Melting Away: Glaciers Indicate Climate Change

THREE TIMES A YEAR, PARK geologist Jon Riedel and his team travel to four glaciers in North Cascades National Park and record snow accumulation and melt. Each spring, they use a steam drill to melt the stakes into the ice about 30 feet and take measurements of the snow density.

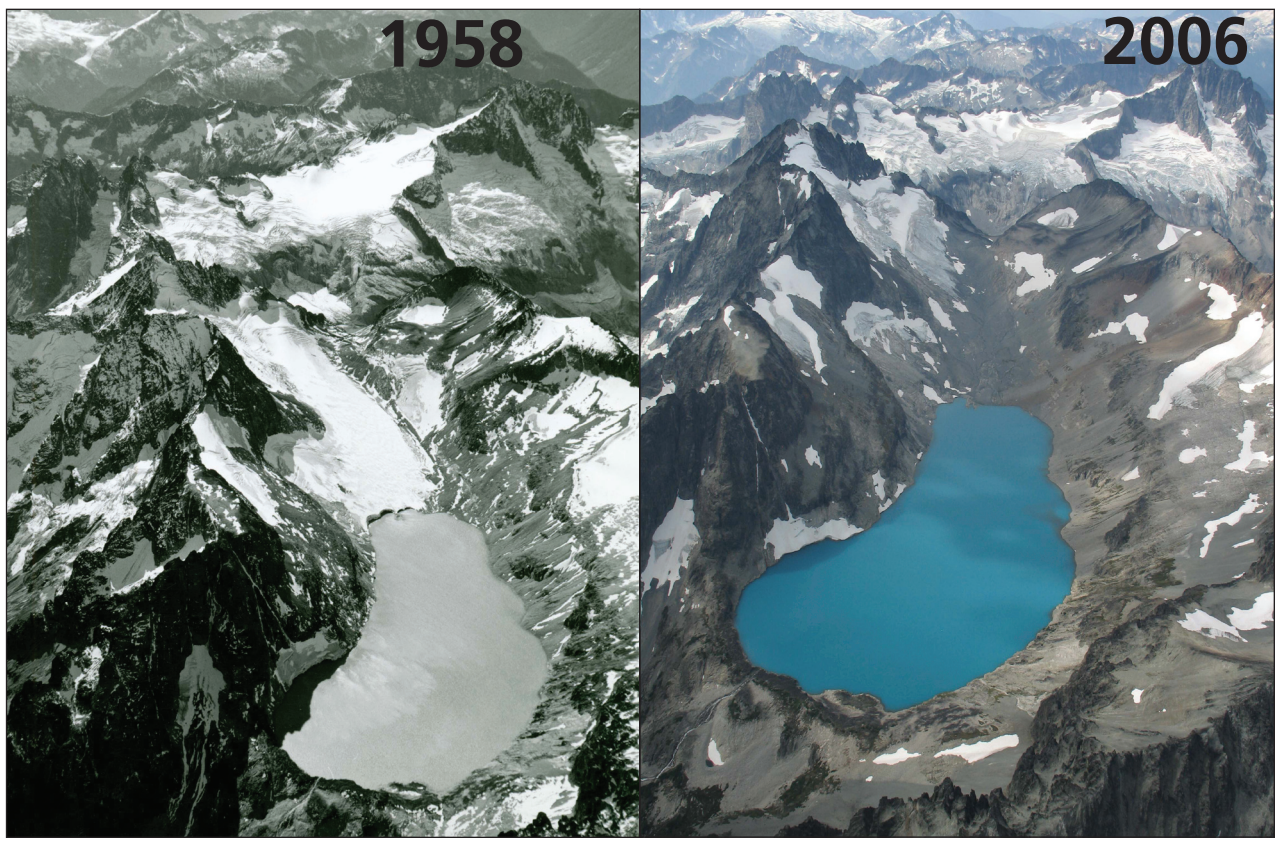
This April the team was greeted by a blanket of last winter's snow as they arrived at the glaciers and recorded a snow pack that was about average. Although the measurements were normal, Riedel said the glaciers need more than typical snowfall to combat the increasingly warmer summers.

"In order to break even, we need to get 120 to 130 percent of normal snowfall," Riedel said, "because the summers are that warm."

The team records snowfall at Silver Glacier, which is the northernmost of the four glaciers—Noisy Creek, North Klawatti and Sandalee glaciers are the others. They began monitoring in 1993, and have found that all the glaciers have lost more mass than they have gained during the period.

Glaciers serve important roles in global ecosystems by supplying the earth with 88 percent of its fresh water. Locally, glaciers contribute about 210 billion gallons of fresh water to rivers and lakes, which helps native species, such as salmon and Bull Trout. Water reaches streams and rivers when it is most needed, late in the summer.

Glaciers also reflect the climate—as winters bring less precipitation, the glaciers receive less snow, and as summers grow warmer, more of the snow on the glaciers melt. "This is one of the reasons why glaciers are a great indicator of climate change," Riedel said, "because they are affected by both seasons."



The pictures above show Silver Glacier at North Cascades National Park in 1958 (left) and 2006 (right).

In September, Riedel's team will head out to the glaciers again and take the last measurements of the year before the next snowfall. Then they will know if the glaciers have retained enough snow this year to build more glacial mass. Last year, when the team measured at Sandalee Glacier, they didn't see any snow remaining from the previous winter.

"2006 was the worst year we've seen since 2003," Riedel said. "All of [the glaciers] have lost more [snow] in the summer than they have gained in the winter since 2002."

Researchers estimate the North Cascades has lost about 40 percent of its glacier area in the past 150 years.

The North Cascades National Park Service Complex boasts the most glaciers of any park in the lower 48 states, with 312 glaciers gracing its landscape. The glaciers cast brilliant reflections of sunsets during the evenings and brighten the lakes and rivers with intense blues and greens from their run-off during the summers.

They also act as silent indicators of where the climate is heading in the future. Current trends record warmer summers and winters, which leaves the glaciers melting faster than they can accumulate, and creates an uncertain future for the livelihood of rivers, lakes and native species.

For more information on glacier monitoring, visit: www.nps.gov/noca/massbalance.htm

Public can Review Plans for Ross Lake

North Cascades National Park Service Complex is planning for the future of Ross Lake National Recreation Area and is seeking public input. North Cascades received more than 750 comments from more than 80 individuals and organizations on a draft of its planning ideas. The topics that received the most comments include: recreation (269), natural resources (150), visitor experience/use (106) and education and interpretation (87). Folks expressed interest in wanting the complex to offer more day-hiking, climbing and camping opportunities, and requested the complex maintain the ecological integrity of the biological, air and water resources in the recreation area.

A planning team will use the comments to develop a range of preliminary management alternatives, which it will use to develop a draft of a general management plan for public review and comment. The plan will address issues of resource protection, recreation and access, and will comply with all applicable laws and policies. By the summer of 2007 the team will have finished a list of preliminary alternatives to include in the plan, and will send out newsletters with the alternatives for public review. For more information on the Ross Lake National Recreation Area General Management Plan, visit: http://parkplanning.nps.gov/rola

Redside Shiners Present Uncertain Future for Bull Trout in Ross Lake

ROSS LAKE IS HOME TO THE federally-threatened bull trout. Recently, a school of dark olive-colored fish not naturally found in Ross Lake were discovered in this reservoir, which was formed from the Skagit River. The Washington State Department of Fish and Wildlife recently confirmed a population explosion of this new group of fish—the redside shiners.

Redside shiners make their homes in slow flowing, shallow rivers and lakes, and are known to overcrowd areas where they are not naturally found. In some lakes and rivers, their presence has reduced trout populations. And, it is nearly impossible, and very costly, to get rid of them.

Park researchers are unsure how the redside shiners got into the lake. They think the fish were probably introduced into the area, since the fish have never before been documented in the upper Skagit watershed. Now, there are hundreds of thousands of redside shiners in the lake, and the main concern is the impact they will have on the native species, particularly bull trout.


Bull Trout

Ross Lake is oligotrophic, meaning it has very low productivity and therefore limited food resources available for fish. The presence of thousands of redside shiners in the lake may mean more competition for those limited resources. Many bull trout do not get enough food to make it to adulthood. It is currently unknown if adult bull trout will use the redside shiners as a food source.

Non-native species, such as the redside shiners in the lake, can threaten ecosystems because they harm the ecological integrity of the area. Humans often don't realize the harm they do when they release bait fish or other non-native species.

As of now, National Park Service and Washington State Department of Fish and Wildlife biologists are uncertain how the redside shiners will affect the bull trout and other native species. "We just currently don't have enough information to determine the impacts of the redside shiner in Ross Lake," park aquatic ecologist Ashley Rawhouser said.