



North Pacific humpback whale population decline indicates impact of warming waters - researchers concerned

March 10, 2024

A recent study shows that a 20% decline in the population of North Pacific humpback whales appears to have resulted from a marine heat wave. Members of the [Canadian Pacific Humpback Collaboration](#) (CPHC) are concerned.

The recent research paper, entitled [Bellwethers of change: population modelling of North Pacific humpback whales from 2002 through 2021 reveals shift from recovery to climate response](#), was published in the Royal Society Open Science journal.

Members of the Canadian Pacific Humpback Collaboration were among the many authors of the study. The CPHC consists of seven British Columbia based organizations who work to catalogue humpback whales off the Pacific coast of Canada. They provided BC data to inform the overall findings.

The objective of the international study was to better understand the population trajectory of humpback whales as they recover from commercial whaling, which ended in the North Pacific in 1976. This included estimating how many humpback whales there were in this recovering population each year from 2002 to 2021. The study relied on data from 46 organizations and 4,292 community science contributors worldwide, making it the largest individual photo-identification dataset ever assembled for a species of cetacean.

Results indicated there were approximately 33,500 humpbacks in the North Pacific in 2012, with an average population growth rate of 5.9% between 2002 and 2013. But this long period of recovery was followed by a 20% decline. This translates to “an estimated population decline approaching 7,000 individuals across the North Pacific in just 9 years (2012–2021).”

The study found that this decline is likely to be correlated to the marine heat wave of 2014 to 2016 (known as The Blob) and that it “altered the course of species recovery, with enduring effects.” Some regional impacts of the 2014 to 2016 marine heat wave were known, for example researchers in SE Alaska ([Gabriele et al., 2022](#)) documented a sudden, and sharp decline in humpback whale survival and reproductive success among the whales they study. But it is only with the data brought together under this North Pacific-wide study, that the scale of the impacts on the population is known.

Marine heat waves are anticipated to increase in frequency and severity due to climate change. They have ecosystem level impacts including changes in ocean productivity and prey availability.

Reduced prey availability as a result of warming waters may not only lead to humpback whales becoming emaciated, but also potential shifts in habitat use by humpback whales that can increase the overlap between the whales and human activity, exacerbating the threats of collision and entanglement. It is unknown how many of the humpback whales now along the coast of British Columbia have shifted from somewhere else.

The recent reassessment of North Pacific Humpback Whales undertaken by The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 2022 identified marine heat waves as a key threat to the species. The known severity of this threat helped retain protection for humpback whales under Canada's Species at Risk Act.

Results from this new research confirm the need for continued protection for humpbacks across the North Pacific and to recognize their role as an indicator species for ecosystem health. CPHC members will continue to document the humpback whales in Canadian Pacific waters and monitor trends as a warming ocean environment makes the future uncertain for this species.

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Quotes from CPHC members:

“The findings are concerning and underscore the value of international collaborations and citizen science.” **Karina Dracott, Ocean Wise**

“From 2015 to 2018, our research in northern BC showed a calving rate decline for humpbacks: one of the areas severely impacted by The Blob, and a subpopulation which mainly migrates to Hawaii. At the time, we suggested that a potential driver for this calving rate decline could be tied to unprecedented changes in food supply caused by The Blob. This North Pacific-wide study further confirms our findings.” **Janie Wray, North Coast Cetacean Society**

“May the results of this study add to the understanding of the scale of the impacts of warming waters and the motivation to reduce impacts of climate change. This research indicates how severe the threat from warming water can be at an ecosystem level, and why there must be continued protection for North Pacific humpback whales. Climate change will increase the number and severity of marine heat waves adding to, and potentially exacerbating, the threats from collision and entanglement.” **Jackie Hilderling, Marine Education and Research Society**

“Researchers consider Humpback whales to be indicators of the impact of warming waters. While there has been an increase of humpbacks along the coast of BC, it's important to understand that they could be shifting from somewhere else, likely due to prey and climate.” **Tasli Shaw, Humpback Whales of the Salish Sea**

About the Canadian Pacific Humpback Collaboration

[The Canadian Pacific Humpback Collaboration](#) (CPHC) catalogues Humpback Whales off the coast of British Columbia. Members of the collaboration consists of British Columbian-based conservation initiatives: the Marine Education & Research Society, North Coast Cetacean Society, The Pacific Wildlife Foundation, Ocean Wise, Humpback Whales of the Salish Sea, KETA Coastal Conservation, and The Whales of Clayoquot & Barkley.

The CPHC's centralized catalogue and database of individual Humpback Whales enable understanding of the whales' habitat use, behaviours, population size and structure, life histories, and the impacts of threats like vessel strike and entanglement.

Fisheries and Oceans Canada (DFO) maintained a province-wide catalogue of Humpback Whales off Canada's Pacific Coast up to 2010. Members of the CPHC were among those who contributed data to DFO and ensured cataloguing of Humpbacks continued beyond 2010. The work of the CPHC is supported by DFO.

The efforts of the CPHC have inform research beyond British Columbia, including the reassessment of North Pacific Humpbacks by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and publications related to the collaborative effort to study Humpbacks across the North Pacific via HappyWhale.