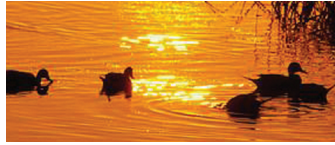




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SOLUTIONS TO GLOBAL WARMING
CHANGING THE FORECAST FOR WILDLIFE

FISH OUT OF WATER:

Global Warming and Northwest Rivers

The effects of global warming as noted in this anecdotal journal entry are indeed looming and pose a serious threat to Northwest rivers and the fish that inhabit them. Fortunately there are things we can do to assure that our children and grandchildren will have access to a wildlife heritage that makes this region of our country so special.

The National Wildlife Federation's new report *Fish Out of Water*, developed with scientists at the University of

Washington, highlights some of the challenges we face and presents some solutions for turning our hope for healthy rivers and abundant fish into a reality.

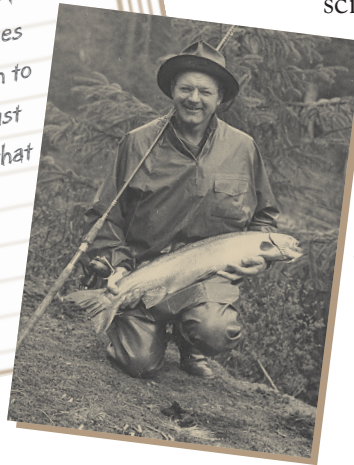
February 10, 2005



I took my spey rod, some neatly tied prawn flies, and my 14 year-old grandson Jason out to the Skykomish River today. Last night's rain stirred up the water so it was a good day to coax a steelhead to the fly.

We got all the way down to the end of the run without a tug. Just when that look of anticipation turned to disappointment on Jason's face, his line went tight. I was proud to watch my grandson set the hook, work the fish through a few hard runs and beach a lovely 11-pound, chrome-bright beauty.

Getting a winter steelhead on the fly is such a rare occurrence these days. Where have all the fish gone? When I was younger a few good ones were almost guaranteed, many big enough to come with bragging rights. Something's just not right. Maybe there's something to that global warming theory and it's taking a toll on my fish. Is there any hope that Jason can experience this wildlife legacy like I did?



The Threat of Global Warming

Scientists agree that human activities, particularly the burning of fossil fuels such as coal, oil and gas in power plants, factories and cars, have been causing excessive amounts of carbon dioxide and other gases to build up in the atmosphere. As a result, the Earth's atmosphere is rapidly heating up. Like many regions, the northwestern United States and the Pacific Northwest rivers are already beginning to feel the effects of global warming.

Temperatures in the region have increased 1.5 degrees Fahrenheit on average during the 20th century. Average rain fall has increased by 14 percent and the warmer temperatures are

causing the snow pack to melt 10-30 days earlier.

Scientists project that, without a significant reduction in the pollution that is contributing to global warming, the Pacific Northwest could face even less winter snow accumulation, earlier peak spring streamflows, lower summer streamflows and elevated stream temperatures—all within just a few decades. These potential changes do not bode well for cold-water fish like salmon, steelhead and trout, many stocks of which are already struggling to survive the pressures of human disturbance and may soon face extinction.

Rivers Heating Up and the Fish Don't Like It

Cold-water fish are extremely sensitive to changes in water temperature. When streams get too warm, the fish can experience slower growth rates, lower oxygen levels in the water and greater susceptibility to poisons, parasites and disease. If the water stays too warm for too long, the river will no longer provide a suitable home for the fish.

Research highlighted in this report shows that a 3 degree rise in average August temperatures would cause up to 20 percent of the streams in the Columbia River Basin and coastal watersheds of Washington and Oregon to become too warm for most salmon, steelhead and trout. If streams in the region continue to be degraded by other factors, the impact will likely be even greater.



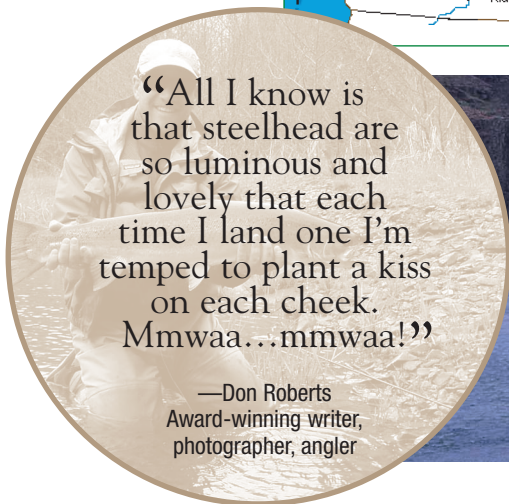
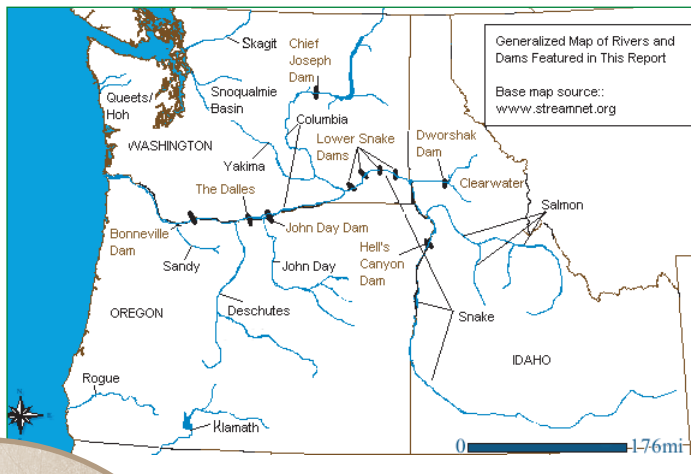
Spawning Never Used To Be This Hard

Earlier peak river flows in the spring (caused by earlier or more rapid snowmelt) and lower-than-normal flows in the summer can make it difficult for adult fish returning from the ocean at their usual time to negotiate obstacles such as falls as they navigate up stream to spawn. These changes can also hinder the ability of juvenile fish to make it to the ocean. High river flows in the winter can cause "scouring", when the gravel beds that salmon eggs are laid in are washed away. On the other hand, too little water after spawning can harm the eggs.

Ten Rivers Most at Risk from Global Warming

As home to the majority of the region's threatened and endangered salmon, the plight of these rivers sounds an alarm bell.

What is bad for fish will be bad for other wildlife – and people too, from fewer opportunities for fishing to less-reliable hydropower and diminished irrigation.



“All I know is that steelhead are so luminous and lovely that each time I land one I'm tempted to plant a kiss on each cheek. Mmwaa...mmwaa!”

—Don Roberts
Award-winning writer,
photographer, angler



John Day River, Oregon

How Can We Change the Forecast for Rivers and Salmon?

The Northwest and the nation can minimize the impact of global warming by reducing the pollution that is causing it. Some of the most important things we can do include: strengthen state and federal policies to promote energy efficiency and renewable energy sources; encourage sound management and protection of forests, wetlands and other natural landscapes which can absorb and store excess carbon; set specific limits on the nation's global warming pollution; re-engage in international cooperation on global warming.

ANGLERS AND ALL CITIZENS OF THE NORTHWEST CAN DO THEIR PART BY:

- improving the energy efficiency of their homes;
- using cleaner, more efficient modes of transportation;
- volunteering with local conservation groups to help restore degraded streams; and
- contacting Congressional representatives to encourage the government to enact policies that reduce global warming pollution.

With a longer-term vision and a commitment to seeking solutions, we can protect the fish, the wildlife and the natural heritage of the Pacific Northwest. For more information about global warming and Pacific Northwest rivers and fish, read *Fish Out of Water* at www.nwf.org/fishoutofwater/



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