



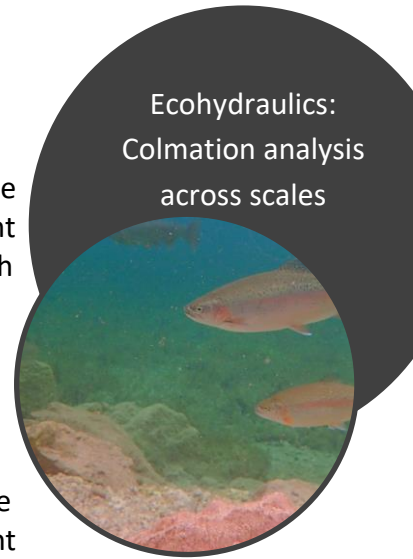
## M.Sc. Topic

“Ecohydraulics: Colmation analysis across scales”

## Background

Colmation, also referred to as riverbed clogging, is defined as the infiltration of fine sediment into a riverbed, leading to clogging of the interstitial space of the sediment structure. In consequence, exchange processes between oxygen and nutrient-rich water with the hyporheic zone are heavily impaired. As a result, the quality of the physical habitat quality deteriorates for many aquatic species.

Anthropogenic activities in fluvial ecosystems have a significant influence on the budget of fine sediment, and therefore, on colmation processes. A recent large-scale study at the University of Stuttgart has yielded many new insights into the recognition and assessment of colmation processes. This project ties in with the recent study and uses cutting-edge field data to derive scale-independent conclusions from site-specific data.



Ecohydraulics:  
Colmation analysis  
across scales

## Thesis Overview

1. Review of literature on colmation processes and recent research at the University of Stuttgart
2. Revise dimensional analysis in fluid mechanics and verify provided datasets
3. Analyze and extract relevant information about colmation data from field study sites and the lab
4. Perform parametric (Buckingham  $\pi$  theorem) and functional (e.g., Fick's law) analyses of the field and lab data
5. Interpret observations and derive functional relationships

*Hints: The thesis can be written in **English or German**.*

## Desirable Skills

- Interest in hydrodynamics, ecology, or experimental science
- Basic knowledge of fluid mechanics



## Apply now!

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Please write a few lines about yourself and why you want to work on this thesis proposal.

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