ECOTIP

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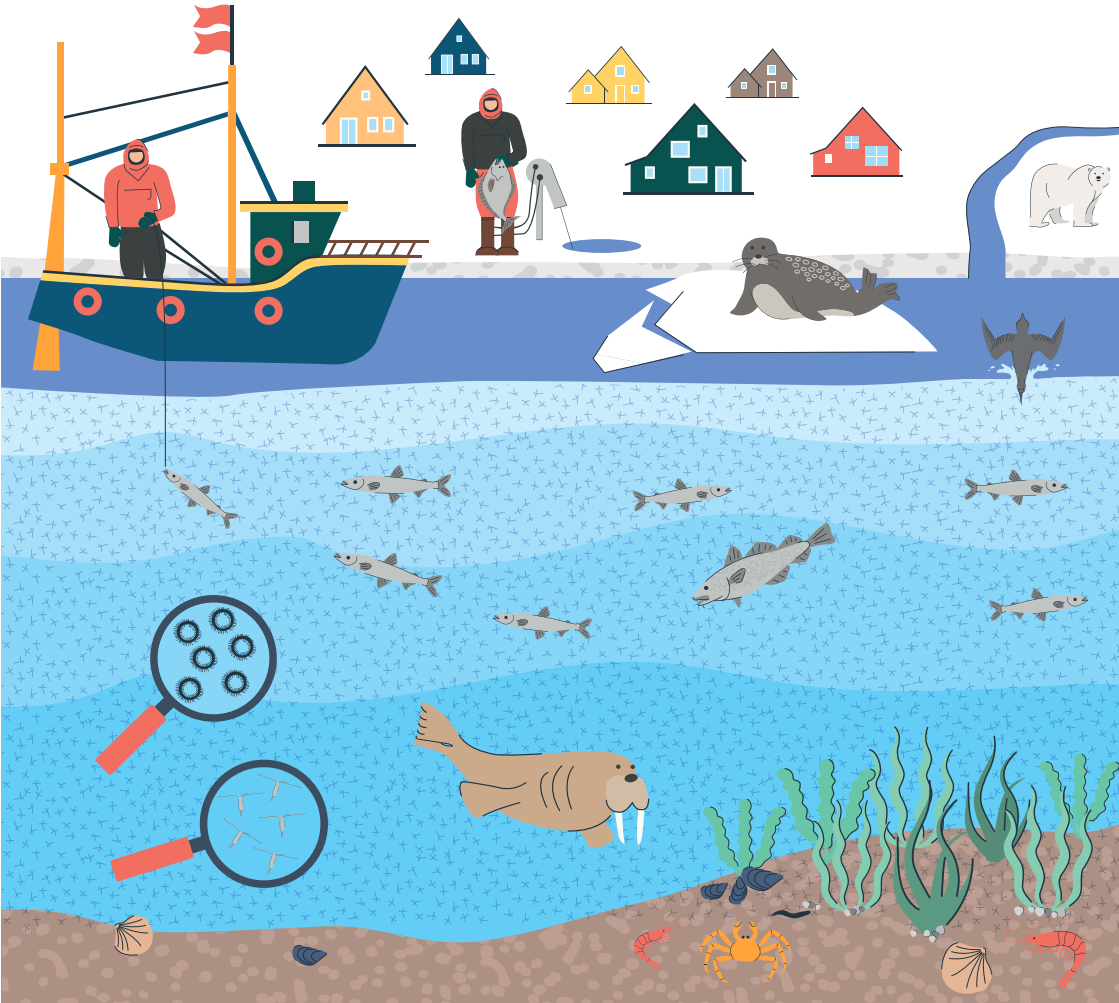
Investigating ecological tipping cascades in the Arctic seas



ECOTIP in a nutshell

ECOTIP is a flagship Horizon 2020 research project focusing on understanding and predicting changes in Arctic marine biodiversity and implications for two vitally important marine ecosystem services: fisheries production and carbon sequestration.

Running for the period 2020 to 2025, and led by the Technical University of Denmark (DTU), ECOTIP brings together leading scientists from 15 institutes across Europe, Japan and Canada. The project combines state-of-the-art field and laboratory studies, analysis of historical and paleo-oceanographic data and trait-based modeling to predict the potential tipping points of key biological ecosystem functions in Arctic seas in the face of climate change and other pressures.

ECOTIP works closely with fishing communities in Greenland and other stakeholders to understand the effects of biodiversity and ecosystem changes on society, and how best to reduce, mitigate and adapt to the changes.

Focusing on ecological tipping cascades

A decrease in Arctic Sea Ice and melting of the Greenland Ice sheet, and subsequent increase in freshwater inflow and stratification, can trigger a change in the biological system: an "ecosystem tipping cascade". ECOTIP operates at this important link between the physical and biological systems, where a regional change in the hydrography of the Arctic Ocean might trigger a biological change at the base of the marine food web with cascading effects both on the regional and local socio-economic systems through fisheries, and on the global climate through carbon sequestration. ECOTIP is attempting to anticipate and predict these changes.

Aims of this project

- Understand how marine biodiversity in the Arctic is responding to pressure from multiple sources, including temperature, salinity, invasive species, pollution and fishing – or combinations of these.
- Improve our description of marine biodiversity and ecosystems.
- Predict the consequences of changes in plankton community composition for carbon sequestration and fisheries.
- Investigate the socio-economic consequences of biodiversity change such as distributions of key commercially important species in Greenland and evaluate adaptation options.
- Provide recommendations for developing adaptation strategies in relation to changes in Arctic ecosystems.

ECOTIP

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