SLIDES: What Does Climate Change Mean for Cold Water Fisheries

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Stan Bradshaw

Abstract

The argument about whether we are in a period of global warming—and whether there is a significant human contribution to this phenomenon—is largely over. Now there is considerable effort made to model the possible magnitude of current change and to predict the environmental effects of warming.

The spectrum of predicted effects is broad, ranging from modified weather events, to rising sea levels, to a myriad of water-related impacts. Of primary interest to Trout Unlimited are projected impacts to cold-water fisheries.

There have been several efforts to project impacts to cold-water fisheries in North America. Estimates of habitat loss by 2090 range from 21% to 40%, depending on the species considered and the model used. Predictions for specific regions, such as the southern Rockies, range as high as 70%. While the extent of the projections varies, the studies are unanimous that, as temperatures increase, cold-water fish habitat would contract throughout the northern hemisphere.

Response to forestall climate-driven changes or minimize their impacts might occur on two scales: (1) a global response that addresses the ongoing human-caused release of carbon and other gases into the atmosphere that exacerbates warming; and (2) region-specific and basin-specific responses that optimize the quality and extent of cold-water fisheries habitat.

Fisheries groups such as Trout Unlimited and fisheries management agencies will have to focus its efforts on the second of these responses while supporting efforts to address the global condition. This approach signals a change, not in the prevailing philosophy of restoration that most cold-water fisheries management agencies have adopted, but rather in how that approach is applied. To minimize habitat losses it will be necessary to prioritize restoration and protection efforts to secure the best habitat in existence first, and to then work outward from that high quality habitat. Second, it will be important to approach habitat restoration on a watershed basis rather than simply looking at habitat as occurring between the ordinary high-water marks.

A model for this prioritized approach exists in the Blackfoot River watershed in Western Montana. For the last fifteen years, local interests have coalesced around the need to protect the watershed, and have responded with a wide-ranging habitat protection and river restoration strategy that has prioritized efforts and which ranges from ridgetop to ridgetop. This is a ground-up collaboration between landowners, water rights holders, government agencies and fisheries interests that is evolving to meet the particular challenges in the Blackfoot watershed.

Locally Lead Collaborative
Plan Purposes:

• Equitable distribution & shared sacrifice of water resources.
• Minimize impacts on fishery resources.
• Broad involvement of waters users & uses.
• Interim response while working towards long-term water management, conservation and stream restoration actions.
Plan Premise:

• Shared Sacrifice
• Voluntary actions
• Equity and Parity in participation:
  – Multiple users
  – Basin wide participation
Water Conservation Plans 2001

Estimated conserved water demand 210 cfs.

73 Water User Participated:

- 27 users shut down systems (flows < 700 cfs)
- 19 users reduced use
- 6 users left systems off
- 7 users applied combination of the above
- 14 users systems inactive

14 water users pooled water rights & 2 relied upon the “water bank” for critical irrigation.