

Ripples through the Food Web:

herbivore-mediated effects of climatic events in aquatic and terrestrial ecosystems

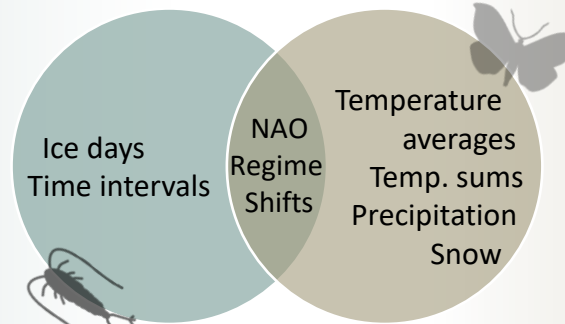
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Baltic Herring

- Herring feeds on zooplankton. Especially **large copepods are important prey** for herring.
- The great **reduction in zooplankton biomasses** in the Archipelago Sea is reflected in the **reduction in size and deterioration of condition** of individual herrings.
- Is there a **climate change induced mismatch** between zooplankton peak biomasses and Archipelago Sea herring reproductive period?

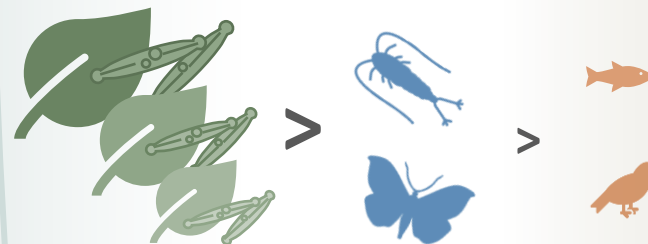
Phytoplankton

- Zooplankton grazes on phytoplankton. Especially **diatoms are important food** for zooplankton.
- Diatom spring blooms have lost their peaks because of **disappearance of spring floods**. We hypothesize that this causes the food chain to be out of sync.



Regime Shifts and NAO are useful proxies for complex climatic phenomena in water and on land

Baltic Regime Shifts in 1975–76 and 1989–90 explain much of the change in mesozooplankton biomass from Seili 1966–2019 as well as the biomass change in many subarctic moth guilds from Kevo 1972–2017. Other important environmental factors were Winter NAO and the decreasing number of ice days for zooplankton and previous summer temperatures for the parent generation of moths.



Changed biomasses of lower trophic levels are reflected as changes in energy flow to the upper levels of terrestrial and aquatic food webs.

Insectivorous birds

- **Weather and availability of food items, such as moths**, are important factors for the breeding success of birds in subarctic areas
- Are there differences in success between **migratory and resident / local and newcomer birds**?
- Climate change may affect the timing of life cycle phases of moths → can this affect the breeding success of insectivorous birds via **phenological mismatch**?

Subarctic plants

- Climate change affects abundances and species composition of subarctic plants. How do **changes in host plant availability** affect moth biomasses among different feeding guilds?
- How does **phenological mismatch between host plant and moth** affect biomasses and abundances of insect prey?

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