

# Global warming may be causing surge in numbers of pink salmon

April 1 2014, by Bob Yirka

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Oncorhynchus gorbuscha. Credit: Timothy Knepp/U.S. Fish and Wildlife Service

(Phys.org) —A pair of researchers, one with the University of Alaska, the other with Independent, Auke Bay are suggesting in a paper they've had printed in *Proceedings of the National Academy of Sciences*, that global warming is partially responsible for large increases in pink salmon populations in North America and Asia. Alan Springer and Gus van Vliet claim that rising ocean temperatures are at least partly to blame for increased pink salmon populations due to an increase in the amount of available food.

Scientists have blamed [global warming](#) for smaller numbers of many fish

species—a recent Intergovernmental Panel on Climate Change, for example, claimed that rising [ocean temperatures](#) (due to global warming) is causing a reduction in numbers of tuna and cod populations in the Atlantic Ocean. Now it appears that global warming may actually cause some fish populations to increase.

Springer and Vliet suggest that pink salmon swimming in warmer water during their formative years are exposed to more food (zooplankton, small fish and squid, etc.) which allows them to eat more, and then later, to produce more offspring. It leads to more fish in the sea, they say, which in turn might have a negative impact on other [sea life](#) that feed on the same prey. They focused their study on sea life in the Aleutian Islands and the Bering Sea, looking to find out if burgeoning [fish populations](#) are causing a decrease in [bird populations](#). In sampling both populations, they noted that second year salmon were more numerous and that bird populations sank as salmon surged, due to less egg laying and lowered survival rate of chicks—signs of nutritional stress.

Whatever the cause, what is undeniable is that pink salmon are thriving and are beginning to take over ecosystems previously dominated by other types of salmon or even other types of animals altogether. Complicating the situation is the fact that many of the salmon swimming freely in the ocean came to be there after being released by fish hatcheries in an effort to boost harvests.

Pink [salmon populations](#) have been rising since the 1970's, roughly the same time frame as global warming—so much so that some have begun suggesting that it's a problem easily solved by allowing fishermen to catch more. While that may help solve the problem of too many fish, it doesn't really answer the question of whether global warming is truly to blame, and if it is, what other changes it may be causing in poorly understood ocean ecosystems.

**More information:** Climate change, pink salmon, and the nexus between bottom-up and top-down forcing in the subarctic Pacific Ocean and Bering Sea, *PNAS*, Alan M. Springer, [DOI: 10.1073/pnas.1319089111](https://doi.org/10.1073/pnas.1319089111)

## **Abstract**

Climate change in the last century was associated with spectacular growth of many wild Pacific salmon stocks in the North Pacific Ocean and Bering Sea, apparently through bottom-up forcing linking meteorology to ocean physics, water temperature, and plankton production. One species in particular, pink salmon, became so numerous by the 1990s that they began to dominate other species of salmon for prey resources and to exert top-down control in the open ocean ecosystem. Information from long-term monitoring of seabirds in the Aleutian Islands and Bering Sea reveals that the sphere of influence of pink salmon is much larger than previously known. Seabirds, pink salmon, other species of salmon, and by extension other higher-order predators, are tightly linked ecologically and must be included in international management and conservation policies for sustaining all species that compete for common, finite resource pools. These data further emphasize that the unique 2-y cycle in abundance of pink salmon drives interannual shifts between two alternate states of a complex marine ecosystem.

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