

Scientific Efficiency Control of Restoration Success: a Case Study on a Danube Stretch in Bavaria (Germany)

Evaluation scientifique de l'efficacité de la restauration :
étude de cas sur un tronçon du Danube en Bavière
(Allemagne)

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ABSTRACT

A large restoration project aims to bring back natural dynamics on the floodplain between Neuburg and Ingolstadt/Bavaria. The contribution aims to show how the control of the efficiency of these restoration measures is possible.

RÉSUMÉ

Un grand projet de restauration vise à restaurer les dynamiques naturelles de la plaine alluviale située entre Neuburg et Ingolstadt/Bavière. La communication vise à montrer comment le contrôle de l'efficacité de ces mesures de restauration est possible.

KEYWORDS

Aquatic species, Danube, efficiency control, floodplain ecology and restoration, floodplain habitats

1 EFFICIENCY CONTROL OF RESTORATION SUCCESS

The Danube floodplain is disconnected from its river and natural water dynamic is inhibited by regulation and hydropower generation. Notwithstanding the hydropower dams, this restoration project aims to bring back natural water dynamics to the floodplain by a new floodplain stream, by ecological flooding and by temporary groundwater drawdown during summer months. Due to the new floodplain stream, former fluctuating water zones which are habitat for the target species *Oenanthe aquatica* (water dropwort) changed to aquatic habitats which are also required. The measure groundwater drawdown aims to enhance the abiotic conditions for this pioneer species of muddy streambanks.

The scientific efficiency control compares the situation before restoration implementation with the effects of three different types of groundwater drawdown. For these three types, the hydrological situation was investigated, and the effects on the potential area and on the occurrence of *Oenanthe aquatica* were mapped. The outcome is that one type can enhance germination of *O. aquatica*, but is detrimental to aquatic organisms. The other type is able to provide the same suitable conditions for *O. aquatica*, without severely harming the aquatic habitats. The third type cannot reach the needed low water levels and is therefore not a comparable option. The results show that an interdisciplinary monitoring is able to develop a measure suitable for both competing habitat types.

Additionally, the initial colonization with fish was examined. Due to the new floodplain stream, aquatic habitats increased considerably. Colonization happened fast and an increase of species and individuals was recorded. Especially rheophilic species were found. The share of alien species in the floodplain stream is still less than 25 % than in the Danube itself. The typical and very invasive *Neogobius melanostomus* (round goby; Black List of Germany) has not reached the area yet. Due to the interconnectedness with the Danube, a variegated habitat has developed. If the floodplain stream should be colonized by typical Danube species, further management strategies need to be considered.

LIST OF REFERENCES

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