

# Food web & biodiversity workshop: policy questions and approach

## Main question:

- Is there a 'food web and/or biodiversity problem' in the Wadden Sea, and if yes, how to define and how to solve?

## Approach taken:

- Emphasis on benthic community (shellfish, sea grass, other).

### Reasons:

- food for other species
- habitat engineers (filtering, sediment stabilisation, shelter function)
- relatively well-researched
- Do we observe any trends (which could point at problems)? If yes, are these caused by human activities?

## Food web & biodiversity workshop: findings (1)

1. One clear trend identified: increase of alien species, which may go to the cost of autochthonous species. In particular: pacific oysters seem to take over mussel beds (thereby providing habitat for young & small mussels). But: is this a problem? (and if yes: is anything to be done against this?)
2. So far, there is no evidence of any other trend in overall biomass or species composition. In particular: no trends in bivalve/polychaete and suspension feeders/deposit feeders ratios.
3. Different grouping of data (spatial scale, groups of species) may reveal underlying trends; still to be done.
4. Is the limit of ecological carrying capacity attained? (invasion of new species does not seem to lead to increased overall biomass)

## Food web & biodiversity workshop: findings (2)

5. Sea grass beds in the Northern Wadden Sea are growing. This shows that there is still potential for sea grass development in the Wadden Sea. But: why is recovery in the western part so slow or absent?
  6. Absence of top predators: remarkable, but is it a problem?
  7. Variability in species biomass over time and space is (and probably: was) large.
  8. Are there alternative (meta)stable states or resilience phenomena in the ecosystem? So far: no indications.
- **Therefore (1+2):** it is not clear whether there is a 'food web and/or biodiversity problem'.

## Food web & biodiversity workshop: how to proceed?

1. Integrate observations on different ecosystem components (shellfish, sea grass, other) in various parts of the international Wadden Sea:
  - In the Quality Status Report
  - In 'habitat mapping' and international research programmes
2. Compare with other ecosystems (e.g. those where top predators are still present)
3. Study invasion patterns: what can we learn from these?
4. Perform tailor-made experiments to unravel interactions between various trophic levels
5. Fill in essential data gaps (zooplankton!)
6. Develop multi-trophic ecosystem models, based on 1-5