

The Potential Influence of Changing Climate on the Persistence of Western Native Salmonids "at Risk": Linking Multiple Scale Analyses to Decision Support

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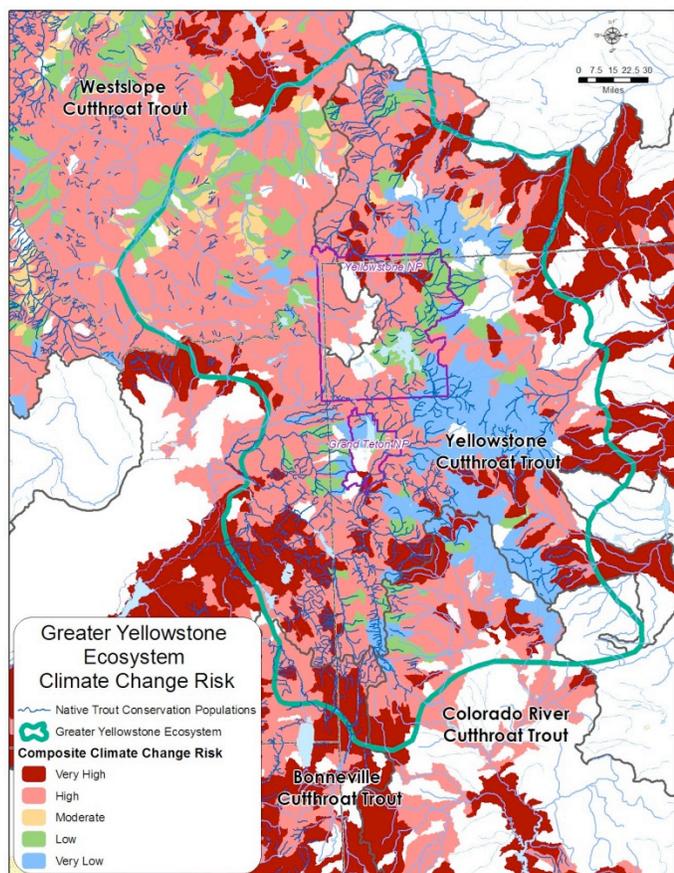
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Summary: Fisheries managers from a diverse array of organizations are increasingly challenged to achieve the recovery and restoration of native trout and salmon throughout their natural range. Nearly all of the native inland cutthroat subspecies, grayling and bull trout have been proposed for listing under the Endangered Species Act; a number are currently listed as “Threatened”, and others are being reviewed for listing. Trout and salmon historically inhabited a variety of freshwater streams, rivers, lakes, ponds, reservoirs, but have declined due to habitat degradation, fragmentation, and competition with introduced nonnative species. The remaining intact populations of native trout, char, and grayling species in the western United States are largely restricted to small, fragmented headwater habitats, where the long-term sustainability of populations is at best uncertain. Recent extirpations of some of these small populations due to wildfires and subsequent floods highlight their vulnerability. Protecting the full expression of life history variation is critical for the persistence of native trout,



char, and grayling, and requires the maintenance of large, heterogeneous and interconnected systems. In the West, climate change is likely to increase water temperatures and the risk of wildfire and change the timing and quantity of water available from snowpack. Shrinking water availability and increased demand for water resources will be a major issue in the future. This project will investigate how climate change will influence habitat for interior species of native salmonids, by developing high-resolution climate data sets and fine scale species response models. Researchers will also develop species-specific decision support tools designed to permit fish managers to quickly and efficiently assess extinction risk and the outcomes of management actions. Such projects, data, and tools are critical for effective management and recovery of these species.