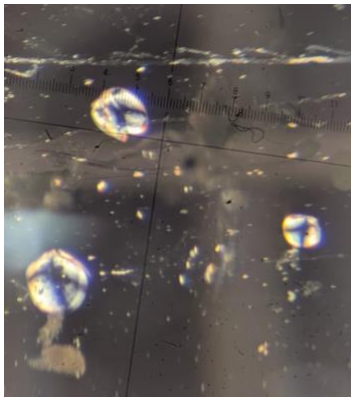
MSc Project

Quaggas in ARAs – What happens to Quagga mussel larvae in wastewater treatment plants?

We are looking for a motivated MSc student to investigate whether larvae of the invasive quagga mussel (*Dreissena bugensis*) survive wastewater treatment processes. The project combines pilot-scale experiments, quantitative analyses, and applied ecological risk assessment.

The quagga mussel is a rapidly spreading invasive freshwater species that is already present in several large lakes in Switzerland. Its dispersal between lakes is facilitated by boats, which may transport planktonic veliger larvae in residual water. To prevent further spread, many Swiss cantons require mandatory cleaning of boats before transfer between water bodies. The resulting cleaning wastewater potentially contains quagga larvae and is discharged into the sewer system and treated in wastewater treatment plants (WWTPs or ARAs in German). Although it is generally assumed that modern WWTPs eliminate the larvae effectively, scientific evidence is currently lacking.




This project aims to clarify the fate of quagga larvae during wastewater treatment. The main goal is to quantify the contribution of each treatment stage to larval elimination and the proportion of larvae that can be detected in the final effluent. In collaboration with the Department of Process Engineering (Eawag), a mobile pilot-scale WWTP has been developed which can be connected to the WWTP Altenrhein (Lake Constance). The system includes primary sedimentation, biological treatment, and sand filtration. In controlled experiments, wastewater spiked with known concentrations of quagga larvae will be treated. Water samples taken along the treatment process will allow quantification of larval removal at each stage. The project combines experimental planning, sampling and microscopic laboratory analysis, data evaluation, and manuscript preparation, with strong applied relevance.

Requirements: Interest in aquatic ecology or environmental engineering, independent and well-organized working style, motivation for experimental work in a pilot-scale facility, and good German and English skills. Start date is flexible. The work will be conducted at Eawag, Department of Aquatic Ecology (Dübendorf). We are looking forward to meeting you!

Main and direct supervisor:
Dr. Alexandra Weber (alexandra.weber@eawag.ch)

- ➔ More info: https://www.weberlab.ch/
- ➔ https://www.eawag.ch/de/info/portal/themen-im-fokus/quaggamuschel/

Co-supervision: Thomas Müller

Formal link/association to UZH: Prof. Florian Altermatt