

## Northwest Science Forum

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### Pacific Salmon and the Endangered Species Act<sup>1</sup>

#### Abstract

There are many ethical, political, and scientific implications surrounding "endangered species," making it difficult to discuss reauthorization of the Endangered Species Act without becoming mired in the pro's and con's of various policy choices. The decline of Pacific salmon is used as a case study to evaluate some of the policy debate surrounding reauthorization of the Endangered Species Act. The challenges posed by listing salmon stocks under terms of the Act are such that everyone in the Pacific Northwest is or will be affected. Viewing Pacific salmon as an endangered species policy issue forces us to evaluate the implications of various policy assumptions. All policy choices involve individual and group winners—and losers—both within and between generations. From a biological perspective, it may be that some stocks of Pacific salmon have been supplanted with fish species better adapted to the current aquatic environment in the Pacific Northwest.

#### Introduction

There are many ethical, political, and scientific implications surrounding "endangered species," making it difficult to discuss reauthorization of the Endangered Species Act without becoming mired in the pro's and con's of various policy choices. To some the debate over endangered species is simply a matter of choosing among alternatives, much as we do with choices over energy, transportation, or international trade policies. Resolution is merely the process of coming to an agreement by compromise. But others view "endangered species" issues as something akin

to religious or moral questions; there is a morally correct position. If one perceives the issue as a moral one, how realistic is it to expect compromise? Still others view "endangered species" through the prism of competing rights—the rights of the public vs. the rights of individuals. An example is "taking" private property without compensation. Another, perhaps hybrid, view is that somehow salmon are linked to our quality of life. It is not primarily a question of the importance of producing trophies for the creel or fillets for the table, but an uneasy feeling that the decline of salmon reflects an intangible loss. It is not surprising that the debate over reauthorizing the Endangered Species Act is characterized by vitriolic attacks on the motives of the combatants.

It is not my intent to advocate a particular position on the salmon issue or for reauthorization or modification of the Endangered Species Act,

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but rather to focus on some of the issues that make reauthorization so controversial, especially as relevant to salmon. If *good* public policy comes from personal and societal experience, and experience comes from *bad* policy, are we at the stage where enough decisions on endangered species have been made that we can now make *good* policy decisions? If so, then one useful way to illustrate the issues is to evaluate case studies in detail to see how the Endangered Species Act actually works—or perhaps doesn't work—as a tool to implement public policy.

There are many interesting candidates from which we can choose. If your fancy leans toward amphibians, we could look at the San Marcos salamander, or something more exotic like the Texas blind salamander; or perhaps the Brunea Hot Springs snail is more to your liking? The California clapper rail or the salt marsh harvest mouse have a certain attraction to some. Or what about an appealing critter such as the Wyoming toad—an unlikely headline grabber in the Rocky Mountains? More emotional and controversial might be the California kangaroo rat, whose habitat requirements mandated under terms of the Endangered Species Act purportedly caused the loss of homes in recent California wildfires.

### Salmon

Salmon, specifically the decline of some stocks of Pacific salmon in the Northwest, is my choice. The salmon issue has some complicated factors. No species of North American Pacific salmon is in danger of extinction; however, hundreds of wild stocks (interbreeding, locally defined populations) are at risk. Further, wild stocks in the northern half of the range (northern British Columbia to Alaska) are doing very well, but many in the southern half (southern British Columbia to California) are not. The poor status of wild stocks in the southern half of the range of Pacific salmon is due to a combination of factors, including unfavorable ocean conditions, fishing, dams, water diversions, hatcheries, altered spawning and rearing habitat, predators, and others. Not all stocks are at risk in Washington, Oregon, Idaho, and California, but many are. Alaska stocks and fisheries are booming and salmon aquaculture is thriving in many parts of the world; salmon have never been more abundant in total catch or in the market.

The challenges posed by listing salmon stocks under terms of the Endangered Species Act are such that everyone in the Pacific Northwest is or will be affected. As the saying goes, for the Endangered Species Act at least, salmon is “where the rubber meets the road.” On a broad geographic scale, it is in the salmon issue that the goals of species preservation run headlong into many other individual and societal goals (Williams and Williams, 1995; Lackey, 1996a).

### Endangered Species Act

Critics have described the Endangered Species Act as “sound-bite policy” based on “barbershop science.” In theory, the act takes precedence over all other laws—perhaps even the “takings” clause of the U.S. Constitution (Smith, 1992). Did Congress really understand what it passed? Most of the discussion in Congress concerned the sorry state of bald eagle populations, our national symbol. Were the policy implications comprehended? Were the scientific and technical difficulties considered? How are democratic institutions to choose among the alternatives when the losers lose so big? How do we incorporate the views of those who hold moral or religious views on the propriety of extirpating a species? Is compromise with mutually exclusive alternatives possible? Can public policy be implemented when a “choice” can end up in court for what seems like an eternity? And what is so important about individual species, much less “evolutionarily significant units,” whatever those might be? The costs of complying with the Endangered Species Act fall heavily on private landowners who lose land, pay fines, face restriction on use of their property, or watch their investments and business ventures collapse (Gordon and Streeter, 1994). Laws are tools to help implement public policy; what *really* is our policy?

Supporters, on the other hand, maintain that the Endangered Species Act is forcing society to make the necessary, though painful, decisions for the future well-being of society (Rohlf, 1991). And it may not be perfect, but the Act is needed now more than ever, as the decline of Pacific salmon in the southern part of the range illustrates. If changes are needed in the Act, it ought to be expanded to protect ecosystems, not just species. The debate is often framed in moral terms. There may be the token reference to “commodity” value or “surrogate for environmental quality”

but the issue is essentially whether humans have a right to drive a species or other evolutionarily significant unit to extinction (Lackey, 1996b). Other supporters simply point to the economic benefits of commercial and recreational fishing as reason enough to fully implement the Act as written.

If we step back from the immediate challenge of the endangered species/salmon issue, we see that species extinctions are not new in the Pacific Northwest. People have been moving here for the past 15,000 years and causing problems almost from the start. As recently as 10,000 years ago, we still had mastodons, mammoths, giant sloths, giant armadillos, giant beavers, American camels, American horses, the American tiger, and the giant wolf—all are now extinct due to a combination of hunting and naturally occurring climate change. These animals would physically dwarf their surviving cousins. These were *real* animals that would not only survive but prosper in Jurassic Park. However, the size and charisma of a species are not the only measures of importance. Species extinction is nothing new in the Pacific Northwest from the perspective of thousands of years. It is the rate and scale that are the issue these days.

Habitats change due to climatic forces, as well as man's activities, and people develop more efficient ways to hunt, be it by technological breakthrough (e.g., bow and arrow), the use of exotic introductions (e.g., European horse), or by mass marketing of cheap equipment (e.g., monofilament gill net).

More important, the human population of the Pacific Northwest is growing at rates comparable to those in Third World countries. From the successive waves of aboriginal immigration from the North, to the influx of Americans from the East in the past two centuries, to the deluge from the Southwest after the Second World War, the Pacific Northwest has been transformed in a few thousand years from an uninhabited corner of the planet to the most urbanized section of the United States with more than 60% of its population residing in urban/suburban communities. There are other sections of the United States with larger urban populations, but the Northwest is now a region of urbanites—and voters. Like it or not, the human population will continue to grow in the Pacific Northwest and will probably continue becoming even more urbanized. To conclude otherwise is illusional.

## Policy

Public choice is choice from among alternatives—the salmon issue is a perfect example. Our choices deal with: How expensive will our energy be? Where will we be able to live? How will we be able to use our private and public property? Which groups will be allowed to fish? Will our food and energy continue to be subsidized? Will we be able to provide jobs for our children? What personal freedoms will we need to give up? It is in the answers to these and other questions that the future of southern stocks will be found. Science can help evaluate the consequences of different alternatives, but the salmon “problem” is fundamentally a *public* choice issue.

But are we chasing a scientific illusion about restoring salmon? The habitat of the Pacific Northwest is dramatically different than it was even a few hundred years ago. For example, the Columbia River basin is now a series of mainstem and tributary lakes. Land use in much of the watershed has changed the aquatic environment in ways that no longer favor salmon. As dramatic as the changes are, some fishes are thriving: walleye, shad, smallmouth bass, and brook trout to name a few. These exotic species are well adapted to the new environment. From an ecological perspective, we may be beyond the stage where we can recreate past salmon habitats. The only option might be to manage for those fishes best suited to current habitat. Another scientifically viable option might be to preserve stocks in those locations such as some “coastal” rivers where the chances of success are greater. Or, as some argue, perhaps we should stop focusing on *stocks* and accept that no *species* of salmon is in danger of extinction. Or is such acceptance merely admitting defeat in the face of difficult and expensive policy choices?

Some offer the promise of adaptive management as the path out of the policy morass. The basic idea underlying adaptive management is that decision makers (and society) learn by experimenting and that decisions get better as we learn through incrementally improving our decisions. The problem is that this approach might work acceptably for problems without moral imperatives and where the alternative decisions are not irrevocable. But, while adaptive management might hold some promise in solving some fairly narrow technical questions, it will not be of much

use in resolving questions of endangered species. Once a species or stock is extirpated, its gene pool is lost forever.

### Conclusion

We have been here before: the demise of many Atlantic salmon stocks in the Northeastern United States is the most striking parallel example. Many of those stocks are gone. Atlantic salmon still exist in some locations and the species is in no danger of extinction, but many stocks have disappeared. Genes that survived Pleistocene glaciation were eradicated within a few decades. At least when those policy decisions were made scientists could profess ignorance of genes and gene pools. Now we allocate significant public and private resources in an attempt to restore stocks that are down to a few individuals—stocks that we are attempting

to restore to environments not well suited to salmon. When does society say enough is enough? From a scientific perspective, it may be that in some places stocks of Pacific salmon have been supplanted with fish species better adapted to the current aquatic environment. Ocean conditions in the southern half of the salmon's range will undoubtedly improve naturally from a salmon's perspective, but will freshwater and terrestrial conditions? Tough science questions, but tougher policy questions.

Viewing Pacific salmon as an endangered species policy issue forces us to evaluate our policy assumptions. All policy choices involve individual and group winners—and losers—both within and between generations. Unfortunately there are no free lunches. Someone always picks up the tab. So it is with all choices dealing with salmon.

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