

Fall 11-23-2020

## Shrinking Salmon: Is Climate Change Linked to Animal Body Size?

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### Recommended Citation

Bacchus, Monica D., "Shrinking Salmon: Is Climate Change Linked to Animal Body Size?" (2020). *Scientific Communication News*. 18.

<https://nsuworks.nova.edu/sci-com-news/18>

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# Shrinking Salmon: Is Climate Change Linked to Animal Body Size?

New data from fisheries is indicating a decline in fish size.

SOURCE: Nature Communications

By *Monica Bacchus* 5 October 2020

Fish are critical food sources for a range of organisms including humans. People commonly use salmon and other fishes for a variety of things including food and medicine. Salmon and other migratory fish are important ecological vectors for transporting vital nutrients from the nutrient dense environment of the open ocean to nutrient poor coastal ecosystems. The viability of all organisms in the Pacific Rim area during the winter is heavily dependent on the quality and quantity of the fish that year, especially size of the fish. A disruption in migratory fish patterns could not only have detrimental effects on fishing, but entire coastal ecosystems.

In a new study, [Cunningham et al.](#) used data from fisheries to piece together a puzzle concerning salmon size in the Arctic. Six decades worth of data from the Alaska Department of Fish & Game was used to examine different aspects of salmon body size and how it changed over time. They analyzed patterns of body size, age, sex and number of fish in four species of Pacific salmon.

The results determined that all of the salmon species decreased in size, with Chinook salmon exhibiting the largest decline in body size. Fish size decreased non-linearly until the year 2000, after which decline in body size accelerated in all salmon species. The reason for the sudden decrease is unknown, but the researchers thought that it could be due to the salmon returning to freshwater to breed at a younger age, thus being smaller in size.

These results open the door for more large-scale questions about the impacts of climate and other anthropogenic change on salmon populations. For example, increased competition with hatchery salmon and climate change could increase the mortality of salmon.

Salmon are a most essential aspect of coastal Pacific food webs and a range of plants and animals, including people, heavily depend on them to get through the tough Alaskan winters. Bears, eagles, small mammals, and indigenous peoples use the salmon run to bulk up on fat for food storage before the winter approaches. Even plants rely on the decaying salmon carcasses for a nutrient boost that is visible in their tree rings. The scarcity of resources caused by decreasing salmon size could put heavy pressure on an already resource scarce ecosystem. As body size continues to decrease, it could potentially push already declining species to the brinks of extinction and eventually ecological collapse.

**Citation:** Oke, K. B., Cunningham, C. J., Westley, P. A., Baskett, M. L., Carlson, S. M., Clark, J., and, Palkovacs, E. P. (2020.) Recent declines in salmon body size impact ecosystems and fisheries. *Nature Communications* **11**: 1. Doi: 10.1038/s41467-020-17726-z