

*The **ECOSPHERE research group** aims to study aquatic and valley ecosystems that are continuously challenged by natural and anthropogenic stressors. The research focuses on acquiring fundamental and applied knowledge at different levels of structural and functional organisation in order to underpin environmental management decisions.*

MASTER THESIS SUBJECT 2025-2026

Restored tidal nature as a filter for riverine pollution: a case-study for the Hedwige-Prosperpolder

Research group: ECOSPHERE

Hosting laboratory: CDE – building C, CGB – building U

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A creek located in the Hedwige-Prosperpolder, the project area for this thesis topic. Sites like this will be sampled during the field campaign so it will be essential to bring good boots!

- This topic mostly contains ☒ literature study, ☒ lab work, ☒ field work, ☐ experimental work, ☐ GIS, ☐ numerical modelling, ☐ other:
- Possession of driver's license B is ☐ needed, ☒ recommended, ☐ not needed
- Possession of certificates needed: ☐ FELASA C, ☐ other:

Summary – Within the Scheldt River basin, many tidal wetlands have been restored for their ecosystem service provisioning. One of these wetlands is the Hedwige-Prosper polder (HPP): 465 ha of previous agricultural land, now brought back into nature for the realisation of Grenspark Groot Saeftinghe. Because of the sheer size of this restoration project, HPP forms an ideal opportunity to evaluate how nature restoration in brackish tidal marshes works on a landscape scale. Not only is this expected to become very relevant for its nature, but on a regional scale this can also become an important site with regards to flood protection, green job creation and tourism.

To now properly evaluate whether the restored wetland is transforming into functional nature, pollution presence is one of the key aspects that needs to be monitored. In the freshly deposited Scheldt sediments, we expect to find various pollutants including heavy metals and PFAS since tidal marshes are known to act as filters for these substances. Whether this is the case, and which extent these pollutants can be found in HPP remains to be studied. Within the larger research framework in HPP this information is valuable and can be linked to various other abiotic factors including sedimentation and erosion, soil properties, biodiversity, water quality,...

For this thesis, you will help field-technicians with sampling for heavy metals and PFAS, and the study of various other linked abiotic factors. Afterwards, you will e.g. assist with the laboratory analyses, and aid with data processing. The findings of this study can be compared to data available from previous measurement campaigns, and of similar ecosystems, to get an impression of the current pollutant filtering function of this young wetland. Due to the novel nature of this project, this pioneering step in the further monitoring of HPP is bound to provide interesting insights in the functioning and evolution of brackish tidal marshes. A sense for adventure, perseverance, and detail is recommended.

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