

# CHAPTER 21

## Valuing wild salmon: who gets to decide?

*Jan Konigsberg, Director, Alaska Field Office, Trout Unlimited, Anchorage, Alaska, USA*

---

### **Introduction**

Different life-paths bring us together to plot a route to the summit of salmon sustainability. Undoubtedly we see different routes to the top and probably disagree about which peak is the true summit of Mt. Sustainability.

I do not believe that any salmon fishery management regime has attained the summit. 'Team-Alaska' reached a false summit, because the way in which Alaska fundamentally values salmon follows the same path that led Oregon and other Northwest states up and off the cliff of the Endangered Species Act. Those who follow this trail adhere to the tenet that the fishery management authority can fulfill its duty to steward the resource principally by managing the fisheries. Yet, no matter how well-intended the managers are, they are bound to fail because they have not been given either the authority or the responsibility to manage the ecosystems upon which salmon depend.

### **Fishery-sustainability certification programs**

Thus, fishery-sustainability certification programs that do not evaluate management's capacity and ability to address the root causes of the decline and extirpation of salmon populations, of which overfishing is only one, are of limited value and may result in incomplete and misleading evaluation.

This path equates sustainable fishing with sustaining the fish. This equivalency renders the definition of sustainability far too problematic. This definition makes it possible to argue 1) that a fishery is sustainable even as it is being overfished so long as there are appropriate management tools available for rebuilding; and moreover, 2) that a fishery that has been managed unsustainably for decades, but is now in the process of rebuilding, can be judged sustainable. There is the further problem of what is meant by the term *rebuilt*. Some American fisheries are reported as fully rebuilt - but, rebuilt to what level? In most cases, it means the *rebuilt* fishery has been restored only to the abundance level of a decade ago, which in reality is a mere 10 percent of the pre-industrial fishery abundance for that species. In the last 100 years, wild salmon abundance in the Pacific Northwest and California has declined 90 percent. Of 192 anadromous salmonid stocks historically known from the Columbia River Basin, 67 (35%) are extinct, 36 (19%) are at high risk of extinction, 14 (7%) are at moderate risk of extinction, 26 (13%) are of special concern, and 49 (26%) are considered to be secure. On the Pacific coast of the United States

alone, salmon have been lost from 40 percent of their one-time range, and stocks are threatened or endangered in another 27 percent.

What is the public to think? Are they to believe that fisheries that have been severely depleted are now rebuilding according to some recovery plan ordered either by the court or the management agency? Are they to be considered sustainable and a testament to current good management? Apparently so.

Nonetheless, the problematic definition of sustainability is a very convenient one for the commercial fisheries. When Marine Stewardship Council (MSC) certification of the Alaska salmon fishery was first proposed, the industry balked. Now, however, the industry believes “sustainability” sells – at least it seems to help sales in niche markets. As the eco-label is perceived to provide a competitive advantage, many fisheries want certification.

While the primary impetus for establishing the MSC was the belief that certification would force improvements in fisheries management through market mechanisms – a sensible rationale – what does seem to have “improved” is the marketing hype. The following quotation demonstrates this point.

*I can't comment about fisheries in other parts of the world, but I think governments, conservationists and even other nations' fishermen could learn a lot from what we've done here in California to sustain our fisheries. Our fishing men and women have taken the lead in restoring fish habitat and making sure our fishing is well-managed – Larry Collins, a San Francisco fisherman and Chairman of the California Salmon Council 2003.*

Mr. Collins would have been on safer grounds to have instead made the point that unsustainable fisheries are more readily discerned than sustainable ones, and that the best that can be said for most California fisheries is that they reside in purgatory, not yet having gone completely to Hell. In other words, the essential, if somewhat imprecise, concept of sustainability functions more powerfully as a lens to detect the unsustainable than it does as a compass to navigate toward sustainability.

### **Fisheries management in Alaska**

As one of its first acts, the Alaska Legislature established an Alaska Department of Fish and Game (ADF&G) in order to ensure an abundant supply of salmon for the commercial fishery.

The Alaska Department of Fish and Game was established with the statutory requirement that,

*The commissioner shall manage, protect, maintain, improve, and extend the fish, game and aquatic plant resources of the state in the interest of the economy and general well-being of the state... through rehabilitation, enhancement, and development programs, [ADF&G must] do all things necessary to insure perpetual and increasing production and use of the food resources of state waters and continental shelf areas.*

In terms of Alaska's salmon abundance, management tends to take more credit than it deserves. Yes, Alaska has plenty of fish, but the reason it still has plenty of fish is because it has plenty of productive salmon habitat. As much as government would like to take credit for maintaining habitat it is a fact that, where there is settlement and development in Alaska, there is degraded habitat — the same as everywhere else. In Southeast Alaska, for instance, nearly 70% of the

culverts in the Tongass National Forest impede fish passage. Nonetheless, Alaska fishery managers and the industry flaunt abundant harvests as evidence of sustainable fishing, but that is not necessarily the case.

Given that the goal of Alaska’s salmon managers is to provide maximum sustained yield of commercially important salmon stocks, the major precepts of management are shown in Table 21.1.

Table 21.1. Principles of salmon management and associated problems.

Principle	Critique
<ul style="list-style-type: none"> <li>In order to provide the greatest opportunity to harvest surplus production, fisheries of many commercially important stocks are usually prosecuted on mixed stocks</li> </ul>	Over-exploitation of the non-target species is difficult to control.
<ul style="list-style-type: none"> <li>Escapement targets are predicated on the assumption that allowing too many salmon onto the spawning grounds (over-escapement) has an adverse impact on salmon production</li> </ul>	Over the long term, however, manipulating escapement to prevent over-escapement is likely to decrease salmon biodiversity and ecosystem productivity.
<ul style="list-style-type: none"> <li>Due to natural fluctuations in abundance of wild salmon, aquaculture-based fishery supplementation (salmon-ranching) is sanctioned and practiced</li> </ul>	Despite the potential for genetic and ecological impacts on wild salmon populations.
<ul style="list-style-type: none"> <li>Abundance based management</li> </ul>	Using abundance as a proxy or even an index of sustainability of salmon stocks is quite problematic and can even be misleading.

**Abundance-based management**

Managing commercial fisheries based on biological escapements determined to produce the greatest sustained yield does not ensure that the temporal and spatial segments of the run (and, hence, the biodiversity of the targeted salmon stocks) will be protected over time. Indeed, even if certain spatial or temporal segments of the run are depleted or even extirpated, which all other factors being equal would result in less “surplus” production to harvest, effective management of the fishery would merely require recalculating maximum sustained yield and biological escapement downward. Therefore, given only abundance-based criteria and analyzing only abundance-based data, management could be deemed successful even as biodiversity declines. The abundance of the return is not a sufficient determinant of whether or not a salmon stock is being exploited sustainably.

In fact, abundance of the catch is not in itself a measure of the health of individual stocks or of freshwater habitat conditions. Abundance of returning salmon can fluctuate dramatically because many factors affect salmon productivity and mortality. Therefore, high returns may or may not be indicative of good management (during periods of high marine productivity, significant management mistakes would be hard to discern); conversely, low returns are not necessarily indicative of poor management. Moreover, there is evidence that a relatively small part of the breeding population is the most productive and that this productive segment is both changing and unpredictable. Thus, population dynamics models that only incorporate abundance will fail to predict decreases in stock productivity as a consequence of actions that maintain abundance in the short term, but decreases genetic variability in the longer term.

The goal of abundance-based management is to maximize the catch, not to conserve biodiversity. Managing for abundance, particularly when hatchery production masks wild population dynamics, does not depend upon protecting the full spectrum of genetic and life history diversity of salmon populations nor the full spectrum of salmon habitats. Moreover, evaluating the success of salmon management based on abundance has the unfortunate, if unintended, blow-back of justifying development projects that might harm local salmon populations according to the rationale that, because there are so many salmon, the loss of a few salmon is not significant.

### The Alaska Salmonid Biodiversity Program

Trout Unlimited (TU) established the Alaska Salmonid Biodiversity Program in 2000 to advocate principally for conservation of the extant demographic, genetic, life-history and ecological diversity among and within Alaska's five species of Pacific salmon. Alaska has the greatest reservoir of salmon biodiversity remaining in the world. Sustaining this biodiversity will require fundamental change in salmon management.

In 2000, the same year that TU established its Alaska office, MSC certified the Alaska salmon fishery. With the certification under its belt, the State of Alaska, along with the Alaskan salmon industry and the emerging green campaign against salmon farming, were quick to juxtapose Alaska salmon management to that of the Pacific Northwest and to the growing but unsustainable and environmentally unfriendly farmed-salmon industry.

Table 21.2. Percentage hatchery salmon of 2000 catch.

Region	% of hatchery salmon in 2000	
	Species	% of catch
Southeast	Chinook	29.7
	Sockeye	16.0
	Pink	1.0
	Coho	20.1
	Chum	72.7
	<b>Total:</b>	<b>26.5</b>
Prince William Sound	Chinook	0
	Sockeye	24
	Pink	82
	Coho	65
	Chum	88
	<b>Total:</b>	<b>80</b>
Statewide	Chinook	18.6
	Sockeye	4.0
	Pink	42.0
	Coho	24.0
	Chum	64.1
	<b>Total:</b>	<b>34.0</b>

TU, however, was not nearly so sanguine about Alaska salmon fishery management. They believed that the Sustainable Salmon Fisheries Policy (SSFP) adopted by the Board of Fish (BOF) in 2000 acknowledged the need for substantial reform in salmon fishery management and hoped that the policy would provide a favourable environment for TU's salmon biodiversity advocacy. Unfortunately, the environment has proved less than favourable.

In October 2001, TU released the report – *Evaluating Alaska's Ocean-Ranching Salmon Hatcheries: Biologic and Management Issues* (accompanied by TU's recommendations for reforming the hatchery program). In this report TU raised the issue about how Alaska's salmon fishery can be called sustainable when about one-third of the statewide annual harvest is comprised of

hatchery-produced fish, with hatchery fish comprising 2/3 or more of the annual harvest of some fisheries (See Table 21.2).

The state and industry take offense that TU would dare to question whether the salmon fisheries are sustainable, especially when farmed salmon were displacing Alaskan salmon in the world's markets. Apparently, TU should have known better than to be asking the wrong questions at the wrong time.

*The industry is "in no mood to listen to theory about how Alaska hatcheries that help them survive might, conceivably, be overgrazing the ocean's pastures or genetically weakening wild salmon."*

Brad Warren, Editor, Pacific Fishing Magazine, January 2002.

These questions were being raised at the time the industry and state seized on the opportunity to differentiate Alaska salmon from farmed salmon in the marketplace. The strategy to compete with farmed salmon and gain the support of the "greenies" depended, however, upon the fiction that all Alaska salmon were naturally wild and that farmed salmon are the major threat to Alaska salmon. While there is no question that farmed salmon are the major threat to the economic value of the Alaska salmon industry, they are hardly a threat to wild salmon biodiversity when compared to the release of about 1.5 billion juveniles annually into Alaska's natural waters from 27 industrial-strength hatcheries. Figures 21.1 and 21.2 show the extent of these hatcheries throughout the state.

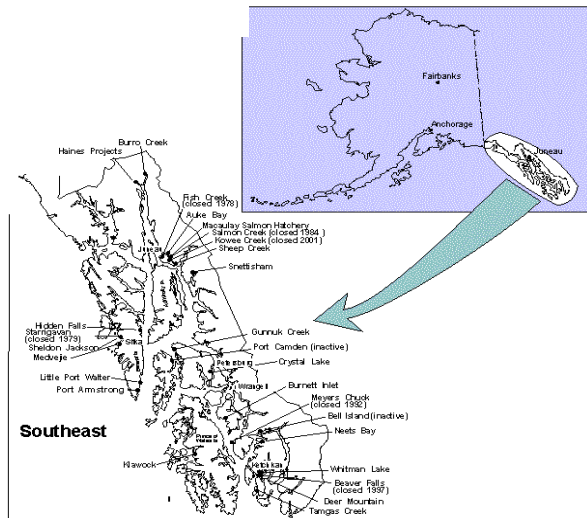


Figure 21.1. Locations of Hatcheries in Southeast Alaska.

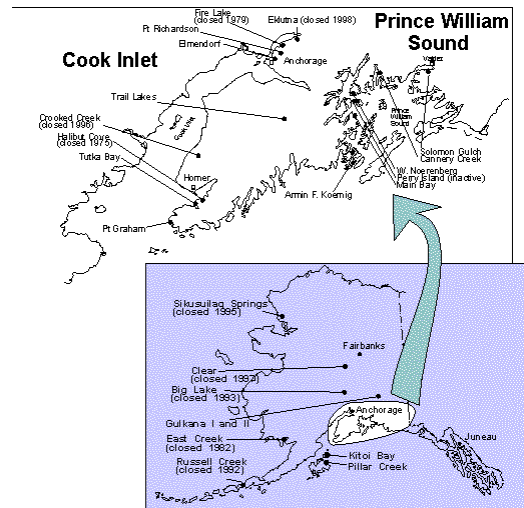


Figure 21.2. Locations of Hatcheries in Prince William Sound, Interior and Southcentral Alaska.

### Impacts of salmon ranching

Since its inception in the mid-1970s, Alaska's salmon-ranching program has been dogged by worries about the potentially harmful interaction between hatchery and wild fish. For example, the American Fisheries Society published a paper, co-authored by the Alaska Department of Fish and Game's chief research scientist, which concluded that hatchery pink salmon are replacing wild pink salmon in western Prince William Sound. Nonetheless, ADF&G insists that hatchery and fishery management protocols safeguard Alaska's wild salmon from adverse impacts of salmon ranching.

In fact, the commissioner of Fish and Game informed TU that he had no confidence in his chief research scientist's findings regarding Prince William Sound pink salmon hatcheries and further, that he saw no inherent conflict between salmon ranching and the recently adopted Sustainable Salmon Fisheries Policy's precautionary principle. Such a cavalier attitude toward salmon ranching, which is after all the other side of the salmon aquaculture coin, contrasts with the Department of Fish and Game's paranoia about salmon farming, which the legislature banned. TU's recommendation that hatchery fish be distinguished from wild fish is based on the same reasoning the State uses to distinguish wild from farmed salmon. The department explains that Alaska outlawed the "*farming of salmon to protect strong native stocks from hybridization, disease, pollution, and competition for food.*" These are precisely the same concerns that apply to ranched salmon. The industry would have us believe that salmon farming was banned because of environmental concerns. This concern may have been a factor, but not the driving one, which was to prevent economic competition from aquaculture.

Just as banning of salmon farming was driven by the self-interest of the commercial fishery so is the misleading and deceptive marketing of Alaska's salmon as wild and sustainable. Hatchery-dependent fisheries, by definition, are neither wild nor self-sustaining. Therefore, encouraging consumers to avoid farmed salmon and opt instead for Alaska salmon materially supports Alaska's salmon-ranching program, which poses a far greater threat to Alaska's salmon biodiversity than does salmon farming.

MSC disputes that salmon ranching is a significant problem and they have refused to respond to the concerns raised by Trout Unlimited. TU's entreaties to the State of Alaska have also been rejected: The director of Alaska Seafood Marketing Institute told TU *My concern is that the farmed salmon producers might pick up your message and run with it.* The Commissioner of Fish and Game explained to TU that *We believe the generic marketing of Alaska salmon, including hatchery salmon as wild salmon, is appropriate.* The Director of the Commercial Fisheries further affirmed that the department believes there is practically no difference between a wild salmon and a hatchery salmon — a claim squarely at odds with basic biology, not to mention Alaska statute. As if to put an end to the debate, an Alaskan senator stepped up to the plate last year with federal legislation that declares hatchery salmon are to be labeled as 'wild'.

### **Prospects of Alaska's hatchery program**

The hatchery program has subverted the dependent community's relationship with the natural world, which used to be the sole source of salmon. As dependency upon hatchery-produced fish escalates, more attention is focused on maintaining and expanding hatchery production and there is less concern for wild salmon and their ecosystems. The high proportion of Southeast salmon produced in hatcheries, especially chum salmon, conveniently obscures the decline in the abundance of wild salmon. In fact, for the last several years, millions of dollars of federal funds designated for wild salmon and their habitats were spent on hatchery production and operations in Southeast Alaska.

Clearly, the hatchery program is not simply science, technology, and economics of fish culture, but also is a social-cultural force affecting the attitudes and belief about fishery management in the communities and regions in which hatcheries exist. In the end, these communities and fisheries have become more dependent on hatcheries and less reliant on wild fish, much the same situation that results from salmon farming.

Just as the Pacific Northwest willingly traded salmon habitat for hatcheries, so does Alaska. Hatcheries, rather than habitat, now produce most of the pink, coho, and chum salmon caught in Prince William Sound and most of the chum in Southeast Alaska. Consequently, when public

funds have become available for wild salmon programs, the Southeast Alaska salmon fisheries would rather subsidize hatchery operations than fund habitat protection and restoration programs (and thus, support elected and appointed officials who, while paying lip service to the importance of habitat, place higher priority on salmon-ranching).

Alaska's salmon fishery management system has become wedded to hatchery production. The salmon-ranching program exemplifies the degree to which economics trumps ecology and commercial considerations trump biological ones. When confronted with the biological certainty that a hatchery fish is not a wild fish, fishery managers are compliant to and complicit with business interests. There could not be stronger evidence that Alaska's salmon fishery management is on same path to salmon purgatory as the rest of the Pacific Northwest.

Most troubling, however, is that salmon fishery managers in Alaska display the same hubris as did the managers in Oregon, Washington, and California. The net effect of MSC certification of the Alaska salmon fishery has been to buoy the state's self-assurance and complacency, rather than to improve salmon fishery management to any significant degree.

The Alaska Department of Fish and Game insists that everything is under control – just as their Northwest counterparts did, even as salmon populations there were being extirpated. This self-assurance dulls the scientific inquisitiveness and subverts the objectivity essential to adaptive management. It also creates a false sense of security among the public and elected officials, who, even when confronted with evidence that wild salmon and especially salmon habitat may be threatened by development, insist that all is fine and that those who say otherwise are simply obstructionists.

#### **Recent changes in Alaska salmon management**

Lest there be any doubt that this mind-set is deleterious to long-term sustainability of salmon and their ecosystems, in April 2003, Governor Murkowski transferred the fish habitat permitting and related habitat protection duties from the Department of Fish and Game to the Department of Natural Resources (DNR), eliminating the Habitat and Restoration Division within the Department of Fish and Game. In addition, other bills have passed that will expedite development projects by diminishing regulatory review of habitat impacts by curtailing and chilling the public process and by consolidating project review and permitting functions in DNR. The Alaska Coastal Management Program will be consolidated within DNR, eliminating local involvement in coastal habitat development and conservation.

In fact, the current administration justifies consolidation of permitting and oversight in DNR as following Oregon's "successful" example. What is more is that this consolidation is supported by Alaska's dominant commercial and sport fishing organizations.

#### **Is management capable of sustaining salmon and their ecosystems?**

This brings us back to how one is to truly evaluate whether or not management is capable of sustaining the fish and their ecosystems and not simply sustaining a fishery even as the productivity declines due to habitat loss and loss of biodiversity. In practical terms, an effective salmon management system would maintain the ecological and biological conditions for salmon survival and production and ensure that they are not impaired by human activities, whether fishing, timbering or others. While salmon fishery managers have authority and power to control fishing effort, they do not have commensurate authority and responsibility to control salmon habitat. Thus, while adjusting sustainability principally in terms of salmon fishery management's capability to prevent overfishing is understandable, it is ultimately an inauthentic approach.

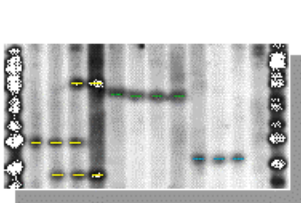
Evaluating the success of management in sustaining salmon populations and maximizing production depends in large measure upon management's ability and capacity to ensure the conservation of biodiversity – conserving genetically unique and locally adapted populations. A critical biological variable affecting salmon production is biodiversity and a critical ecological variable is habitat. The two variables are interdependent, the more productive habitat, the more potential production and the more biodiversity, the more habitat that can be potentially used.

I believe that Alaska's salmon fishery management claim to sustainability is overblown, because:

- It refuses to acknowledge the inherent limitations of traditional fishery management and thus the need for significant change if salmon and their ecosystems are to be sustained; as if such an acknowledgement would be tantamount to admitting failure. Ironically, it is this refusal to admit to the inherent limitations of traditional salmon fishery management that is the failing.
- To the extent that fishery managers seek to maximize available surplus of commercially-important stocks by placing salmon biodiversity at the risk in mixed stock fisheries and hatchery supplementation.
- Even if sustainability is to be evaluated strictly in terms of traditional fishery management, management's performance should be measured according to the degree to which managers hew to the statutes, regulations, and policies that provide protection to wild salmon.

The performance indicators that are the most critical for assessing the sustainability of Alaska's salmon fisheries are those that provide evidence for the transformation from 'salmon fishery' management to 'salmon' management. Unfortunately, current indicators suggest just the opposite. Given the failed fishery management regimes throughout the Pacific Rim, coupled with increasing knowledge about the factors that affect salmon productivity, it is no longer sufficient to manage "just" the fishery; rather the salmon fisheries must be managed in the context of preserving both salmon biodiversity and whole ecosystems. This is a tall order, since it requires a degree of intergovernmental and interagency planning, coordination, and cooperation to achieve an integrative transformation in the exercise of authority, currently fragmented among agencies and jurisdictions, in order to manage for the major factors that affect salmon and their ecosystems. Without such a transformation in the institutional function and structure of Alaska's fishery management system, it will continue pell-mell along the same path as other once abundant salmon-producing regimes.

As long as the salmon business, which of course is embedded in the larger world of business, drives fisheries management, there will be little impetus for change.



We have a choice to make about how we value salmon.

As long as we reduce the bar code on the left to the bar code on the right in Figure 21.3, the less likely we will manage for salmon biodiversity and the more likely all salmon will be conceived in a bucket.

Figure 21.3. Coho genetic code and Coho bar code.