The Wadden Sea food web

Different habitats for different bird species

Horn, S[1], Asmus, R.[1], Schwemmer, P.[2], Enners, L.[2], Garthe, S.[2], Eskildsen, K.[3], Ruales, A.[3], Kohlus, J.[3], Reimers, C.[4], Binder, K.[4], Ricklefs, K.[2], Stage, M.[2], Wittbrodt, K.[5], Schwarzer, K.[5] and Asmus, H.[1]

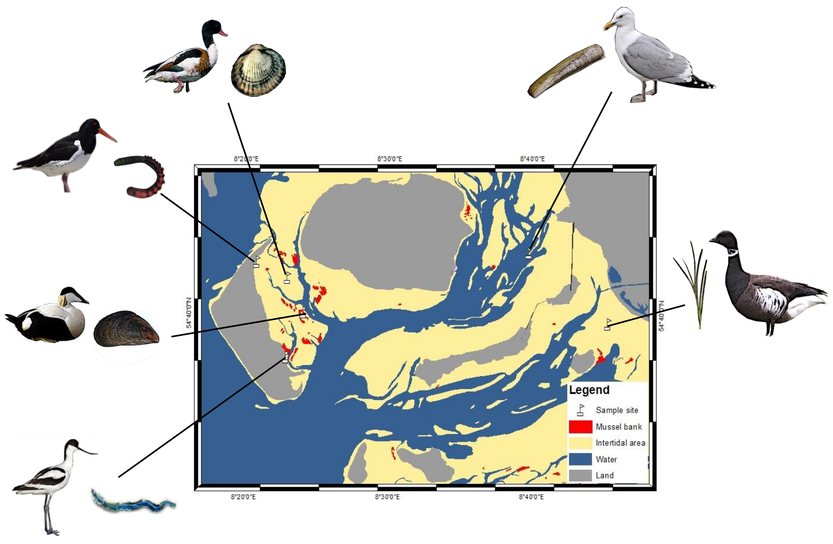
1 Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung
2 Forschungs- und Technologiezentrum Westküste der CAU Kiel
3 Landesbetrieb für Küstenschutz, Nationalpark und Meeresschutz Schleswig-Holstein
4 Landesamt für Landwirtschaft, Umwelt und ländliche Räume
5 Institut für Geowissenschaften der CAU Kiel

Introduction

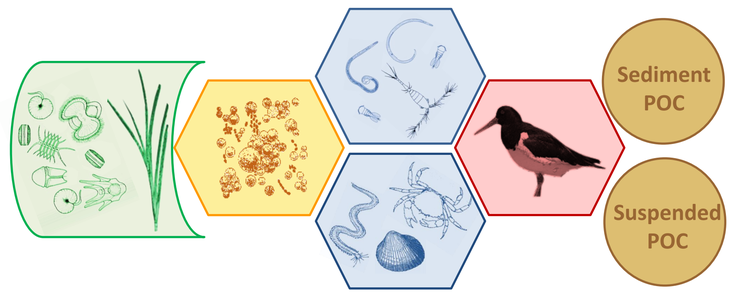
The Wadden Sea is one of the most important foraging areas for breeding and migrating birds. However, little is known about the preferred feeding places of birds and how the intense predation pressure influences the food web.
Within the project STopP the trophodynamic structure of different Wadden Sea habitats is determined to get an idea how sediment characteristics and hydrodynamics modify habitats that serve as food sources for birds.
Here, we focus on three questions:

1. Is there a difference in the food web structure of different habitats?
2. Which habitat do birds prefer?
3. Which impact do birds have on the food web?

Material and Methods



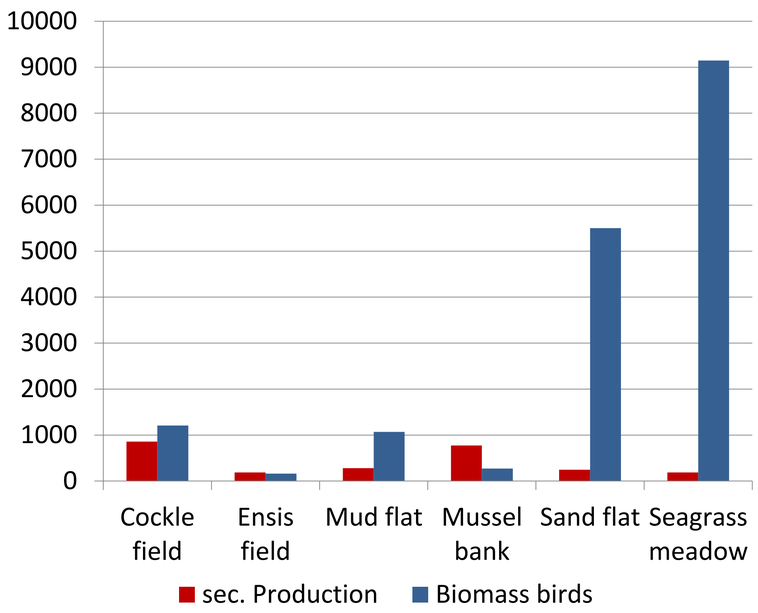
- Six sampling sites
- Samples for food web construction
- Counted birds
- Data analysis: Ecological network analysis (ENA)



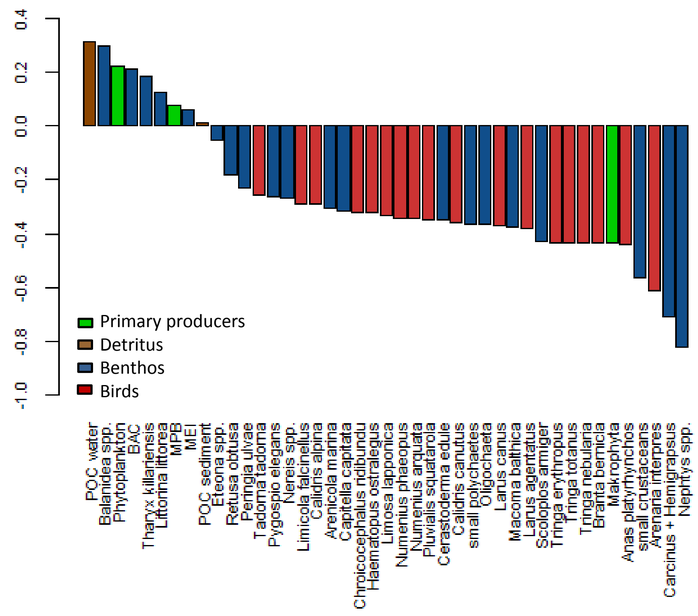
Results and conclusion

	Rel. Ascendancy (%)	Rel. Redundancy (%)	FCI (%)	Flow Diversity
Cockle field	41,20	34,10	5,49	4,04
Ensis field	44,10	27,60	8,36	3,43
Mud flat	41,10	37,70	4,91	3,28
Mussel bank	35,20	29,00	3,03	4,76
Sand flat	34,20	38,90	15,02	5,20
Seagrass meadow	37,80	36,60	11,55	5,10

1. System attributes: The habitats differ in their structure. While the *Ensis* field appears to be the best organized system, the sand flat is the most resilient one. Also the FCI and the FD differ between the habitat types.



2. Biomass: Birds show a strong preference to the habitats sand flat and seagrass meadow, although cockle field and mussel bank show a higher secondary production. However, some bird species are strongly dependent on special habitat types. Therefore, a heterogeneous system is worthwhile.



3. Impact analysis: Wadden Sea food webs are strongly impacted by foraging birds. Birds have a negative influence on the standing stocks of their prey but also impact other bird species negatively due to a high competition on the intertidal areas.

Outlook

- Are there seasonal differences?
- Create food web model for whole area
- Model future scenarios based on natural and anthropogenic impacts

Any questions? Please ask:
Sabine Horn
Alfred-Wegener-Institut
Hafenstraße 43
25992 List/Sylt
Tel.: 04651 956 4217
sabine.horn@awi.de

AWI
HELMHOLTZ GEMEINSCHAFT
Nationalpark Wattenmeer SCHLESWIG-HOLSTEIN
Landesamt für Landwirtschaft, Umwelt und ländliche Räume Schleswig-Holstein
C A U Christian-Albrechts-Universität zu Kiel
Forschungs- und Technologiezentrum Westküste Büsum
Bundesministerium für Bildung und Forschung