

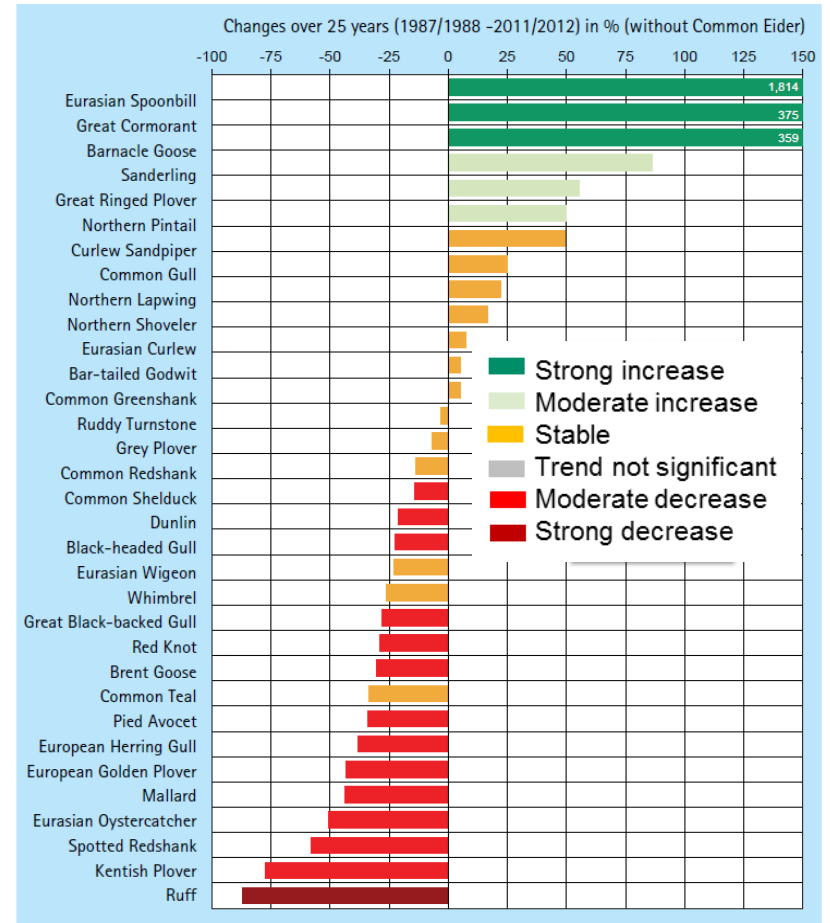
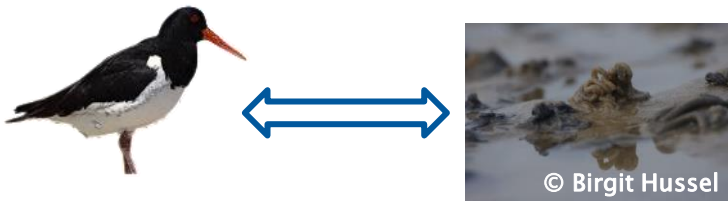


Do birds influence the structure and functioning of coastal food webs?

Sabine Horn, Camille de la Vega, Ragnhild Asmus, Philipp Schwemmer,
Leonie Enners, Stefan Garthe, Harald Asmus



Introduction



Blew et al. (2015)

Holistic approach – Ecological network analysis

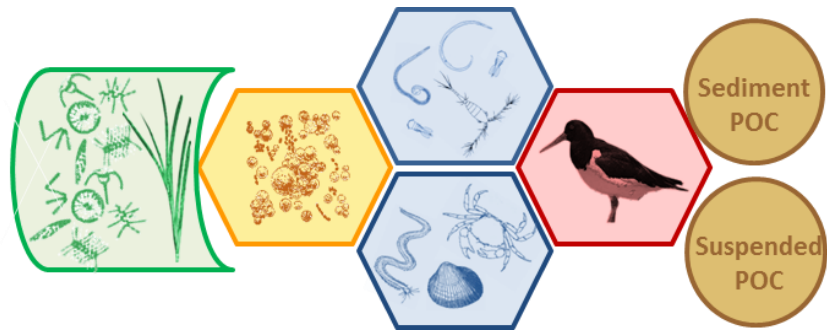
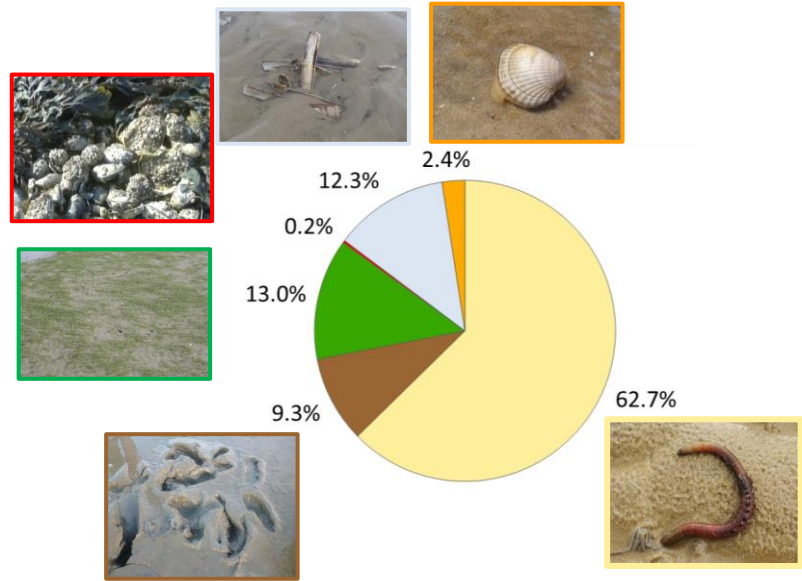
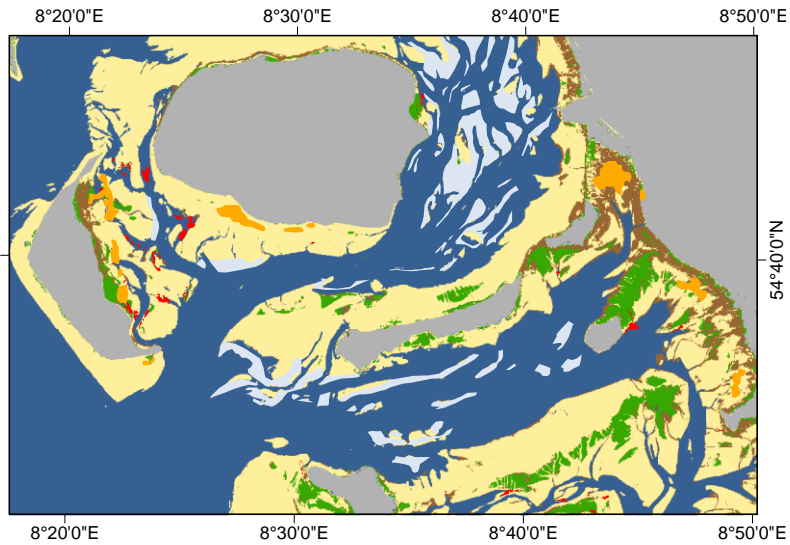


Objectives

- Ecological network analysis
- Influence of birds
 - How do birds impact the food web?
 - Do changes in the bird population alter the food web structure?



Study site

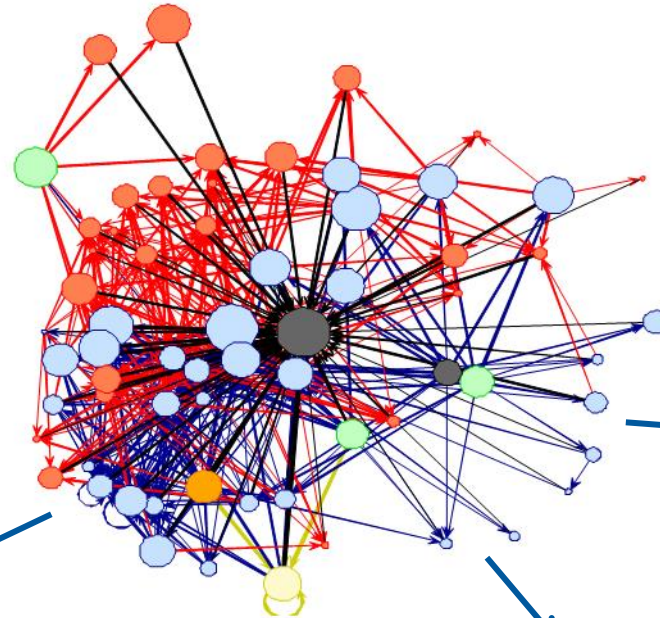


mg Carbon per m²



Status of the study site

65 compartments



Size and activity

TST 11,437.1 mgC m⁻² d⁻¹

System structure

A/DC 32.3%
OH/DC 67.8%
Robustness 0.365

Flow structure

FD 5.1
ELD 3.3

Recycling

FCI 6.0%

Big and active system with high reserves of free energy, a complex and redundant flow structure and dependent on external imports

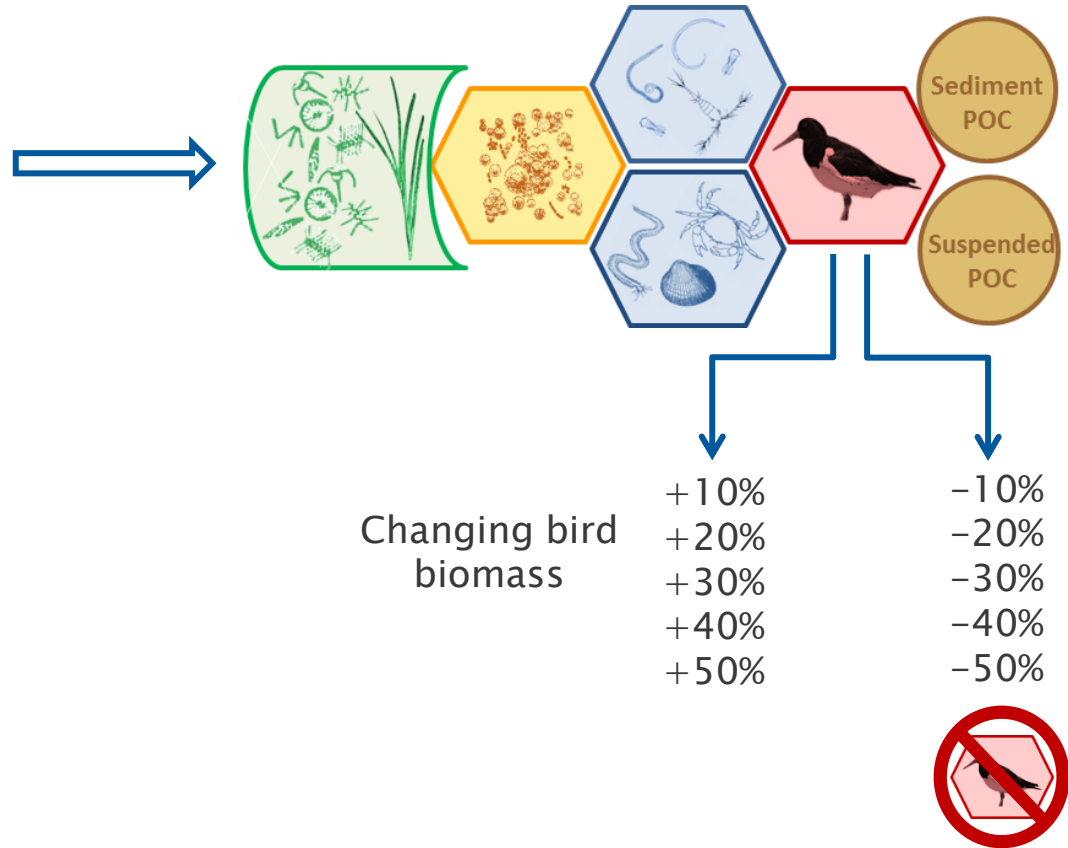
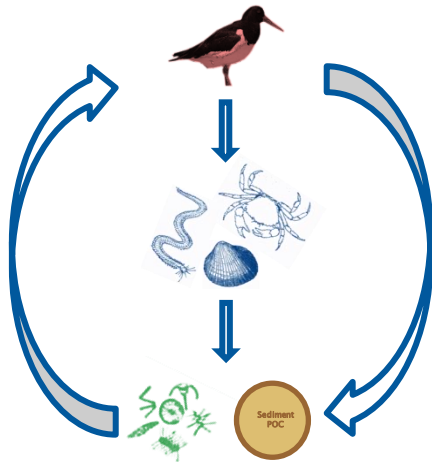


Methods to assess the avian influence

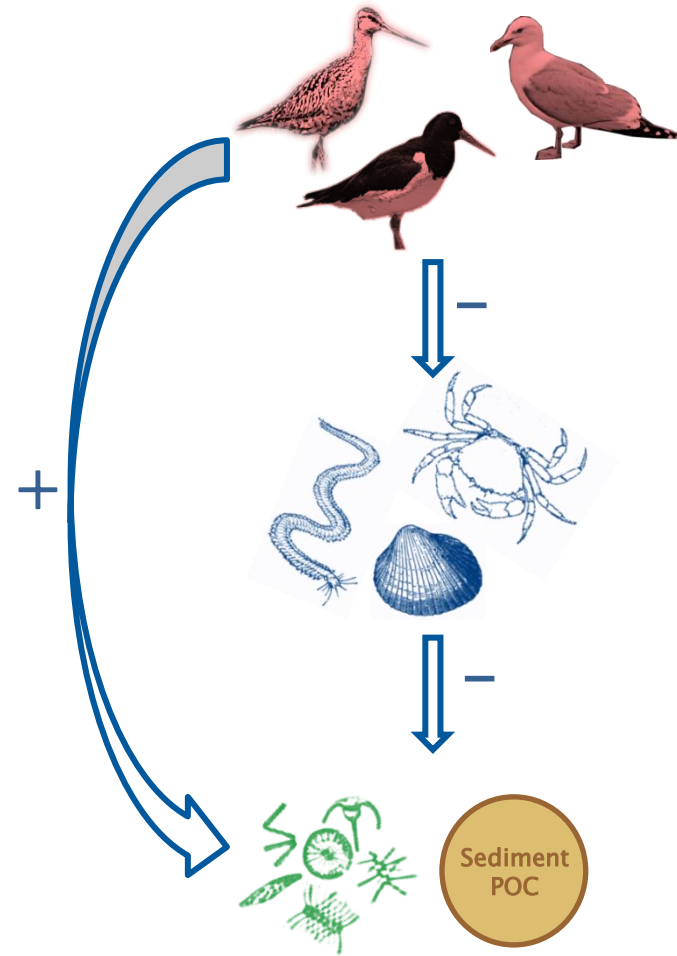
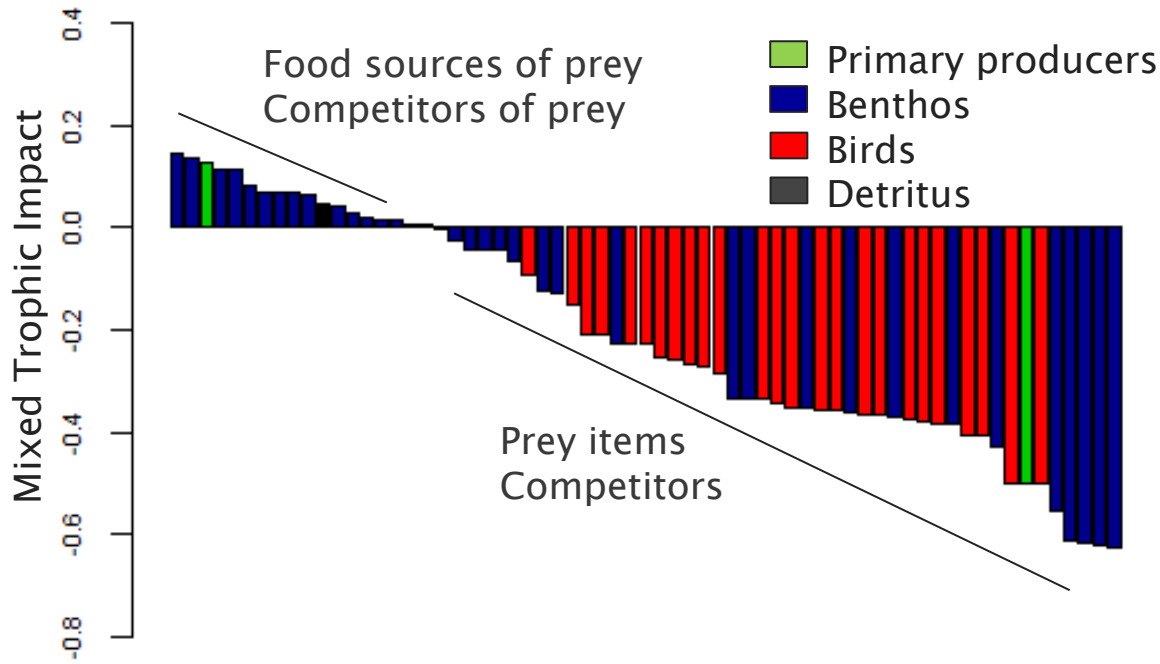


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Impact analysis

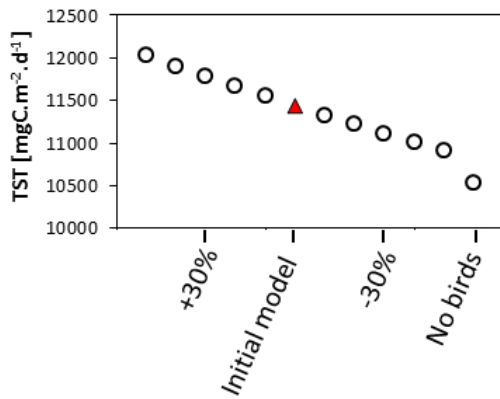


Impact analysis

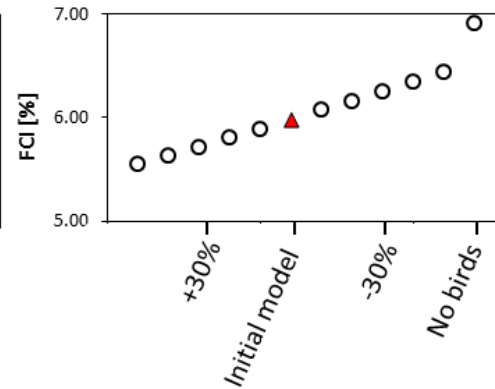


Bird sensitivity analysis

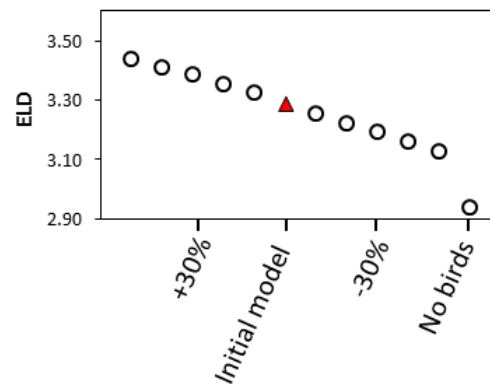
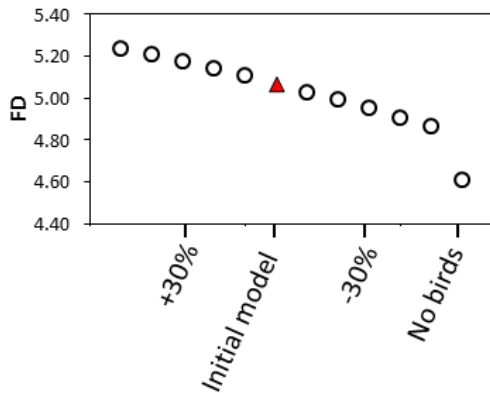
Size and activity



Recycling



Flow structure



TST: Total System Throughput

FD: Flow Diversity

ELD: Effective Link-Density

FCI: Finn Cycling Index

Decrease in bird biomass = Decrease in stability and resistance

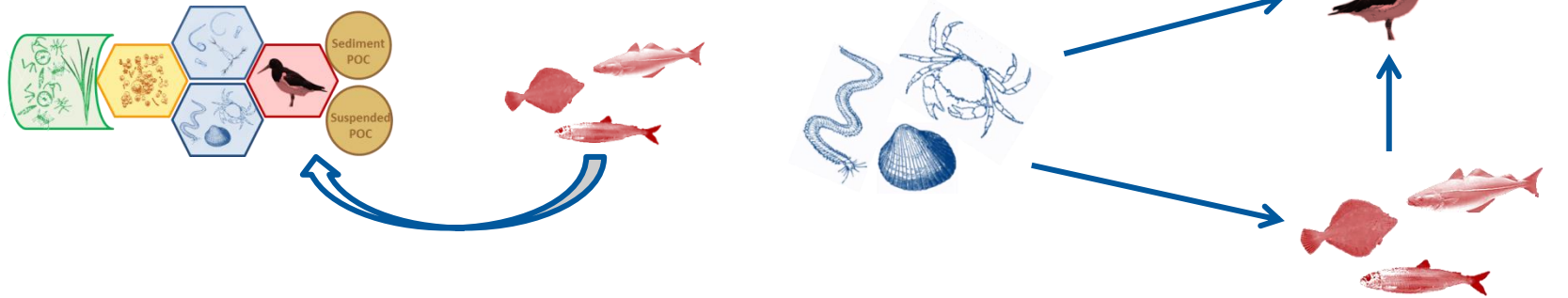


Conclusion and forecast

Conclusion

- Birds are important predators in intertidal food webs
- Included in direct and indirect pathways
- Changes in the bird population induce alterations in the food web structure

Inclusion of fish compartments



Uncertainty analysis

- Significant differences when bird biomass decreases?

Thank you!



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