

General description of the Area:

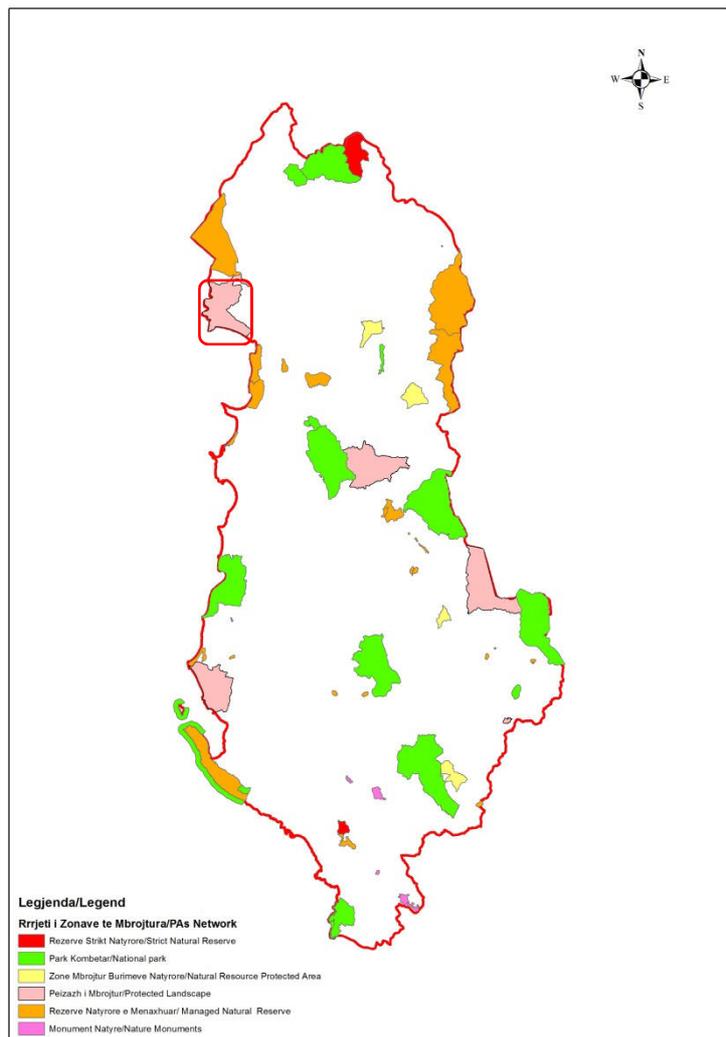
Buna River Protected Landscape (BRPL)

The location and boundaries of the BRPL are outlined in DCM No. 682, dated 02.11.2005 (Annex 3). The Protected Landscape comprises an irregular block of land some 20 km long in the north-south direction and 6-15 km wide in the east-west direction, with a total area of 23,027 ha. This is situated to the extreme northwest of Albania, against the border with Montenegro (to the west), and between Lake Shkodra (to the north) and the Adriatic Sea (to the south)

The bulk of the BRPL is situated within Shkodër District of the Shkodër Region, with a minor portion to the southeast forming part of the neighbouring Lezhe District of the Lezhe Region (Map 2). It includes parts of eight communes: [Rrethinat](#), [Ana e Malit](#), [Dajç](#), [Velipojë](#), [Bërdicë](#) and [Bushat](#) within [Shkodër](#) District, plus small parts of [Balldren i Ri](#) and [Shëngjin](#) Communes in [Lezhë](#) District. Collectively these eight communes cover a total area of 49,294 ha (or 493 km²), and have a total population (2011) of 68,128 people, settled in 74 villages

The neighbouring areas comprise: to the north and east, the remaining portions of Ana e Malit, [Bërdicë](#), [Bushat](#), [Balldren i Ri](#) and [Shëngjin](#) (plus [Shkodër](#)) Communes; to the south the Adriatic sea, and to the west the adjacent portion of Montenegro.

Shkodër is the principal city in the north of Albania. Founded in the 4th Century BC it is one of the oldest and most historic places in Albania, as well as an important economic and cultural centre. Through the ages it has retained its status as a major city in the Western Balkans



due to its strategic positioning close to the Adriatic Sea and Italian ports, combined with land routes to other important cities and towns in the region. Within Albania, Shkodër is located 35 km north of Shëngjin Port, 80 km North of Rinas International Airport, 90 km North of Tirana and 110 km North of Durres Port and, in the region, it is 60 km to Podgorica (Montenegro) and 260 km to Pristina (Kosovo). Regional integration is recognized as being essential to future economic development of this broader area. In addition to being a regional commercial centre, Shkodër is also an important university town.

Natural values:

Plant communities and habitats. About 60% of the surface area of the BRPL has been converted to settlements and agricultural uses (fields, orchards, vineyards, pastures), particularly on the floodplain portion. Natural vegetation is largely confined to the remaining 40% of the area.

The vegetation of the BRPL has been described in a recent detailed study by De Sanctis et al. (2013). Within a limited area, the BRPL presents a high diversity of community types. This diversity is related not to the richness of the flora, which is not exceptional for a Mediterranean area, but to a complex mosaic of habitats related to subtle differences in the geology. Wetland and dry grassland vegetation are particularly diversified. Altogether 29 alliances and 49 associations were described, as follows:

- Sand dunes (5 associations)
- Wetlands (26 associations)
- Alluvial forests (5 associations)
- Vegetation of carbonitic hills (13 associations)

Three of these associations were described as new: *Clematido viticellae-Punicetum granatae* (low woodland on the lower parts of the carbonitic hills), *Medicago minimae-Aegilopetum triuncialis* (low grassland on disturbed areas on the back dunes of the Rroja beach) and *Periploco-Alnetum* (alluvial woodland on the Buna delta).

In addition, 10 series were recognized, those of the alluvial plain related to the age of deposits of Buna in relationship to the advancement of the delta in the Holocene, and those of the carbonatic range to lithological differences in relationship with altitude (and therefore geological age).

The protected area includes three main land units:

The alluvial plain composed of holocenic loams and turfs deposited by the Buna River (Fraseri *et al.*, 2006) with marshlands, alluvial and riverine forests and lagoons;

- A range of low carbonitic hills comprising upper Cretaceous-Paleocene limestones and dolomites, and covered with arid Mediterranean vegetation. These hills run in southeast-northwest direction through the northern part of Velipojë Commune and the southern part of Dajç Commune, reaching a maximum altitude of 500 m at Black Peak (just to the north of Viluni Lagoon).
- A coastal holocenic dune system, composed of sands deposited by the Buna River, occurring as a narrow strip all along the coast.

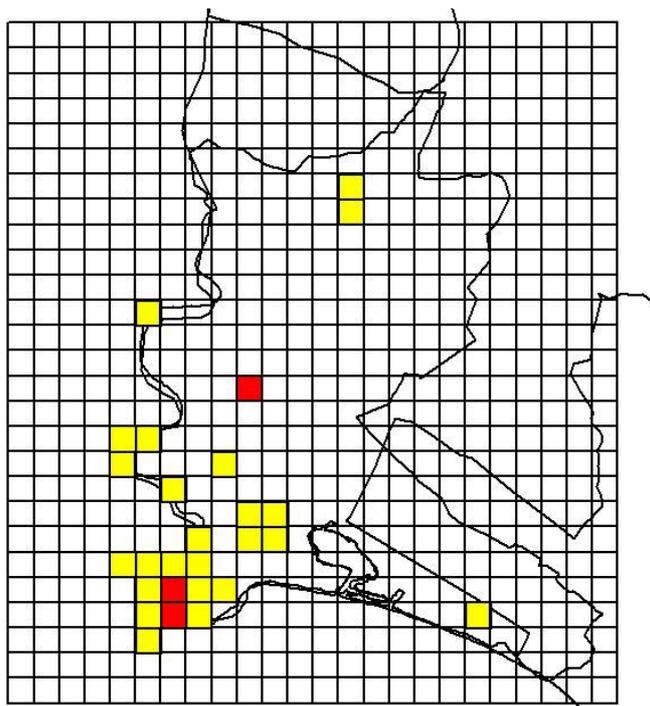
Key natural features include:

- The Buna River, which flows through a well defined and fast flowing channel, in places with a narrow fringe of riverine forest, and which for much of the western part of the BRPL marks the border with Montenegro.
- The Buna Delta/Velipojë wetland area covering a triangle of land between the Buna river, the sea and the western extremity of Velipojë Village. This area supports a diverse mosaic of wetland habitats, including Petharia marsh and a sizeable portion of alluvial forest. Previously designated as a Managed Natural Area, this area now comprises the core conservation area of the BRPL and is mainly fenced to protect against high tourism pressures.
- The Buna floodplain – this covers the major part of the BRPL, and has now mostly been converted to agricultural land.
- Domni freshwater marsh, comprising a substantial reed-bed area situated along the road from Shkodër to Velipojë, between the carbonitic hills at the junction of Dajç, Bushat and Velipojë Communes.
- Viluni lagoon, comprising a substantial body of open brackish water situated in Velipojë Commune some two km to the east of Velipojë Beach. It comprises the terminal portion of a former large wetland complex extending from Shkodër to the ocean and including the Pentari – Domni – Murteme - Velipojë wetlands. The lagoon also receives water from the sea to which it is connected by a canal some 500 m long and 30-40 m wide.
- The Carbonitic hills extending through the BRPL from the Buna River in the northeast to the southwestern corner of the reserve.
- Velipojë Beach, comprising a broad sandy beach extending some 6 km west from Viluni Lagoon to the mouth of the Buna River.
- Baks Rrjollj Beach, extending along the coast line to the east of Viluni Lagoon. Here the beach tends to be narrower and has the spectacular backdrop of the southern part of the Renci hills in the near background.

Fauna: The BRPL supports a wide diversity of animal species and is particularly rich in aquatic species. The fauna includes a large number of species that are of global, regional or national conservation concern.

Mammals: The most common mammal species within the BRPL include: *Lepus capensis* (common hare), *Vulpes vulpes* (Red Fox), *Canis aureus* (Golden Jackal), *Meles meles* (European Badger), *Mustela nivalis* (Least Weasel) and *Sus scrofa* (Wild Boar) (Beqiraj, 2006). Euronatur (2006) record the presence of 22 mammal species including *Canis aureus* (Golden Jackal), *Ursus arctos* (Brown Bear) and, in the Buna River, Buna delta and adjacent sea, *Tursiops truncatus* (Bottlenose Dolphin), and the globally threatened European Otter (*Lutra lutra*). In addition to habitat loss and fragmentation, mammal species are probably threatened by high levels of hunting.

Mammals Richness

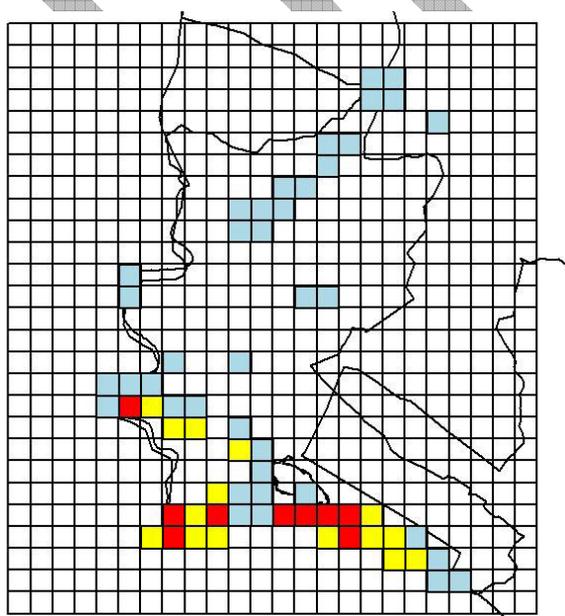


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	0.5	1	-5383962
	1	1.5	-256
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Birds: The BRPL supports a rich bird community, particularly of waterbirds. Euronatur (2006) recorded the presence of 238 bird species. These included 114 breeding birds (status: breeding confirmed and probably breeding) and 16 species possibly breeding in the area. In addition 52 species are classified as regular and 51 as occasional passage migrants or winter visitors. Together with a number of species of conservation concern, the presence of high numbers of wintering waterbirds was one of the motivations for declaring the BRPL and Lake Shkodra as a Ramsar site. High and uncontrolled levels of hunting remain a major concern for bird populations within the BRPL.

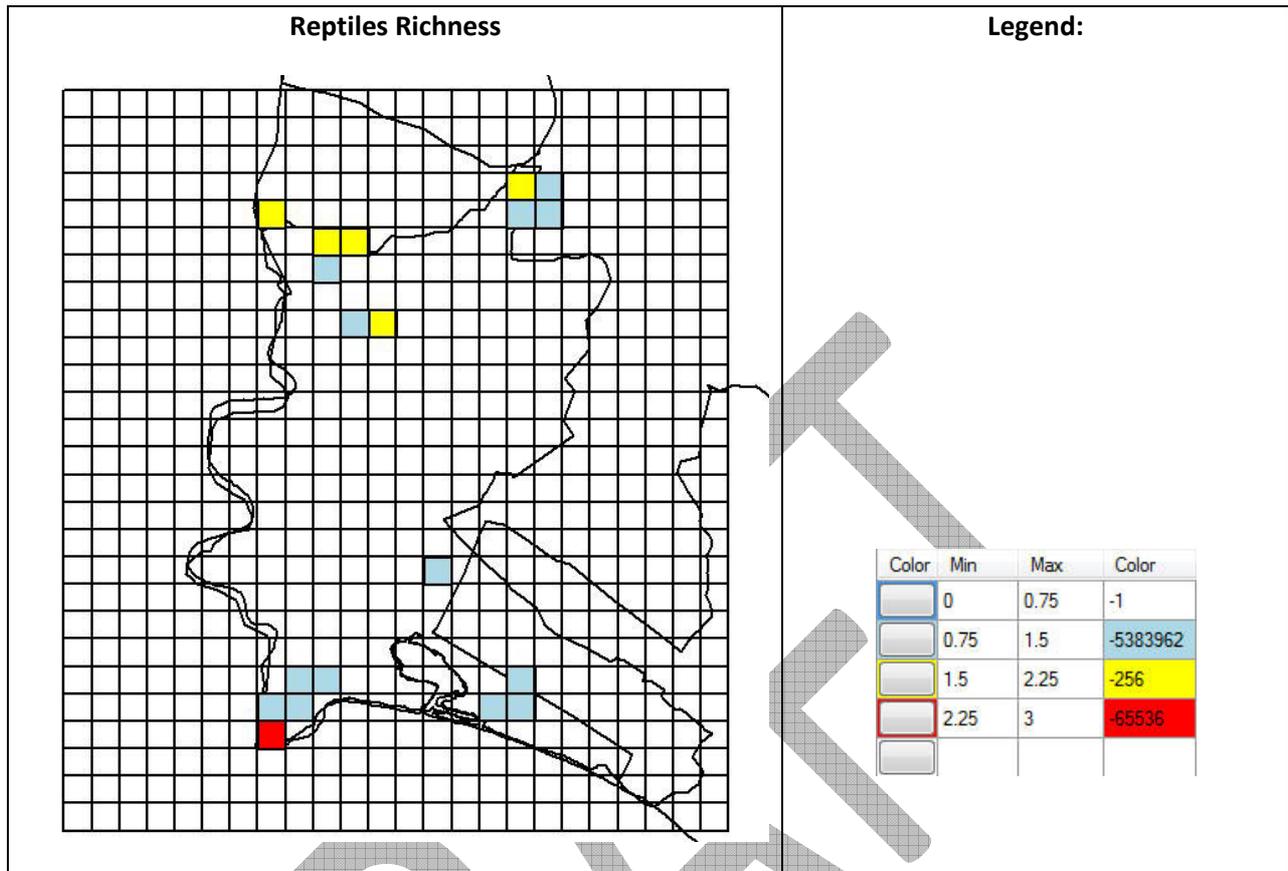
Birds Richness



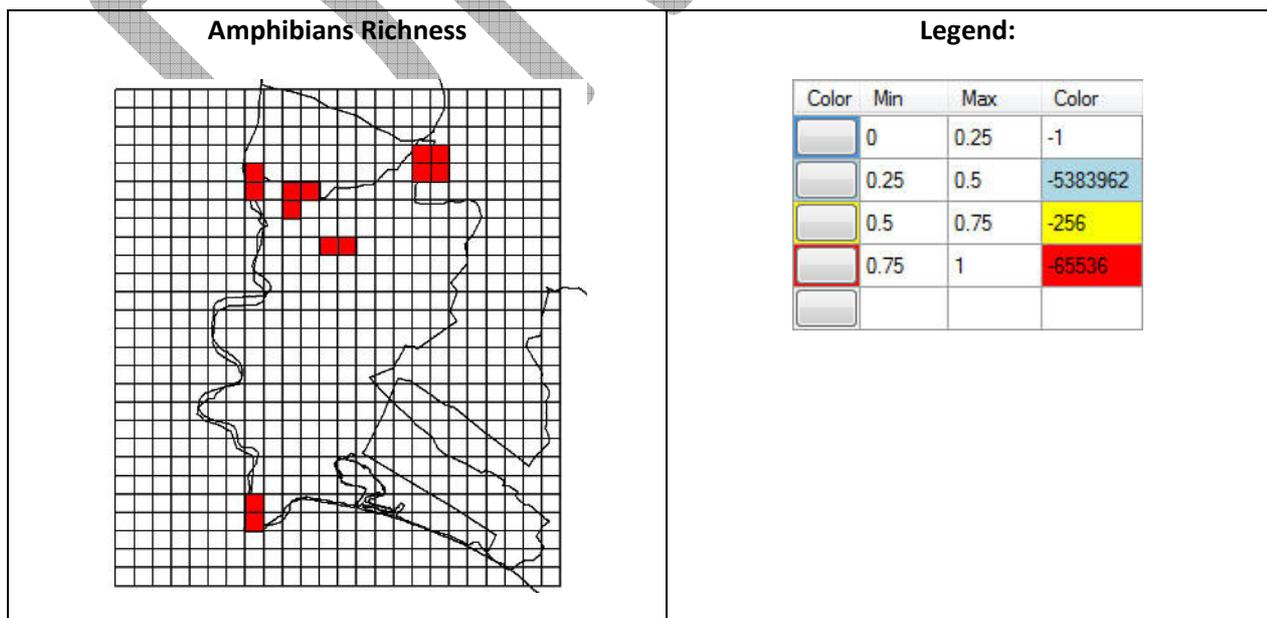
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	2	3	-256
	3	4	-65536

Reptiles: Euronatur (2006) record the presence of 19 reptile species within the BRPL, all of which are included on the IUCN red data list of 2009: four as Near Threatened, 10 as Least Concern and five as Not Evaluated.



Amphibian: Euronatur (2006) record the presence of 11 amphibian species all of which are on the IUCN red data list 2012, one as endangered and 10 as least concern. The collection of frogs to supply to restaurants was reported to be widespread.

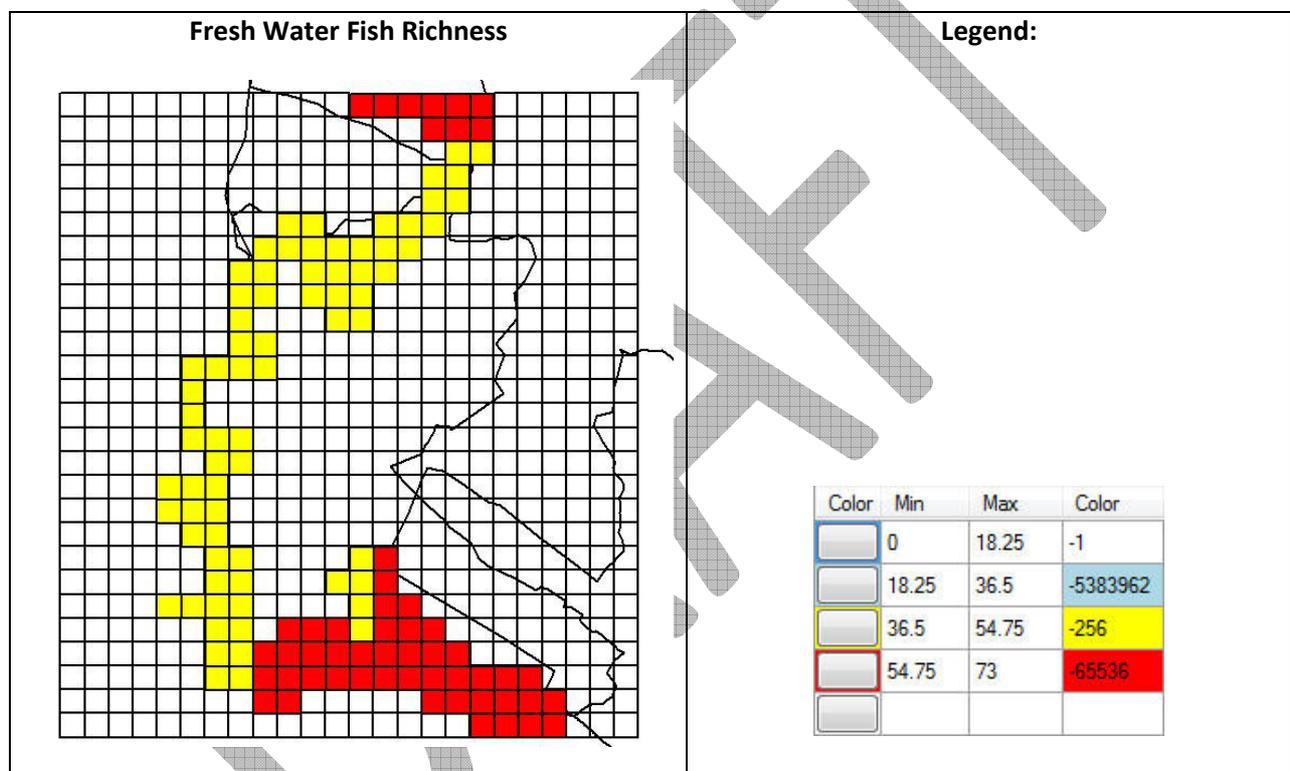


Fresh Water Fish: Euronatur (2006) record the presence of 143 freshwater fish species (Lake Shkodra, Buna River, Buna Sea and Viluni Lagoon). This includes the Adriatic Sturgeon (*Acipenser sturio*) which is almost extinct. This high species diversity reflects the diverse habitat mosaic of the Buna Delta. The Buna

River also links and integrates the fish communities of the Adriatic Sea with those of the inland Lake Skadar and the Drin River system. Thus although the fish community is dominated by species typical of temperate freshwaters, it also includes a number of species from colder waters that have entered the system for Lakes Ohrid and Prespa at the headwaters of the Drin River, as well as a number of marine species.

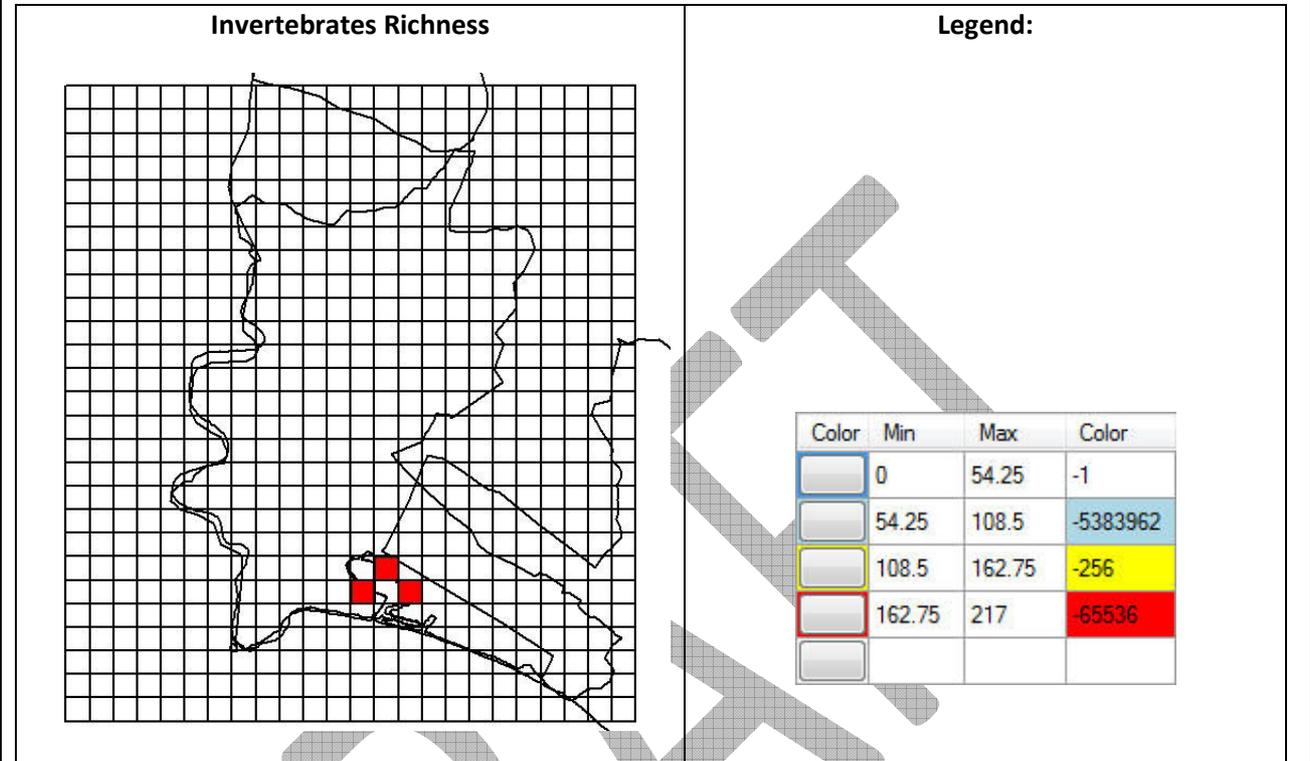
Beqiraj (2006) notes that the Buna is essential for the migration of 13 fish species from inland waters to the Adriatic Sea. Among migratory species, six are globally threatened, namely the European sea sturgeon (*Acipenser sturio*), the Adriatic sturgeon (*Acipenser naccarii*) and the Starry sturgeon (*Acipenser stellatus*), the Twaitte shad (*Alosa fallax*), the River lamprey (*Lampetra fluviatilis*) and the Brook lamprey (*Lampetra planeri*).

Concerns were raised about detrimental impacts arising through the introduction of alien fish species, as well as declining fish populations due to overfishing and use of inappropriate fishing methods (including dynamite), and potential impacts due to increasing levels of pollution.



Invertebrates: Little data exists concerning the occurrence of invertebrates within the BRPL. Euronatur (2006) record the presence of 217 species from the Viluni lagoon and [Velipojë](#) wetlands. Beqiraj (2006) notes that mollusks are the best known groups, and that three globally threatened mollusk species have been recorded (*Unio elongates*, *Unio crassus* and *Microcondylaea compressa*). Local residents raised

concerns as to apparent detrimental impacts to bee populations resulting through inappropriate use of agricultural pesticides. Beqiraj (2006) also notes that invertebrates are potentially very important bio indicators for the ecological status of the Protected Landscape.



Ecosystem services:

The main livelihood activities within the BRPL are crop and livestock production, including production of irrigated pastures for livestock. Tourism is also important to the local economy and, to a lesser extent fishing.

Agriculture: Ownership of land is highly fragmented and farm sizes are very small (mean size varies among Communes from 1.0 to 1.9 ha). Big farms, defined as being larger than 10 ha in extent, or with more than 8 cattle or 150 sheep or goats, account for less than 5% of farms within the BRPL. Access to credit is limited, hampering the ability of farmers to invest in machinery and irrigation equipment. Roughly half the cropping area is used for fodder production, with a wide variety of cereals, vegetables, fruits and olives being grown on the remainder.

Livestock: The livestock community is dominated by cows (about 13,000 within the BRPL), sheep (about 20,000) and goats (about 3,000), which provide transport, meat, milk and cheese. Given the small size of farm, and thus production, access to markets is limited, and most production is used for self consumption or for direct selling.

Tourism. The main tourism activity is summer beach tourism, with some 80,000 to 200,000 visitors per year. The bulk of the visitors come from Kosovo, and typically stay for only a short period (from a few days to two weeks). This type of high volume – low spending tourism results in high pressures to local resources, for example in terms of demand for services and the management of wastes (solid waste and wastewater). It is also a key driver for the ongoing uncontrolled urban development. The quality of tourism services is generally low. There are also some hunting tourists, mainly from Italy.

Fishing. Lake Shkodra is the main site of fishing within the area, but additional fishing is carried out within the BRPL in the Buna River, in the sea, and in the larger wetland areas, particularly Viluni Lagoon. Freshwater fish catches appear to be declining, probably due to unsustainable (and often illegal) methods of fishing including, for example, the use of dynamite. Local residents who fish in the sea suffer strong competition from larger fishing vessels launched from the nearby port of Shëngjin. One company previously was awarded a licence to produce mussels in Viluni Lagoon, but after the 2010 floods this was discontinued in favour of mullet and eel fishing instead. The fish catch is completely absorbed by the local market. Concerns have been raised about the possible dangers of pollution to fish quality.

Infrastructure. Most villages within the BRPL face significant problems in terms of infrastructure. Only a few settlements are served by authorized water pumping stations, such that the majority of residents rely on private shallow wells from which the quality of water is uncertain. There are no wastewater treatment plants within the BRPL, and despite the presence of a recently constructed communal solid waste ground in Bushat, most communes continue without any formal system for the management of solid wastes.

Cultural System: Rozafa Castle, strategically located between the junction of the Drin and Buna Rivers and overlooking Shkodër town, is the most famous historical landmark in the region. The bulk of the BRPL was until recently a swampy wilderness, such that it is devoid of any such major historical features. However, the visual attractiveness of the landscape, in particular the alluvial forest of the [Velipojë](#) wetlands comprises an important tourism and thus cultural resource.

In Europe, there are only a few examples where pastoralism is still practised on a scale as large as in the BRPL. Associated with this, Euronatur (2006) documented the presence of a number of primitive and indigenous breeds of domestic animals, including Siska pigs, Busha cattle and Zackel sheep, whilst noting that goat, horse and donkey populations require further investigation.

The particular rural feel of this landscape comprises a considerable tourism asset, but which in the face of uncontrolled and haphazard urban development, is fast being lost.

DRAFT

Trovare info su sentieri (lunghezza, difficoltà, dislivello, punti interesse, etc.)

Water Network:

In addition to the Buna River, the BRPL supports a great variety of surface wetland areas varying from seasonal to permanent and in nature from brackish to freshwater. The extent of wetlands has been greatly reduced through implementation of drainage measures in the 1970's. These canals and pump stations are still in place although many are now in poor condition. Development of upstream dams on the Drin river has greatly modified the flow regime and lead to a marked reduction of sediment load in the Buna River. Nevertheless, the BRPL remains prone to flooding, and in January 2010 most of the area, particularly to the north of the carbonitic hills, was submerged.

In terms of groundwater, the BRPL supports a multilayer aquifer confined to the alluvial sediments, which reach tens of metres in depth and are recharged by direct infiltration, hydrologically connected surface waters (Buna River and drainage channels) and from groundwater flow coming from the karstic formations.

Main Threats:

Natural System

Key direct threats to the natural system include modification, fragmentation and loss of habitat, overuse of resources, pollution particularly of water resources, and the establishment of alien fish species.

Water Resources: The main threat to water resources is due to increasing levels of pollution, resulting from upstream mining and industrial development in the Drin catchment; the release of untreated waste waters, particularly from Shkodër town; poor management of solid wastes, particularly with respect to Shkodër; and due to increased use of agricultural chemicals such as fertilizers and pesticides (river network and groundwater, Rows 20 and 21). Solid wastes carried from Shkodër by the Buna River are deposited into the sea, resulting in pollution of coastal areas too. The flow regime has already been greatly modified through diversion of the Drin into the Buna River and through the building of dams in the upstream catchment area mainly for hydropower purposes (river network, Row 20); it is possible that additional dams will be built resulting in further impacts to the flow regime.

These impacts represent a direct threat to wetland systems (wetlands, Row 2) and aquatic organisms (amphibians and fresh water fish, Rows 6 and 7), and also to human populations, principally in the form of contaminated drinking water supplies (water use: drinking water, Row 34). The washing up of solid wastes on Velipojë beach also creates a significant concern for tourism use.

Rangelands. Erosion of the river banks along the Buna River comprises a particular threat to riverine forests, which are restricted to a narrow belt along the course of the river (riverine forest, Row 1). Such forests play an important role in terms of both erosion and flood control (erosion regulation and water regulation, Rows 22 and 23).

Another important threat to alluvial forests comes from tourism activities, in the form of both high levels of use (attractions and activities, Row 40) and also due to continuing uncontrolled development (tourism infrastructure, Row 41). This applies in particular to Velipojë forest and wetland complex within the core protected area.

The extent of wetlands within the BRPL have already been drastically reduced through drainage works which have enabled their conversion to agricultural uses (wetlands, infrastructure, Row 2), to the extent that the bulk of the floodplain area is now under intensive agricultural production (agricultural production, Row 5). Additional threats come in the form of deteriorating water quality, in particular relating to run-off from adjacent agricultural fields (in some cases leading to eutrophication), and high levels of utilization by livestock.

Sand dunes are another component that is highly threatened, largely due to tourism related impacts in the form of both high levels of direct use (beach tourism) and the development of infrastructure to service the beach tourists (sand dunes, Row 3). Coastal erosion is another important threat, which is related to upstream dam construction resulting in reduced sediment loads in the Buna River, and hence lower rates of sediment deposition in coastal systems (sand dunes, Row 3).

The vegetation of the carbonitic hills (dry oak forests, shrublands and grasslands) appears to be in reasonable status and relatively stable (Row 4). Potential impacts include fires, overgrazing by livestock and soil erosion. The shrub *Salvia officinalis* is believed to be threatened by excessive levels of harvesting (non-timber forest products, Row 24).

Fauna: The use of inappropriate and unsustainable forms of harvesting were identified as a major threat to animal populations, in the form of excessive levels of hunting of mammals and birds (wildlife harvesting, Row 25) and the harvesting of fish (for example, using dynamite and fishing during the spawning season) (fresh water fisheries, Row 26). Collection of frogs was also reported to occur, but the impact of this was not clear (wildlife harvesting, Row 25). Pollution poses another important threat, particularly to aquatic organisms, but attention was also drawn to detrimental impacts to bee populations resulting due to inappropriate uses of agricultural pesticides (Row 35). The introduction and establishment of several alien fish species was noted to comprise a serious threat to certain fish populations (fresh water fish, Row 7). Ongoing development will necessarily result in further habitat fragmentation which will be an additional threat to certain animals.

Socioeconomic System

Broader constraints faced by local communities include poor socioeconomic conditions; lack of local and regional employment opportunities; limited potential of livelihood options; poorly developed infrastructure and services (lack of safe drinking water supplies; poor road access; poor access to education and health facilities), and difficulties in accessing finance and markets. People are thus forced to rely heavily on the use of natural resources, so providing pressure for damaging and unsustainable uses of resources.

Apart from threats relating to the unsustainable use of resources, such as over grazing by livestock; excessive levels of hunting of mammals and birds; damaging techniques and unsustainable levels of fish harvesting, and damaging methods and unsustainable levels of harvesting of plants, the main threats to livelihoods concern limited access to financial resources and poor access to markets; and particularly for tourism ongoing uncontrolled and insensitive development that could rapidly reduce the attractiveness of the area to visitors. Sector specific threats include:

Water: (water use) – the pollution of groundwater (Row 21) due to upstream industrial and mining development; poor management of waste waters and solid wastes, and the use of fertilizers and pesticides

for agricultural purposes, and the limited development of safe water supplies based on deeper aquifers (drinking water, Row 44).

Agriculture: (farming system, financial capital, irrigation and agricultural machinery, Row 35) – key constraints include land fragmentation and the small farm sizes, limited levels of production, difficulties in accessing credit and therefore investing in mechanization and irrigation, and in accessing markets. Additional threats relate to the high risk of flooding and the associated poor status of some of the drainage canals and pump stations (water use, agriculture, Row 33). Damage by birds to crops and losses of livestock to wildlife were noted, but were not considered to be significant (birds and mammals, Row 9).

Tourism: One of the key threats to tourism is the continuing focus on high volume – low spending tourists, which results in major demands on services and potentially unsustainable impacts to the environment (for example to sand dune communities) (Row 41, tourism infrastructure, tourism-related services and ancillary activities). The quality of tourism services is reported to be low. Continued growth of tourism is a key driver of ongoing uncontrolled development, such that the character of the area is rapidly changing and which ultimately is likely to be detrimental to the sustainability of tourism within the BRPL.

Fisheries and aquaculture: Current fishing practices are considered to be unsustainable and to be reflected in diminishing fish catches (primary products, Row 38). Fishermen in the sea face strong competition from larger vessels that launch from the nearby Shěngjīn Port (sea fisheries, Row 28). Increasing levels of pollution pose a potential risk in terms of quality of fish for consumption (primary-derived processed products, Row 38).

Infrastructure: Key limitations of infrastructure include the limited availability of safe supplies of drinking water (drinking water, Row 34), the absence of facilities for treatment of waste waters and solid wastes; poor road access to many places; and the poor status of drainage infrastructure (canals and pump stations); and the absence of flood control works.

Cultural System: The principal threat to cultural resources comprises the rapid and unregulated nature of development that is leading to a rapid change in the nature of the area. It appears that there is also a danger of loss of important local breeds of livestock.