

Research and monitoring program for the Hedwige-Prosperpolder: Restoring estuarine nature

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The Hedwige-Prosper Polder (HPP) restoration project, initiated in late 2022, is one of the largest tidal marsh restoration efforts in Europe, encompassing 465 hectares of former agricultural land in the Scheldt Estuary. The project plan outlines the creation of the HPP area in order to achieve the largest possible sustainable mudflat and salt marsh area with the maximum potential for dynamic sedimentation and erosion. This is intended to enhance climate resilience, flood protection, carbon sequestration, and habitat provisioning.

To achieve these goals, a comprehensive monitoring program has been established, spanning a period from 2023 up to and including 2027. This monitoring program focusses on hydrodynamics, sedimentation, vegetation development, benthos, and soil and water quality. First, to improve our understanding of sediment dynamics, research is being conducted on the interaction between sediment properties (grain size, bulk density, penetration resistance, shear stress, bed-level change, and erodibility) and location factors (wind-wave exposure, elevation, and benthos diversity). Second, the establishment of pioneer vegetation and, more specifically, their strategies for colonizing new areas are being investigated. Third, soil life in the form of benthos is evaluated across a variety of newly formed intertidal habitats. Lastly, soil and water quality, and the capacity of estuarine nature to improve these factors, are assessed within this monitoring framework. The first results of the monitoring program and the research goals will be presented.

By closely monitoring these parameters and conducting in-depth research, we aim to enhance our predictive capabilities regarding the development of the restored tidal marshes, ultimately informing future restoration projects and contributing to the broader understanding of tidal marsh ecosystem dynamics.

Keywords

Managed Realignment; Coastal Wetlands; Flood Plains