive forest is the Mediterranean alluvial mixed forest, dominated by alder (*Alnus glutinosa*) and Narrow-leaved ash (*Fraxinus angustifolia*) and often mixed with white poplar (*Populus alba*), field elm (*Ulmus minor*) and Pendunculate oak (*Quercus robur*). In some spots, accounting for 4 ha in total, white poplar forms pure plant communities. The alluvial forest offers the potential for many shrubs to grow to dense populations, with a high number of species, like *Rubus ulmifolius*, *Crataegus monogyna*, *Rosa sempervirens* and *Tamarix dalmatica*. The presence of liana species, such as *Hedera helix*, *Smilax aspera*, *Periploca graeca* or *Clematis viticella* complicates the access to the sites. Despite the shadow, herbaceous species are also abundant, typical are *Lythrum salicaria*, *Asparagus acutifolius*, *Galium aparine*, or *Agrostis stolonifera*. Certain areas, especially those close to Kune and Vaini forests, are covered with shrubs, namely with *Tamarix* spp. (*T. dalmatica* and *T. Hampeana*) which may reach 4 to 5 m in height (Fig. 7-19). Other species accompanying the tamarisks are *Vitex agnus-castus*, *Rubus ulmifolius*, *Juncus acutus* and *Arthrocnemum glaucum*. Unfortunately, many of the forested areas are now heavily damaged and permanently under pressure by woodcutting and by the abusive and not sustainable urbanization that is continuously spreading.



Figure 7-19: Flowering tamarisks (Kune) (Photo: A. Miho).



During hot summer months, the salinity often strongly increase in some zones. There the soil becomes evenly covered with a fine layer of white salt. The vegetation is then composed of halophytes, mainly succulent species, often dominated by *Arthrocnemum* species (*A. fruticosum*, *A. perenne*, *A. galucum*). A small number of other species accompany them, like *Salicornia europaea*, *Limonium vulgare*, *Inula crithmoides*, *Halimione portulacoides*, and *Artemisia coerulescens*. The habitats which are flooded during most of the year are also proper places for *Juncus*, we find mainly *J. acutus* with a large ecological amplitude and *J. maritimus*. Associations with *Arthrocnemum* and *Juncus* often alternate with each other or with other species like *Scirpus holoschoenus*, *Saccharum ravennae*, *Plantago crassifolia*, or *Schoenus nigricans*. This leads to a fragmented and interesting structure of the vegetation pattern.

A narrow belt of sandy dunes extends up to 10 km along the coast. It is about 30-40 m wide and with a maximum altitude of 1-2 m. Pioneer species growing close to the sea shore are *Cakile maritima*, *Xanthium strumarium* and *Salsola kali*. These species form dense populations towards the inland part together with *Cyperus capitatus*, *Sporobolus pungens*, *Echinophora spinosa*, *Eryngium maritimum*, *Medicago marina* and *Ammophila arenaria*.

« « « **Figure 7-18:** Vaini wetland area: **left:** reed beds with remnant pines of the former forest in the south-western part of Vaini; **right:** western part of Vaini with the pine forest in the littoral cordon (Photos: S. Beqiraj)

The dominant aspect of the dune vegetation is the cultivated forest of pines (*Pinus pinaster*, *P. pinea*, *P. halepensis*), which spreads also along Drini riverbanks and in the Vaini region. In total the pines cover about 70 ha, they had been cultivated during the 1970^{ies}. Only few species flourish underneath the pines, like *Rosa sempervirens*, *Rubus ulmifolius* or *Lagurus ovatus*. Along the riverbanks of Drini, a narrow shrubby belt of willows prospers, mainly *Salix alba* and *S. elaeagnos*, with species like *Ditrichia viscosa* or *Lythrum salicaria* completing the pattern of the vegetation.



Figure 7-20: Coastal habitats in the Kune wetland (Shengjini) (Photo: A. Miho).



Figure 7-21: Merxhani lagoon with the main connecting channel to the sea (Photo: A. Miho).

Fauna

The Kune-Vaini complex houses five principal aquatic habitats, the marine (coastal), the estuarine, and the fluvial habitats, the ponds and marshes. This fulfills the prerequisites for its denotation as a Special Protected Area (SPAs) and especially as an Important Bird Area (IBAs).

More than 360 species of animals have been described for the Kune-Vaini region, but as the studies were very limited and only sporadic, they do not cover all animal groups (Tab. 7-2). However, when compared with existing data on the fauna of all Albanian wetlands, about 90% of the species known are reported for the Kune-Vaini region, with about 80% of the mollusks, 77% of the amphibians, 68% of the birds and 55% of the mammals.

Table 7-2: Species number (N) of the main fauna groups in the Kune -Vaini site (ECAT - Tirana, 1998; Beqiraj, 2004).

Animal groups	N
Mollusks	61
Crustaceans	59
Fishes	32
Amphibians	10
Reptiles	24
Birds	196
Mammals	23
Total:	360

About 190 species are listed in the red list of animal species of Albania. Especially endangered birds with 33 species and endangered mammals with 4 species belong to the IUCN Red list of 2007 as globally threatened species (Tab. 7-3). More than 220 species are known for marine habitats (from the surface to 25 m depth), including 56 species of crustaceans, 51 birds, 100 mollusks and 3 mammals.

The most common fish species in Kune-Vaini were mullets, eel, Sea bass, sea breams, sand smelts, torpedo, leer fish, shidrum, bogue, sole and Atlantic horse. The most common fish species are listed in table 7-4. Mainly marine fish species have been mentioned as common in the central part of Merxhani, close to the main channel connecting with the sea, like sea breams, bogue, pilchard, anchovy, gobies and eel. Kulari in the northern part was inhabited mainly by eurialine species, like sea breams, Common sole, mullets and Sea bass; when the salinity increased, other marine species have been observed, like the European anchovy, pompano or the common dentex.

Table 7-3: Endangered animal species in the Kune -Vaini wetlands (Misja, 2006), globally threatened species marked in red (IUCN, 2007) .

Crustacea	Mollusca	Insecta
<i>Alpheus dentipes</i> <i>Calappa granulata</i> <i>Crangon crangon</i> <i>Dardanus arrosor</i> <i>Paguristes oculatus</i> <i>Palaemon serratus</i> <i>Palinurus elephas</i> <i>Parthenope angulifrons</i> <i>Penaeus kerathurus</i>	<i>Aporrhais pespelecani</i> <i>Chamelea gallina</i> <i>Mytilaster minimus</i> <i>Mytilus galloprovincialis</i> <i>Ostrea edulis</i> <i>Pecten jacobaeus</i> <i>Pteria hirundo</i> <i>Solen marginatus</i> <i>Tapes decussatus</i> <i>Theodoxus fluviatilis</i> <i>Tonna galea</i> <i>Venerupis aurea</i> <i>Venus verrucosa</i>	<i>Ameles spallanzani</i> <i>Apatura ilia</i> <i>Danaus chryspus</i> <i>Empusa egea</i> <i>Euphydryas aurinia</i> <i>Gonepteryx cleopatra</i> <i>Hemaris croatica</i> <i>Hemaris croatica</i> <i>Libythea celtis</i> <i>Mantis religiosa</i> <i>Myrmeleon formicarius</i> <i>Potasia aeruginosa</i> <i>Saturnia pavonia</i>
Pisces		
<i>Aphanius dispar</i> <i>Argyrosomus regius</i> <i>Balistes carolinensis</i> <i>Hippocampus guttulatus</i> <i>Mola mola</i> <i>Psetta maxima maxima</i>		
Amphibia		
<i>Rana balcanica</i> (=Pelophylax kurtmuelleri) <i>Rana lessonae</i>		
Reptilia		
<i>Ablepharus kitaibelii</i> <i>Caretta caretta</i> <i>Coluber najadum</i> <i>Cyrtodactylus kotschy</i> <i>Elaphe quatuorlineata</i> <i>Emys orbicularis</i> <i>Coluber gemonensis</i> <i>Mauremys caspica</i> <i>Ophisaurus apodus</i> <i>Testudo hermanni</i>	<i>Accipiter gentilis</i> <i>A. nisus</i> <i>Acrocephalus melanopogon</i> <i>A. schoenobaenus</i> <i>A. scirpaceus</i> <i>Anser albifrons</i> <i>Aquila clanga</i> <i>Ardea cinerea</i> <i>A. purpurea</i> <i>Ardeola ralloides</i> <i>Aythya nyroca</i> <i>Botaurus stellaris</i> <i>Buteo lagopus</i> <i>Callinago media</i> <i>Ciconia ciconia</i> <i>C. nigra</i> <i>Circus aeruginosus</i> <i>C. cyaneus</i> <i>C. macrourus</i> <i>C. pygargus</i> <i>Egretta garzetta</i> <i>Falco subbuteo</i> <i>Glareola pratincola</i>	<i>Haematopus ostralegus</i> <i>Himantopus himantopus</i> <i>Hippolais olivetorum</i> <i>Lanius minor</i> <i>L. excubitor</i> <i>Locustella fluviatilis</i> <i>L. luscinioides</i> <i>Lymnocyptes minimus</i> <i>Milvus migrans</i> <i>M. milvus</i> <i>Nycticorax nycticorax</i> <i>Panurus biarmicus</i> <i>Phalacrocorax pygmaeus</i> <i>Plegadis falcinellus</i> <i>Remiz pendulinus</i> <i>Sterna sandvicensis</i> <i>Sylvia ruepellii</i>
		Aves
		Mammalia
		<i>Lutra lutra</i> <i>Meles meles</i> <i>Mustela putorius</i> <i>Myotis myotis</i> <i>Tursiops truncatus</i>



Figure 7-22: Eel catching nets in the outlet channel of Ceka (Photo: S. Beqira)

Less fish species have been reported for Ceka; the most common mentioned were eel, mullets, sand smelts, and quite rare the sea bass and sole; Zaje is mainly inhabited by eel and mullets; the most valuable fishes, sea breams and sea bass seems to have abandoned the lagoon due to over fishing. Other species caught by fishermen were the crabs, cuttlefish, and squids (Tab. 7-4).

Concerning the macro-zoobenthos of the lagoon, there is a high presence of the tubilifer polychaete *Hydroides* spp., of the cirripede *Balanus* spp., the crab *Carinus aestuarii*, and especially of the mollusks *Ventrosia ventrosa*, *Pirenella conica*, *Cerastoderma glaucum*, *Scrobicularia cottardi* and *Abra segmentum* (Fig. 7-24).

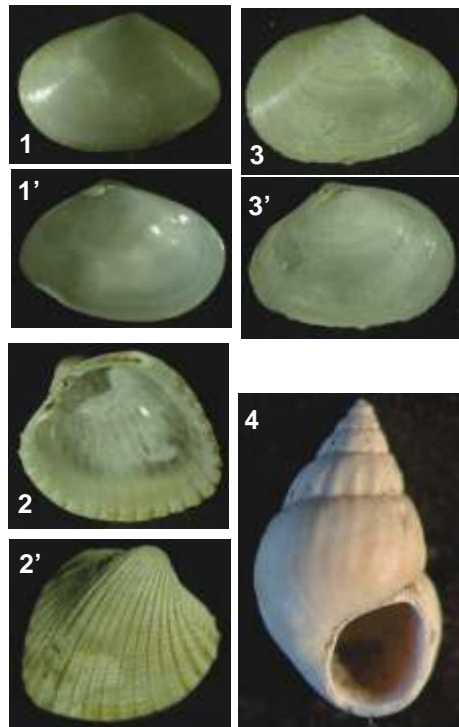


Figure 7-23: Mollusk shells from the Kune Reserve: 1 and 1': *Abra segmentum*; 2 and 2': *Parvicardium exiguum*; 3 and 3': *Scrobicularia cottardi*; 4: *Pusillina marginata* (Photos: S. Beqiraj).

Marine sediments consisting of fine sand offer habitats for a diversity of gastropods and lamellibranches, like *Murex brandaris*, *Donax trunculus*, *Chamalea gallina*, *Ruditapes decussatus*, *Ensis siliqua*, *Acanthocardia tuberculata*, *A. echinata* and *Mytilus galloprovincialis*.

Table 7 -4: Common fish species in the Kune-Vaini area.		
Scientific name	Common name	Albanian name
Fishes		
<i>Anguilla anguilla</i>	Eel	Ngjala, Gjala, Njala, Mesholla
<i>Atherina boyeri</i>	Big scale sand smelt	Aterina symadhe
<i>Atherina hepsetus</i>	Sand smelts	Aterina, Terina, Gavoni
<i>Boops boops</i>	Bogue	Vopa, Tonovili
<i>Chelon labrosus</i>	Thicklip grey mullet	Qefulli i dimrit, Vijoshi, Mavriaku
<i>Dentex dentex</i>	Common dentex	Dentali, Dhëmbaçi, Sinagridhja
<i>Dicentrarchus labrax</i>	European seabass	Levreku, Lavraku
<i>Diplodus annularis</i> (<i>Sparus annularis</i>)	Sea breams	Sargu bishtzi, Spari bishtzi
<i>Diplodus sargus</i>	White seabream	Sargu i zakonshëm, S. i bardhë
<i>Engraulis encrasicolus</i>	Anchovy	Açuga, Gavroja, Inçuni
<i>Gobius</i> spp.	Gobies	Burdullaku, B. i zi, B. i shkëmbit
<i>Lichia amia</i>	Leerfish	Lojba, Lica, Glica
<i>Liza aurata</i>	Golden grey mullet	Veshflorini, Veshari, Gasturi
<i>Liza ramada</i>	Thin lip mullet	Qefulli i vjeshtës, Kokdhani
<i>Liza saliens</i>	Leaping mullet	Gasturi, Veshverdhi
<i>Mugil cephalus</i>	Flathead mullet	Qefulli i verës, Gushtaku
<i>Sardinia pilchardus</i>	Pilchard	Sardele
<i>Solea vulgaris</i>	Sole	Gjuhëza
<i>Sparus aurata</i>	Gilt - head (sea) bream	Kocja, Ullorja, Spari
<i>Torpedo torpedo</i>	Torpedo	Peshk elektrik me njolla
<i>Trachinotus ovatus</i>	Pompano	Lojba me pika
<i>Trachurus trachurus</i>	Atlantic horse	Stavrida, Stavridhi
<i>Umbrina cirrosa</i>	Shidrum	Korbi i bardhë, Korbi, Millokop

Some freshwater habitats, especially in the northern part of the Merxhani lagoon, are inhabited by terrapins *Emys orbicularis* and *Mauremys caspica*. Other widely seen reptiles linked to aquatic habitats are *Natrix natrix* and *N. tessellata*. Reptiles of international conservation values reported so far are *Cyrtodactylus kotschyi*, *Mauremys caspica*, *Ophysaurus apodus* and *Telescopus fallax*. Among important amphibians are *Rana balcanica* (= *Pelophylax kurtmuelleri*) and *R. lessonae*.

Both Vaini and Kune regions are well known for their high diversity of waterfowl species (Fig. 7-25). The prevalent reed beds in the Vaini wetlands are important habitats for their wintering. About 196 species have been recorded, of which 59 are permanently nesting birds, 65 migratory wintering, 51 summer migratory and 21 vagrant species. The Kune-Vaini wetlands are also known as important wintering site for the Pygmy cormorant (*Phalacrocorax pygmaeus*), a globally endangered species. Other endangered birds in the region are the Red and the Black kite (*Milvus milvus* and *M. migrans*). Among the rare wintering birds in the marine and coastal habitats are dabbling and diving ducks (Tab. 7-5).

When compared with other wetlands in Albania, Kune-Vaini zone is also an important site for Ciconiiformes, large, long-legged wading birds with large bills. The most abundant nesting birds are listed in table 7-6. The colonies of ciconiiform species were famous in the past, but they became continuously depleted. Moreover, during the last decade most of them moved westwards to more protected habitats and closer to the seashores, as the inland wetlands got continuously disrupted. The Kune-Vaini and Tale wetlands originally had been known for natural reproduction of the pheasant (*Phasianus colchicus*); today there is no information whether the zone still shelters some individuals.



Figure 7-24: Eel catching nets in Merxhani
(Photo: A. Miho)

Table 7-5: Rare wintering birds in the marine and coastal habitats of Kune-Vaini area.

Scientific name	Common name	Albanian name
Diving ducks		
<i>Aythya nyroca</i>	Ferruginous duck	Kryekuqja e vogel
<i>Bucephala clangula</i>	Common goldeneye	Rosa me kater sy
<i>Gavia arctica</i>	Black-throated loon	Nori gushezi, Norusha
<i>Gavia stellata</i>	Red-throated diver	Nori gushekuq
<i>Melanitta nigra</i>	Common scoter	Rosa e zeze, Rosa kadife
<i>Podiceps auritus</i>	Horned grebe	Kredharaku
<i>Podiceps grisegena</i>	Red-necked grebe	Kredharaku faqehirte, Zhytra
<i>Somateria mollissima</i>	Common eider	Pata e detit
Non-diving ducks		
<i>Anas clypeata</i>	Northern shoveler	Sqepluga, Rosa sqepluge
<i>Anas crecca</i>	Eurasian teal	Rosa kerre, Kerrkerrja, Gerxhola
<i>Anas penelope</i>	Eurasian widgeon	Kryekuqja e madhe, Rosa kryekuqe
<i>Anas querquedula</i>	Garganey	Marsakja, marsatorja
Ralliforms		
<i>Fulica atra</i>	Eurasian coot	Bajza, Bajukla, Bajuka
<i>Gallinula chloropus</i>	Common moorhen	Pula e ujit, Bariu
<i>Rallus aquaticus</i>	Water cock	Gjeli i ujit
Limicols (Sandpipers)		
<i>Tringa totanus</i>	Common redshank	Qyrylyku kembeqirize, Qurylyku sqepkuq
<i>Vanellus vanellus</i>	Northern lapwing	Gicvilja, Cinja, Cingla, Kerthingla

Table 7-6: *Ciconiiforms* and *Lariforms*, the most abundant nesting birds in Kune-Vaini region.

Scientific name	Common name	Albanian name	Notes
Ciconiiforms			
<i>Ardea cinerea</i>	Grey heron	Çafka e perhime	unique nesting place
<i>Botaurus stellaris</i>	Eurasian bittern	Gakthi	
<i>Egretta garzetta</i>	Little egret	Çafka e bardhe e vogel	
<i>Ixobrychus minutus</i>	Little bittern	Gakthi i vogel	
Lariforms			
<i>Sterna hirundo</i>	Common tern	Dallëndyshja e detit	

Figure 7-25: Bird colonies in Merxhani lagoon
(Photo: L. Kashta).



In the census of 1952, the Kune reserve held the largest heronry colony of Albania with about 2000 to 2500 breeding pairs. At that time Pygmy cormorants were also part of the colony with about 10% in numbers. In 2000 the colony was depleted to 20 to 25 pairs of herons and the Pigmy cormorant was no more part of the colony (Fig. 7-26; see also Fig. 14-3). A similar situation went on also in Velipoja, Shkodra Lake and Micro Prespa. Nowadays, Pigmy cormorants observed during the breeding season are limited to just a few individuals using the Albanian territory as feeding site. Breeding birds have moved to the Montenegrin part of Shkodra Lake and the Buna wetlands, or to the Greek part of Micro Prespa

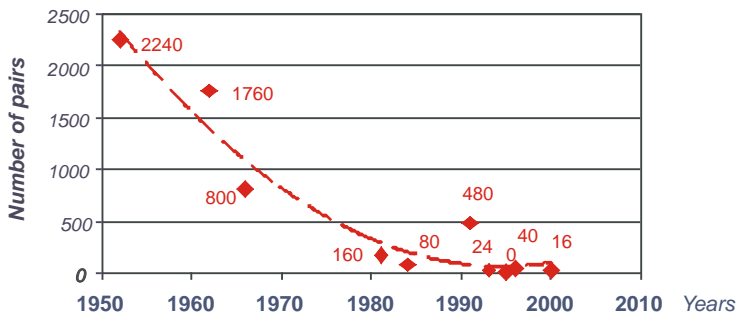


Figure 7-26: Pair number of the heron colony in Kune reserve between 1952 and 2000 (Aliu, 2007).

The most threatening factor for nature in the Lezha lagoons since 1960 is the land reclaiming and the drainage activity in the large wetland areas causing a massive cut back of breeding and wintering habitats. The pressure has been enhanced during the last decades, especially at the Shengjini coast and the Kune wetlands by intense urbanization and increasing tourism (see Chapter 14). The drastic decrease of herons is good evidence for an increased human impact in the past decades, despite the fact that the zone is strictly protected. The colony has been disturbed mainly by fishermen and hunters. Fish nets not only diminished endangered fish, but also caught rare and endangered mammals and reptiles, dolphins and sea turtles, as well as waterfowl. Captured birds were even used for commercial purposes. Moreover, the inadequate water exchange of the lagoons with the sea, especially in Ceka, may threaten further the aquatic life (i.e. harmful algal blooms).

The wetlands of the Drini delta are known to house several mammals, like the otter (*Lutra lutra*), a globally endangered species. Other mammals hunt on the riverbanks, like the fox (*Vulpes vulpes*), the weasel (*Mustela nivalis*) and the polecat (*M. putorius*). Mammals of international rarity value are in addition the Broad-toothed field mouse (*Apodemus mystacinus*), the Greater mouse-eared bat (*Myotis myotis*), the Mediterranean horseshoe bat (*Rhinolophus euryale*) and the Greater horseshoe bat (*R. ferrumequinum*). Marine water is often visited by the Bottlenose dolphin (*Tursiops truncatus*). Even the Mediterranean seal (*Monachus monachus*), a marine mammal endangered in Europe, has been accidentally observed in the past in the Tale sea area.