Economic Growth and Salmon Recovery: An Irreconcilable Conflict?

Robert T. Lackey
National Health and Environmental Effects Research Laboratory
U.S. Environmental Protection Agency
Corvallis, Oregon 97333

lackey.robert@epa.gov
(541) 754-4607

Citation: Lackey, Robert T. 2005. Economic growth and salmon recovery: an irreconcilable conflict? *Fisheries*. 30(3): 30-32.

Available on the web:

www.epa.gov/wed/pages/staff/lackey/recntpub.htm

Economic Growth and Salmon Recovery: An Irreconcilable Conflict?[1]

Robert T. Lackey[2]

National Health and Environmental Effects Research Laboratory
U.S. Environmental Protection Agency
200 SW 35th Street
Corvallis, Oregon 97333
USA

The presumed relationship between economic growth and salmon conservation is the unstated basis for many of the contentious policy deliberations now occurring in western North America. Economic growth is "a sustained rise in a nation's production of goods and services" (National Council on Economic Education 2003). In other words, economic growth occurs when the product of population and per capita production (and consumption) is increasing, and is indicated by increasing GDP (Trauger et al. 2003).

Blunt discussions of the relationship between economic growth and the future of salmon are uncommon, perhaps understandably in part because such discussions would likely highlight the difficult, divisive policy choices that, from the perspective of some policy makers and advocates, are best left unarticulated. Rather than blunt and candid dialog, a "conspiracy of optimism" seems to reign in most discussions concerning the prospects for salmon recovery (Lichatowich 1999).

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[1]*Modified from talk given at the Symposium "Economic Growth and Fisheries Conservation" convened at the annual meeting of the American Fisheries Society, August 22-26, 2004, Madison, Wisconsin. The views and comments presented are those of the author and do not necessarily represent those of any organization.*

[2]*Dr. Lackey is senior fisheries biologist with the U.S. Environmental Protection Agency in Corvallis, Oregon (lackey.robert@epa.gov; 541-754-4607). He is also courtesy professor of fisheries science and adjunct professor of political science at Oregon State University.*

Most salmon policy discussions tend to focus on the *proximal* causes, the agents of the decline, and how these agents must be altered to achieve and sustain higher levels of salmon abundance. Scientists have long recognized these proximal causes of the decline, but there remains uncertainty about their relative importance (Lackey, 2003).

Attempts at serious discussion about future policy options regarding wild salmon in California, Oregon, Washington, Idaho, and southern British Columbia quickly lead to an apparent conundrum, one of accommodating anticipated economic (including human population) growth while concurrently restoring biologically significant, sustainable runs of wild salmon.

Compared with most other fisheries issues, the decline of salmon has been well studied over a long period (Lackey 2003). The proximal causes of the decline have been, and often still are, intense commercial, recreational, and subsistence fishing and, especially these days, mixed stock fishing; freshwater and estuarine habitat alteration due to urbanizing, farming, logging, and ranching; dams built and operated for electricity generation, flood control, irrigation, and other purposes; water withdrawals for agricultural, municipal, or commercial needs; stream and river channel alteration, diking, and riparian corridor modifications; hatchery production to supplement diminished runs or to produce salmon for the retail market; predation by marine mammals, birds, and other fish species, often exacerbated by unintentionally concentrating salmon or their predators; competition, especially that with exotic fish species, many of which are better adapted to the highly altered aquatic environments now present in the region; diseases and parasites; pollutants from a myriad of sources; and reduction in the annual replenishment of nutrients from spawned-out, decomposing salmon.

This long list of causal agents is surely not complete, but still it covers most human enterprise in the region. Also, it is known that changes in ocean and climatic conditions, regardless of whether or not these changes are partially driven by human economic activities, have a big influence on salmon abundance, even if the mechanisms of action are poorly understood. Given that past economic activities have had an adverse overall effect on the abundance of wild salmon, then increasing future economic activity would result in an even greater overall effect.

As we begin a new century, wild salmon have been on a 150 year downward trend and runs are now at low levels in California, Oregon, Washington, Idaho, and southern British Columbia, and in spite of substantial interannual and interdecadal variation (Augerot, 2005). By the end of this century in these four states and southern British Columbia, wild salmon probably are not going to disappear entirely, but will most likely survive as remnants of once-flourishing species in small portions of their original range.

The agents of the decline and how they operate continue to be vigorously studied, debated, and published. The results of such studies are topics that most fisheries biologists feel comfortable discussing, but what *should* be important to those who want to influence salmon recovery policy? It is the policy *drivers*, the root causes, not the agents or proximal causes, that will determine the status of wild salmon through this century. The agents — habitat alteration, dams, water withdrawals, fishing, hatcheries, pollutants, exotic species, and many more — are simply the ways in which core policy drivers are expressed (Czech et al. 2004).

I will offer two examples to illustrate the pervasive influence of policy drivers on wild salmon. One is an example of a macroeconomic policy; the other is an example of a microeconomic one. I use the terms "macroeconomic" and "microeconomic" perhaps more loosely than is common in traditional economics (Krall 2005), but regardless of the precise definition used, these policy drivers will determine the future of wild salmon in western North America.

The example of a macroeconomic policy driver concerns commerce, trade, and markets. The overall trends toward what is loosely described these days as free trade, free markets, and market globalization tend to work against increasing the numbers of wild salmon. Commerce and the rules governing it are not topics most fisheries biologists talk about, but, if anyone wants to accurately forecast the future of wild salmon, these topics cannot be ignored.

To some students of salmon policy, the macroeconomic policy driver seems too obvious to discuss. To others, it is sacrilege, a challenge to the mantra that society can have *both* economic growth and biologically significant, sustainable wild salmon runs. I suspect that for most people in salmon policy debates, it is an unpleasant but inescapable reality about how the world works.

The drive for low-cost production is a widely professed approach to trade, both within and between nations. My purpose is not to argue for or against such a rule of commerce, but rather to spotlight its impact on wild salmon.

Consider examples of rational business decisions when the rules of commerce are governed by "free markets, free trade." Computer manufacturers buy monitors from where they can be manufactured at lowest cost. Automobile companies locate assembly plants in places where cars can be produced most inexpensively. In a global market, to make French fries fast food restaurants buy massive quantities of potatoes from those suppliers who minimize their production and distribution costs. These examples demonstrate how low-cost production is achieved in practical ways. To individuals or specific enterprises, each decision is rational. Each decision is arguably a sensible choice given the rules of commerce, but there are ecological consequences in those decisions that are rarely weighed in the decision-making process.

Free markets and free trade work well in important ways, but there are consequences that often are not favorable to wild salmon and other ecological resources. How much more are people willing to pay for computers, automobiles, or French fries produced in ways that will help restore wild salmon and other ecological resources? We should not hide behind the political drivel that computers, automobiles, and potatoes can be produced just as cheaply in a salmon-friendly manner. They cannot. How many individuals are willing to forego purchasing a bright red tomato in February grown in a hot house heated with electricity generated by salmon-killing dams? Not many. Even if consumers were aware of the economic infrastructure required to produce tomatoes in winter, I doubt many would change their purchasing priorities.

So much for the macroeconomic driver, the current and likely future rules of commerce and their influence on wild salmon. If the rules do not change, there is little chance of sustaining biologically significant numbers of wild salmon in California, Oregon, Washington, Idaho, and southern British Columbia. Salmon runs supported by some type of artificial propagation may lead to a different outcome, but for truly "wild" salmon the future appears bleak.

Let me now move to my other example of what will determine the future of wild salmon, a microeconomic policy driver: *individual preferences*. Our individual preferences directly determine the future of wild salmon and substantial and pervasive changes must take place in these preferences if the current long-term, downward trend in wild salmon abundance is to be reversed (Montgomery 2003).

For most fisheries professionals, it is natural to assume that salmon are near the top of most people's individual priorities. Just look at opinion surveys: everyone appears to support salmon recovery and especially for wild salmon! It is not so. Even my kids who I have had over three decades to inculcate, regularly admonish me: *"Dad, get a life. Most people out here in the real world just don't care that much about restoring wild salmon. They have other things to worry about!"*

Individual behavior and actions, not the results of telephone opinion polls nor the number of recovery plans, provide the best and most realistic forecast of the future of wild salmon. Remember what happened in the western United States in 1991? The first salmon "distinct population segment" was listed under terms of the U.S. Endangered Species Act. ESA listing arguably provides the strongest and least flexible species protection available.

Jump ahead 10 years to 2001. Just a decade after this first salmon listing, a severe drought, combined with electrical blackouts in California, provoked the Bonneville Power Administration to declare a power emergency, abandon previously agreed upon interagency salmon restoration commitments, and generate electricity 24 hours/day, 7 days/week using water that had been reserved to help salmon smolts migrate. In one of the most striking recent barometers of competing societal priorities, air conditioners, hair dryers, and toasters won out over both wild and hatchery-bred salmon — and with scant public opposition. No street protests. No legal challenges. No elected officials publicly pleading for salmon. No environmental group blanketing the Internet with demands to mobilize fax machines in defense of salmon. No campus teach-ins. No AFS resolution. Near complete silence.

A bad decision? Not necessarily. Nor was it necessarily a good one. Surely it was a selection from among unpleasant alternatives. Based on demonstrated individual and collective behavior, it is naive to consider salmon recovery as anything more than one element, one often minor element, in a constellation of competing, often mutually exclusive, individual wants, needs, and preferences.

The apparent mediocre standing of wild salmon recovery in most people's overall priority ranking, coupled with scant indication of a near-term dramatic and widespread change in those priorities, means the long-term future of wild salmon in the Pacific Northwest does not look promising (Lackey 2003).

I conclude with this challenge to individuals and groups pressing for wild salmon recovery: any policy or plan targeted at restoring wild salmon to the Pacific Northwest must at least implicitly respond to the two policy drivers I described, or that plan will not be successful. It will be added to an already long list of noble, earnest, and failed salmon restoration attempts.

There still are some salmon recovery options that are likely to be ecologically viable and probably socially acceptable, but the suite of recovery options is narrowing yearly. For professional fisheries managers, scientists, technocrats, and analysts, and especially for those of us who are involved with salmon issues in California, Oregon, Washington, Idaho, and southern British Columbia, it is a time for offering forthright ecological information, coupled with no-nonsense policy analysis. It also time to recognize the fundamental conflict between economic growth and salmon recovery.

Literature Cited

Augerot, Xanthippe. 2005. Atlas of Pacific Salmon: the First Map-based Assessment of Salmon in the North Pacific. University of California Press, Berkeley, California. (In Press).

Czech, Brian, Paul Angermeier, Herman Daly, Phil Pister, and Robert Hughes. 2004. Fish conservation, sustainable fisheries, and economic growth: no more fish stories. *Fisheries*. 29(8): 36-37.

Krall, Lisi. 2005. An ecologically economic perspective on microeconomics and fisheries conservation. *Fisheries*. 30(2): 38-40.

Lackey, Robert T. 2003. Pacific Northwest salmon: forecasting their status in 2100. *Reviews in Fisheries Science*. 11(1): 35-88.

Lichatowich, James A. 1999. *Salmon Without Rivers: A History of the Pacific Salmon Crisis*. Island Press, Washington, District of Columbia, 352 pp.

Montgomery, David R. 2003. *King of Fish: The Thousand-year Run of Salmon*. Westview Press, Boulder, Colorado, 290 pp.

National Council on Economic Education. 2003. *Centuries of economic growth: from feathers to robotics.* National Council on Economic Education, New York, New York. Online at www.ncee.net/ei/lessons/lesson6/.

Trauger, David L., Brian Czech, Jon D. Erickson, Pamela R. Garrettson, Brian J. Kernohan, and Craig A. Miller. 2003. *The relationship of economic growth to wildlife conservation*. Wildlife Society Technical Review 03-1. The Wildlife Society, Bethesda, Maryland. 22 pp.

About the Author:

Dr. Robert T. Lackey, senior fisheries biologist at the U.S. Environmental Protection Agency's research laboratory in Corvallis, Oregon, is also courtesy professor of fisheries science and adjunct professor of political science at Oregon State University. Since his first fisheries job 40 years ago mucking out raceways in a Sierra Nevada trout hatchery, he has dealt with a range of natural resource issues from positions in government and academia. His professional work has involved all areas of natural resource management and he has written 100 scientific and technical journal articles. His current professional focus is providing policy-relevant science to help inform ongoing salmon policy discussions. Dr. Lackey also has long been active in natural resources education, having taught at five North American universities. He continues to regularly teach a graduate course in ecological policy at Oregon State University and was a 1999-2000 Fulbright Scholar at the University of Northern British Columbia. A Canadian by birth, Dr. Lackey holds a Doctor of Philosophy degree in Fisheries and Wildlife Science from Colorado State University, where he was selected as the 2001 Honored Alumnus from the College of Natural Resources. He is a Certified Fisheries Scientist and a Fellow in the American Institute of Fishery Research Biologists.

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