North Cascades Resource Brief

National Park Service
U.S. Department of the Interior

North Cascades
National Park Complex

TOP: A typical aggregation of redside shiners in Ross Lake. Photo by Amy Brown MIDDLE: A volunteer high school student conducts a snorkel survey for redside shiners in Ross Lake. Photo by Amy Brown BOTTOM: The typical size of an adult redside shiner in Ross Lake is approximately three inches. Photo by Paul K. Anderson

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Redside Shiners

Together Ross, Diablo and Gorge lakes provide 13,366 acres of fish habitat in the heart of North Cascades National Park. The cold temperatures and high quality of the water in these lakes provide exceptional habitat for three genetically unique populations of native fish species: bull trout, Dolly Varden, and rainbow trout. The lakes, rivers, and streams of the upper Skagit watershed support one of the largest and most protected bull trout populations in the conterminous United States. In 2004, the redside shiner was detected in isolated locations within Ross Lake. Although native to Washington State, it is not naturally found in the park. Since its initial discovery, this redside shiner population has exploded and now is a prominent summer feature most of the Ross Lake shoreline.

Evidence indicates that these fish are having a substantial influence on the population dynamics of the native trout in Ross Lake. In 2010, their presence was documented in Diablo Lake, indicating that they are spreading to the lower parts of the watershed. The exact method of introduction is unknown, but the commonly accepted explanation is accidental release while being used as bait.

Biology

The redside shiner is classified as a minnow and is found west of the Rocky Mountains, from northern British Columbia to southern Oregon. The natural history and habits of redside shiners vary widely and depend on local conditions. Adults range from three to seven inches in length and can live up to seven years. Spawning typically begins when water temperature reaches 50°F, so their spawning period in Ross Lake could extend from early spring through late fall. In comparison, the native bull trout spawn in the fall when water temperatures fall below 48°F.

Trends

Temperature increase in Ross Lake is an expected result of global climate change. This will increase the spawning window for redside shiners, potentially resulting in even higher rates of reproduction and larger numbers of redside shiners. Redside shiners may also start to exploit stream habitat as waters warm and the population increases. This trend of stream occupation is demonstrated in areas south and east of Washington, which have a warmer climate.

Park Management and Research

The rapid population growth and expanding distribution of the redside shiner is a concern for park biologists. These fish are dramatically changing the food web in Ross Lake where they are both a source of food for larger trout and char and are also likely competing for resources with younger native fish emerging from tributary streams. Research is being conducted in cooperation with Western Washington University to address these concerns. Specifically, research is being conducted to determine the diet of redside shiners and how food habits change with size of fish, season, and location in the lake. In addition, growth rate and reproductive habits are being characterized. Preliminary work indicates that redside shiners mostly eat zooplankton and aquatic insects during spring and summer. These prey are also the primary food items selected by juveniles of the native trout in Ross Lake.