



NWT Cumulative Impact Monitoring Program (NWT CIMP)

A source of environmental monitoring and research in the NWT. The program coordinates, conducts and funds the collection, analysis and reporting of information related to environmental conditions in the NWT.

NWT Environmental Research Bulletin (NERB)

A series of brief plain language summaries of various environmental research findings in the Northwest Territories. If you're conducting environmental research in the NWT, consider sharing your information with northern residents in a bulletin. These research summaries are also of use to northern resource decision-makers.

Arctic Salmon: Community monitoring initiatives find increasing salmon in the NWT

Salmon are increasing in the Canadian Arctic. Community members are monitoring these changes through their subsistence harvests and are currently working with researchers at Fisheries and Oceans Canada to understand this change. Increasing salmon may impact native fishes; however, fishers may also benefit from increased harvests. Salmon may be moving further north due to broader changes in ocean and freshwater ecosystems related to climate change.

Why is this research important?

This research began because NWT subsistence fishers noticed more salmon being harvested in their nets. They wanted to know where these fish were coming from and what their presence may mean for native fishes. These community-driven questions were addressed using a community-based approach.

What are we doing?

We collect salmon that are incidentally harvested in subsistence fishers' nets. Whole salmon or their heads are then sent to Fisheries and Oceans Canada in Winnipeg where data are collected and biological information analyzed. Results are reported back to community members.



Charlie Erigaktoak and Danny Gordon Jr. of Aklavik, NWT, with a salmon they harvested in 2016 at Shingle Point, Yukon. (Credit: Michelle Gruben)

What did we find?

- People across the Canadian Arctic are catching more salmon in more places. In the NWT, the harvest of Pacific salmon is generally increasing (Figure 1).
- There are year-to-year changes in harvest levels, which are likely related to changing environmental conditions in salmon populations.
- Chum salmon are natal to Canadian Arctic waters, meaning they spawn successfully in the Mackenzie River system. Pink, Chinook, Sockeye and Coho salmon have all been harvested in the NWT; however, these species are likely not yet established as reproducing populations in the NWT and are called vagrants.
- Chum salmon are harvested in the western Canadian Arctic every year. However, there are years when exceptionally high numbers of Chum salmon are harvested. These “exceptional years” are becoming more frequent.
- Pink salmon are still rare, but are becoming more commonly harvested in the Beaufort Sea and Mackenzie River Delta communities in even-numbered years. Pink salmon have also appeared, although very rarely, in Nunavut.
- More Sockeye salmon in recent years have been observed and harvested as far east as Cambridge Bay, Nunavut.

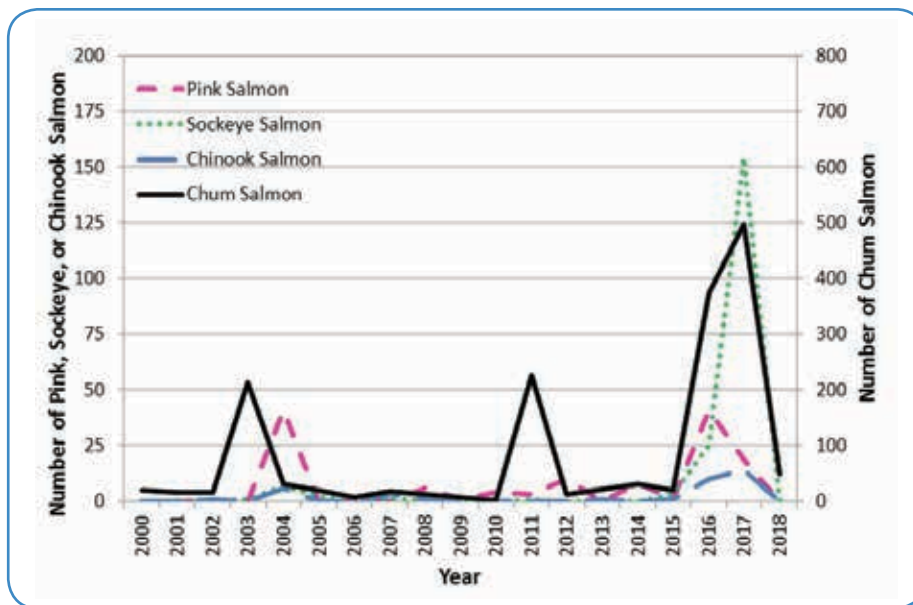


Figure 1: The number of each species of Pacific salmon provided to the Arctic salmon community-based monitoring program from harvesters in the NWT from 2000-2018. Note that salmon harvests reported here for 2018 are preliminary. Modified from Dunmall et al. 2018. (Available at: <https://doi.org/10.23849/npafctr11/87.90>)

What does this mean?

Community members and scientists working together can successfully monitor changes in rare fishes across a vast and remote area using a community-led approach.

Increasing salmon occurrences across the Canadian Arctic reflect underlying changes in the ocean and rivers. Warming temperatures and changing environmental conditions may be helping salmon access and perhaps survive in the Arctic, and could lead to salmon moving into new areas.

Recommended Reading:

Dunmall, K.M., N.J. Mochnacz, C.E. Zimmerman, C. Lean, and J.D. Reist. 2016. Using thermal limits to assess establishment of fish dispersing to high-latitude and high-elevation watersheds. *Canadian Journal of Fisheries and Aquatic Sciences* 73:1750-1758. doi:10.1139/cjfas-2016-0051

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