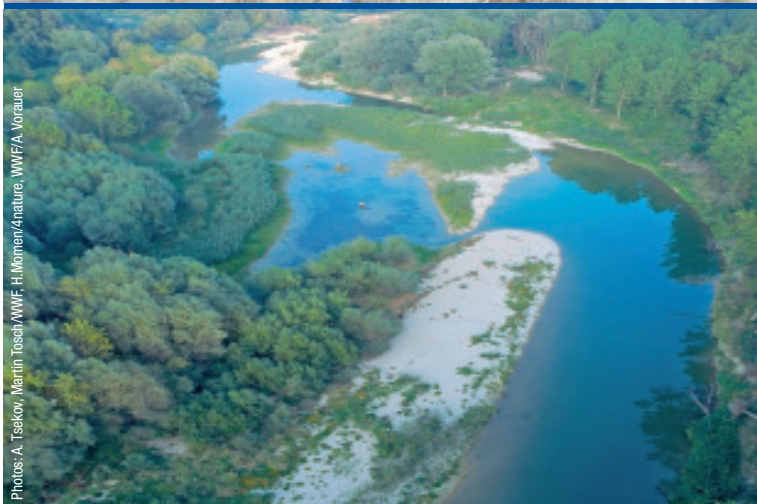


Save the Danube Sturgeons

An Action Plan for the Recovery, Protection and Conservation
of Endangered Sturgeons in the Danube River Basin



Why an Action Plan?

Sturgeons are on the brink of extinction. To conserve the unique, highly endangered sturgeons of the Danube River Basin, urgent actions and concerted protection measures are needed.

Implementation of the *Action Plan* for the Danube River Sturgeons, published by the Council of Europe and produced in the framework of the Bern Convention (an intergovernmental treaty on the conservation of European wildlife) will help to stop over-exploitation and to restore free migration and natural reproduction of sturgeons in the Danube River Basin.

This *Action Plan* has resulted from a workshop attended by scientists and various stakeholders from all countries of the Danube River Basin.

Existing international obligations

Healthy sturgeon populations are excellent indicators for the “good ecological status of surface waters”, one of the main objectives of the Water Framework Directive (WFD), which applies to all EU Member States. Sturgeon conservation measures are also required by the EU Habitats Directive, binding for all EU Member States and Accession Countries. Sustainable trade in sturgeon products is regulated by the global Convention on International Trade in Endangered Species (CITES).

The International Commission for the Protection of the Danube River (ICPDR), mandated by the Convention on Cooperation for the Protection and Sustainable Use of the Danube River (Danube River Protection Convention), is supporting the *Action Plan*. All of the countries cooperating under this Convention have stated their firm political support for implementation of the EU-WFD.

The Danube has undergone numerous modifications in the past, but still holds stretches with outstanding ecological value and beauty.



Photo: WWF-Canoa/A. Vornauer

Objectives of the Action Plan

The *Action Plan* document, adopted by the Council of Europe in December 2005, aims to raise public awareness about the need to implement urgent measures for sturgeon conservation and sets out the following general objectives:

Stop over-exploitation and ensure sustainable trade

- Danube Basin-wide coordination of sturgeon-related policies and ‘best-practice’ management of sturgeon fisheries
- Strengthening and harmonisation of international legislation and regulations relating to sturgeon fisheries and trade in sturgeons and sturgeon products, including caviar



Stop habitat degradation and ensure the future of sturgeon migration routes

- Protection and restoration of sturgeon habitats and migration routes (by making it possible for migrating sturgeons to overcome artificial barriers such as dams and weirs) – essential for their reproduction
- Reduction of pollution in the Danube River and its tributaries



Stop the loss of sturgeon diversity

- Conservation of all sturgeon species native to the Danube Basin, including the conservation of genetically distinct forms



Ensure effective coordination of conservation measures

- Establishment of an international network and coordination body for implementation of the *Action Plan* throughout the Danube Basin.



Photos: WWF-Canoa/E. Duncan, WWF-A. Mohl, M. Hochleitner, WWF-M. Bösch



Why should we protect Sturgeons?

It is not only the economic value of sturgeons, but also their place in evolution, fascinating life cycle and role as indicators of healthy ecosystems that should motivate us to save the ‘giants of the Danube’.

Sturgeons

- are long-lived (up to 60 years) migratory fishes with a complex life-cycle and late sexual maturity
- live mostly in the Black Sea and migrate upstream along the Danube River and its tributaries for spawning
- originated about 200 million years ago; they therefore constitute an ancient group of animals, that may be considered the ‘living fossils

of the Danube’

- are found only in the Northern Hemisphere
- can grow to the incredible size of eight meters
- are faithful to the same spawning sites year after year
- produce the luxury delicacy caviar (sturgeon eggs)

As a result of various man-made pressures, sturgeon populations in the Danube Basin have decreased dramatically during the past century.

Six native species of sturgeon

Originally, there were six native species of sturgeon in the Danube Basin. Of these:

The **Atlantic sturgeon** (*Acipenser sturio*) is already extinct.



The **Stellate sturgeon** (*Acipenser stellatus*) is extremely rare and highly endangered.



The **Ship sturgeon** (*Acipenser nudiiventris*) is close to extinction.



The **Beluga** (*Huso huso*) is extremely rare and highly endangered.



The **Danube sturgeon** (*Acipenser gueldenstaedti*) is extremely rare and highly endangered.



The **Sterlet** (*Acipenser ruthenus*), which lives in freshwater, is considered vulnerable and its survival is maintained through stocking programmes.



Overview of threats

The complex marine-freshwater life cycle of sturgeons, as well as their high value to the fishing industry, make these fishes especially vulnerable to impacts from human activities.

There is no single 'cause and effect' factor responsible for the decline of sturgeons in the Danube Basin. However, the current most important threats include:

Upper Danube (source to Bratislava): habitat degradation, river regulation and construction lead to the loss of spawning grounds.

Middle Danube (Bratislava to the Iron Gates gorge): major dams like the Iron Gates (Serbia/Romania) and Gabčikovo (Slovakia)

Lower Danube (downstream of Iron Gates, including the Danube Delta): over-fishing of sturgeons, due mainly to illegal catches; water and sediment pollution leads to a build-up of toxic substances within sturgeons.

Black Sea: Accidental capture ('by-catch') of sturgeons when fishing for other species contributes to over-exploitation; pollution from industry, sewage and agricultural chemicals seriously affects water quality.

The construction of the Iron Gates dams had severe impacts on the distribution of sturgeons, limiting the migratory species to the Lower Danube. For example, this map shows the past and present distribution of Beluga (*Huso huso*). By installing appropriate fish passes in the Iron Gates dams, 800km of the Danube could be reopened to migratory sturgeons.



Photo: J. Bloesch

With international cooperation the Danube at the Iron Gates dams (Serbian-Romanian border) could be made passable for sturgeons again.

Blocked Migration

In order for Danube sturgeons to reach their upstream spawning sites, there is an urgent need to install fish passes in existing large dams.

Spending large parts of their lives in the open sea, most sturgeon species enter freshwater rivers to spawn. Although the migratory behaviour of sturgeons is not yet fully understood, it is a fact that the huge Iron Gates I and II dams, constructed in the 1970s and 1980s, effectively blocked off the Middle Danube River, preventing migrating fish from reaching their spawning grounds.

As a result, all migratory sturgeons that try to migrate up the Danube from the Black Sea are now confined to the Lower Danube River, being unable to migrate any further than the Iron Gates dams. Even in the Lower Danube, sturgeon movements are restricted by many other man-made obstacles.

Upstream of the Iron Gates dams only the last isolated remnants of former sturgeon populations remain, together with populations of the Sterlet (*Acipenser ruthenus*), which occurs only in freshwater and which is partly sustained by releasing juvenile fish reared in hatcheries.

ACTION: Making the Iron Gates and Gabčikovo dams passable for sturgeons:
Step 1 Feasibility study
Step 2 Planning of fish passes
Step 3 Construction of fish passes

Gravel extraction can have severe impacts. A sturgeon spawning site near Calarasi, Romania (river km 373) was destroyed in the 1990s.



Photo: WWF/A. Mohr

Habitat Loss

Restoring and protecting the existing spawning sites is essential for sturgeon survival.

River engineering for hydropower, navigation, irrigation and flood protection – including dam building, construction of dykes, and the deepening and straightening of river courses – have radically altered the water flow, sediment transport and physical form of the Danube River and its tributaries.

These changes have severely affected – or even destroyed – the ecological functioning of river courses, meaning that suitable habitats for sturgeons have become increasingly degraded

and fragmented. Sturgeons depend for their survival on an interlinked network of habitats that provide them with the correct conditions for feeding, migration and spawning. Crucial factors include the rate of flow, temperature and quality of the water, as well as the characteristics of the river-bed and banks. For example, sturgeons need well-oxygenated gravel beds for spawning.

ACTION: Research on key sturgeon habitats and protection of spawning sites.

The responsibility of the EU for Danube sturgeons

With the aim of improving transport links between different regions of Europe, the European Commission (EC) developed the concept of Trans-European Transport Networks (TEN-T) and made proposals for Pan-European road, rail, air and waterway transportation corridors. In 2003-2004, the Danube was designated as 'Pan-European Transport Corridor VII' under TEN-T. This foresees the Danube as the "backbone of the east-west waterway connection", providing, together with the Rhine River, a link between the North Sea and Black Sea. The development of existing inland waterways in the region has already resulted in severe adverse ecological and environmental impacts along the Danube and its major tributaries. In 2003, the EU and the navigation lobby of the Danube countries defined 'bottlenecks' to navigation (i.e. areas where the

river is too shallow for larger shipping). These so-called bottlenecks have a combined length of about 1,000 kilometers and it is proposed that engineering measures should be implemented over the next 15 years to deepen and straighten them. Unfortunately, many of these river stretches overlap with ecological 'hot spots'. In particular, TEN-T projects planned in Romania will have serious ecosystem impacts, including one of the last-remaining spawning grounds for Danube sturgeons. The plans have already been criticised by the Romanian National Danube Delta Institute, CITES Romania and WWF International. If the damaging TEN-T developments cannot be stopped, even the few surviving remnants of suitable sturgeon habitat in the Danube Basin may be lost, finally pushing these majestic fish to extinction.

Pollution of the Danube and its tributaries

Long-lived fishes like sturgeon are particularly vulnerable to build-ups of toxic substances from urban areas, industry and agriculture.

Pollutants such as excessive nutrients from sewage and agricultural fertilisers, substances known as endocrine disruptors, heavy metals, and persistent organic chemicals do not only affect sturgeons, other fish and the consumers of fish (including people). The sturgeons' food supply (mainly invertebrates, such as insect larvae, worms and snails, living in the bottom sediments of rivers) is also affected drastically, and the whole food chain of the river system is thrown out of balance.

Endocrine disrupting chemicals may cause fertility to decrease, or even to be lost altogether, while bioaccumulation – the build up of poisonous substances in plants and animals – has the potential to affect the health of human beings, at the top end of the food chain.

ACTION: Promote full implementation of the Water Framework Directive and thus achieve good ecological status of surface waters.

Maintaining good water quality is a prerequisite for successful long-term survival of sturgeons in the Danube.



Photos: WWF-Carsten M. Edwards, WWF-Carsten M. Edwards, Sascha Burkard



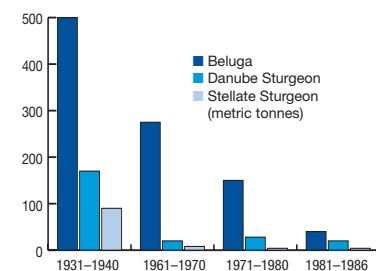
Over-exploitation

Sturgeons are fished mainly for caviar, but their meat and skin are also widely used in the Danube River Basin. Today, illegal fishing is the greatest direct threat.

The dramatic decline of sturgeon catches in the 20th century, especially in Romania and Ukraine, reflects the impact of over-fishing. Specific problems are the catch of economically valuable and ecologically important older sturgeons, by-catches from fisheries for other species, poor regulation of sturgeon fisheries, and poaching.

The Convention on International Trade in Endangered Species (CITES) fixes annual quotas limiting the trade in sturgeon meat and caviar. The Lower Danube countries agreed on a Regional Strategy for sustainable management of sturgeon populations in accordance with CITES. However, as of January 2006, CITES had not set the annual quotas for 2006 because the countries

concerned could not prove the sustainability of the catches. In particular, the black market and poaching are not subject to adequate levels of effective monitoring and enforcement.



The decline of sturgeon catches in the Lower Danube River by species, reflecting the impact of excessive catches, mainly in Romania and Ukraine (from NAVODARU et al. 1999).

ACTION: An immediate and substantial decrease in fishing pressure, involving a

reduction in catch quotas and possible introduction of a moratorium on catches of Ship sturgeon (*Acipenser nudi-ven-tris*) and Danube sturgeon (*Acipenser gueldenstaedti*). The illegal sturgeon harvest must also be drastically reduced.

Caviar Industry

The caviar industry exerts great economic pressure on the Danube sturgeon fishery owing to the huge profits generated by global sales.

The retail value per kilogramme of caviar ranges from EUR 300 in unofficial local markets to roughly EUR 1,000 in duty free shops, and as much as EUR 6,000 in luxury sales outlets.

The commercial value of caviar more than doubled between 1993 and 2003, but there was an overall decline in legally sanctioned international trade over the same time period. Given that the market demand for caviar remains high, this suggests either a drastic decline in sturgeon/caviar availability and/or an increase in illegal trade. TRAFFIC, the

wildlife trade-monitoring network of WWF and IUCN, revealed that from 1998 to 2003 the EU (especially France and Germany) was the world's largest importer of caviar, accounting for 550 tonnes out of an overall legally permitted international trade of 1,205 tonnes. Although the majority (some 80%) of the legally traded caviar comes from the Caspian Sea, Romania still is among the world's top five caviar exporting countries.

It is difficult to quantify illegal catches and trade in sturgeons and sturgeon products, as these are – by definition – carefully hidden activities. However, large seizures of illegal caviar in Europe indicate that there is a thriving black market.

All legal trade in sturgeon products must be accompanied by the appropriate CITES documentation. Governments have also agreed on a new labelling system so that legally traded caviar can easily be identified. Beginning in 2006, the EU is adopting a new Regulation, making this labelling requirement legally binding in all 25 Member States.

ACTION: Effective monitoring and control of domestic and international markets

Inadequate legislation, poaching and an uncontrolled black market have led to over-exploitation of sturgeon meat and caviar.





Joint actions by many different stakeholders are required for the long-term survival of sturgeon populations. The release of fish by the Donau-Auen National Park, a private fishery company and an NGO, pictured here, is just one example of the cooperative measures required.

Photo: WWF, Fotofinger

Urgent Measures needed

Sturgeons were witness to the extinction of the dinosaurs. If we do not want to witness the sturgeons' own extinction, all of us need to cooperate and to act NOW.

Because sturgeons are very long-lived fishes, a recovery programme must be designed on a long-term basis (at least 30-50 years). Even if over-fishing could be stopped tomorrow and restoration of sturgeon habitats also completed overnight, it would still take many years for healthy, sustainable populations of mature fishes to develop. The *Action Plan* can be thought of as falling into three distinct phases:

- **Preparation of appropriate measures**
- **Implementation**
- **Monitoring (to measure its success)**

Efforts will be made to achieve the buy-in of as many stakeholders as possible with regard to proposed conservation measures. Only measures enjoying strong stakeholder support are likely to succeed in the long run. It is equally clear that conservation action has to be based on sound science, including new research that will be conducted specifically to help with implementation of the *Action Plan*.

The *Action Plan* proposes:

- Immediately and significantly reducing fishing pressure by catch quota reduction and possible introduction of a moratorium on cap-

ture of *Acipenser nudiiventris* and *Acipenser gueldenstaedti* and possibly other species

- Reducing the illegal sturgeon harvest
- Making the Iron Gates dams passable to sturgeons (beginning with a feasibility study, then moving onto planning, selection and implementation of an engineering solution)
- Ensuring effective control of domestic and international markets
- Conducting research into key sturgeon habitats, sturgeon behaviour and the status of sturgeon stocks
- Establishing a gene bank and DNA-based identification system for sturgeons and their products, especially caviar
- Preparing restocking plans so that these can be implemented as soon as the context is favourable
- Harmonising international legislation and trade
- Contributing to an improvement in socio-economic conditions in the Lower Danube
- Establishing the necessary coordination/monitoring body to ensure effective implementation of the *Action Plan*.

Learning from experience along the River Rhine

The programme 'Salmon 2000' in the River Rhine that culminated in the re-establishment of the once extinct Atlantic salmon (*Salmo salar*) proves that such an ambitious programme can be successful, if:

- There is political will among all riparian countries to undertake effective, joint and coordinated efforts;
- The programme addresses both marine and riverine stages of the species' life-cycle
- Pollution is drastically reduced
- Fish passes are established in a coordinated

way at all hydropower dams and weirs beginning downstream and moving progressively upstream

- Restoration of potential spawning sites upstream and in tributaries is properly coordinated
- Restocking actions are coordinated throughout the river basin
- Conservation measures are combined with public relations activities aimed at raising awareness and helping local people to identify with the problems being addressed by the programme.



Photos: WWF/B. Strabel, R. Sacchi, Archive



From local fishermen to scientists and politicians – everybody's children should have the opportunity to see sturgeons prosper in the Danube.

A win-win situation for sturgeons and people

The ecological and economic importance of sturgeons and the complexity of threats affecting them are reflected in the number and diversity of stakeholders in the Danube River Basin.

Vision: *"A win-win situation is created for sturgeons and people in the Danube Basin, whereby healthy, naturally reproducing sturgeon populations are restored, in turn supporting an economically sustainable sturgeon fishery and lasting recreational and cultural value".*

It is clear that there are many other perspectives in addition to the viewpoint of ecologists and conservationists. Therefore, to achieve effective implementation of measures to protect and restore sturgeons in the Danube Basin, cooperation between disciplines and stakeholders is required. Workshops, public relations campaigns, round-table discussions, and joint

projects are just some of the mechanisms that can contribute to finding workable, sustainable solutions that can be implemented in the official framework of the **Action Plan**.

The following is a list of just some of the key stakeholders involved in the conservation of Danube sturgeons:

- The International Commission for the Protection of the Danube River (ICPDR)
- Ministries of Environment and CITES authorities of all Danube riparian countries (overall implementation of the **Action Plan**)
- Fishery companies
- Caviar export/import companies
- Inland waterway interests (shipping/navigation)

- Hydropower companies (responsible for management of many dams)
- Gravel extraction companies (dredging)
- Municipalities etc. (local authorities often have significant responsibilities for flood protection structures and schemes, controlling point sources of pollution, protecting drinking water supplies etc.)
- Farmers (agriculture is responsible for much of the diffuse pollution reaching the Danube and its tributaries)
- Non-Governmental Organizations NGOs (expertise in conservation, raising public awareness, campaigning)
- Politicians (provision of political will and financial support; leadership role in raising awareness, promoting legislation).

A Network for Sturgeons in the Danube River Basin

In order to secure the long-term survival of sturgeons in the Danube River Basin cooperation between various stakeholders is required.

Sustainable implementation of measures to protect sturgeons needs a shared, Danube Basin-wide strategy. Sturgeons are long-distance migrants, regularly criss-crossing political and administrative boundaries. It is therefore highly desirable to harmonise legislation and regulations as far as possible and to coordinate implementation of conservation and restoration measures. An important element of the **Action Plan** is therefore the establishment of a Danube Sturgeon Network, linking all institutions interested in sturgeon protection in the Danube Basin. These will include

environment ministries and other government bodies, sturgeon hatcheries, water management organisations, local fisheries associations, NGOs, research institutes and many others.



Photo: WWF, Reckinger

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