

The Heat is On: Global Climate Change Likely to Harm Trout

It's about kids. That's the headline for the feature article about TU's First Cast program in the summer issue of Trout magazine. You bet it's about kids. That's what TU activists say when they dedicate countless volunteer hours working for trout. We do what we do so kids will have the opportunities we've had to enjoy wild fish and clean rivers. But will today's budding anglers have the same opportunities we have enjoyed? Significantly, will their kids and grandkids?

A new report about human-induced global warming and trout from the Natural Resource Defense Council and Defenders of Wildlife indicates that if it's about kids, we best get cracking.

The good news from the report is that Montana's trout will weather global warming better than fish in the Northeast, Southwest and South. The bad news is that some areas in those regions will totally lose their trout populations, and thus trout fishing. But the issue of climate change is more than about recreation. It's also about economies and ways of life. The Dept. of Interior estimated that in 1996, nine million trout anglers produced 94 million angler/days (that's one angler fishing for at least part of a day). One million salmon anglers chipped in with another 12 million angler days. Depending on the analysis used, the total economic value of this activity was between \$1.3 billion and \$14 billion.

Montana's FWP estimates angling in Montana, the majority of which is for trout, is worth at least \$235 million a year to the state.

The report, "The Effects of Global Warming on Trout and Salmon in U.S. Streams," concludes it's highly probable global warming will render 18-38 percent of the nation's streams totally unsuitable for all species of trout and salmon by the year 2090. The range of probability

varies, depending on species, region and how long society defers controlling carbon dioxide emissions. (Most human-caused carbon dioxide is produced by fossil fuel combustion. The simple explanation of global warming is that human-caused increases in atmospheric CO₂ is trapping heat at levels exceeding the natural range and is thus warming the planet precipitously.)

The report also says that when applying reasonable assumptions for greenhouse gas emissions and world economic growth, Montana could lose 0-5 percent of its useable trout habitat by 2030, 3-16 percent by 2060 and 5 to 30 percent by 2090. Some might say, well, that's not bad. But here's the hitch: The report considers only the direct effect of increased stream temperatures on the upper thermal tolerances of trout and salmon. Not analyzed were the effects of global warming on snowpack, annual precipitation (and streamflows), ecological change in streams (such as food webs), ocean effects (which greatly influence anadromous fish), fish diseases, selection for predators with higher temperature tolerances and habitat fragmentation caused by thermal barriers. Thus, the report's projections are understated.

Some will dismiss this report as alarmist. But not so fast. The authors used the same methods, with some refinements, applied in two previous evaluations, one by EPA, on the potential effects of global warming on fish. The authors of this study collected baseline air and water temperatures from 2,000 sites nationally. They also applied models used by leading climatologists and other scientists. They compared different projections of world economic growth and greenhouse gas emissions. And they discussed, but not in detail, the potential benefits of a warmer climate on trout (such as easier winters, or potential expansion of coldwater species range in elevation and latitude). The authors also used standard statistical analyses, and they tested the sensitivity of each conclusion to different data. Moreover they provide ample provisos explaining data gaps and the assumptions inherent in the models. Skeptics will note that the report isn't the final word. But shortcomings

aside, one thing seems clear: We seem to have a serious problem.

Human-caused climate change is real. Aside from the squeaky protests of a few flat-earthers, most of the world's scientific community agrees humans are changing the climate. The questions that remain are what does it mean, and who will win and who will lose? It appears trout will be among the losers.

So what can TUErs do? Affecting how humans cause climate change is understandably daunting. But we have options. We can reduce our individual consumption of fossil fuels. We can influence how Montana, one of the nation's leading carbon repositories (with coal and oil), contributes to the problem. We can influence our elected representatives. According to one Washington, D.C., insider publication, Max Baucus is the third most powerful man in the Senate. Citing concern for the coal industry, he recently voted against a legislative measure that would have reduced key air pollutants that contribute to global warming. And, we can let President Bush -- whose advisors recently admitted, that, yes, humans are causing global warming -- know that more of the nation should run on renewable energy sources such as conservation, solar and wind power. Finally, we should tell the president and Congress to seriously collaborate with the international community to reduce greenhouse gas production, and to approve energy legislation that eliminates pork for oil and coal but increases support for renewable energy sources.

Daunting? Yes. But it's for the kids.