Turning Tides:

CLIMATE RESILIENCE IN COMMERCIAL FISHERIES

by **KATHERINE MARTIN** /// EAC Volunteer

In the crow's nest of a boat, scanning the water for swordfish.
PHOTO: Sebastiàn Pardo

Climate change is influencing the distribution, abundance, growth and competition of marine species. Many species are moving toward the polar regions to escape intensifying marine heatwaves. These distribution changes can lead to new or growing populations of invasive species and create problems like increased competition and predation for native species. Species are being forced to adapt to these new conditions; we must adapt with them.

The fishing industry in Atlantic Canada employs more than 12,000 people. Climate adaptation within the commercial fishing industry is fundamental for protecting marine ecosystems while also supporting the livelihood of seafood harvesters.

If a marine population becomes less productive or shifts regions, that can mean the loss of livelihood for seafood harvesters. Nova Scotia's seafood exports hit $2.5 billion in 2021[1], emphasizing the need for stakeholders and decision-makers to support the commercial seafood industry as it adapts to the impacts of climate change.[2]

Katherine (she/they) is a recent graduate of Dalhousie University and a current student in Nova Scotia Community Collage's oceans technology program. They have a passion for ocean sustainability and marine conservation.

The increasing vulnerability of marine species and importance of the seafood industry highlight the need to increase sustainable fisheries management while exploring new ways for harvesters to continue their livelihood.[3] Right now, there is no framework or action plan to address climate adaptation in the commercial fishing industry. Many changes are made on an individual basis, after the industry is feeling the impact.

Testing on-demand fishing gear

Critically endangered North Atlantic right whales have shifted their summertime home in Canada from the Bay of Fundy to the Gulf of St. Lawrence. This shift was largely due to a distribution shift of their food sources and it increased their risk of entanglement and vessel strike. In 2017, 12 whales were found dead, entangled in fishing gear in Canada, prompting swift management action and fisheries closures to reduce the risk to these whales.[4]

Lobster and snow crab fishers in Atlantic Canada are reducing risk to whales by using on-demand fishing gear – systems that remove rope from the water column, prevent marine mammal entanglement and allow harvesters to fish in zones where whales may be present.

In an interview with Madeline Tanner, a marine fishing gear technologist with the Canadian Wildlife Federation, she discusses the need for meaningful consultation with stakeholders.

"Change can be difficult, especially when it comes to transforming generations-old traditions," says Madeline, explaining that building relationships with harvesters is the key to success.

"If you want to work with commercial fish harvesters to build resiliency, you need to build up mutual trust, respect and empathy. It is so important to see things from their perspective when talking about the effects of climate change because it impacts not only the world around them, but their direct livelihood."

Madeline works with harvesters to ensure that their voice is heard when it comes to the development of these systems. "We have worked directly with harvesters for years by trialing on-demand fishing gear on their vessels with their deckhands, and have taken their feedback to developers so that when the time comes and there's a closed fishing zone, harvesters can use the most optimized technology to continue to earn their livelihood."

The Halifax-based **CanFish Gear Lending Program** is the first of its kind in Canada, featuring eight different types of rope on-demand systems for harvesters to test.[5] The program emphasizes the need for collaboration when it comes to creating a more sustainable and resilient commercial fishing industry.

Finding value-adding options

The swordfish harpoon fishery in Nova Scotia is also adapting to changing conditions. The Ecology Action Centre (EAC) is working with these harvesters to implement rod-and-reel to licences as an alternative low-impact gear method to harpooning.[6] Although harpooning is a very sustainable fishing method, the changing ocean conditions are making it harder to locate swordfish that are basking and can be easily harvested. Being able to use both harpoon and rod-and-reel will enable greater access for fishers to catch their quota.

Holly Isnor, marine campaign coordinator with the EAC, says, "It's critical to prioritize the adaptation of the swordfish fishery to proactively safeguard against climate change, which we see affecting ocean conditions and leading to reduced catches. Adding a rod-and-reel licence and charter operations would provide economic relief to fishers, benefit Nova Scotia's rural coastal communities and keep a sustainable food source on the market."

Despite clear support from industry, and years of work to get this venture off the ground, regulatory processes are creating roadblocks for this proactive fishery. Government and decision-makers need to support sustainable initiatives that allow fisheries, like the swordfish harpoon fleet, to adapt to changing conditions.

The future of climate resilient fisheries

Supporting the development and implementation of climate-resilient technology and adapted fishing practices will be integral for addressing the challenges of climate change. Action must be taken to include more information on the effects of climate change in fisheries management while including insights from seafood harvesters. With better information on current and future conditions of the oceans, commercial fisheries can implement new strategies to adapt and respond. Sustainable fisheries technology needs support now more than ever to help the industry adapt to what's ahead.

REFERENCES

1. Department of Fisheries and Oceans. 2023. "Seafisheries landed value by province, 2022." **https://www.dfo-mpo.gc.ca/stats/commercial/land-debarq/sea-maritimes/s2022pv-eng.htm**.

2. Boyce, Daniel G., Derek P. Tittensor, Susanna Fuller et al. 2024. "Operationalizing climate risk in a global warming hotspot." Ocean Sustainability 3, no. 33: 1-16. **https://doi.org/10.1038/s44183-024-00067-5**.

3. Logan, Cloe. "How rising emissions will hurt Canada's fisheries, and how curbing them could help." Canada's National Observer. **https://www.nationalobserver.com/2024/06/28/news/rising-emissions-fisheries-curbing-could-help**.

4. National Oceanic and Atmospheric Fisheries. 2024. "2017–2024 North Atlantic Right Whale Unusual Mortality Event." **https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2024-north-atlantic-right-whale-unusual-mortality-event#counts-of-north-atlantic-right-whale-ume-mortality-serious-injury-and-morbidity-sublethal-injury-or-illness-cases**.

5. Canadian Wildlife Federation. "About." Accessed Sept. 2, 2024, **https://canfishgear.ca/about/**.

6. Isnor, Holly, Christina Callegari and Shannon Arnold. 2024. "Keeping a Century-Old Fishery Alive." Ecology Action Centre. **https://ecologyaction.ca/sites/default/files/2024-08/KeepingACenturyOldFisheryAlive_Aug2024.pdf**.