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## **Local Perspectives On Biodiversity Change And Adaptation Capacity In Greenlandic Fisheries**

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*Publication date:*  
2023

*Document Version*  
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

*Citation for published version (APA):*  
Jacobsen, R. B., & Heerema, S. (2023, Nov 1). Local Perspectives On Biodiversity Change And Adaptation Capacity In Greenlandic Fisheries.

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POLICY BRIEF

# LOCAL PERSPECTIVES ON BIODIVERSITY CHANGE AND ADAPTATION CAPACITY *IN GREENLANDIC FISHERIES*





# LOCAL PERSPECTIVES ON BIODIVERSITY CHANGE AND ADAPTATION CAPACITY *IN GREENLANDIC FISHERIES*

The ECOTIP project has analyzed catch statistics and conducted a Local Ecological Knowledge (LEK) study to learn about how biodiversity changes have recently impacted Greenlandic fisheries the most. The study includes knowledge presented by the offshore fishing fleet, coastal fisher representatives, factory management and fishery management in a workshop (Nuuk, Nov. 8 2021). Furthermore, interviews were conducted (Nov 2021 – June 2023) with coastal fishers, hunters, fish factory managers and community members in: Upernavik, Aappilattoq, Inarsuit; Nuuk; Nanortalik and Qaqortoq; Tasiilaq, Kuumiut and Kulusuk.





LEK has identified a whole range of biodiversity changes and distributional shifts to which fishers have been adapting. These include:

- Changes in sea temperature and sea ice formation
- Increased run-off and changes in algae production and growth in fiords
- A northward movement of the shrimp stock
- Incidents of unprecedented bycatch in the offshore fisheries
- An increased fishery for known species in North Greenland and East Greenland
- Changing behavior of fish in the fiords, responding to temperature and changes in predator presence
- Years with 'missing arrivals' of fish or mammals in fiords
- And increase of rare fish species and whales in East Greenland





## A HIGHLY ADAPTIVE FISHERY BUT WITH REGIONAL INEQUALITY IN POSSIBILITY

The Greenlandic fishery has demonstrated a high capacity to maintain key fisheries during the last 10 years of changing conditions. Fishers have been able to experiment and change fishing strategies and techniques within a season (e.g., cod gillnetting in Nuuk), a few years (shifting to open-water fisheries in North Greenland), or gradually over a decade (the offshore trawling fleet following shrimp distribution northward). New fisheries for known species – in local areas or in new areas – receives much focus. Fisheries for rare or new species has been most prominent in the offshore fishery, as in the case of mackerel.

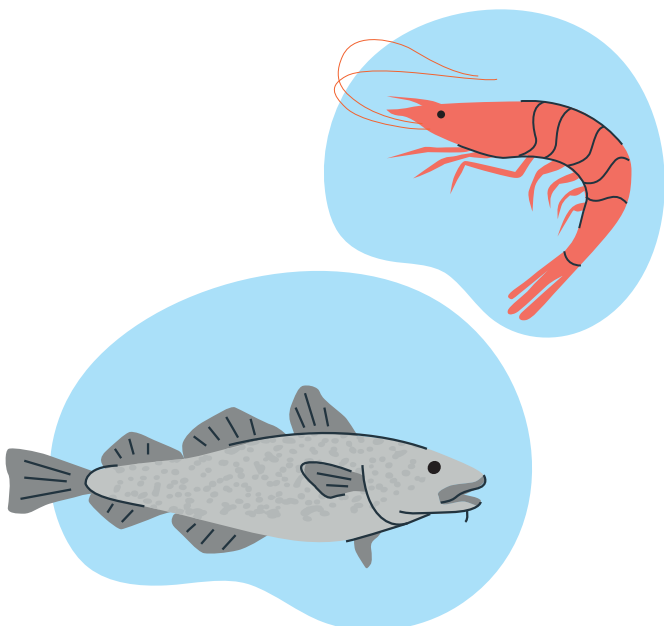
When listening to the LEK accounts of changes and adaptation, ECOTIP notices that there are regional differences in fishery opportunities and infrastructure.

The offshore fishery has generally been able to adapt to environmental changes. They have adapted new technology to pursue new pelagic fisheries and demonstrated mobility to 'follow' incremental shifts in the location of the shrimp biomass. Generally, seafood companies have undertaken structural changes to become economic competitive resulting in fewer, but larger and more efficient vessels. Presently, the offshore fishery is considered attractive in terms of working conditions, salary level and company profits. Overall, they consider the offshore fisheries to be 'stable for the moment'. Technological and regulatory responses to changes in by-catch emerged as an important adaptation theme.

The coastal fishery in North Greenland has adapted well to decreasing sea ice and greater abundance of various species. The Greenland halibut fishery remains the most attractive fishery, but cod and crab are showing increased catches. During the last decade, new factories have opened while others have expanded storage and processing capacity. Still, sudden shifts in weather and changing predator presences (whale distribution) are impacting fishery operations. There are reports from the Disko Bay of years when the capelin that did not arrive on the beaches as usual.

In contrast, fisheries in South Greenland has experienced a more negative development, as the cod fishery in four to five years faced a decline but has recently stabilized. Furthermore, the fisheries in South Greenland have not seen inflow of new species to support commercial fisheries and fishers have faced low cod prices and lack of marketing options for more of the well-known local species. Coastal fishers observe known species like wolffish, salmon and char to be increasing. There are scattered reports on rare species being caught once in a while.

LEK observations among coastal fishers in Tassilaq, Kuummiut and Kulusuk, East Greenland report that most of the well-known fish species appear to be in good condition, including Greenland halibut, cod and capelin. Arctic char and lumpsucker is observed to be increasing. This region reports the most incidences of rare and unknown fish species including new types of shark, char, salmon and even some unknown fish. More of the rare whale species are now coming to the areas – including pilot whales, orca, white-beaked dolphin. So far, fishers have been able to maintain their traditional fishing sites and fisheries, but they report on challenges caused by quickly changing weather, limited landing possibilities and low fish prices. Polar cod has responded to warming water temperatures - and possibly cod predation - and is far less present that it used to be. In recent years, hooded seals have been less present. When asked about their assessment of the future fisheries in the region, all interviewed fishers first and foremost highlighted the importance of shorter distance to landing sites and more competition between fish factories (Royal Greenland established a new landing facility in Tasiilaq around the time of the interviews).





## NORTHERN FISHERIES

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## SOUTHERN FISHERIES



GREENLAND

ICELAND

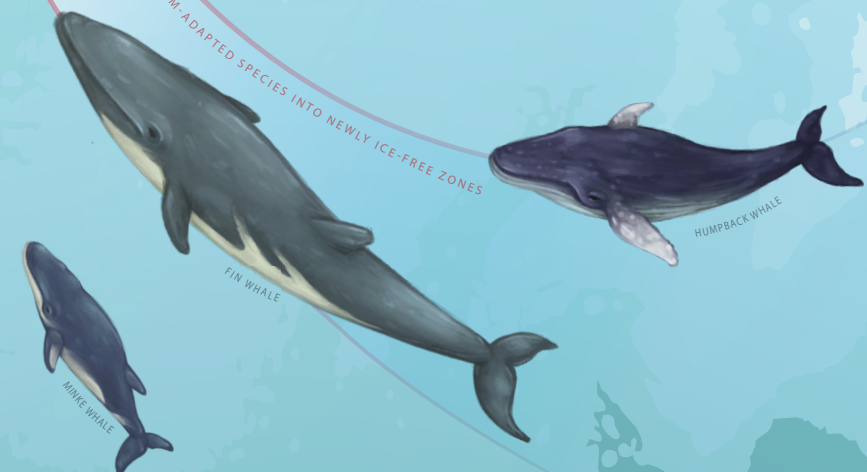
MIGRATION OF COLD AND ICE-ADAPTED SPECIES FURTHER NORTH

MIGRATION OF WARM-ADAPTED SPECIES INTO NEWLY ICE-FREE ZONES

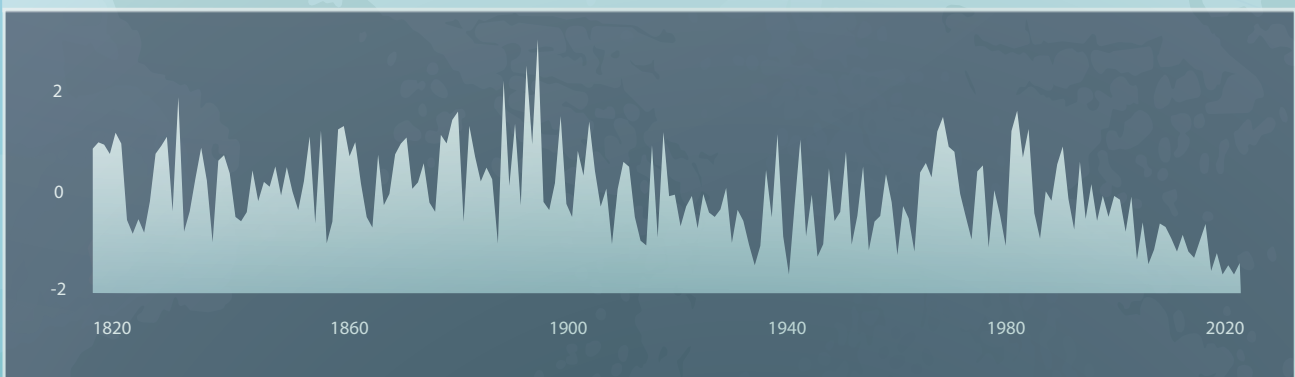
# GREENLAND FISHERIES

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EXTENT OF COASTAL SEA ICE COVERAGE IN SOUTHEAST GREENLAND



# SUMMARY

## FOR DECISION-MAKERS

Despite differences between fisheries and regions, Greenlandic fisheries have generally demonstrated both capability and willingness to adapt fishing and marketing strategies to environmental changes, regulations or diminishing market opportunities. Deliberately facilitating and supporting the inherent maneuverability of the fisheries is essential. Based on knowledge obtained from interviews, workshops and statistical analyses, the findings from ECOTIP suggest that decision-makers can support flexibility in the fisheries further by:

- Prioritize on-going and close dialogue between Greenland Institute of Natural Resources, managers and fishers to explore and create shared understandings of biodiversity changes as they occur, and explore possibilities for swift adaptation in regulations and/or fishing techniques (e.g. by-catch regulations)
- Keep it administratively uncomplicated for a coastal fisher to apply for multiple licenses in the coastal fisheries. This facilitates adaptive shifts between species depending on presence, absence and changing market conditions.
- Ensuring better landing facilities in/within short

distances. The presence/absence of nearby factories and/or landing opportunities is fundamental to fishers and community members when they assess the future prospects of their profession and community.

- Promoting competition between factories. In order to raise the ex-vessel sale prices and hereby supporting local fishing communities and motivating the next generation to become fishers. Coastal fishers in all regions have highlighted this need.
- Continuing to focus on innovation in the seafood sector – to increase the diversity of landing opportunities and sale prices for coastal fishers. This is especially called for in the cod fishery and in communities with few landing opportunities.
- Deliberately supporting the diversification of local markets. In addition to landing to factories, coastal fishers and hunters supply multiple domestic markets - including local fish market, sale to local institutions (elderly homes, kinder gardens) and sale via private network (hooded seal products from South Greenland). This diversifies coastal fishers marketing strategies and provides more local access to food security.
- Continuing the focus on re-expanding local food knowledge on how to prepare 'rare species' (rare, but well-known by older generations)
- Initiating explorative fisheries for known species in new areas. Coastal fishers are pointing to different fisheries that could be initiated locally. Offshore fisheries are interested in expanding fisheries further north.
- Investigate ways to enhance the working conditions of coastal fishers. Nearby landing sites, boats equipped for and deck technology that eases physical work has been suggested by coastal fishers.
- Prioritizing food security and nutrition in the management of hunting quotas. North Greenlandic hunters have explained how short hunting seasons and the Olympic 'race' is causing scarcity the rest of the year. Also, interviewees in South and North Greenland note that catches are no longer distributed widely in the community via traditional sharing system. There are concerns that elders and less well-off persons have less access to food caught and sold by fishers and hunters.
- Introducing financial programmes to support entrepreneurship outside the municipal centres. From the perspective of very fishery-dependent communities in the periphery – like Upernavik and Nanortalik - this would help diversify livelihood options e.g. to develop tourism.



# RECOMMENDATIONS FOR DECISION-MAKERS



Prioritize on-going and close dialogue between Greenland Institute of Natural Resources, managers and fishers to explore and create shared understandings of biodiversity changes as they occur, and explore possibilities for swift adaptation in regulations and/or fishing techniques (e.g. by-catch regulations)



Keep it administratively uncomplicated for a coastal fisher to apply for multiple licenses in the coastal fisheries. This facilitates adaptive shifts between species depending on presence, absence and changing market conditions.



Investigate ways to enhance the working conditions of coastal fishers. Nearby landing sites, boats and deck technology that eases physical work has been suggested by coastal fishers.



Support the diversification of local markets. In addition to landing to factories, coastal fishers and hunters supply multiple domestic markets - including local fish market, sale to local institutions and sale via private network. This diversifies coastal fishers and hunters' adaptation strategies and provides local food security.



Strengthen initiatives aiming to expand and innovate local food knowledge on how to prepare 'rare species'. The older generation has experience with preparing a wider range of fish species and can be included in such initiatives.



Prioritize food security and nutrition in the management of hunting quotas. North Greenlandic hunters have explained how short hunting seasons and the Olympic 'race' is causing scarcity the rest of the year. Also, interviewees in South and North Greenland note that catches are no longer distributed widely in the community via traditional sharing system. There are concerns that elders and less well-off persons have less access to food caught and sold by fishers and hunters.



Ensure better landing facilities within short distances. The presence/absence of nearby factories and/or landing opportunities is fundamental to fishers and community members when they assess the future prospects of their profession and community.



Continue to focus on innovation in the seafood sector - to increase the diversity of landing opportunities and sale prices for coastal fishers. This is especially called for in the cod fishery and in communities with few landing opportunities.



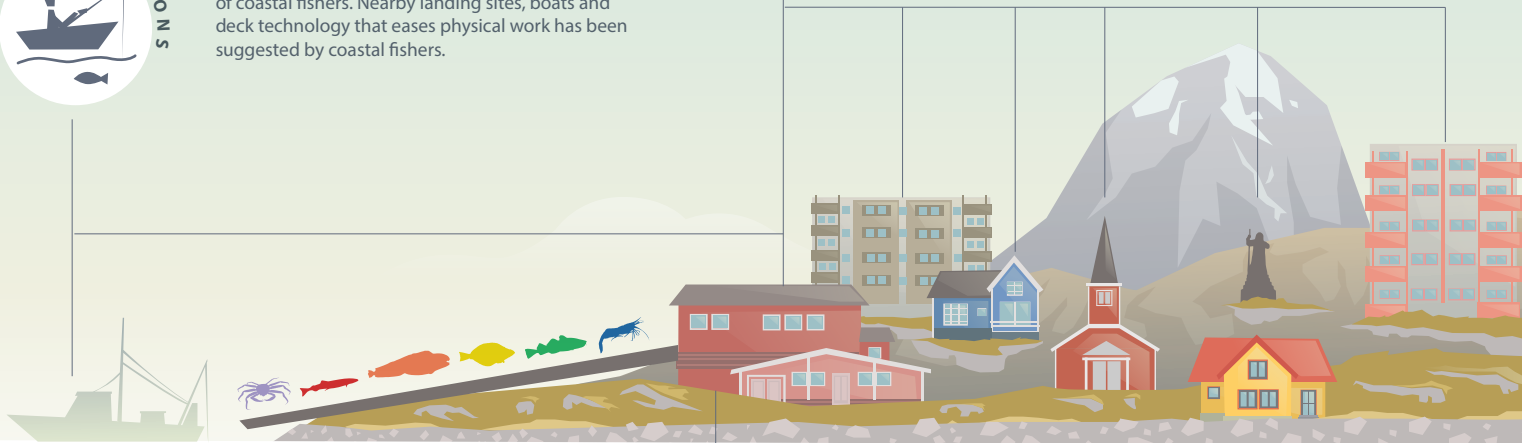
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Promote competition between factories. In order to raise the ex-vessel sale prices and hereby supporting local fishing communities and motivating the next generation to become fishers. Coastal fishers in all regions have highlighted this need.



Introduce financial programmes to support entrepreneurship outside the municipal centres. From the perspective of very fishery-dependent communities in the periphery - like Upernavik and Nanortalik - this would help diversify livelihood options e.g. to develop tourism.





**For further information,  
comments or questions,  
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