

*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 2023

From mud to marsh: assessing the effect of sediment drainage on seedling survival in an intertidal mudflat

Research group: ECOSPHERE

Hosting laboratory: CDE – building C

Promotor(s): Prof. Dr. Stijn Temmerman (stijn.temmerman@uantwerpen.be)

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*Picture on the left: A marsh organ, a device placed in tidal marshes to measure the effects of inundation time. Picture on the right: An example of an intertidal mudflat (Lillo-Potpolder, located along Scheldt estuary), showing pioneer species (*Vaucheria* algae and *Aster tripolium*) colonizing along the fringes of a tidal channel.*

- 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: Tidal wetlands, such as salt marshes and mangroves, are valuable coastal ecosystems providing numerous ecosystem services such as shoreline protection, water quality regulation and carbon sequestration. However, much of these ecosystems are currently at risk by both human (e.g. conversion into agricultural land) and natural pressures (e.g. sea-level rise). In order to conserve and restore these ecosystems, it is important to gain insight in the processes controlling the formation of new wetlands.

A first important step to achieve the formation of a salt marsh is the colonization of algae and pioneer plant species. Previous research has indicated that the establishment and survival of these plant species is related to (i) seed dispersal events to suitable areas for seed germination, and (ii) a sufficiently long disturbance-free period for seedling anchorage. These suitable areas can typically be found along the fringes of tidal channels, however, it still unknown why plants prefer to first establish there. One of the ongoing hypotheses is that sediment drainage might play an important role in plant establishment.

In this thesis you will contribute to field measurements and mesocosm experiments in the Hedwige-Prosperpolder, a depoldered site along the Scheldt estuary that re-opened in November 2022. The aim of this fieldwork is to disentangle the role of sediment drainage and inundation frequency on the establishment of pioneer plants. For this thesis, you need to be enthusiastic to work in muddy environments.

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