

Output Factsheet

Output title:

Ex-situ gene stocks of Danube sturgeons

Summary of the output (max. 2500 characters)

Fishing of sterlet from natural waters is experienced more difficult than before and the acquisition of Russian sturgeon individuals is even more troublesome. The MEASURES project successfully increased ex situ stocks of both of these species. The new sterlet brooders partially could support the reproduction event in NAIK-HAKI, in 2020. Although Russian sturgeon broodstock was not available for purchase, 3,000 fertilized eggs were used by the project partners for gene bank enhancement at BOKU and at NAIK-HAKI as well. The fail-safe recirculation systems provide high protection for fry and juveniles, and the PIT tagging helps to track older individuals to monitor their development closely. The transportation of endangered fish species in MEASURES helped to share the needed infrastructural capacity for mass rearing and also supported the transnational network of multiple, ex situ gene banks.

Contribution to EUSDR actions and/or targets (max. 1500 characters)

Priority Area 6 “To preserve biodiversity, landscapes and the quality of air and soils” Point 4. “Continue the ongoing work and efforts to securing viable populations of Danube sturgeon species and other indigenous fish species by 2020”

The ex-situ preservation is the cornerstone of conservation of critical endangered sturgeons since their natural population declined continuously and their self-sustainability is questioned. Until the complete habitat restoration which allows these species to survive and reproduce in natural conditions, their conservation is relying primarily on ex-situ preservation.

Performed testing, if applicable (max. 1000 characters)

In 2019 and 2020, specimens of broodstock (former members and newly caught specimens) involved into artificial reproduction were assessed for their fertility and fecundity. During this process, basic biotic data were recorded and individual tagging was performed. Finally, for creating the genetic based mating design the genetic profiling of specimens was performed using microsatellite markers.

Integration and use of the output by the target group (max. 2000 characters)

The role of the sturgeon gene bank in NAIK HAKI goes far beyond the pure ex-situ conservation. Since, it is composed for large specimens of rarely seen fish species it is frequently in the middle of the focus in all public happening of the institute. Visitors regularly come from elementary and high schools and from universities. But also fish farmers and policy and decision makers are among the visitors. The yearly propagation also plays a demonstrative role mostly for students from universities. The living gene bank with a well-known genetic background, furthermore, can fulfil other research purposes. For instance, functional diversity studies in the near past.

Finally, ex-situ conservation and the living gene bank constitute a base for conservation action like strengthening natural populations and also for aquaculture purposes. Regarding the former purposes, the most important target groups are the angler societies.

Geographical coverage and transferability (max. 1500 characters)

Theoretically, the ex-situ gene bank can be the base for population strengthening in the whole Danube catchment. However, conservation restocking has to consider the genetic integrity of native stocks. Consequently, the basin wide use should be done considering the genetic background of the living gene bank and the recipient population. To ensure the safe utilization, the genetic profiling of the present gene bank has been performed.

Durability (max. 1500 characters)

It depends on the average lifetime of the species. Most sturgeons are long-life species, so the durability of this gene bank is for several decades. At the same time, renewing of the stock in the live gene bank is required, especially in the case of intensive use. During a natural population-strengthening program, when a series of restocking with high number of stocked specimens takes place, this renewing is important to maintain the desirable genetic variability and thus the fitness of the native stock. The genetic profiling of the living gene bank contributes to maintain the genetic variability because the mating design can be created based on genetic traits.

Synergies with other projects/ initiatives and / or alignment with current EU policies/ directives/ regulations, if applicable (max. 1500 characters)

To establish and maintain ex situ sturgeon live gene banks is of priority importance to be able to save these flagship species from extinction. Both, the "Pan- European Action Plan For Sturgeons" (ratified by the member states of the Bern Convention and endorsed by the EC) as well as the "Galati Declaration on Sturgeon Conservation in the Danube Basin and the Black Sea" (signed by ministries of all Danube range countries) address these issues while highlighting the urgent necessity to take actions before the remaining species will be extinct. Furthermore, the Sturgeon 2020 program also emphasized the crucial role of ex-situ conservation action in the case of sturgeons as flagship species.

Output integration in the current political/ economic/ social/ technological/ environmental/ legal/ regulatory framework (max. 2000 characters)

In Hungary, the sterlet catch is banned because of the decline of its natural stocks. The most prevalent example for social, environmental and political integration is that the ex-situ live gene bank is the base of further restockings and strengthens the natural population of sterlet. Strengthening the sterlet population for the cancel of the ban of catch is a very important social and political purpose currently.