

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

Catching the Ghost Part II. Which environmental factor causes exotic Gammaridae to dominate in lowland rivers

Research group: ECOSPHERE

Hosting laboratory: CDE

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Gammarus roeseli, an exotic invertebrate species, is feasting on native Potamogeton natans plants.

- 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: Lowland rivers Desselse Nete and Zwarte Nete are 2 very similar rivers in the upstream catchment of the Kleine Nete river. They are very similar in size, depth, land use, discharge... and flow very close to each other. The Desselse Nete vegetation is characterized by a dominance of *Potamogeton natans*, along with other macrophyte species. These other species are also found in the Zwarte Nete, but *P. natans* is totally absent, despite the habitat is very suitable.

A MSc-thesis in 2022 has looked into the possible factors explaining this difference. Although the Zwarte Nete is slightly more nutrient rich, no significant abiotic differences could be detected between both rivers. Also fish and invertebrate diversity was similar. The only difference we could detect was a much higher abundance of Gammaridae in the Zwarte Nete, caused by a 315x fold abundance of the exotic *Gammarus roeseli*. Lab experiments have revealed that this species is capable of rapidly reducing *P. natans*. At last, the question was answered what (which 'ghost'?) was preventing *P. natans* from establishing in the Zwarte Nete.

However, this now has triggered a new question "Which environmental factor causes exotic Gammaridae to dominate in the Zwarte Nete over the Desselse Nete". To address this question, you will perform a series of ecotox test in the lab to compare the sensitivity of *G. roeseli* vs. the native *G. pulex*. Perhaps, the slight nutrient difference between the 2 rivers is responsible after all.

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