

**FISH
OF
BUNA RIVER
AND
I'TS
DELTA**



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An aerial photograph of a river delta, showing a large island in the center and a forested area on the right. The water is a deep blue, and the land is a mix of green and brown. The image is overlaid with a semi-transparent teal color.

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Recognizing that materials of this nature benefit from continuous refinement, we welcome any suggestions or feedback. Please feel free to share your input at contact@ppnea.org.

Contents:

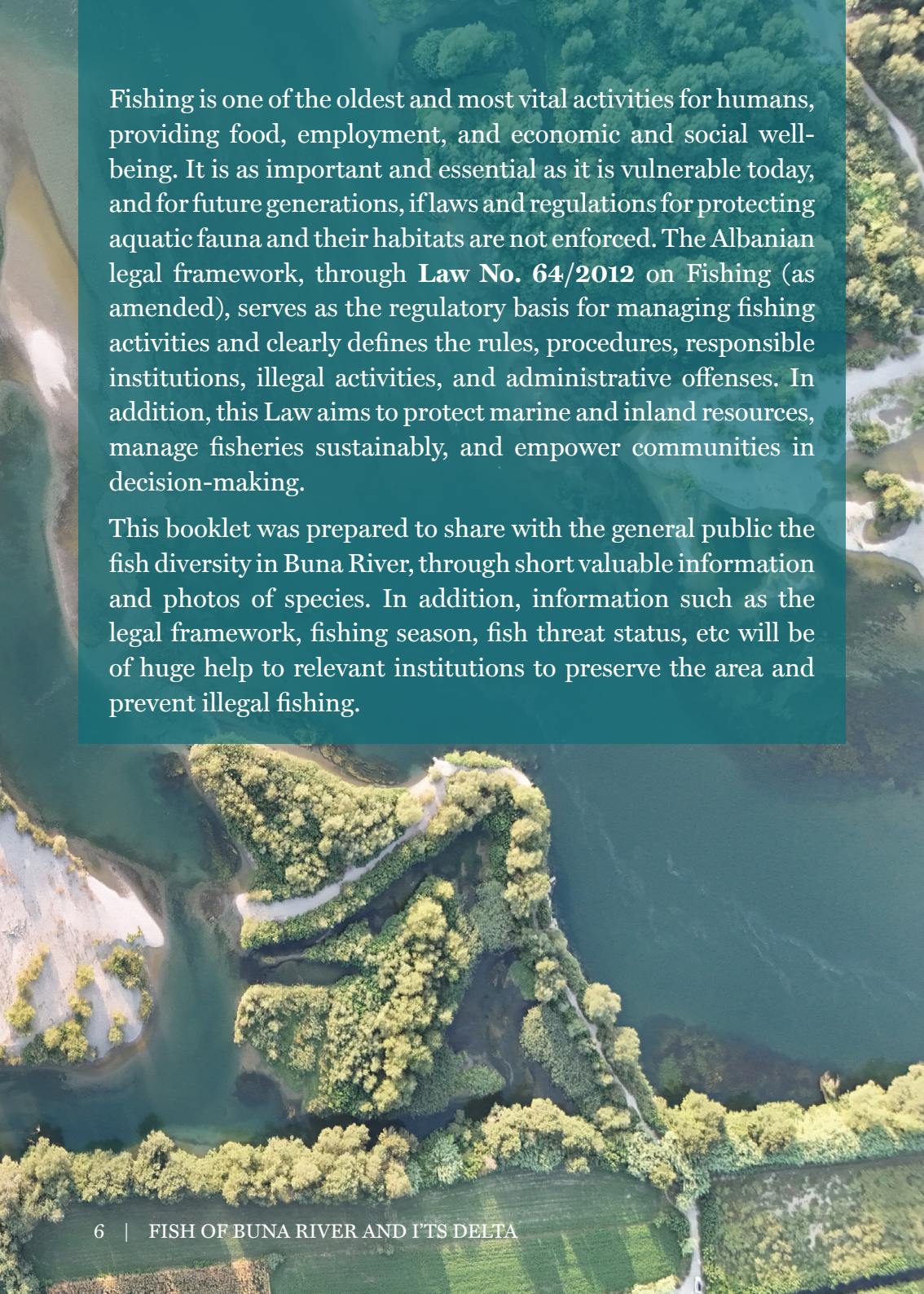
Foreword	5
The Buna/Bojana River	5
Protected Landscape, Buna-Velipoja River	7
Biological Diversity	10
Fish	11
Main Issues Threatening Fish	12
Illegal Fishing	13
Abandonment or Disposal of Fishing Materials in the Water	13
Discharge of Wastewater and Agricultural Runoff	14
Extraction of Inert Materials	14
Symbolys	15
<i>Acipenseridae</i> Family.....	16
<i>Anguillidae</i> Family.....	18
<i>Atherinidae</i> Family.....	19
<i>Nemacheilidae</i> Family.....	20
<i>Blennidae</i> Family.....	21
<i>Petromyzontidae</i> Family.....	22
<i>Centrarchidae</i> Family.....	23
<i>Cobitidae</i> Family.....	24
<i>Citharidae</i> Family.....	26
<i>Cyprinidae</i> Family.....	27
<i>Gasterosteidae</i> Family.....	39
<i>Gobiidae</i> Family.....	40
<i>Ictaluridae</i> Family.....	42
<i>Moronidae</i> Family	43
<i>Mugilidae</i> Family.....	44
<i>Percidae</i> Family.....	46
<i>Poeciliidae</i> Family.....	47
<i>Salmonidae</i> Family.....	48
References	51
List of species	52

Foreword

The Buna/Bojana River

The Buna/Bojana River is a lowland river originating from Lake Shkodra's southernmost tip. Together with its delta represent an important area of international aspect. This transboundary area has protected status in Albania and Montenegro and is part of important ecological networks such as KBA, IPA, IBA, Ramsar, and officially as Candidate Emerald site. It is the lake's only emissary, connecting it to the Adriatic Sea. The river flows for 44 km with a width of 0.35-0.5 km and a depth of 2-4 m. Its upper course flows southwest, continuing south along the Buna River's coastal plains until it empties into the Adriatic.

Buna is joined by the Drin River, which is the largest catchment in Albania, and this duo has shaped throughout the years the outstanding landscapes and important wetlands found in its delta, important habitats for hundreds of species. Despite its transformations and anthropological interventiOn a special mission to find the “mystic” Adriatic sturgeon (*Acipenser naccarii*) but also to evidence of the fish diversity in this river, 2024 PPNEA carried out a study through the E-DNA along the whole river length and its delta. From the E-DNA study, 31 fish species in total but unfortunately, the Adriatic sturgeon wasn't one of them. This is a call for all stakeholders to be aware of the actual situation and interact, mitigate, and restore.

An aerial photograph of a river delta, showing a network of water channels and lush green vegetation. A semi-transparent teal rectangle is overlaid on the top half of the image, containing white text. The text discusses the importance of fishing and the regulatory framework in Albania, specifically Law No. 64/2012 on Fishing.

Fishing is one of the oldest and most vital activities for humans, providing food, employment, and economic and social well-being. It is as important and essential as it is vulnerable today, and for future generations, if laws and regulations for protecting aquatic fauna and their habitats are not enforced. The Albanian legal framework, through **Law No. 64/2012** on Fishing (as amended), serves as the regulatory basis for managing fishing activities and clearly defines the rules, procedures, responsible institutions, illegal activities, and administrative offenses. In addition, this Law aims to protect marine and inland resources, manage fisheries sustainably, and empower communities in decision-making.

This booklet was prepared to share with the general public the fish diversity in Buna River, through short valuable information and photos of species. In addition, information such as the legal framework, fishing season, fish threat status, etc will be of huge help to relevant institutions to preserve the area and prevent illegal fishing.

Protected Landscape, Buna-Velipoja River

The Buna-Velipoja River Wetland Complex, encompassing the Buna River, the Drin River estuary, and the Velipoja coastal area, was designated as a Protected Landscape (Category V) in 2005. This Protected Area covers a territory of 21,678.85 hectares and is located in the Shkodra lowlands, in the southern part of the Shkodra Plain. The complex exhibits a geological structure composed of limestone, flysch, and other formations. This geological diversity is shaped by the position of the Shkodra lowlands, situated at the intersection of four tectonic zones: the Alps, Mirdita, Krasta-Cukali, and Kruja zones.

Due to Albania's geographical position, the climate of the Buna-Velipoja River Protected Landscape is typically Mediterranean, characterized by mild, wet winters and dry summers. Coastal influences moderate the typical Mediterranean aridity. In its lower course, the Buna River forms a wetland complex, including Shalsi Lake, the Mertemza, Domni, and Velipoja marshes, and Viluni Lagoon. Additionally, several islands have formed along its course. Significant sediment deposits, primarily gravel, sand, and clay, accumulate at the riverbed, especially in its upper reaches. The Buna River has an average sediment flow transported in suspension or dissolved form, with suspended sediments measuring 438 kg/sec and turbidity at 1,250 g/m³.

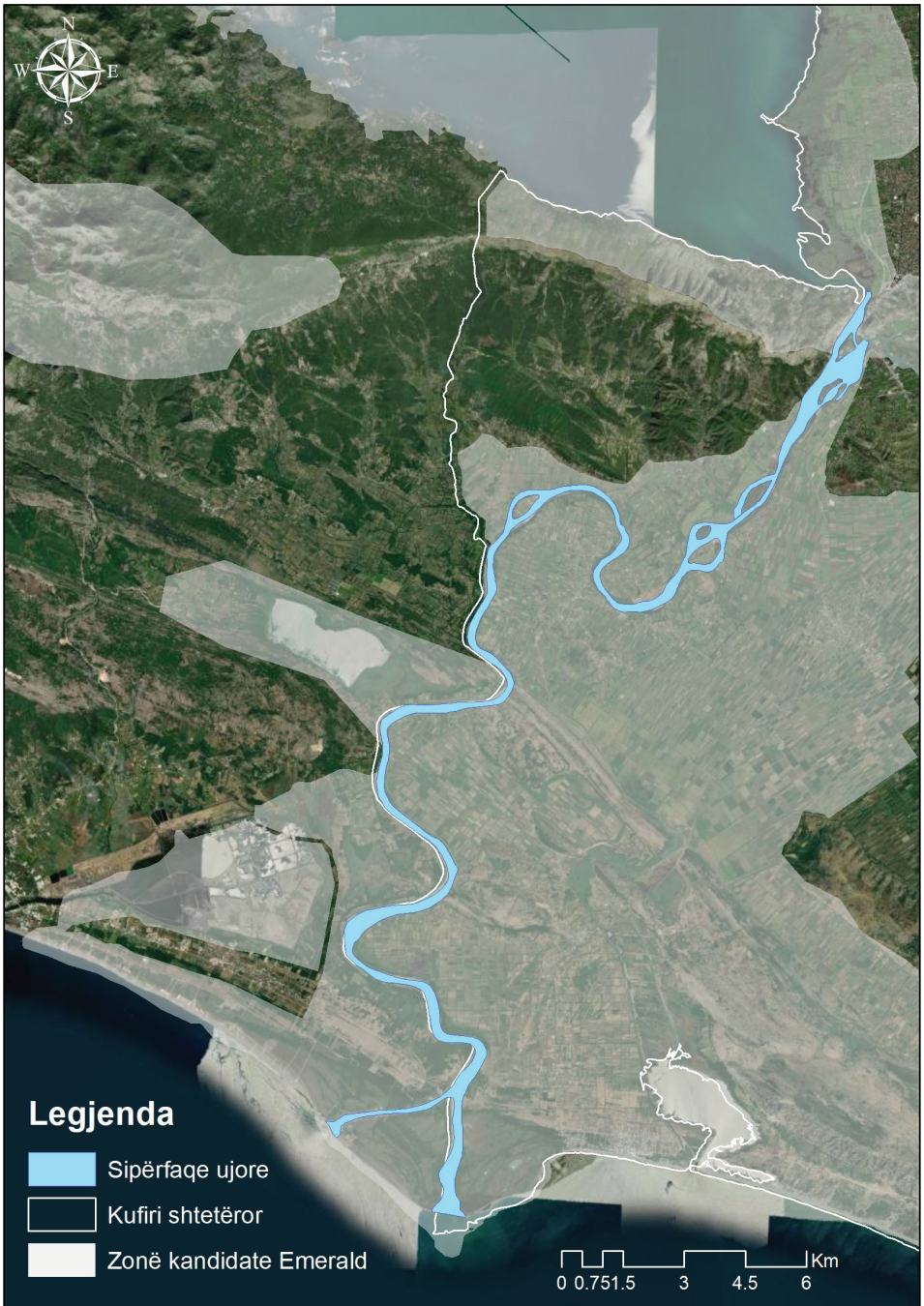


Figure 1: Map of the Buna River-Velipojë Protected Area and Lake Shkodra, a candidate for the Emerald Network. Prepared by E. Gjyzeli.

Two Additional Ecologically Important Areas:

Domni Freshwater Marsh: This marsh, characterized by extensive reed beds (*Phragmites australis*), covers a considerable area and is located along the road connecting Shkodra and Velipoja.

Viluni Lagoon: A saline water lagoon situated 2 kilometers east of Velipoja beach. The lagoon communicates with the sea through a channel approximately 500 meters long.



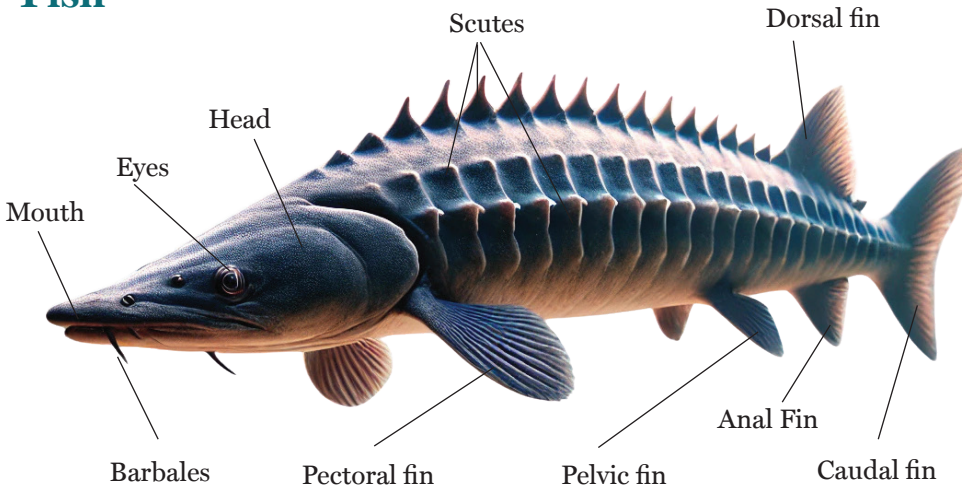
An aerial photograph showing a vast, lush green landscape. In the foreground, there is a dense forest of tall, thin trees. In the middle ground, a wide river flows through the landscape, surrounded by more dense vegetation. In the background, the river continues towards a distant shoreline with more trees and a small peninsula. The overall scene is a natural, undisturbed environment.

Biological Diversity

This Protected Area is distinguished by its rich biodiversity of plants, birds, mammals, and fish. Plant formations such as white poplar (*Populus alba*), black alder (*Alnus glutinosa*), tamarisk (*Tamarix parviflora*), and white willow (*Salix alba*) provide critical habitats for numerous bird species. Among these are cormorants, gulls, ducks, coots and herons.

The area has also recorded traces of one of the world's most endangered mammals, the Eurasian otter (*Lutra lutra*). Fish are another important class found in this Protected Area, particularly in the Buna River. This river is of great significance as it serves as the final segment linking the Drin hydrological system with the Adriatic Sea. Consequently, it acts as an ecological corridor for migratory fish traveling to the Adriatic from Lakes of Prespa, Lake Ohrid, and Lake Shkodra.

Fish



Fishes are aquatic vertebrate animals that use gills for respiration rather than lungs. They do not possess limbs like legs or fins. The term “fish” refers to a highly diverse group of organisms found distributed widely across all aquatic bodies worldwide. Due to their immense diversity, fish exhibit various forms and sizes.

Fish have a diverse diet, consuming other fish, plants, crustaceans, worms, mollusks, insects and their lar presence of fins (though not all species have all fin pairs, such as lampreys), scales, and other formations that enable them to feed and protect themselves from predators. The lateral line running along the body of a fish is a crucial component as it helps the fish detect weak movements in water and concentration gradients. Regarding their biogeographical distribution, fish are broadly classified based on their geographic distribution and tolerance to salinity: Freshwater fish and Marine fish.

In any case, fish from both groups migrate towards fresh or saline waters for spawning, feeding, or shelter. These qualities make fish a unique group in the living world, playing a crucial role in aquatic food chains and ecosystems by influencing the abundance, size, structure, and productivity of zooplankton or phytoplankton, which play a key role in aquatic food webs.

Main Issues Threatening Fish

The Buna River, due to its inflows, the sediments it contains, and those brought by the Drin River, offers important habitats for fish. Species like the white bream, which require fast-flowing waters, have found suitable conditions for spawning here. The river also hosts species from Lake Shkodra due to the similar climate. This diversity has historically served as a food source for humans, and today, fishing remains an important sector of the Shkodra region's economy.

However, due to improper practices and exploitative activities, many species are currently threatened with extinction, and some species are believed to be extinct because they have not been seen in the river for a long time. For example, two species critical to the aquatic ecosystem and the economy, the Adriatic sturgeon (*Acipenser naccarii*) and the European sturgeon (*Acipenser sturio*), have not been seen in the Buna River for the past 10 years.

Another problematic practice is the introduction of non-native species (induction) from other countries, mainly for economic purposes. This practice, which may seem beneficial for the fishing sector, has natural and economic consequences. Some introduced species fail to adapt and may go extinct, causing economic losses. Others that do adapt pose a potential risk to native species by competing with them. Pollution and climate change favor these alien species.

Illegal Fishing

All forms of fishing that are prohibited and the failure to respect fishing seasons negatively impact the preservation of fish populations. Unregulated fishing causes irreversible damage to fish stock levels.

Abandonment or Disposal of Fishing Materials in the Water

This negative phenomenon has a significant ecological impact, as fish or other aquatic species may get caught in these materials, leading to their death. The disposal of waste and inert materials also threatens fish.

Discharge of Wastewater and Agricultural Runoff

These discharges increase phosphorus and nitrogen levels, causing an excessive growth of algae. These algae reduce oxygen levels, leading to fish suffocation or the accumulation of harmful compounds in the fish's organs, which are then transferred to humans.

Extraction of Inert Materials

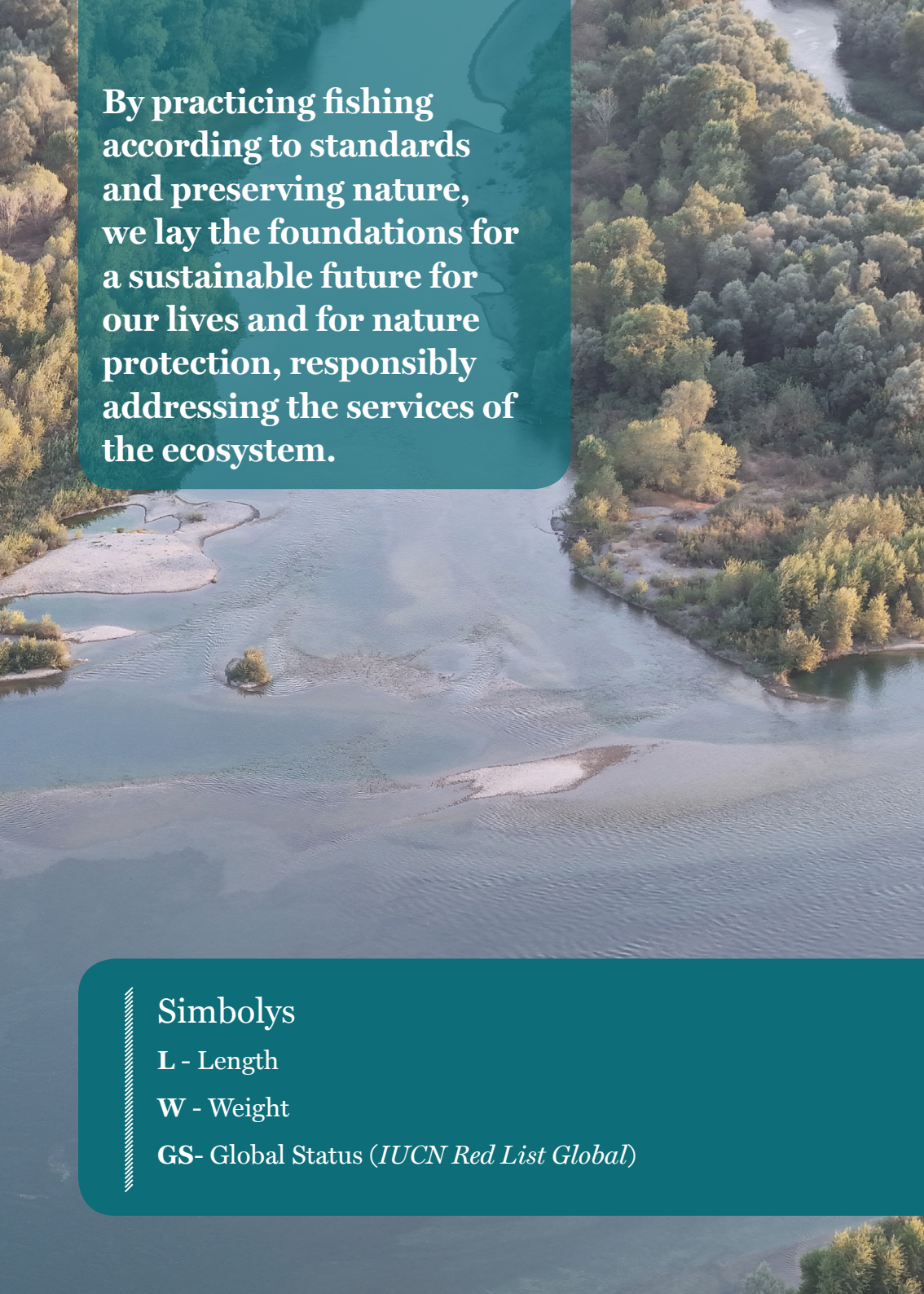
The practice of extracting inert materials, such as gravel from the riverbed, has destroyed and continues to destroy fish habitats, preventing them from spawning and finding food. This has negative consequences for the entire ecosystem and the broader community living around the river.

It should be noted that all these factors not only threaten fish but also other species, such as birds and mammals that feed on fish. Fish

also serve as bioindicators of water quality, signaling whether the state of the ecosystem is good or poor. Therefore, there is a need to protect fish and implement sustainable fishing practices. But what is sustainable fishing?

In simple terms, sustainable fishing means leaving enough fish in the water and minimizing impacts on their habitats and ecosystems. Therefore, fishing seasons should be respected, nets that destroy habitats should not be used, and fishing materials should not be abandoned. Organizational measures should be taken to prevent the discharge of wastewater into the river, and the indiscriminate extraction of inert materials should be prohibited.

By practicing fishing according to standards and preserving nature, we lay the foundations for a sustainable future for our lives and for nature protection, responsibly addressing the services of the ecosystem.



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Symbolys

L - Length

W - Weight

GS- Global Status (*IUCN Red List Global*)

An aerial photograph of a river delta, likely the Buna River, showing a network of water channels and lush green vegetation. A teal semi-transparent box is overlaid on the left side of the image, containing text about the Acipenseridae family. The text is in white, with the title in a larger, bold font.

Acipenseridae Family

Most sturgeons are anadromous species, feeding in saltwater or freshwater and undertaking long journeys to spawn in large rivers. One of their known habitats is also the Buna River. These fish are also capable of completing their life cycle in freshwater. Sturgeons are primarily large-bodied fish, without scales and with 4 barbels. Among all the families of freshwater fish in Europe, this family is the most affected by human activity due to overfishing and the construction of hydropower plants. These factors have caused their disappearance in many countries.

Adriatic sturgeon (*Acipenser naccari*)

This is an endemic species of the Adriatic Sea and its branches. In Albania, its presence is documented only in the Buna River. The disappearance of the Adriatic sturgeon in the Buna/Bojana River came as a result of overfishing, pollution, and habitat loss.



Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

It is characterized by a long body, with the dorsal part in shades of gray-brown, while the ventral part is lighter and the belly is white. This fish prefers large and deep rivers with strong currents, staying near lagoons and river rapids, mainly with muddy and sandy substrates at depths of 10-40 meters.

L: 2 m **W:** 25 kg.

GS: *Critically Endangered (CR)*

Threats: *Overfishing, pollution, and habitat loss.*

European sturgeon (*Acipenser sturio*)

It is known as the European sturgeon, belongs to the Acipenseridae family and has a broader distribution compared to the Adriatic sturgeon. The European sturgeon is found extensively in the Eastern Atlantic, while in Albania, it inhabits several rivers and in Montenegro only in the Buna/Bojana River part. It features a long body with colors ranging from gray to brown and dark blue, with a white underside.



Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

Lmax: 5 m **Wmax:** 400 kg.

GS: *Critically Endangered (CR)*

Threats: *Overfishing, habitat loss.*

Anguillidae Family

This family is characterized by species of fish distinguished by their elongated body and long, fused dorsal and anal fins. They lack pelvic fins. They are anadromous species that migrate from rivers to the sea to spawn. Eels are found in oceans worldwide. In Albania and Montenegro, the representative of this family is solely the European eel (*Anguilla anguilla*).

European eel (*Anguilla anguilla*)



The European eel is characterized by its silver color and long, cylindrical body. It inhabits various aquatic environments, including brackish, fresh, and muddy waters. It prefers depths and is usually found at the bottom of river beds.

Spawning time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 130 cm **M:** 7 kg.

GS: Critically Endangered (CR)

Threats: Overfishing, habitat loss, and the construction of hydropower plants that block their migration routes.

Atherinidae Family

This family includes small to medium-sized fish found in tropical and temperate seas. These fish are characterized by an elongated and compressed body with a silvery coloration, and they have two separate dorsal fins. They are tolerant to varying levels of salinity, which enables them to adapt well to different aquatic environments.

Big-scale sand smelt (*Atherina boyeri*)



It is a native species in the Buna River. This fish can be found throughout the Mediterranean Sea. The fish described is typically brown and silver with a dark brown back. It prefers to inhabit coastal waters, estuaries, as well as flowing waters such as rivers and lagoon systems.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 20 cm **M:** 4-5 kg.

GS: *Least Concern (LC)*

Threats: *Habitat loss and pollution.*

Nemacheilidae Family

This family mainly consists of small fish found in Europe and Asia. A distinctive characteristic of the species is the presence of 3 barbels (whiskers). Species from this family mainly live in freshwater, preferring flows with clean, well-oxygenated water. Some of them are known and used as aquarium species.

Zeta Loach (*Barbatula zetensis*)

This is a native species that populates the Buna River and is also present in Lake Shkodra. The species appears with a pale silver color and dark brown spots on its back. It prefers to live in rivers or streams with solid bottoms, either with gravel or rocks.



Spawning time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 6-7 cm

M: 200 g.

GS: *Vulnerable (VU)*

Threats: *Overfishing and habitat loss.*

Blennidae Family

This family is large and predominantly includes small marine fish. Species of this family are found worldwide, in tropical and temperate seas, especially in rocky waters. Some species are adapted to live in brackish waters. A distinctive characteristic is the presence of a single spine, 2-4 rays, and the absence of fins.



Freshwater blenny (*Salariopsis fluviatilis*)

It is a native fish in the Buna River. This fish can be found in streams, rivers, and lakes. It is characterized by a light brown or yellowish color with some dark stripes.

Spawning time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 15 cm

M: 400 g.

GS: *Least Concern (LC)*

Threats: *Habitat loss.*

Petromyzontidae Family

Fish in this family are lamprey-like with 7 circular gill openings behind the eye. These fish lack paired fins and scales.

Species in this family are characterized by a distinctive oral disk. They are anadromous species that migrate to the upper reaches of rivers after spawning in the sea. They live in marine environments with sandy and clayey sediments in freshwater.



Lampetra soljani

This species is endemic to the Buna River. It prefers environments with fresh water and the bottoms of rivers with subtropical climates. This species appears with a brown color on its dorsal side and a lighter color on its ventral side.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

Lmax: 12.6 cm

M: 30 g.

Threats: *Lampetra soljani* is currently not threatened.

Centrarchidae Family

These fish have been accidentally introduced into lakes and ponds but can only survive for a few years. They are distinguished from other introduced species by their continuous lateral line and a single dorsal fin.

Pumpkinseed sunfish (*Lepomis gibossus*)

This species is introduced in the Buna River. It is characterized by a large, laterally compressed body. The upper part of this fish appears yellowish-green with the presence of shiny spots of the same color throughout the body. It prefers habitats with fresh and warm waters. It is found in lagoons, such as Lake Shkodra.



Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 20 cm

M: 300 g.

GS: *Least Concern (LC)*

Threats: *Urban pollution and wastewater discharges, a negative phenomenon in the Buna River.*



Cobitidae Family

A family primarily consisting of small and slender fish with a wide distribution ranging from Europe, across Asia to Africa, and even in Morocco. Species in this family are distinguished by a round, movable, and retractable dorsal spine, which is hidden under the skin in many of them. They are characterized by elongated bodies and inhabit the bottom part of rivers. The species are very similar in appearance but differ genetically.



Cobitis ohridana

It is an endemic species found in rivers such as the Buna, Drini, and Vjosa, as well as in the lakes of Shkodër and Ohrid. This fish prefers habitats with fresh and temperate water conditions and is characterized by a brown coloration with black spots on its dorsal side.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

Lmax: 6.9 cm **M:** 2-3 gr.

GS: Least Concern (LC)

Kërcënimet: Pollution and habitat loss.

Balkan spined loach (*Sabanejewia balcanica*)



This species is native to the Buna River. It prefers freshwater environments with moderate temperatures and is characterized by its black and brown-gray coloration.

Threats: .

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

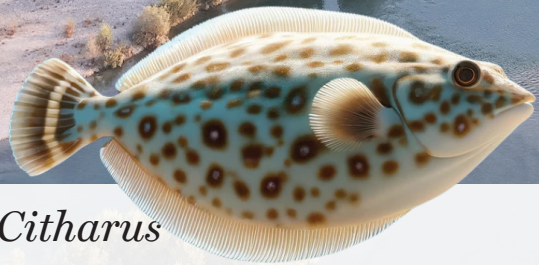
L: 9 cm **M:** 12g.

GS: Least Concern (LC)

Threats: Habitat loss

Citharidae Family

This is a small family with four genera distributed in the Mediterranean Sea, Indian Ocean, Japan, and down to Australia. Among the 5 genera, only the genus *Citharus* is found in the Mediterranean. This family includes only 7 species of fish characterized by a flounder-like and flat body. What distinguishes them from other groups is their compressed body and the placement of their eyes on one side. They prefer to stay on the bottom of water bodies covered with mud or sand. They release their eggs into the sea, but often also in the estuaries of rivers.



Spotted flounder (*Citharus linguatula*)

This is a native species in the Buna River, which prefers aquatic environments with great depths. It is mainly found at the bottoms of marine environments. It is characterized by a pale brown coloration.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 15 cm

M: 150 g

GS: Least Concern (LC)

Threats: Overfishing and habitat loss.

Cyprinidae Family

This family is one of the largest families of freshwater fish, found almost worldwide except in Madagascar, New Zealand, Australia, and South America. This family comprises more than 2,100 species with diverse sizes and shapes. These species are distinguished by a pharyngeal tooth found in their throat region, called the pharyngeal tooth. They inhabit a wide range of habitats, from small ponds to rivers found in the Himalayas. In the Buna River, there are both native, endemic, and introduced species from this large family.

Alburnoides ohridanus



This fish is an endemic species found in Lake Ohrid and is characterized by a yellow and light blue coloration on its dorsal part. It prefers habitats with clear and freshwater, making the Buna/Bojana River an important habitat for this species.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

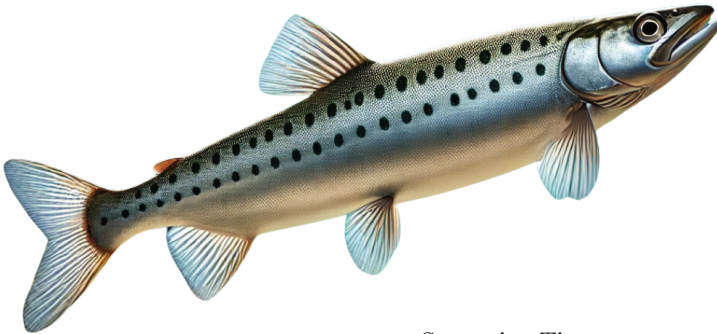
L: 9 cm

M: 10-15 g

SB: *Vulnerable (VU)*

Threats: *Habitat loss and competition from invasive species.*

Shkodra bleak (*Alburnus scoranza*)



Alburnus scoranza, commonly known as the Shkodra bleak, is a species of fish endemic to Lake Shkodra and Lake Ohrid, also found in the Buna and Drin rivers. It prefers habitats with fresh and temperate water conditions. This fish is characterized by its green and brownish coloration.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 18 cm

M: 47 g.

GS: *Least Concern (LC)*

Threats: *Habitat loss.*

Twait shad (*Alosa fallax*)



Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

It is a native species found in the Buna River and is characterized by its silvery and blue coloration on the dorsal side. This fish is found in brackish and freshwater environments.

L: 40 cm

M: 1.5 kg

GS: Least Concern (LC)

Threats: Improper fishing practices, pollution, and invasive species.

Eurasian minnow (*Phoxinus phoxinus*)



Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

This is a native species found in the Buna/Bojana River. It inhabits environments with fresh and slightly brackish waters and prefers their bottoms. This species is characterized by brown with black coloration on the dorsal part and silvery on the ventral part.

L: 7 cm

GS: Least Concern (LC)

Threats: Pollution.



Common carp (*Cyrinus carpio*)

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 60 cm

M: 4 kg.

Threats: *This species is currently not threatened.*

This is an introduced species in the Buna River. It is characterized by a large, elongated body with a color range from green to yellow, dark brown, and silver. The species favors larger water bodies with slow-moving currents and soft sediment substrates.

Carassius gibelio



This is an introduced species in the Buna River. It is found in fresh and brackish water environments and is characterized by its silvery-brown color.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 20 cm

M: 3 kg.

Threats: *This species is currently not threatened.*

Goldfish (*Carassius auratus*)

The goldfish is an introduced species in the Buna River. It primarily prefers continental flowing waters or lagoons. They are inclined to live in calm or stagnant waters, such as rivers, lakes, ponds, marshes, etc. There are varieties with color combinations, such as white, green, red, etc.



Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 10 cm

M: 6 kg.

GS: Least Concern (LC)

Threats: Pollution.

Ohrid nase (*Chondrostoma ohridanus*)



This is an endemic species found in the Buna River. It primarily prefers habitats with fresh waters and is also found in the Drin River, as well as in Lake Shkodër and Lake Ohrid. It is characterized by a metallic blue-gray color.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 25 cm

M: 1.5 kg.

GS: Near Threat (NT)

Threats: Pollution and habitat loss.

Squalius platyceps



It is an endemic species found in the Buna River, also reported in the Drin River, Lake Shkodër, and Lake Ohrid. This species prefers habitats with temperate fresh water. It is characterized by silver and brown coloration.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 47.2 cm **Mmax:** 1.2 kg.

GS: *Least Concern (LC)*

Threats: *Habitat loss and pollution.*

Rutilus albus



It is a native species found in the Buna River, also found in Shkodra Lake. The name “albus” derives from Latin, meaning white. Its body is characterized by a white and silvery coloration, typical for this species. They are found in habitats with fresh and temperate water.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

Lmax: 29.5 cm

Mmax: 98.5 g

Threats: *This species is currently not threatened.*



Prespa roach (*Rutilus prespensis*)

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

Lmax: 23.3 cm

M: 180 gr.

GS: Least Concern (LC)

Threats: Habitat loss.

It is an endemic species of the Adriatic Sea that is also found in the Buna River. It has a long and medium-sized body with a silvery coloration. It is found in a wide range of habitats such as rivers and streams with moderate to slow currents, lakes, marshes, reservoirs, etc.

Albanian roach (*Pachychilon pictum*)



Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

It is an endemic species found from the Drin River to the Vjosa River. The Albanian roach is characterized by a silver color with black spots along its dorsal region.

This fish prefers freshwater environments and a warm climate.

L: 18 cm

M: 70 gr.

GS: Least Concern (LC)

Threats: Habitat loss and pollution.

European bitterling (*Rhodeus amarus*)



Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

The European bitterling prefers calm or still waters with abundant vegetation. This fish is characterized by green, silver, and blue coloring.

L: 10 cm

M: 7 gr.

GS: *Least Concern (LC)*

Threats: *Habitat loss and pollution.*

Stone moroko (*Pseudorasbora parva*)



Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

An introduced species in the Buna River, *Pseudorasbora parva* is a fish that prefers aquatic environments with well-developed vegetation. It is mostly found in areas such as small channels, ponds, and primarily small lakes. The body color varies from green to yellow to gold, with males being more pale.

L: 8 cm

M: 19 gr.

Threats: *This species is currently not threatened.*

Grass carp

(Ctenopharyngodon idella)



Grass carp is a large fish that has been introduced to the Buna River. It is found in environments with brackish and freshwater. It exhibits a color variation from yellow to green, with dark brown and white.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 60 cm

M: 25 gr.

Threats: *This species is currently not threatened.*

Bighead carp

(Hypophthalmichthys nobilis)



Bighead carp is an introduced species in the Buna River. It has a brown color with black spots on the sides. A characteristic feature is its large mouth, without barbels, and lacking teeth. It prefers habitats such as river systems, lake confluences, reservoirs, etc. It can tolerate high water temperatures.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 150 cm

Mmax: 50 kg.

Threats: *This species is not threatened.*

Silver carp

(*Hypophthalmichthys molitrix*)



Silver carp is an introduced species in the Buna River, which prefers brackish and freshwater environments. It appears with a pronounced silver color and, as it grows, is characterized by a pale green color on the dorsal part.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

Lmax: 120 cm

Mmax: 50 gr.

Threats: This species is currently not threatened.

Black Amur bream

(*Megalobrama terminalis*)



This fish is an introduced species in the Buna River, which prefers freshwater environments. It is characterized by a silver color.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 20 cm

M: 4 kg.

Threats: This species is not considered threatened.

Black carp

(*Mylopharyngodon piceus*)



Introduced to the Buna River, it is found in rivers, streams, and lakes. This species requires large rivers, such as the Buna, for reproduction. It is characterized by black, brown, and dark blue colors.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 60-100 cm

M: 45 kg.

Threats: This species is currently not threatened.

Scardinius knezevici



It is an endemic species found in Lake Ohrid and Lake Shkodra. It inhabits freshwater and temperate aquatic environments. *S. knezevici* appears with colors ranging from silver to orange.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 29.5 cm

Mmax: 364 g.

GS: Least Concern.

Threats: Habitat loss.

Telestes montenigrinus



It is endemic to Shkodra Lake and the Buna River. This species lives in freshwater environments with calm currents. It is characterized by dark brown and silver colors.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 10 cm

M: 10 gr.

GS: *Least Concern (LC)*

Threats: *Habitat loss.*

Tench *(Tinca tinca)*



Tench is an introduced species in the Buna River. The body is dark green to bright yellow in color. It inhabits calm, temperate waters with the presence of aquatic plants.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 70 cm

M: 7.5 kg.

GS: *Least Concern (LC)*

Threats: *Habitat loss.*

Gasterosteidae Family

The *Gasterosteidae* family is a small group with 5 genera and about 15 species of fish found in freshwater and coastal waters from Eurasia to North America. What distinguishes these species is the presence of a series of spines in the dorsal fin, a single spine in the anal fin, and a pair of pelvic fins.

Species of this family are known for their nest-building behavior, which consists of plant debris and algae. The nest is maintained by being anchored by threads that serve as a substrate or attached to vegetation. The male attracts the female to the nest, where the eggs are ready to be fertilized. The nest is protected by the male and later by the juveniles.

Three-spined stickleback (*Gasterosteus aculeatus*)



This is a native species found in the Buna River. It lives in freshwater and brackish waters. Typical habitats for it are bodies of water with calm currents and clean water, with sandy bottoms and abundant vegetation. It appears with white and silver colors.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 8 cm

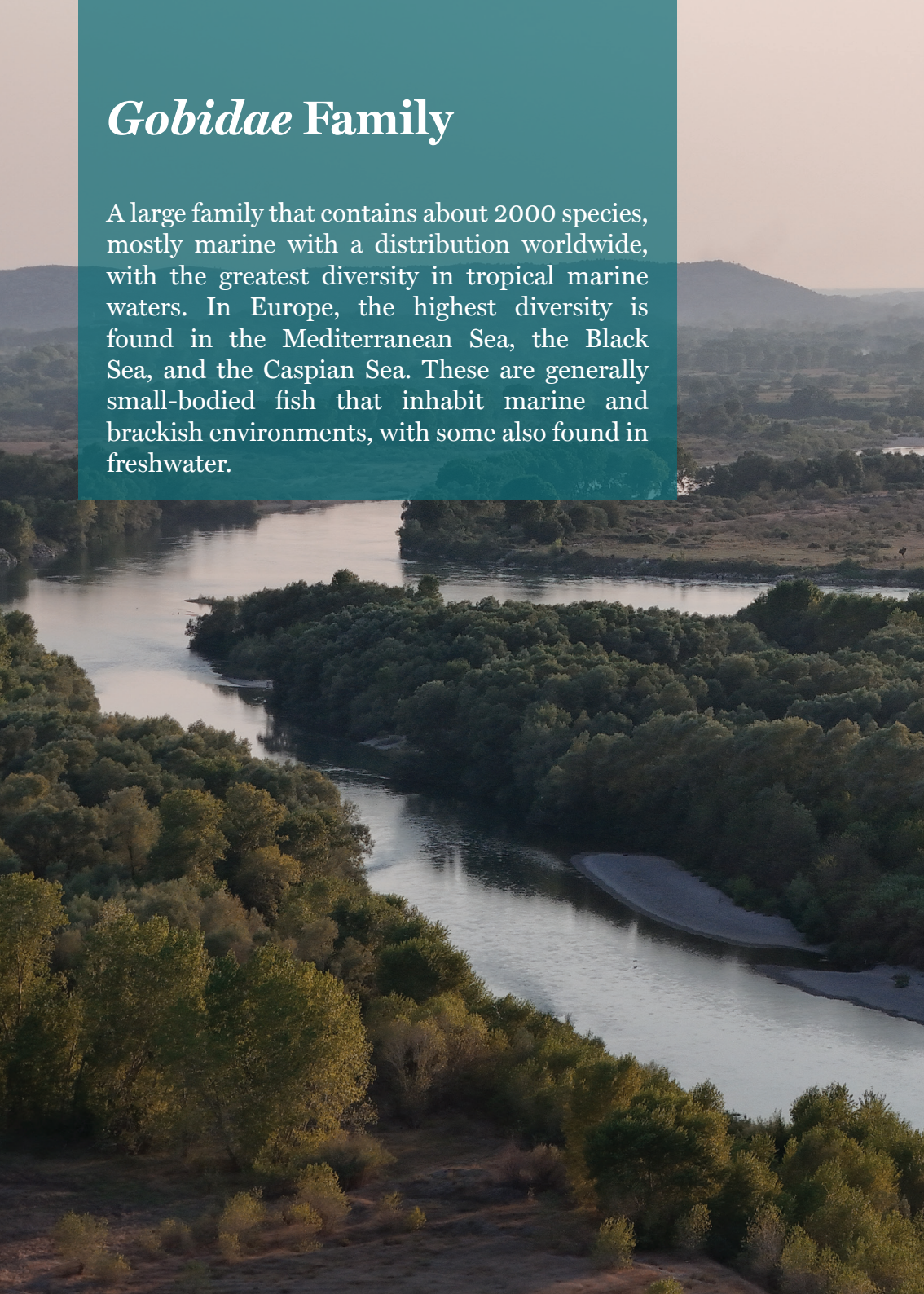
M: 10 g.

GS: *Least Concern (LC)*

Threats: *Habitat loss.*

Gobidae Family

A large family that contains about 2000 species, mostly marine with a distribution worldwide, with the greatest diversity in tropical marine waters. In Europe, the highest diversity is found in the Mediterranean Sea, the Black Sea, and the Caspian Sea. These are generally small-bodied fish that inhabit marine and brackish environments, with some also found in freshwater.



Gobio skaderensis



Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

From its name, it is an endemic species found in Lake Shkodra and the Buna River. *G. scadarensis* is found in freshwater and brackish environments. It is characterized by green and silver colors.

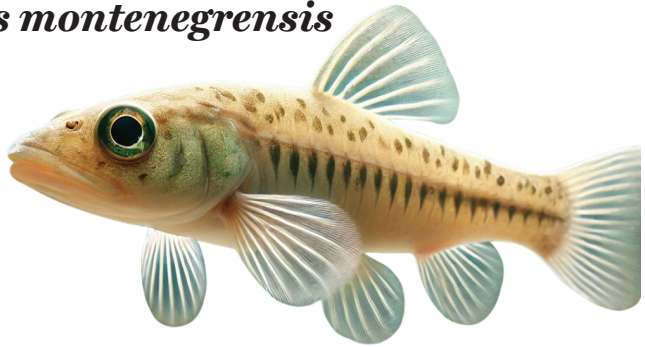
L: 12 cm

Mmax: 220 gr.

GS: *Endangered (EN)*

Threats: *Habitat loss and overexploitation.*

Pomatoschistus montenegrensis



Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

It is an endemic species of Shkodra Lake. The body color varies from gray to brown. It prefers shallow rivers and ponds with gravel layers, where algae grow, providing protection for this fish from predators.

Lmax: 2.8 cm

M: 10 gr.

GS: *Least Concern (LC)*

Threats: *Habitat fragmentation and pollution.*

Ictaluridae Family

This family is endemic from North America to South America in Guatemala. It includes about 50 species grouped into 6 genera. They are distinguished from other European species by their adipose fins.

Brown bullhead *(Ameiurus nebulosus)*

This is an introduced fish species in the Buna River. It is found in slow-flowing bodies of water such as streams, rivers, reservoirs, and lakes. They are easily adaptable, as they tolerate a wide range of environmental conditions. It appears with dark brown to green coloration.



Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 2-3 cm

M: 5 g.

GS: *Least Concern (LC)*

Threats: *Pollution and Habitat degradation.*

Moronidae Family

This family consists of 2 genera and 4 species: Morone with 4 species in North America and Dicentrarchus with 2 species in the Eastern Atlantic and the Mediterranean Sea. They are distinguished by having a pair of narrow dorsal fins and a relatively broad lateral line that extends to the rear part of the caudal fin. In Europe, species of this family are mainly found in brackish waters. Only *Dicentrarchus labrax* is found in freshwater habitats.

European seabass (*Dicentrarchus labrax*)



The European seabass is a native species in the Buna River. It is a marine species but prefers the river's mouth for living and, during the summer, migrates into the river's flows. Its color is variable, ranging from dark gray to blue or green.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 1 m

M: 5 kg.

GS: Least Concern (LC)

Threats: Overfishing, as it is a slow-growing species.

Mugilidae Family

Species within this family are primarily marine but can also migrate into lagoons and rivers, with some adapted to freshwater environments.

Characterized by their flattened heads, these species typically inhabit depths of less than 200 meters, preferring muddy substrates. Their reproductive cycle involves releasing eggs in the sea. Due to their similar body shape and silver coloration, distinguishing between species can be challenging.

In the Buna River, two species from this family have been identified: *Liza ramada* and *Mugil cephalus*.



Thin Lip mullet (*Liza ramada*)

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 10-20 cm

M: 2.9 g.

GS: Least Concern (LC)

Threats: Habitat loss.

The thinlip mullet is a native species found in the Buna River. Although a marine species, it enters brackish water environments at the mouth of the Buna River. It prefers freshwater and migrates up to the upper reaches of rivers. The body colors are gray and white.



Flathead grey mullet (*Mugil cephalus*)

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 1.2 cm

M: 8 kg.

GS: Least Concern (LC)

Threats: Habitat loss.

A native species found in the Buna River, the spring mullet displays a range of colors including gray, blue, greenish brown, and silver-white. It is found in both highly saline and freshwater environments. It also prefers river mouths, streams, and enters lagoons with sandy or muddy bottoms.

Percidae Family

This family is predominantly composed of freshwater fish. There are about 180 species in this family and 10 genera native to Europe, Central Asia, and North America. They are distinguished from other families by having a continuous lateral line, a higher anterior part than the posterior part, and 1-2 anal spines. This family, which includes native, endemic, and introduced species, primarily inhabits freshwater environments. In the Buna River, the species are not native but introduced.

European perch (*Perca fluviatilis*)

The European perch is an introduced species in the Buna River. It prefers to live in slow-flowing rivers, deep lakes, or ponds, but avoids cold and fast-flowing waters. This species is characterized by a green to brown color and is equipped with 5-8 black stripes.



Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

Lmax: 51 cm **M:** 4.75 kg.

GS: Least Concern (LC)

Threats: Habitat loss and invasive species.

Poeciliidae Family

This is a large family comprising small-bodied fish that inhabit freshwater and brackish waters from North and South America to Africa. Males of this family have a modified anal fin called a gonopodium, through which sperm is transferred to the female's body.

A significant number of species from this family are part of the aquarium trade, and some have been found in European waters. They are quite sensitive to temperature drops, which can lead to their disappearance.

Eastern mosquitofish (*Gambusia holbrooki*)



This is an introduced species in the Buna River. It primarily prefers warm, slow-moving, and calm water environments. It is found at depths of less than 10 cm.

It appears with colors ranging from green to brown, with dark blue and silver.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 4 cm

M: 1.9 g.

GS: Least Concern (LC)

Threats: Pollution and habitat loss.

Salmonidae Family

These are medium to large fish that inhabit nearly all habitats with clean, cold, and well-oxygenated water. Salmon are native to the Northern Hemisphere but have been widely introduced for aquaculture in cold waters around the world.

They are also among the fish groups most affected by human impact. Their conservation is complicated by the use of alien salmon species or populations as stock for economic purposes. They exhibit a range of forms and sizes, which complicates their identification.

West Balkan trout (*Salmo farioides*)



The Drin trout is a native species found in the Buna River and is endemic to the Adriatic Sea. It prefers environments with clean, fast-flowing water and serves as a biological indicator of water quality. This species is characterized by a silver color with black spots on the dorsal region.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

L: 3-4 cm

M: 400 gr.

GS: *Currently not threatened*

Threats: *Pollution, overexploitation.*

Rainbow trout (*Oncorhynchus mykiss*)



The golden trout is an introduced species in the Buna River. It is characterized by a silver color on the underside and a red stripe on the upper side. It is found in saline, brackish, and freshwater environments. They prefer cold water environments but can also adapt to warmer water conditions. This species is currently not threatened.

Spawning Time:

1	2	3	4	5	6	7	8	9	10	11	12

Lmax: 1.2

Mmax: 24 kg.

GS: *Currently not threatened*

Responsible institutions and contacts:

Institution	Responsible	Contact - Albania
Ministry of Tourism and Environment	Politics, Legislation	https://turizmi.gov.al/kontakto/
National Inspectorate for the Protection of Territory (NIPT)	Inspection, Investigation, Law Enforcement	No. +355697028105
National Agency of Protected Areas (NAPA) and Regional Administrations of Protected Areas (RAPA)	Inspection, Investigation, Law Enforcement in the Protected Areas Network	No. +355 69 364 7063 Email: Info@akzm.gov.al
State Police	Criminal Investigation	Nr. 129. Email: policiaeshtetit@asp.gov.al
Fisheries Management Organization (FMO)	Management, Regulation, and Monitoring of Fishing Activities and Fish Stocks	Nr. 022 620 046 / +355 67 691 8777. E-mail: ariancinari@gmail.com
Shkodra Border Police	Patrolling for Illegal Fishing	Nr. +355 69 411 0262. E-mail: sallaoperativeshkoder@ASP.gov.al
Municipal Police	Administrative investigation	Nr. +355 22400150. Email: mjedisi@bashkiashkoder.gov.al
PPNEA - Birdlife Albania	Monitoring, Awareness, and Study of Environmental Conditions	Nr. 04 562 8954 Email: contact@ppnea.org

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List of species:

Albanian	Latin	Pages No,
Amuri i bardhë	<i>Ctenopharyngodon idella</i>	34
Aterina symadhe	<i>Atherina boyeri</i>	19
Ballëgjeri i bardhë	<i>Hypophthalmichthys nobilis</i>	34
Ballëgjeri larosh	<i>Hypophthalmichthys molitrix</i>	36
Barkëgjera e Ohrit	<i>Alburnoides ohridanus</i>	28
Blenidi i ujërave të embla	<i>Salariopsis fluviatilis</i>	21
Blini	<i>Acipenser sturio</i>	17
Blini i bardhë	<i>Acipenser naccari</i>	17
Burdullaku i Shkodrës	<i>Pomatoschistus montenegrensis</i>	41
Gjuca e Shkodrës	<i>Alburnus scoranza</i>	28
Grunci i karsteve	<i>Phoxinus phoxinus</i>	29
Gurnecka e Ohrit	<i>Cobitis ohridana</i>	25
Gurnecka e Zetës	<i>Barbatula zetensis</i>	20
Gurnecka me gjëmbe e Ballkanit	<i>Sabanejewia balcanica</i>	25
Idhtaku	<i>Rhodeus amarus</i>	34
Karasi i artë	<i>Carassius auratus</i>	31
Karasi Prusian	<i>Carassius gibelo</i>	30
Krapi	<i>Cyprinus carpio</i>	30
Krapi i zi	<i>Mylopharyngodon piceus</i>	37
Kubla liqenore	<i>Alosa fallax</i>	29
	<i>Lampetra soljani</i>	22
Levreku	<i>Dicentrarchus labrax</i>	43
Lina	<i>Tinca tinca</i>	38
Lloska e Shkodrës	<i>Scardinius knezevici</i>	37
Mlyshi i Drinit	<i>Squalius platyceps</i>	32

Ngjala	<i>Anguilla anguilla</i>	18
Njëmustakori i Shkodrës	<i>Gobio skaderensis</i>	41
Njila e Ohrit	<i>Chondrostoma ohridanus</i>	31
Notaku	<i>Pseudorasbora parva</i>	34
Paroshja	<i>Citharus linguatula</i>	26
Pëllëmbëza	<i>Megalobrama terminalis</i>	36
Peshku farëkungull	<i>Lepomis gibbosus</i>	23
Peshku kokëviç kafe	<i>Ameiurus nebulosus</i>	42
Peshku mushkonjë	<i>Gambusia holbroki</i>	46
Qefulli i verës	<i>Mugil cephalus</i>	45
Qefulli i vjeshtës	<i>Liza ramada</i>	45
Sharroku	<i>Perca fluviatilis</i>	46
Skorti i bardhë	<i>Rutilus albus</i>	32
Skorti i Prespës, Pllotica	<i>Rutilus prespensis</i>	33
Skorti i zi, Skorti i Ballkanit	<i>Pachichilon pictum</i>	33
Skorti me vizë	<i>Telestes montenigrinus</i>	38
Trigjilpërëza	<i>Gasterosteus acuelatus</i>	39
Trofta e Drinit	<i>Salmo farioides</i>	48
Trofta e ylbhtë	<i>Oncorhynchus mykiss</i>	48

CIP Katalogimi në botim BK Tiranë

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About the Project

“Setting the Foundation for a Sustainable Future for Buna River Protected Landscape in Albania and Bojana Delta in Montenegro”, is a project supported by the Critical Ecosystem Partnership Fund (CEPF) - small grants and is focused on the transboundary Buna River and its delta with its main aim on increasing knowledge of the freshwater species living in this ecosystem through innovative studies such as DNA analysis. In addition, based on the data collected conservation actions were implemented, and also several meetings with important stakeholders took place aiming to raise awareness and preserve these valuable ecosystems.”

The Organization for the Preservation and Protection of the Natural Environment in Albania (PPNEA) is the first environmental organization established in Albania in 1991 and currently represents the largest organization in the country and one of the most specialized institutions in the field of studying and preserving biodiversity. and the natural environment.

PPNEA aims to preserve species and areas of high natural value in the country, helping to recover endangered populations of wild life species and conservation of their habitats.

PPNEA also works for training, education, information and awareness of special interest groups and the general public in the field of conservation and sustainable development in Albania.



Partnerë:



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