

# WHERE THERE'S SMOKE, THERE'S FIRE

## Trout populations are at significant risk from climate change. BY TODD TANNER

IT'S BEEN A WILD YEAR for weather. The National Oceanic and Atmospheric Administration (NOAA) recently released a September report showing that the first eight months of 2012 set a new January–August record for extreme weather here in the United States. The old mark had stood unchallenged for

77 years. NOAA also announced that the first eight months of 2012 were the hottest January–August we've ever seen.

If you've been out on the water much, you're probably not surprised; in much of the country, the heat was surreal. In July, an Iowa newspaper reported that thousands of fish died in the Des Moines River

when 42 miles of river water registered at least 97 degrees.

In addition, our most recent yearlong stretch—from September 2011 through August 2012—was the warmest 12-month period ever recorded in the United States. It sneaked past the old record, which ran from August 2011 through July 2012 and

Studies have shown that flows in central Rocky Mountain rivers such as the Yellowstone, shown here in Paradise Valley with the Absarokas in the distance, have been in decline for the past 60 years. Low water usually means warmer water, which poses a grave danger to trout.

lasted exactly one month. In fact, we've now broken NOAA's record for the warmest 12-month period for the contiguous U.S.—a database that goes all the way back to 1896—five months in a row. We set a new record in April, then again in May, and another in June, and again in July and August.

In other words, it's been awfully hot. Oh, and dry. Lest you think I've forgotten, the United States has been in the middle of the worst drought we've experienced in more than 50 years. According to the U.S. Drought Monitor, some 64 percent of the Lower 48 was dealing with moderate to exceptional drought as of mid-September. That's serious. It's also one of the reasons we've had such a horrific wildfire season, with Colorado and points south aflame back in June, and Montana, Wyoming, Idaho, Washington, and Oregon still breathing smoke and sucking ash in the middle of September.

### Consequences for Coldwater Fish

So what does all this mean? It's now safe for anglers the world over to assume that the planet's most respected scientific body, the U.S. National Academy of Sciences, was absolutely correct when it stated last year, "Climate change is occurring, is very likely caused primarily by the emission of greenhouse gases from human activities, and poses significant risks for a range of human and natural systems." Okay, now that we know that the world is getting warmer—9 of the 10 hottest years on record have occurred since 2000, the Arctic is melting, and Western forests are dying—let's connect climate change to anglers.

Over the past few years, several scientific studies looking at trout and climate change have been released, and they haven't been filled with good news. In 2008, the National Resources Defense Council and Trout Unlimited's Montana State Chapter produced "Trout in Trouble." Last year, the results of a monstrous study by eight different teams—from organizations as diverse as the USFS, USGS, Colorado State University, and Trout Unlimited—identified how different species of trout would be adversely affected.

Say you fish Montana. That's an easy one for me because I live in Big Sky Country. Among the effects of climate

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Because bull trout live in such fragile ecosystems, they are especially endangered by climate change.

change we'll see in the near term are:

- *Less snow, which means lower summertime stream levels, higher summertime water temperatures, and lower stream oxygen levels*
- *Earlier runoff, which will disrupt spawning*
- *Stressed trout*
- *River closures*
- *More people fighting over water*
- *More extreme wildfires*

Every one of those problems is directly related to a warming climate, and every one will impact anglers who come here to fish. Now, if Montana were the only place getting hit, perhaps we could still rationalize a business-as-usual approach. But it's not the only place. Climate change is already reaching out across the country and around the world.

According to Trout Unlimited, *Trout and salmon are especially vulnerable to climate change and global warming because they are dependent on an abundance of clear, cold water. As coldwater habitats warm, rising temperatures will have negative impacts on all life phases of these fish—from eggs to juveniles to adults. These fish already face pressures because of reduced habitats and population losses.*

The consequences of continued rising temperatures could be dire: U.S. Forest Service scientists predict that more than half the wild trout populations will likely disappear from the southern Appalachians because of the effects of warming stream temperatures. Losses of Western trout populations may exceed 60 percent in certain regions, and bull trout, which live in Western rivers in some of the country's most wild places, could be

effectively wiped out. Salmon, too, will lose habitat, with one prediction saying that up to 40 percent of Pacific Northwest salmon populations may be lost by 2050.

If nothing changes, habitat will shrink and fisheries will become less productive. As more time passes, we stand to lose many of the places we love to fish. The thing about climate change is that it's a process, not a destination. If we want to hold on to our angling, and if we hope to pass along a decent world to our kids and grandkids, then we have to start taking climate change seriously. Dr. James Hansen, who heads NASA's Goddard Institute for Space Studies and who's an expert on climate change, gave us a 10-year window to get a handle on our greenhouse gas emissions. Unfortunately, that was back in 2006. We're running out of time.

So what, specifically, can we do? First, we can educate ourselves about the causes and effects of climate change, and then focus on projects that will lessen the effects—protecting and planting streamside vegetation, ensuring minimum flows in tailwaters and rivers used for irrigation, and the like. Second, we can band together as sportsmen to help support and pass strong climate and energy legislation. Despite what you might hear on the news, this is not a partisan issue: protecting our waters and our trout is an issue that transcends politics.

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