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## Biosketch

Throughout my scientific career, I studied complex ecosystem dynamics and translated findings into practice. Research sparked my interest during my MSc at Wageningen University, when I first experienced the full academic process of experimenting, analysing, writing, and peer-reviewed publishing as lead author. During my PhD research at the Radboud University (RU), I combined fieldwork, laboratory experiments and computer models to derive fundamental principles underlying landscape-forming seagrass meadows, graduating Cum Laude in 2009. I got excited about translating such principles into applications during my postdoc at the University of Groningen (UG). Here, I coordinated the conservation-oriented Waddenfonds-project 'Waddensleutels', investigating mussel reefs in the Wadden Sea. In that period, I also carried out a PhD-spin-off experiment, resulting in the discovery of a worldwide occurring mutualism in seagrass meadows. Based on this work, I obtained a personal NWO/ALW-Veni grant in 2012. In that year, I also received the KNAW Heineken Young Scientist Award for successfully combining fundamental and applied science with effective outreach.

In 2013, I obtained a Tenure Track at the RU where I was promoted to associate professor in 2017. In 2018, I received a personal NWO/TTW-Vidi grant. Later that year, I accepted a combined position as research leader at the Netherlands Institute for Sea Research (NIOZ; 0.7fte) and a full professorship (chair) of Coastal Ecology at the UG (0.3fte). In addition to leading my research group, I am also heading the chemical laboratory at RUG and act as deputy department head at NIOZ. Finally, I serve as vice-chair of the coastal expert team of the 'OBN–Nature Management Knowledge Network' since 2014 and am part of the KNAW Ecology Grant evaluation committee since 2021.

## Research interests

My research focuses on the functioning of coastal ecosystems shaped by habitat-forming species – also called 'ecosystem engineers' or 'foundation species'. I am fascinated by how these species build entire landscapes, thereby generating vital services to society, including biodiversity enhancement, coastal defence, and carbon storage. My drive is to unravel 'what makes these ecosystems tick' and to translate fundamental findings into conservation and restoration applications, aiming to halt and reverse ongoing ecosystem degradation.

As part my fundamental research line, I discovered that habitat-forming species facilitate themselves by modifying their environment through so-called 'emergent traits', which are not expressed by an individual but emerge at the aggregation level. Consequently, such self-facilitation only works beyond certain minimum patch size or density thresholds. Examples are seagrasses, salt marsh plants, dune grasses and reef-building bivalves that aggregate to shape the landscape by e.g., attenuating wind or water flow, and by trapping and stabilizing sediments. Apart from this 'within-species facilitation', I discovered that habitat-forming species engage in vital but vulnerable mutualisms that further improve living conditions.

Building on the above, my applied research line highlights that inclusion of both within-species and between-species facilitation in restoration designs greatly amplifies coastal restoration yields. Moreover, I showed that by temporarily mimicking emergent traits using biodegradable structures, establishment of habitat-forming species can be 'kickstarted' as patch size- and density-dependent establishment thresholds are effectively bypassed. These most recent advancements pave the way for technical solutions to successfully restore degraded coastal ecosystems.