



Contact: Brian Gorman  
(206)526-6613

FOR IMMEDIATE RELEASE  
April 5, 2007

## **Researchers Foresee Climate Change Possibly Hampering Northwest's Salmon Recovery**

Scientists from the National Oceanic and Atmospheric Administration and the University of Washington published a paper today that states habitat deterioration associated with climate change is likely to make salmon recovery in the Pacific Northwest much more difficult, especially in relatively untouched, high-elevation river basins. Their modeling also suggests that habitat protection and restoration strategies can mitigate some of the harmful effects of future climate conditions on streams and salmon.

The study by scientists from NOAA's National Marine Fisheries Service Science Center and the university's Department of Civil and Environmental Engineering was published today in the Proceedings of the National Academy of Sciences.

"Today's findings make it even more important that the region really focus on salmon recovery and the recovery plans we are producing," said Bob Lohn, Northwest regional administrator for NOAA Fisheries. "Let there be no mistake, we're in this for the long haul. We've got to continue our efforts on those aspects of the salmon life cycle over which we have some meaningful control: habitat restoration, hatchery and harvest reform, and, in the Columbia River basin, improvements of the region's hydropower system."

According to the researchers, higher water temperatures, lower spawning flows and, most importantly, increased winter water flows are all likely to raise salmon mortality in the Snohomish River basin and in similar watersheds along western drainages in the Pacific Northwest.

To investigate possible effects of climate change on habitat conditions for salmon, the researchers ran computer models of Chinook salmon in the Snohomish River basin in Western Washington under a variety of future habitat conditions. Chinook in the Puget Sound drainage basin, including those in today's study, were listed in 1999 under the federal Endangered Species Act. NOAA Fisheries Service approved a locally generated recovery plan for them early this year.

The models looked at climate-related habitat impacts on three critical phases of the salmon life cycle: stream temperature during pre-spawning, minimum water flows during spawning and maximum water flows during egg incubation.

"Under assumptions of warming temperatures and shifts in local precipitation, these stream habitat attributes will change for the worse as far as salmon are concerned," said Mary Ruckelshaus, a senior research ecologist and one of the NOAA scientists. The models predicted declines in spawning populations of 20 to 40 percent by 2050 compared to current conditions.

-more-

Ruckelshaus said the models didn't look at other possible climate effects such as rising sea levels and changes in ocean productivity that may further decrease salmon survival in the region.

The researchers noted, however, that Chinook salmon exhibit "remarkable plasticity" and may be able to respond to future climate conditions in ways not captured by the models. Adult Chinook may be able to change such things as the timing of migration and egg laying, for example, to improve their chances of survival.

"Little is known about the capacity of salmon to adjust to climate change," the study observes, "and the potential for evolutionary or behavioral responses is one of the most important avenues for further research."

The study, entitled "Projected impacts of climate change on salmon habitat restoration," was authored by James Battin, Matthew W. Wiley, Mary Ruckelshaus, Richard N. Palmer, Elizabeth Korb, Krista K. Bartz and Hiroo Imaki. Battin, Ruckelshaus, Bartz and Imaki are from NOAA Fisheries, the other researchers are from the University of Washington.

NOAA, an agency of the U.S. Commerce Department, is celebrating 200 years of science and service to the nation. From the establishment of the Survey of the Coast in 1807 by Thomas Jefferson to the formation of the Weather Bureau and the Commission of Fish and Fisheries in the 1870s, much of America's scientific heritage is rooted in NOAA.

NOAA is dedicated to enhancing economic security and national safety through the prediction and research of weather and climate-related events and information service delivery for transportation, and by providing environmental stewardship of our nation's coastal and marine resources. Through the emerging Global Earth Observation System of Systems (GEOSS), NOAA is working with its federal partners, more than 60 countries and the European Commission to develop a global monitoring network that is as integrated as the planet it observes, predicts and protects.

###

**On the Web:**

NOAA Fisheries Service: [www.nmfs.noaa.gov](http://www.nmfs.noaa.gov)

NOAA: [www.noaa.gov](http://www.noaa.gov)