

# Eel disappearance in karst landscape

## Gimnazija Metkovic Croatia

### The European Eel (*Anguilla anguilla*, Linnaeus 1758.)

**Scientific classification:**

Regnum: Animalia  
 Phylum: Chordata  
 Classis: Actinopterygii  
 Ordo: Anguilliformes  
 Phamilla: Anguillidae  
 Species: *Anguilla anguilla*, Linnaeus 1758.  
 Conservation status: CRITICALLY ENDANGERED



French: "anguille" Croatian: "jegulja"  
 Slovak: "uhor" Italian: "anguilla"



### ARE EELS SNAKES??

European eels are fish with one pair of small pectoral fins and long, snake-like bodies. The body covering of an eel is typically scaleless.

### HOW DO EELS SWIM??

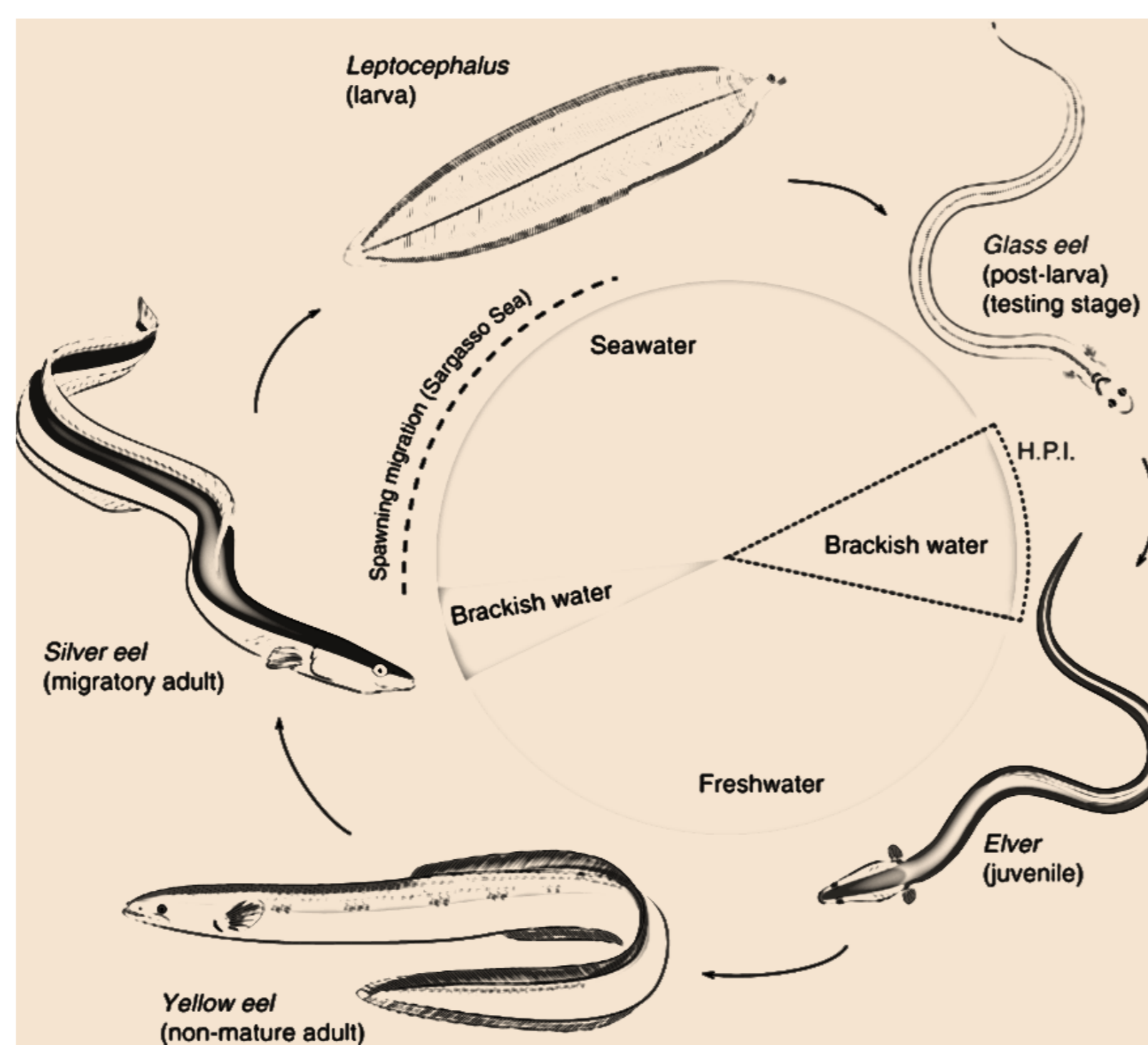
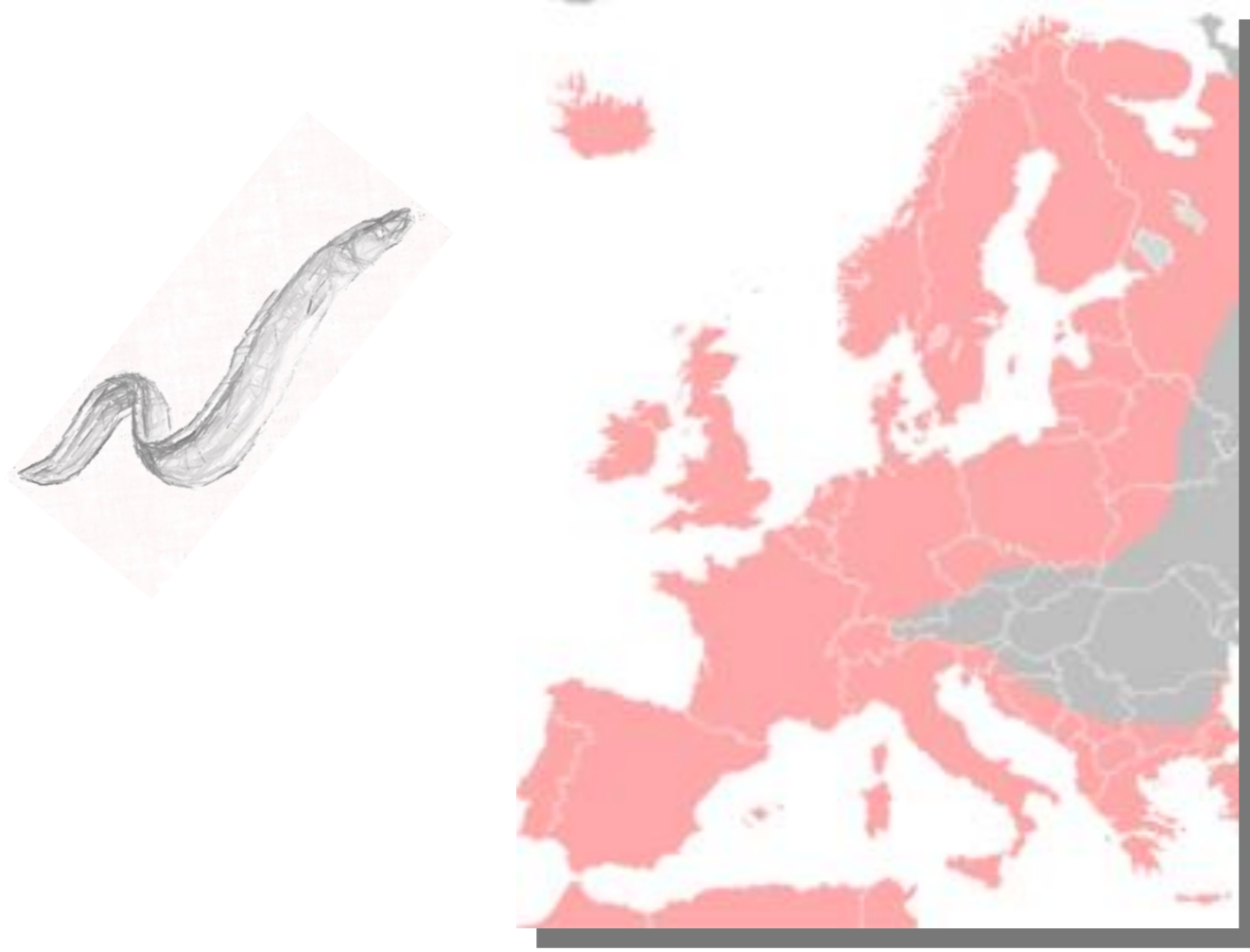
To swim, eels generate waves that travel the length of their bodies. To swim backwards, they reverse the direction of the wave.

### FRESHWATER OR SEAWATER??

As catadromous fish, European eels spend most of their adult lives in freshwater rivers, streams, and estuaries before returning to the open ocean to spawn and lay eggs.

### Habitat

European eels can be found from the northern reaches of Russia and Finland across Europe all the way down to the coasts of North Africa.



### LIFE CYCLE

European eels go through several life stages.

As **larvae**, eels have thin heads and wider bodies that look like a leaf, but as they age, they become longer and thinner.

As their bodies become larger and more translucent, they become known as "glass eel." Next, as the eels enter freshwater, they transform again, gaining pigmentation and becoming known as "elvers."

For the next 6 to 20 years, the eels increase and get lemon-colored undersides, known as the "yellow eel" stage. Yellow eels travel upstream to cooler, less salty water until they become reproductively mature.

Finally, the fish transform again into "silver eel" with a metallic sheen and large eyes.

At this point eels migrate thousands of miles back out to the Sargasso Sea, where they **spawn, lay eggs, and die.**

### SECRETIVE LIFESTYLE

People still don't know much about eels. This species is nocturnal and secretive, spending the day buried in mud and under stones. At night, they feed on a variety of food sources, depending on their life stage. They eat everything from fish to mollusks and crustaceans, to even insects and worms. European eels are strong swimmers, and they have impressive climbing skills, so they can navigate obstacles in their upstream journeys. They can even be seen leaving the water and entering fields, where they find slugs and worms.



### A LOCAL DELICACY IN METKOVIC

The Neretva is the largest river of the eastern Adriatic, forming an extensive delta with large reedbeds, lakes, wet meadows, lagoons, sandbanks and saltmarshes. The Neretva Delta around Metkovic is a unique geographic area, a marshland surrounded by a circumferential karstic rock massif of South Dinaric Alps.

These water areas with muddy and soft bottom provide ideal habitat for the eel.

Eels are a local delicacy eaten by poor people in the past, and now very expensive in restaurants.

### AMAZING JOURNEY



The silver eels start their journey out of Neretva Delta in the autumn, on a rainy night with warm wind. They swim through the maze of marshes and ravines towards the sea (this part is full of traps set by people to catch them). Just near the delta and along the sea coast, males await. Then, in massive schools, eels travel together, leaving the Adriatic Sea, without stopping and feeding, towards Gibraltar. After the Mediterranean, the eels push for months across the Atlantic all the way to the Sargasso Sea.

There millions of eels lay billions of eggs, and die.

Fertilized eggs emerge to the surface and millimeter small, transparent larvae appear in the shape of flat leaves.

In two years they grow to a few centimeters as glass eels and unmistakably arrive to estuaries of the same rivers where their parents started their journey.

### WHY ARE EELS DISAPPEARING FROM NERETVA DELTA??

#### REASON No. 1 – POLLUTION

The pollution of waterways in which eels live, such as through the use of pesticides (Neretva Delta is a thriving agricultural area), as well as the rise of sea level and infiltration of saltwater into the Delta – all these disrupt the life of the eel in Neretva.

#### REASON No. 3 – OVERFISHING

Due to the high demand for the eel in the blooming Croatian tourist industry, the fishing restrictions are often disregarded, which affects the loss of eels even more.

#### REASON No. 2 – HABITAT LOSS

The eel is losing its habitat through extensive marshland disappearance in favor of farming.

The building of dams and construction of modern roads in the surrounding Dinaric Alps has blocked some of the underground pathways of the eel.

### WORRYING EUROPEAN TREND: DISAPPEARANCE OF THE EEL

A dramatic collapse in eel population has been recorded by present studies across the European Union. A recent study by the University of Dubrovnik confirmed the same situation for Metkovic - Neretva Delta.

Local fishermen have reported significant decline in amount of eel, and this is reflected in its price which has skyrocketed in the past year.

**SOURCES:**  
 Glamuzina, L. et al.  
 The study of European eel, *Anguilla anguilla* in the River Neretva estuary (Eastern Adriatic Sea, Croatia) using traditional fishery gear, *Acta Adriatica* 63 (1): 35 – 44 (2022)  
<https://rsis.Ramsar.org>

