



## Master Thesis Abstract

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### **Reintroduction scheme of *Cottus gobio* Linnaeus, 1758 in the Upper Drava River in South Tyrol (Italy) with fish from the same catchment**

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*Cottus gobio* or bullhead is a bioindicator species due its sensitiveness to changes in water quality and river hydromorphology. It is widely spread throughout Europe, but locally extinct in the Upper Drava River (South Tyrol, Italy).

River pollution due to municipal wastewater and diffuse run-off from agriculture were formerly significant stressors leading to bullhead extinction. Habitat deterioration due to big flood and manmade hydromorphological changes along the river also have a strong influence. However, the water quality of the Upper Drava has greatly improved due to the construction of a wastewater treatment plant in 1998.

Thus, a reintroduction scheme is proposed to bring back bullheads into the Upper Drava River. To initiate healthy populations, it is suggested that about 500 – 700 young bullheads to be released at each of three sites, two of them are the tributaries. The artificial reproduction of the bullheads is planned in a hatchery FAA Forellenhof located in Lavant, near Lienz (Austria).

Fish from the same catchment will be used, which will be captured from the Drava in Lienz (Austria). It is proposed that donor fish be captured before spawning time, around February or March, to allow the adult bullheads to adapt with the new environmental conditions in the hatchery. Considering the fertilized eggs production by females and the mortality rate during re-absorption of the yolk sac, it is recommended that 20 – 50 adult bullheads be captured.

In order to enhance the spawning habitat, roof tiles or perforated bricks will be added in the earth pond at the hatchery. Stones or gravels will also be added to provide a more natural environment preferred by *Cottus gobio*. It is suggested that the bullheads be released around September, after they are about 4 cm long (0+ fry) to reduce their vulnerability.

The growth of reintroduced bullheads is predicted using the temperature-dependent form of von Bertalanffy. By using water temperature data from 2016, which has an annual average of 6.02°C, it is predicted that the bullhead will reach  $\pm 21$  mm in the first year,  $\pm 86$  mm in the second year,  $\pm 142$  mm in the fifth year, and  $\pm 172$  mm in the tenth year.

**Key words:** *Cottus gobio*, bullhead, fish, reintroduction, Upper Drava River, South Tyrol