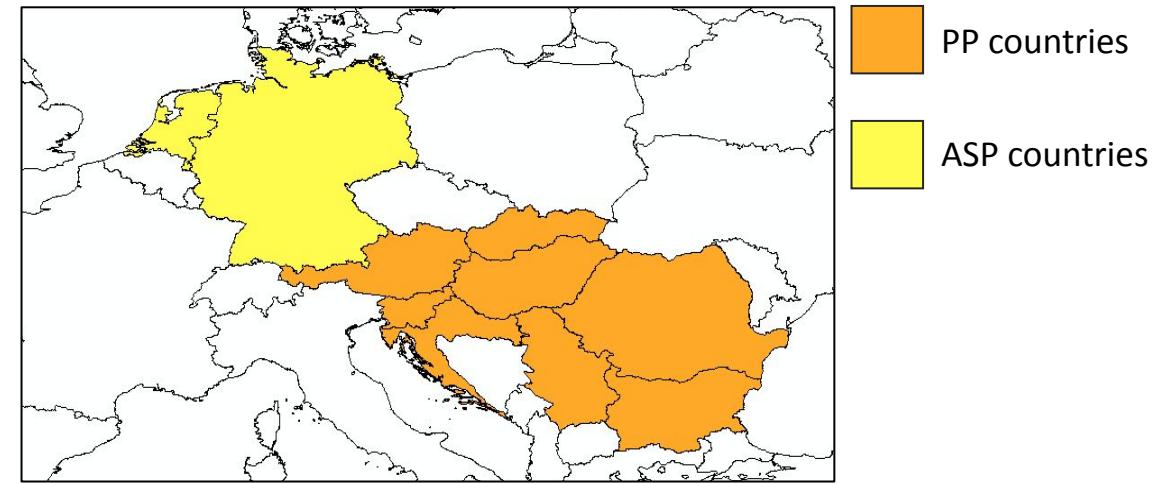


MEASURES

**Managing And Restoring Aquatic Ecological Corridors
For Migratory Fish Species In The Danube River Basin**



- 3 years Interreg project (01.06.2018 – 31.5.2021)
 >> extended to 31.7.2021
- project lead: BOKU - Univ. Prof. Dr. Thomas Hein
- 12 Project Partners (PP) across the Danube region
 + 12 Associated Strategic Partners (ASP)
- contributes to programme priority SO 2.3:



Foster the restoration and management of ecological corridors



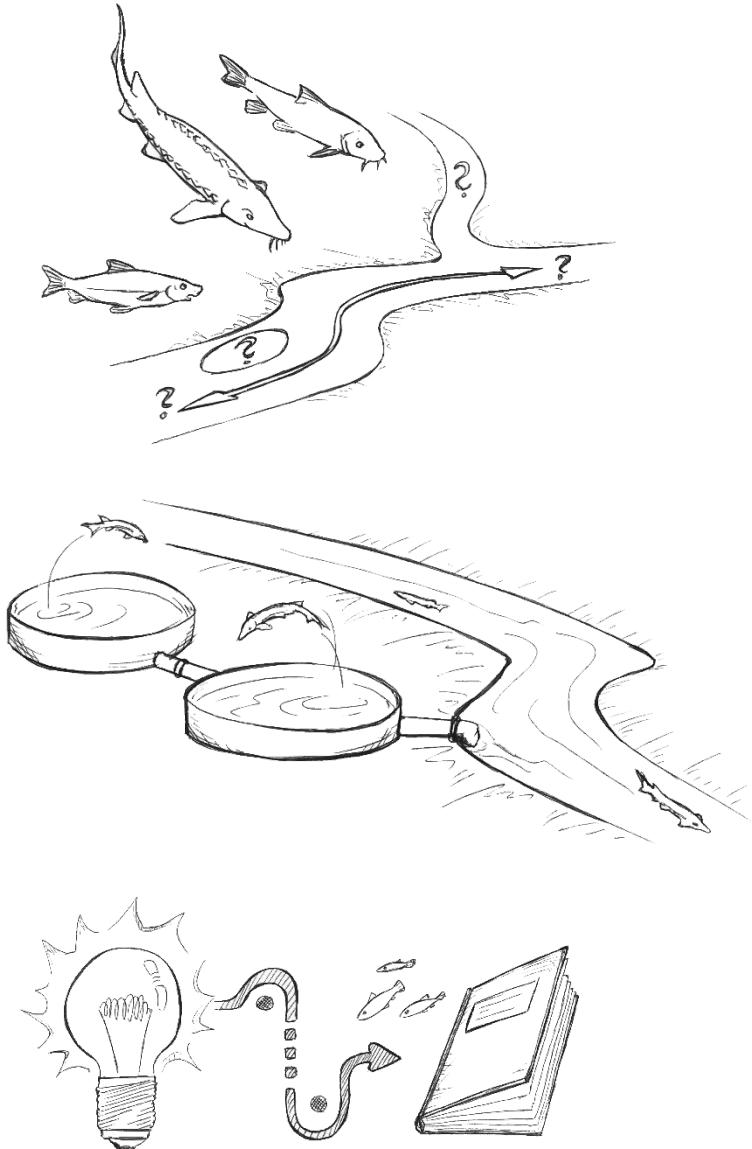
Project co-funded by European Union funds (ERDF, IPA)

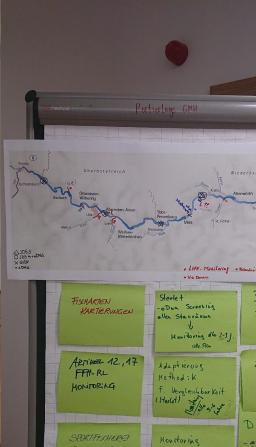
www.interreg-danube.eu/measures

overall budget: ca. 2.5 million €
ERDF & IPA contribution: ca. 2.1 million €

Specific objectives of MEASURES

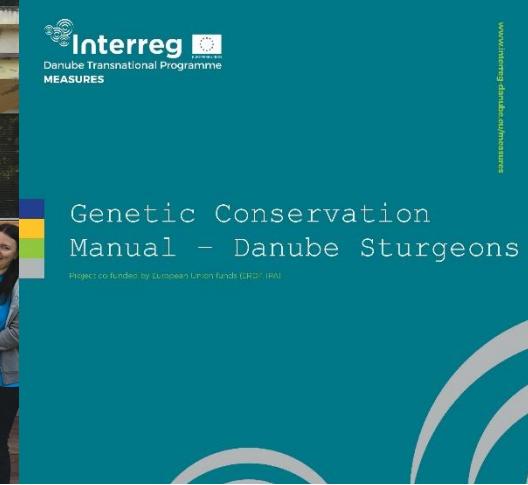
- (1) **Identification & mapping** of migratory fish habitats.
- (2) Provision of a **strategy to conserve Danube sturgeon** species, including an appropriate design of broodstock facilities.
- (3) Development of a **harmonised & improved strategy** (including prioritisation) for the re-connection of migratory fish habitats to secure and re-establish vital **ecological corridors in the DRB** to be implemented into policy and management plans.





Managing and restoring aquatic ecological corridors for migratory fish species in the Danube River basin

Context
The Danube River and its tributaries are key migration routes for sturgeons and other migratory fish such as barbel and nase. These species are excellent bio-indicators for the quality of ecological corridors due to their specific needs during their life stages indicating habitat connectivity and therefore the overall corridor quality.



2021 CALENDAR (SERBIAN)

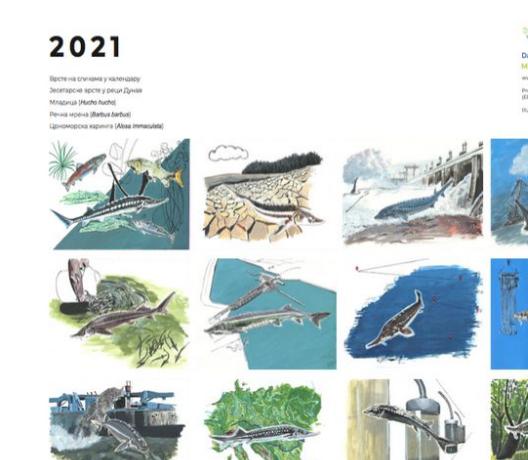


MEASURES - Managing and restoring aquatic Ecological corridors for fish species in the Danube River basin

ERSTER NATIONALER STAKEHOLDER - WORKSHOP

Sehr geehrte Damen und Herren, liebe Kolleginnen und Kollegen,

das Institut für Hydrobiologie und Gewässermanagement der Universität für Bodenkultur koordiniert seit Juni 2018 das vom Danube-Transnational-Programme geförderte Projekt „Managing and restoring aquatic Ecological corridors for migratory fish species in the River basin“ (Akronym: MEASURES). Ziel von MEASURES ist es, die Donau als ein Korridor zu verbessern. Dafür werden im Projekt Schlüsselhabitatem identifiziert und



WP T1 - Infosystem Eco-Corridors



IBRA

Network of stakeholders

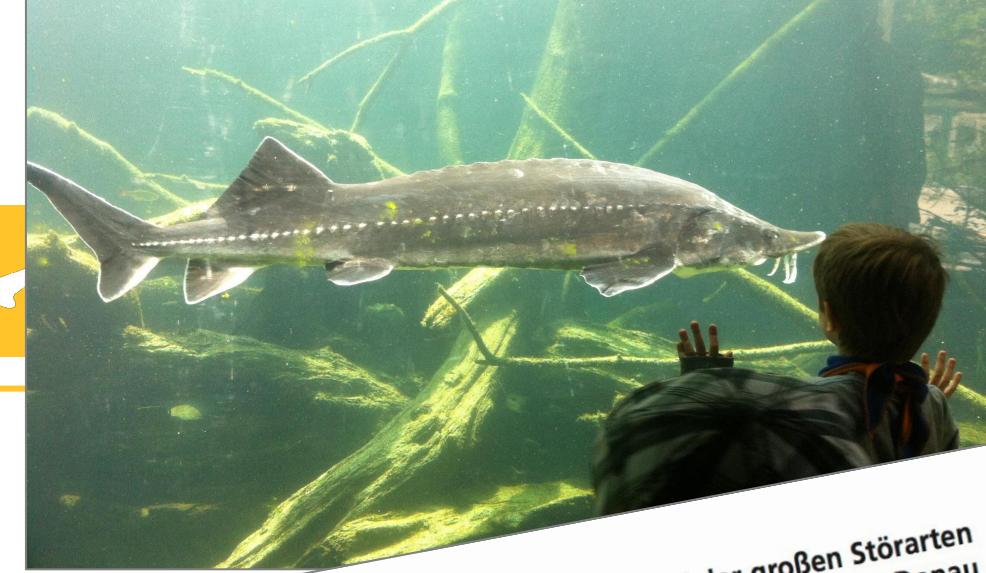
- **National network:** established in 8 partner countries (AT, HR, SK, SI, HU, RS, RO, BG)
- **National workshops:** 3 rounds with nat. and local authorities, HEI and research units, infrastructure and public service providers, aquaculture units and other interest groups
- **Outcomes:** included in WP T4 for defining needed measures and activities to secure Danube eco-corridors (Strategy for the Danube ecological corridor)

WP T1 - Infosystem Eco-Corridors



MEASURES Information System (MIS)

- Online data on migratory fish, habitats and Danube
- Linking done with:
 - Freshwater Information Platform
 - Danube Future Knowledge Base
- Linking to be elaborated with
 - ICPDR Danube GIS



Das Schicksal der großen Störarten
in der Oberen Donau

Bernhard SCHMALL & Thomas FRIEDRICH

Abstract: The fate of the large sturgeon species in the Upper Danube. The Danube is home to six sturgeon species, all of which are highly endangered and in some cases already extinct. Through overfishing in the past centuries, four species went almost extinct in the Upper and Middle Danube; later the construction of power plants and dams made spawning migrations impossible and led to their doom in the Upper and Middle Danube. In the lower part of the Danube longer spawning runs of diadromous species have been made impossible with the construction of the hydropower plants at the Iron Gate. The sterlet (*Acipenser ruthenus*), the most representative of this fish family in the Austrian Danube, is 'Fish of the Year 2014' in Austria, while the European sturgeon (*Acipenser sturio*) is 'Fish of the Year 2014' in Germany. This article is a compilation of three articles (SCHMALL & FRIEDRICH 2014a, 2014b; FRIEDRICH et al. 2014) and deals only partly with autecological issues but rather examines the former range and economic importance of these fish, and further identifies the current situation of sturgeon species in the whole Danube and efforts to protect them. In terms of historical sources the focus lies on the catchment of the Austrian Danube.

Key words: Danube, sturgeons, Austria, economic importance, historic range.

Einleitung

Die Donau ist die Heimat von sechs verschiedenen Störarten, wobei alle in ihrem Bestand stark gefährdet bzw. teilweise bereits ausgestorben sind. Durch Überfischung in den vergangenen Jahrhunderten wurden sie in der Oberen Donau beinahe ausgerottet, die Errichtung von Kraftwerken und Staustufen machte den Restpopulationen eine Laichwanderung unmöglich. Im unteren Bereich der Donau wurden mit der Errichtung der Staustufen am Eisernen Tor längere Laichzüge der diadromen Spezies unterbunden (FRIEDRICH 2009, 2013).

Der Sterlet (*Acipenser ruthenus*), der letzte Vertreter

Taxonomische Probleme, Zuordnung historischer Nachweise

Im 18. Jahrhundert wurde die Art *Acipenser ruthenus* aufgestellt, deren taxonomische Zuordnung vor nicht restlos geklärt ist, da die Ordnungen zweifelhaft sind. Es handelt sich wahrscheinlich um ein Synonym von *Huso huso*, was von *Acipenser nadiventris* (KOTTEN 1861) von FITZINGER & HECKEL (1836) unter der Bezeichnung für das Donaugebiet beschrieben wurde.

Als Varietät von *Acipenser gueldenstaedtii* (VLAZENKO et al. 1989).

WP T2 - Mapping the Corridor



DDNI

MAPS – data collection

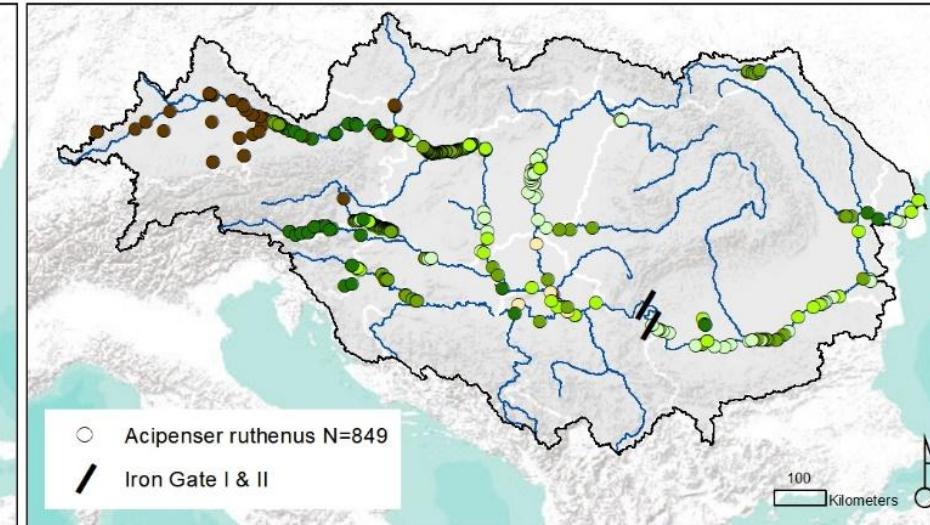
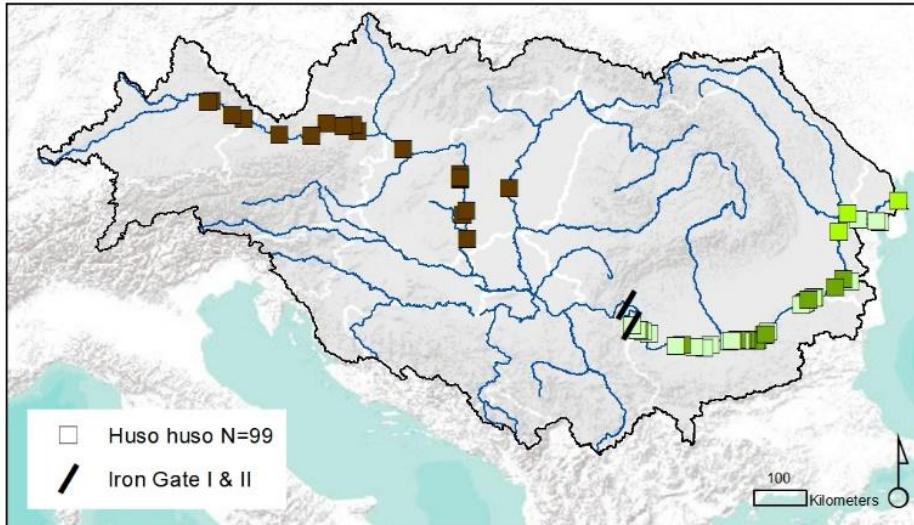
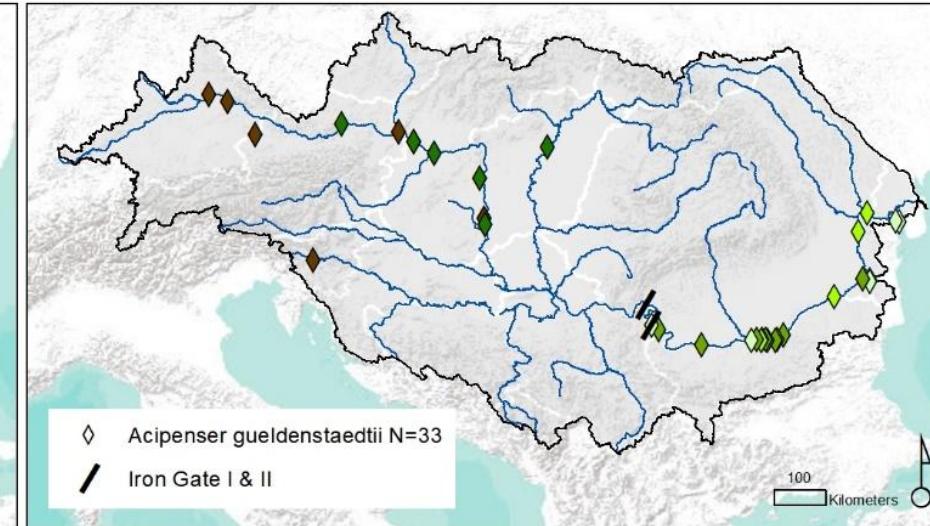
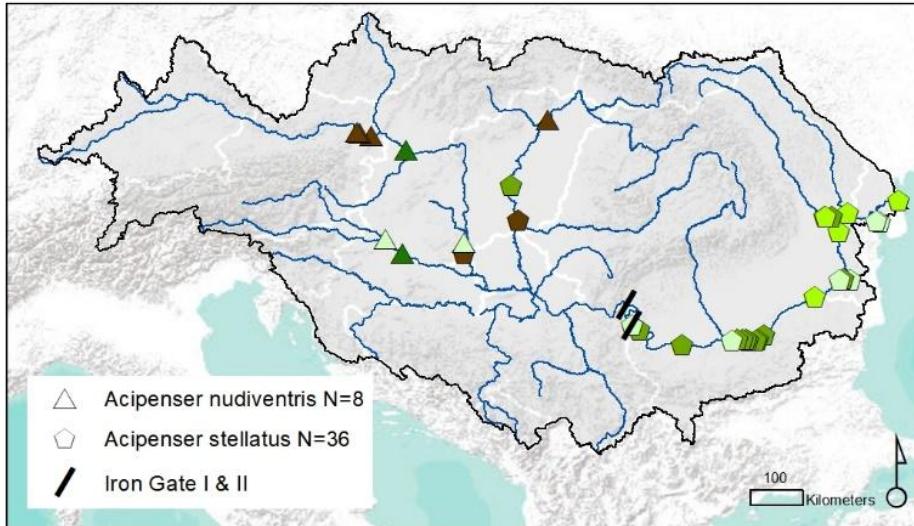
- Potential sturgeon habitats
- Primary data collection:
 - Identifying potential habitats (maps, historic data)
 - At Danube and tributaries
 - On site measurements and fishing activities
- Secondary data collection:
 - Publications, grey literature, books, project reports, fisheries data, historic data etc.
 - Collected by PPs



WP T2

MAPS

- Current habitat data of known sturgeon observations in DRB
- Data included in updated DRBMP (public consultation started on 31st of March 2021)



WP T2



DDNI

DANUBE MIGRATORY FISH HABITAT MANUAL

- Chapters:
 1. Migratory Fish in the Danube Region
 2. Detection of potential key habitats and their spatial extension
 3. Confirmation of habitats by the presence of species
 4. Advantages and limitations of different methods
 5. Estimated costs and personnel for fish habitat assessment methods

>>>> **Reviewers' comments are edited!!**



WP T3 - Strengthen Migratory Fish



Activities

- Restocking of Russian sturgeon and sterlet done
- eDNA-sampling method developed for Russian sturgeon & sterlet
- Collection of broodstock / ex-situ gene stocks
- Submitted: LIFE-boat4sturgeons



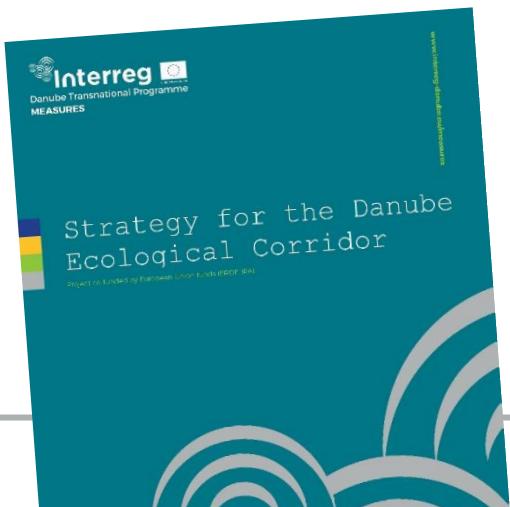


BOKU

WP T4 Securing the Eco-Corridor

Strategy for the Danube ecological corridor

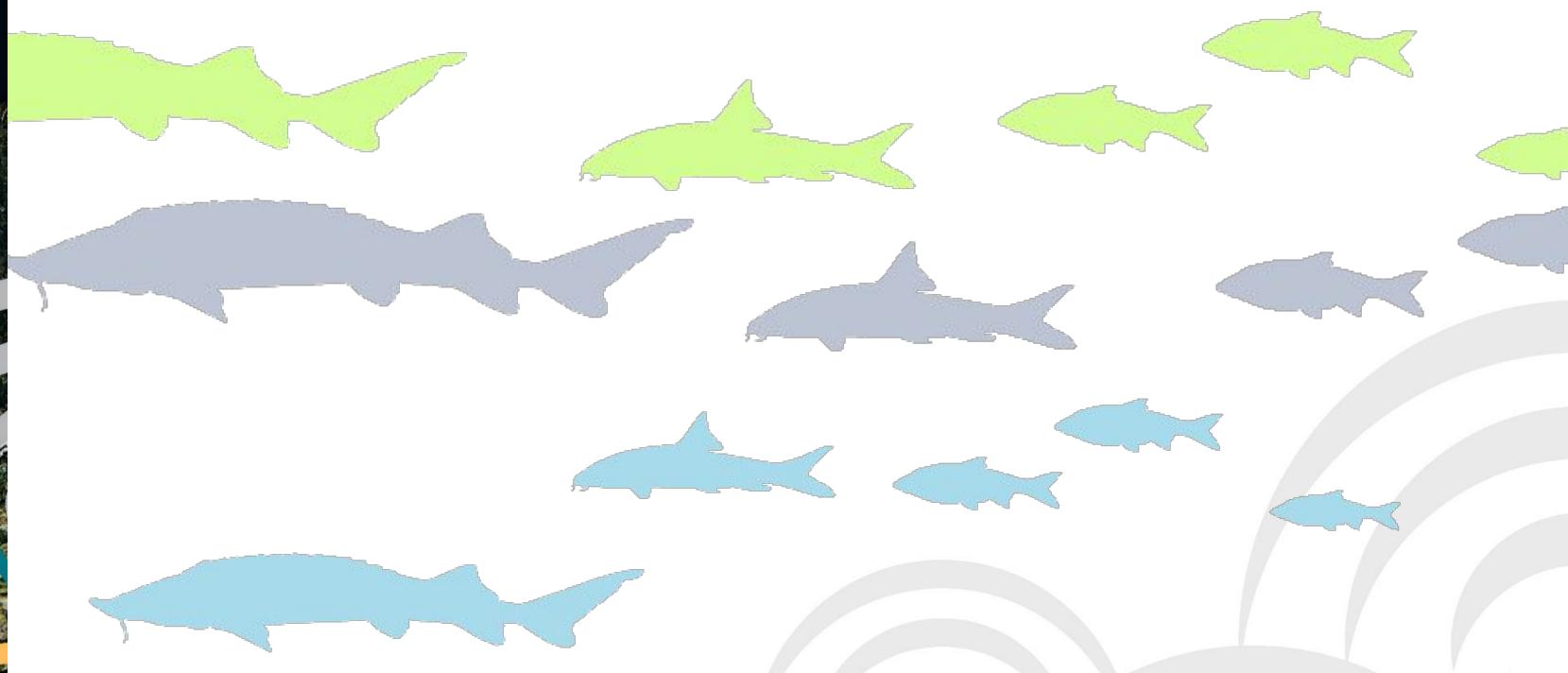
- Vital ecological corridors in the DRB through reconnection of migratory fish habitats for all migratory fish species
- Defined measures with:
 - Suggestion of specific activities
 - Definition of spatial & temporal scale



WP	Description and conclusion
WP T2	<ul style="list-style-type: none">• potential habitats of migratory fish
WP T1, T2, T4	<ul style="list-style-type: none">• Adverse effects of (large) migration barrier
WP T3	<ul style="list-style-type: none">• Ex-situ conservation of sturgeon species• Restocking of sterlet and Russian sturgeon• National workshops & analysis of results
WP T1, 4	<ul style="list-style-type: none">• Stakeholder mapping and analysis of workshops;• Management & Policy

Details follow

• Type of measure
• Monitoring of their habitats
• Assessing and effects of migration
• Securing and sturgeon species
• Develop and Plans for
• Create a Fish Network
• Improve for migration
• Habitat restoration from
• Guidance for
• Halting
•...



MEASURES

**Managing And Restoring Aquatic Ecological Corridors
For Migratory Fish Species In The Danube River Basin**

Contact: measures_coord@boku.ac.at