



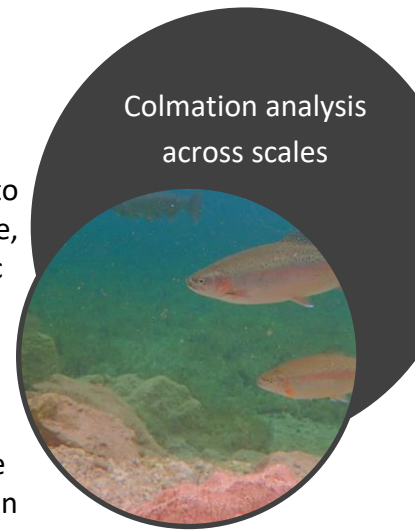
B.Sc. / M.Sc. Topic

“Colmation analysis across scales”

Background

Colmation 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 spawning substrate reduces and the physical habitat quality deteriorates.

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 graduation project ties in with this recent study to derive scale-independent conclusions from site-specific data.



Thesis Overview

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

*Hints: This project can be done as either BSc. or MSc. project, where a BSc. project only involves functional analyses without the requirement of deriving functional relationships (i.e., only interpretation of results). The thesis can be written in **English or German**.*

Desirable Skills

- Interest in hydrodynamics, ecology, fluid mechanics and/or experimental science
- Programming experience (e.g., Python, Matlab/Octave, or R) is an advantage, but not a prerequisite



Apply now!

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

Examiner: Prof.-Dr. Ing. Silke Wieprecht (LWW) | Supervisor: Dr. sc. Sebastian Schwindt (LWW)