

Science

BRIEFING

January 7, 2014

CLIMATE CHANGE AND ROCKY MOUNTAIN NATIVE TROUT

BACKGROUND

Like many fishes native to the Rocky Mountains and the Pacific Northwest, cutthroat trout (*Oncorhynchus clarkii*) and bull trout (*Salvelinus confluentus*) have declined, apparently in response to changes to flow regimes, habitat alteration, and the introduction of non-native species. Many remaining native trout populations are heavily fragmented and persist only in small patches of habitat, with the degree of fragmentation increasing towards the southern range extent. Rapidly warming climates across much of this range threatens many populations.

RESEARCH

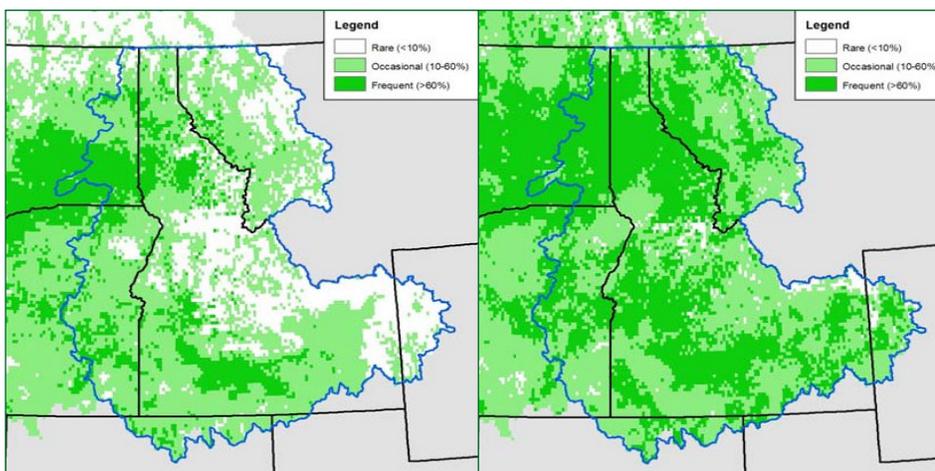
Research Activity: Researchers at RMRS have been collaborating with other regional scientists to explore how a changing climate has been affecting streams and the potential consequences for native trout habitats and populations.

Benefits to Resource Managers/Society: Managers need tools for assessments of climatic effects on native trout so that restoration and preservation actions can be prioritized. Biological, temperature, and discharge data from monitoring networks could be used to develop accurate vulnerability assessments that provide information regarding where conservation actions would best improve population resilience. These monitoring networks and vulnerability assessments could form a cornerstone for interagency collaborations and partnerships between research and management as all parties work to develop and enact the conservation strategies needed to preserve native trout in the Rocky Mountains this century.



KEY FINDINGS

- Monitoring records show trends in temperature and hydrographs consistent with a warming climate in recent decades.
- Biological implications include upstream shifts in thermal habitats, risk of egg scour, increased wildfire disturbances, and declining summer habitat volumes.
- Models predict large reductions in native trout across the Rocky Mountains in the 21st century.



Probability of a winter flood event in the Eastern Columbia River Basin under historical conditions (left) and under forecasted conditions assuming the 2080 A1B climate scenario (right).

MORE INFORMATION

- www.fs.fed.us/pnw/pubs/pnw_gtr884.pdf
- www.treeseearch.fs.fed.us/pubs/42330
- www.treeseearch.fs.fed.us/pubs/38691

The Climate-Aquatics Blog (www.fs.fed.us/rm/boise/AWAE/projects/stream_temp/stream_temperature_climate_aquatics_blog.html) provides links to resources such as publications, videos, and presentations on topics relating to aquatic ecosystems and climate change. For more information, please contact Dan Isaak, USFS Research Fishery Biologist, disaak@fs.fed.us or (208)373-4385