



From the Black Sea to Vienna – Assessing Driver-Pressure-State Relations for Migratory Fish in the Danube River Basin

Daniel Trauner (1,2), Paul Meulenbroek (1), Thomas Friedrich (1), Florian Borgwardt (1), Thomas Hein (1,2)

(1) University of Natural Resources and Life Sciences, Vienna, Institute of Hydrobiology and Aquatic Ecosystem Management (IHG) , Austria (daniel.trauner@boku.ac.at), (2) WasserCluster Lunz Biological Station GmbH, Lunz am See, Austria

The Danube is a lifeline connecting a multitude of countries and bioregions, characterizing landscapes, providing resources, and habitat for flora and fauna on its course from source to sea. The river acts as a migration route – an ecological corridor for biota along its watercourse and the adjacent wetlands. Especially fish are excellent bio-indicators for the functionality of this corridor. Their populations have suffered substantially from overfishing, pollution, habitat destruction and disruption of their migration routes in the Danube River. Long distance migratory fish like the once abundant but now highly endangered anadromous sturgeon species represent a historic, economic and natural heritage of the Danube region that used to migrate from the Black Sea up to the floodplains around Vienna to spawn. To save these species from extinction and to counteract the destruction of the corridor concerted transnational investigations, management plans and actions for its restoration as well as supportive conservation measures are highly needed and implemented in the DTP Interreg project MEASURES. The project uses sturgeons and other migratory fish as a flagship species and identifies key habitats to initiate protection measures and assess the current status and potential of the ecological corridor along the Danube and its main tributaries.

This study takes data from the MEASURES project and the AQUACROSS project and creates a Linkage Framework (LF). The LF is a set of interlinked matrices that can show connections between components by creating multiple impact chains. It is a valuable tool for decision makers that can depict interrelations in a system and is a recommended ecosystem-based management method. We link stakeholders to their related activities in the Danube, these activities are linked to different pressures they induce (physical, chemical, biological), and lastly they are linked to migratory fish species affected by these pressures. To increase the explanatory power of these impact chains, the activities are weighted according to their spatial extent and their frequency, and the pressures according to the severity and persistence of their interactions. A preliminary investigation revealed over 200 stakeholders in the region, therefore the results from the LF analysis will provide valuable information about the role, importance, and impact of these stakeholders for the migratory fish species. The outcomes can contribute to future drafts of policy and management plans into sustainable measures aimed to restore the function of the Danube as an ecological corridor.