

**Master's Thesis**  
**FS 2024**Head: Prof. Dr. Robert Boes  
Supervision: Claudia Beck (IUB)  
Martina Noethiger (SBB)

# Restoration of fish migration at a historic weir in the city of Zurich

The weir Sihlhölzli (Fig. 1) in the Sihl in the city center of Zurich was created in 1926 when the SBB Ulmberg tunnel was built and the Sihl was diverted. The approximately 4.7-meter-high weir represents an obstacle for fish migrating upstream from the Limmat into the Sihl. In addition to fish passability, the urban location of the weir poses further challenges: The weir itself and the surrounding tree-lined avenue are protected, space in the surrounding area is limited and flood protection is a top priority at this location. In a comprehensive study, around 10 different variants for a fish upstream migration facility were analyzed and compared in an intensive participatory process.



Fig. 1: Weir Sihlhölzli in Zurich with the SBB-tunnel lying beneath (Photo: IUB)

In this thesis, a preliminary project is developed for one of the most promising variants. The hydraulics of the upstream migration facility are dimensioned for the needs of all fish species. Constructive and static calculations are carried out for the construction of the fishway within a protected environment. The excavation pit is planned, construction processes are described and a cost estimate is prepared. The effects on flood safety are determined using 2D modelling (e.g. in BASEMENT).

**Contact:** Katharina Sperger  
Teaching Assistance, HIA B 57.2  
044/632 41 39, [sperger@vaw.baug.ethz.ch](mailto:sperger@vaw.baug.ethz.ch)

**Remarks:** Project-oriented thesis, supervised externally;  
Topic can be distributed more than once;  
Thesis can be written in German or English