ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

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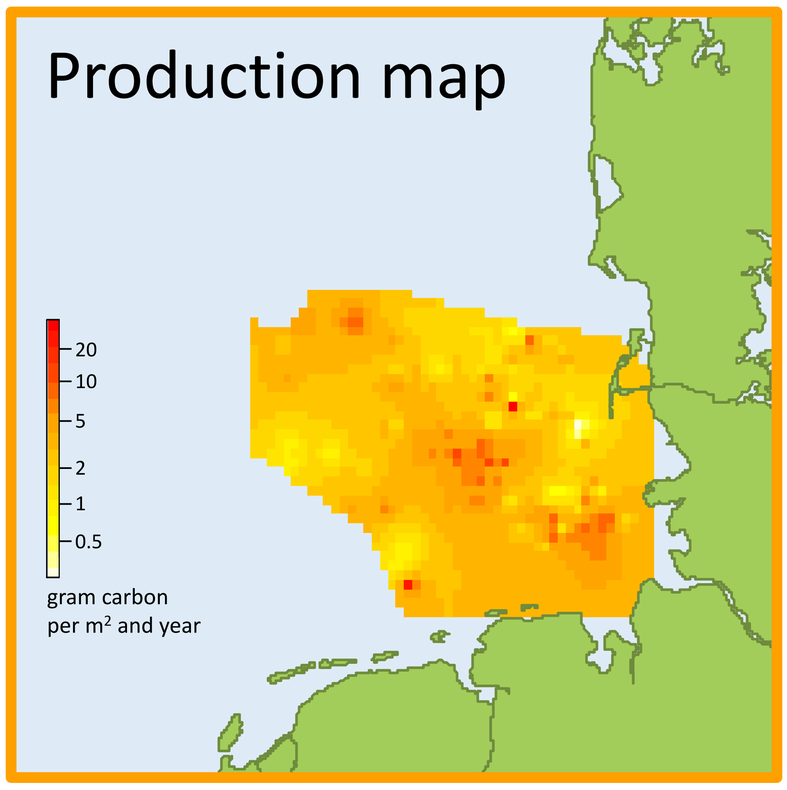
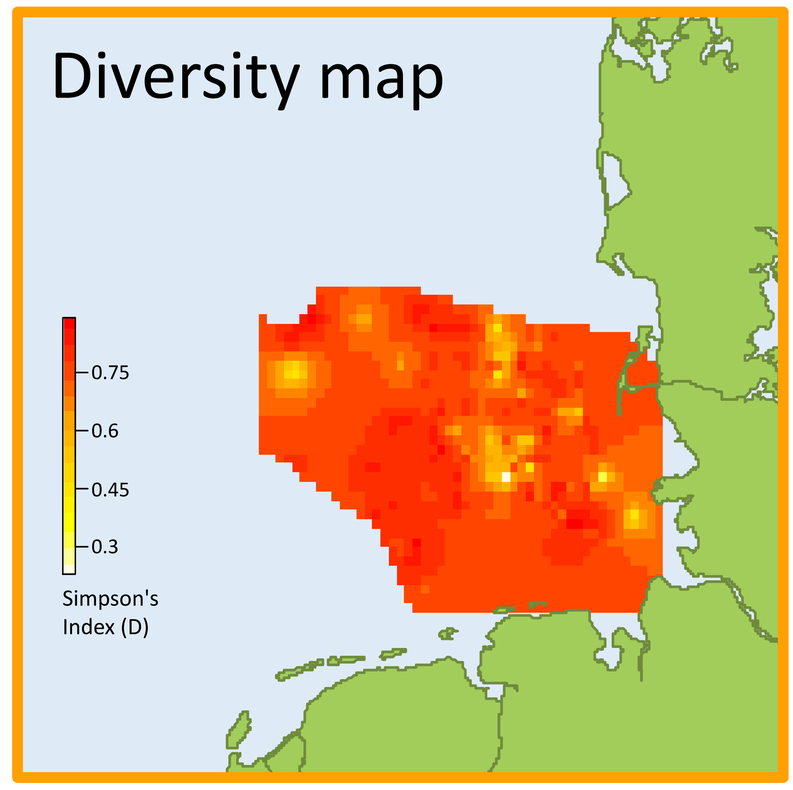
Predictive value of trait-based measures for benthic secondary production in the German North Sea

Main findings

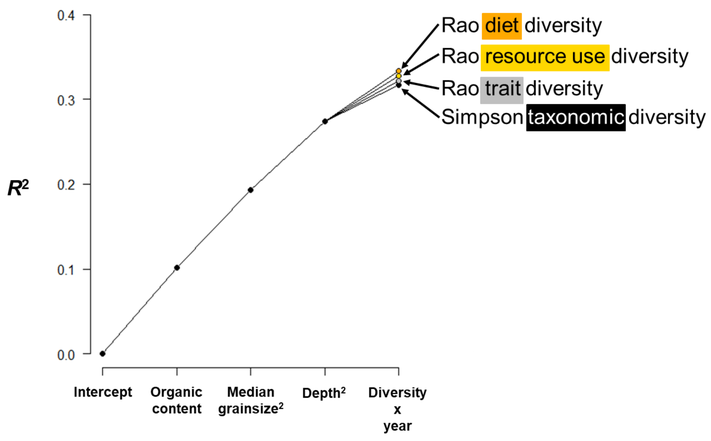
Secondary production correlates inversely with biodiversity.

Dominance of the detritivore diet is the most powerful predictor of secondary production.



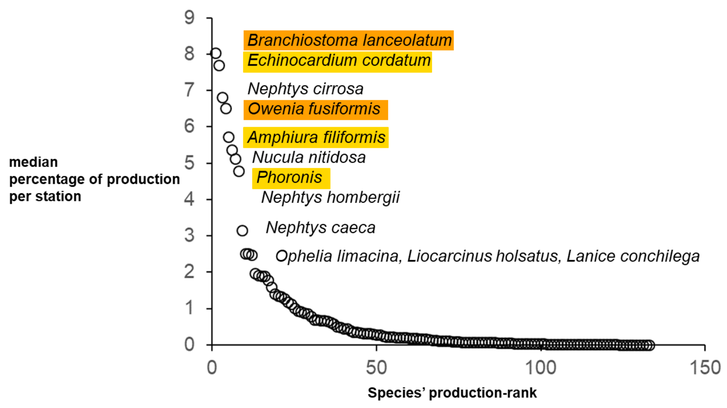


Relevant factors

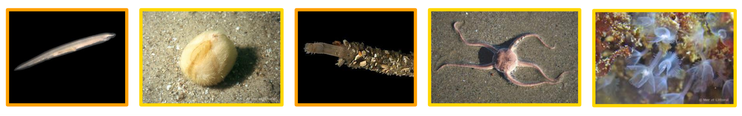


- Sediment organic content, grain size and water depth account for most of the explained variation in secondary production.
- Functional diversity based on diet trait improves regression model more than overall trait diversity or taxonomic diversity, but all relationships are negative.

Main producers



2 species responsible for 30 %, 5 species responsible for 50 % of total secondary production



Background

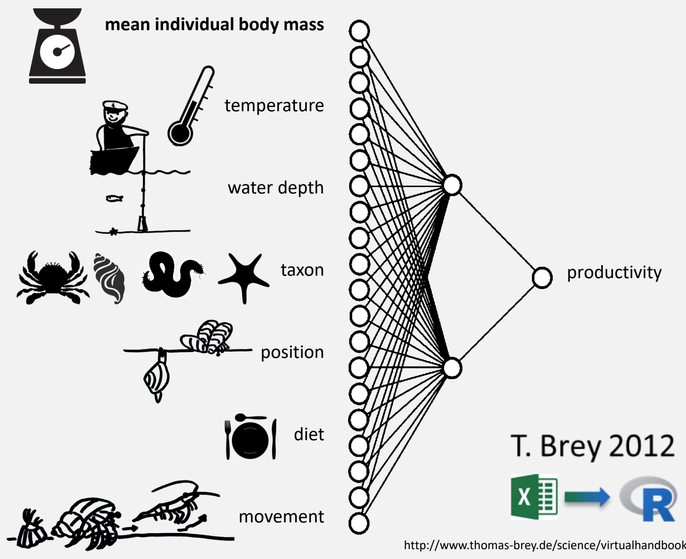
- The biodiversity-ecosystem functioning principle suggests diversity as a driver for ecosystem properties.
- To investigate the complementarity this implies, we take a trait-based and large scale observational approach.
- Diversity indices based on dissimilarities of various combinations of functional traits are related to benthic energy flow as a measure of ecosystem functioning.

Data

174 stations in the German North Sea sampled within two years.

van Veen grabs 0.1 m²

Empirical production model



Biological traits used

Resource use traits:
feeding habit and diet

Body features:
size and flexibility

Interaction with environment:
position and movement

Life history traits:
lifespan and fecundity

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