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Conservation

The biology of Danube sturgeons



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Sturgeons originated about 200 million years ago and have undergone little morphological change, making them “living fossils”. They show very long generation intervals, tolerance for wide ranges of temperature and salinity, and high resistance to natural predators. The 27 members of the sturgeon order (*Acipenseriformes*) are confined to the northern hemisphere, inhabiting rivers, lakes and coastal waters in Europe, Asia and America.

Sturgeons are distinctive for their elongated bodies, extended upper lobes of the caudal fin and the rostrum-shaped snouts. They lack scales but have five rows of bony scutes along the body. Sturgeons can get more than 100 years old and over six meters long.

Migrating up the Danube

Five of the six sturgeon species native to the Danube basin used to live in the Black Sea and enter the Danube for spawning. In the past, Russian Sturgeon, Stellate Sturgeon, European Sturgeon (very rare and now extinct in the Danube), Ship Sturgeon and Beluga Sturgeon regularly migrated upstream, some as far as Vienna and beyond. However, this migration has been interrupted by the Iron Gates dams shared by Serbia and Romania. Today, the migration of these species can be observed only in the Lower Danube. The Sterlet, on the other hand, is a pure freshwater species and largely sedentary, undertaking only short spawning migrations. The Ship Sturgeon seems to have survived only in its freshwater form.



LITTLE IS KNOWN

ABOUT KEY
STURGEON HABITATS
IN THE DANUBE

Spawning habits

Most Danube sturgeon species spawn from spring to early summer over a wide range of temperatures (6 to 25° C). Some races enter the river in spring and some in autumn or winter. Fish of the winter race spend the winter in the river, hibernating in holes or deeper river bends. They spawn far upstream the year after entering the river. The spring races do not hibernate and only enter the river when temperatures are rising. The two forms of behavior do not represent different species, but different strategies for the pre-spawning migration.

Observations on some populations show that sturgeons visit the same spawning sites every time when they enter the river for spawning. The “site fidelity” may derive from the fact that sturgeons survive in the river due to genetically imprinted early life stage survival strategy adapted to the location in a particular reach of the river.

The life cycle of *Acipenseriformes* is very long with puberty occurring late in life. Individuals spawn repeatedly, but most females do not spawn annually.

Sturgeons have also shown a tendency towards hybridisation with other sturgeon species. This occurs even more when spawning habitats are lost and different species are confined to only a few suitable sites or when one species is rare compared to another species.



BELUGA STURGEON / *HUSO HUSO*



RUSSIAN STURGEON /
ACIPENSER GULDENSTAEDTI



STELLATE STURGEON /
ACIPENSER STELLATUS



STERLET /
ACIPENSER RUTHENUS



SHIP STURGEON /
ACIPENSER NUDIVENTRIS



EUROPEAN STURGEON /
ACIPENSER STURIO

Spawning habitats

We know little about the exact location of key sturgeon habitats within the Danube River basin. Suitable spawning habitats are vital for the reproduction of *Acipenseriformes*. Spawning sites are usually hard surfaces covered with clay, gravel and boulders, and featuring many crevices in which larvae find protection from predators or floods. Location of spawning sites varies according to the hydro-morphological characteristics of the different reaches of the river. The water depth at spawning sites varies from a few meters to 26 m and the required current velocity is quite high, allowing for wide dispersal of fertilised eggs. Eggs are adhesive and after dispersing from spawning grounds, settle to the bottom, usually on coarse substrates in a much lower water velocity. They remain there until they develop into larvae and start feeding.

Flow regime and water temperature are important factors in development of early life stages of sturgeons. Water level fluctuations, due to flow management by hydropower stations, can have negative effects on spawning and reproduction success of adults.

Feeding

Sturgeons possess tactile barbels located at the front of the mouth, which is protactile – meaning that it can be pushed outwards and forwards. They also have thickened lips. Their eyes are very small and it is thought that they do not contribute much to the location and capture of prey.

Most Danube sturgeon species feed on bottom invertebrates - insects, insect larvae, annelids and molluscs, and also occasionally on bottom fish. Some species reduce or even stop feeding during their migration in freshwater. *Huso huso* is the only true predator among the six Danube sturgeon species. In the Black Sea it preys on bottom-dwelling and pelagic fish, while in the river it feeds on freshwater fish.



Why we are here.

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

www.danube-sturgeons.org

The project “Joint actions to raise awareness on overexploitation of Danube sturgeons in Romania and Bulgaria” aims to tackle overfishing, the main direct threat to the survival of Danube sturgeons.

For more information:

www.danube-sturgeons.org

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

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