

## The impact of biological invasions on the Wadden Sea food web (INFOWEB)

Sarina Jung<sup>1,a</sup>, Ulrike Schückerl<sup>1,b</sup>, Camille de la Vega<sup>1,c</sup>,

Harald Asmus<sup>c</sup>, Ragnild Asmus<sup>c</sup>, Ingrid Kröncke<sup>b</sup>, C. (Katja)J.M. Philippart<sup>a</sup>, Henk W. van der Veer<sup>a</sup>

<sup>a</sup>Royal Netherlands Institute for Sea Research, P.O. Box 59, 1770 AB Den Burg, The Netherlands, E-mails: Sarina.Jung@nioz.nl, Katja.Philippart@nioz.nl, Henk.van.der.Veer@nioz.nl

<sup>b</sup>Senckenberg am Meer, Südstrand 40, 26382 Wilhelmshaven, Germany, E-mails: uschueckel@senckenberg.de, ikroencke@senckenberg.de

<sup>c</sup>Alfred-Wegener-Institut für Polar- und Meeresforschung in der Helmholtz-Gemeinschaft, Hafenstr. 43, 25992 List, Germany, E-mails: camille.de.la.vega@awi.de, Harald.Asmus@awi.de, Ragnild.Asmus@awi.de

Invasive species can have major effects on the structure and functioning of coastal ecosystem food webs through competition, altering predator-prey relationships, nutrient cycling and the structure and magnitude of energy flows between the different trophic compartments. To assess the impact of invasive species on the food web in the Wadden Sea, three intertidal areas (Jade Bay, Sylt-Rømø Bight, Balgzand) will be analysed and compared by means of Ecological Network Analysis (ENA). These areas differ in the species and abundance of invasive species and in environmental conditions such as geomorphology, hydrology and sedimentology.

To compile the different food web models, we will estimate biomass, respiration, ingestion (including diet composition), egestion, production for the dominant fauna and flora communities occurring in the different habitats within these areas (e.g. *Arenicola*-sandflats, mudflats, seagrass and mussel beds). The diet composition will be estimated using stable isotopes, coupled with stomach content analysis for higher trophic levels. Temporal changes within each study area will be quantitatively assessed by repetitive ENA analysis during different periods (when invasive species abundance was low and high).

Because of the uniform terminology, symbols and indices, the ENA results allow us a temporal and spatial comparison of the consequences of invasive species for Wadden Sea food webs which can also be useful information for future ecosystem management concepts.