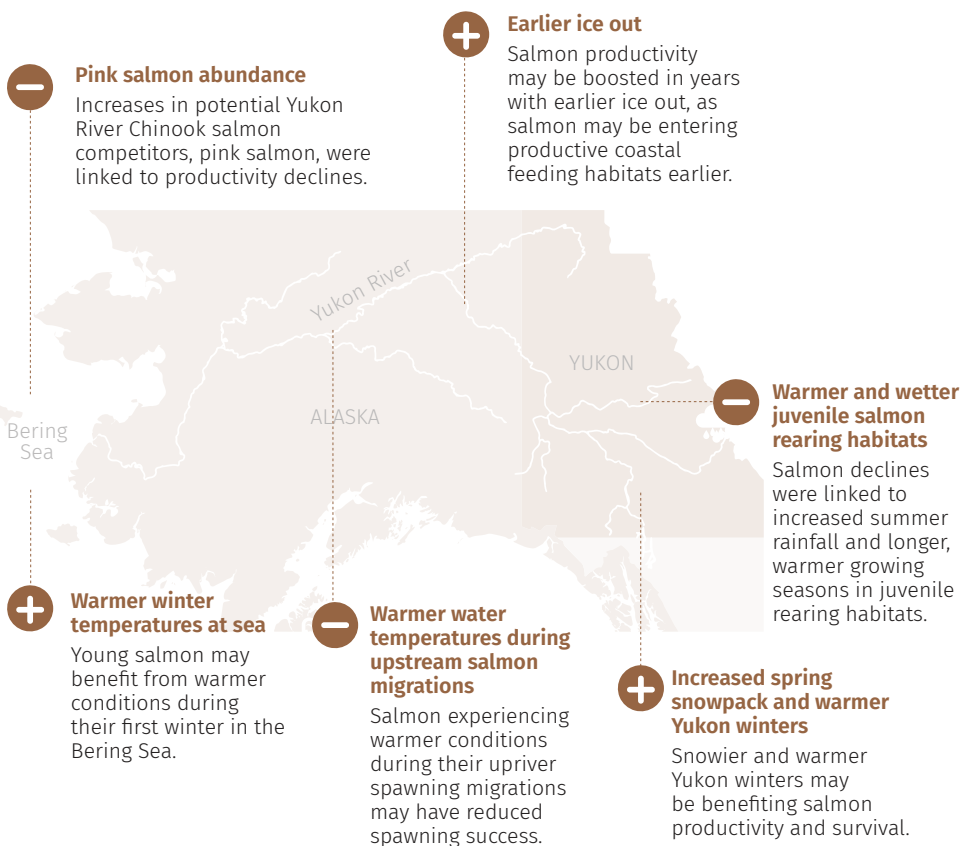


Yukon River Chinook salmon productivity

Recent declines of Chinook salmon in Canadian waters of the Yukon River represent a growing crisis for thousands of Indigenous and other people residing within the Yukon River drainage and beyond. A recent study analyzing three decades of data found that Canadian-origin Yukon River Chinook salmon productivity was related to numerous environmental and ecosystem processes acting over multiple life stages:



- indicates a negative and **+** indicates a positive relationship to salmon productivity

With an increase of 1.2°C in water temperature during the upstream migration there was an average decline of 12,000 adult salmon produced.



Photo: Sonny Parker



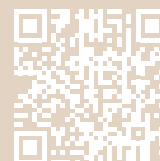
Photo: Alyssa Murdoch



Photo: Alyssa Murdoch

The study *Multiple environmental drivers across life stages influence Yukon River Chinook salmon productivity* was conducted by Alyssa Murdoch in coordination with Brendan Connors, Nicolas Lapointe, Joanna Mills Flemming, Steven Cooke, and Chrystal Mantyka-Pringle.

LINK TO THE REPORT:



Fisheries and Oceans Canada / Pêches et Océans Canada

Relevance for local and regional conservation and management

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Take a precautionary, ecosystem-based management approach

We encourage managers to more directly consider changing environmental and ecosystem conditions when setting and managing fisheries management goals. This may include adjusting the spawning goal (the number of spawners needed to reach Canadian spawning grounds) depending on risks posed by changing environmental conditions. For example, the spawning goal could be proactively raised in all years, allowing more adults to spawn to account for increasing environmental uncertainty. Another approach would be to increase the spawning goal in years that salmon are expected to experience more environmental stress such as warmer temperatures during their freshwater return migrations.

2

Protect and restore juvenile freshwater habitats

Juvenile rearing habitats in Yukon freshwaters may be threatened by climate-related stress including high summer rainfall. More rainfall may produce higher peak flows that could impede young salmon from seeking food or accessing higher quality habitats. Based on this result, juvenile habitats in regions experiencing more climate stress may be considered high priority areas for protection and restoration. For example, we recommend targeted habitat stewardship activities that could be used to reduce the negative effects of high flows on young salmon (e.g., streamside habitat restoration).

3

Develop a coordinated transboundary salmon recovery and rebuilding plan

We did not find a single cause that is responsible for the salmon crisis. Instead, we revealed a host of potential environmental factors that may be influencing salmon, both positively and negatively, over a vast geographical area. Based on this result, we emphasize the importance of taking a holistic approach that incorporates the far-reaching complexity of this issue, especially considering the growing uncertainty of climate change. In particular, we recommend developing a coordinated transboundary salmon recovery and rebuilding plan that encompasses the entire Canadian-origin Yukon River Chinook salmon habitat range.