

MYTHBUSTERS #2

Revealing Fish and Wildlife Myths Public Power Council Fish and Wildlife Committee

MYTH: Salmon and steelhead will recover by removing the four Lower Snake River Dams.

THE FACTS:

- Removal will not significantly increase fish survival through the Lower Snake River. Current juvenile fish passage survival rates are at or above 95% at all four dams.
- These dams only affect 4 out of 13 Endangered Species Act (ESA) listed salmon and steelhead stocks in the Columbia River Basin.
- These dams inundated only 10% of the historic fall chinook spawning habitat in the Snake River; spring chinook, sockeye and steelhead were less affected. Removal will not significantly improve access to historic spawning areas.
- Removing these dams would have a significant negative impact on our economy and environment by eliminating about 1,020 average megawatts of carbon-free energy, increasing green house gasses by 4.4M tons/yr and reducing navigation capacity.

Studies used to support these facts?

Regionally developed and reviewed fish passage and survival studies performed by NOAA-F, Independent Science Review Panel, Independent Science Advisory Board and U.S. Army Corps of Engineers

Why do advocates perpetuate this myth?

- Salmon populations appeared to decline coincident with the construction of the four Lower Snake River dams.
- Fish and wildlife agencies directly receive millions of dollars from the region's ratepayers each year to fund mitigation projects.
- Environmental groups set legal precedent through litigation and collect significant donations by advocating removal of these dams.
- Out of region politicians may be pushed politically to advocate for removing dams in the Northwest.

What information do advocates use to support this myth?

Fish Survival:

- PATH analysis, which is a complex model that singles out the hydrosystem, does not consider effects of harvest or changes in freshwater or ocean survival. NOAA-F discontinued using PATH in favor of a more holistic approach.
- Fish Passage Center's Comparative Survival Study which has been unfavorably reviewed by several independent research organizations in the region (NOAA-F 2007).

Economics: Save Our Wild Salmon's 2006 report titled: *Revenue Stream: An Economic Analysis of the Costs and Benefits of Removing the Four Dams on the Lower Snake River* was found to have significant faults in its assumptions by the Independent Economic Advisory Board (IEAB 2007).

THE FACTS:
SUPPORTING EVIDENCE

- **Removal of the four Lower Snake River dams will not provide significantly higher fish survival.**

The Lower Snake River dams are run-of-river dams. They do not affect the volume of water in the river. Also, both juvenile and adult fish readily pass these dams. As described in Table 1, the survival rate of juvenile salmon and steelhead passing the Lower Snake River dams is near or above 95%. Surface bypass systems have been installed at three of the four dams, with the fourth dam scheduled for a bypass system installation in 2009. Survival will likely be even higher upon completion of these projects. The four Lower Snake River reservoirs still provide important rearing habitat for juvenile salmon and steelhead. Removing these dams would have little measurable benefit to juvenile fish.

Table 1. Summary Survival Rates for Juvenile Spring Chinook Passing the Four Lower Snake River Dams.

Hydroelectric Dam	Route of Passage and Survival					
	Spillway Passage	Juvenile Bypass System	Surface Bypass System	Transport System	Turbine Survival	OVERALL DAM SURVIVAL
Lower Granite	93%	97%	98%	98%	95%	96%
Little Goose	97%	96%	New	98%	92%	96%
Lower Monumental	96%	92%	New	98%	88%	94%
Ice Harbor	95%	99%	97%	None	87%	97%

Data Sources: NOAA-F COMPASS Modeling for 2008 BiOp and research and analysis conducted from 2003-07 by USGS – Biological Survey, Battelle/Pacific Northwest National Laboratories, University of Idaho, University of Washington, NOAA-Fisheries and Normendau Assoc. Inc.

In 2002, the U.S. Army Corps of Engineers released the results of a \$20 million, seven year study to improve juvenile salmon passage through the hydropower system on the Snake River which included an evaluation of breaching these dams (Corps 2002). In summary, the Corps determined that leaving the dams in place was the preferred alternative because:

- Improving the dams and modifying operations can provide high survival rates.
- The benefits of dam removal are not known and there is uncertainty about potential negative effects (e.g., sediment transport).
- Dam removal is expensive and will result in negative secondary economic and environmental impacts.

Since the study was conducted, improvements have been made at the Lower Snake River dams to achieve high survival rates. Further, power prices have increased and understanding about climate impacts have evolved. The changes that have occurred since the time of the study reinforce the Corps’ determination.

There continue to be significant efforts to improve fish passage survival at the four Lower Snake River dams. The Corps and BPA fund the Lower Snake River Compensation Plan (LSRCP) to mitigate impacts on the four affected fish stocks (WRDA 1976). The goal of the LSRCP is to

compensate for the loss of 48% of the juveniles migrating downstream through the system, through construction and operation of 26 hatchery, research, and fish health facilities. The remaining 52% of the impacts were to be mitigated through fish passage modifications at the dams, barging or trucking smolts, and habitat improvement work.

The Council reports that through 2007, BPA, the Corps and the Bureau of Reclamation has funded almost \$2.5B in fish passage improvements at the dams (NPCC 2007a). Spill and flow augmentation to aid fish passage has cost the region over \$5B in lost generation and funds required to replace lost generation (NPCC 2007a).

- **The Lower Snake River Dams affect only 4 out of 13 ESA-listed salmon and steelhead stocks in the Columbia River Basin.**

There are 13 ESA listed stocks of salmon and steelhead in the Columbia and Snake Rivers. Only four of these 13 inhabit the Snake River: spring/summer chinook salmon, fall chinook salmon, sockeye salmon and steelhead. Removing the four Lower Snake Dams would not significantly contribute to the recovery of these or other salmon or steelhead stocks in the Columbia River Basin because it will not significantly increase fish survival nor access to historic habitat.

- **Removal of the four Lower Snake River Dams will not significantly improve access to historic salmon and steelhead spawning area in the Snake River.**

The four Lower Snake River dams inundated about 10% of the available fall chinook habitat in the Snake River Basin; spring chinook, sockeye and steelhead habitats were even less affected. Salmon and steelhead stocks from the Snake River have historically spawned primarily upstream of the Lower Snake River dams (NOAA-F 1991a, b; 2005 a, b). The majority of this available habitat was blocked by dams or impacted by logging, mining and water diversions before construction of the four Lower Snake River dams (Chapman 1990, NOAA-F 1991a, b; 2005 a, b).

Fall Chinook Salmon

- An estimated 70% of the historic habitat was lost with the construction of dams upstream of the four Lower Snake River dams (NOAA-F 2005a).
- The four Lower Snake River dams inundated an estimated 10% of the historic spawning habitat for fall chinook in the Snake River (NOAA-F 2005a).
- Today, an estimated 20% of the historic spawning habitat for Snake River fall chinook remains.
- The Lower Snake River reservoirs still provide important rearing and migration habitat for salmon and steelhead.

Spring/Summer Chinook Salmon

- Over 50% of the historic habitat was lost with the construction of dams upstream of the four Lower Snake River dams (NOAA-F 2005a).
- There are no estimates of the amount of spawning habitat lost from construction of the Lower Snake River Dams (NOAA-F 2005a).
- NOAA-F (2005a) estimates that about 50% of the historic spawning habitat remains, and the population has a wide spatial distribution in a variety of locations and habitat types.

Sockeye Salmon

- Historically, sockeye salmon spawned and reared in several high mountain lakes in Idaho, all located far above the four Lower Columbia River dams.

- By 1924, the majority of the historic habitat was blocked by construction of dams above the Lower Snake River dams (NOAA-F 1997, Chapman 1990).
- The Idaho Fish and Game poisoned important nursery lakes and installed barriers in the late-1950s and early-1960s to keep sockeye out of these lakes in order to develop resident trout fisheries (Chapman 1990).
- Sockeye salmon populations in the Upper Columbia River are increasing significantly, even though adults must currently pass even more run-of river dams.

Steelhead

- Historically, a majority of this stock spawned above the four Lower Snake River dams (NOAA-F 2005a)
- About 50% of the historic spawning habitat remains available, most of which is considered to be in good condition (IDFG 1991).

- **Removing the Lower Snake River Dams would have a significant negative impact on our economy and environment.**

The Snake River dams were built to provide several benefits to the region, including a clean, carbon-free, renewable source of electricity; barge transportation into Idaho and irrigation for crops in the Columbia River Basin. Removing these dams would eliminate important benefits to the region without significantly improving conditions for salmon and steelhead. Other impacts to the economy and environment include:

- Elimination of about 1,020 average megawatts of carbon-free energy and 2,650 megawatts of sustained peaking capacity (NPCC 2007b).
- Increased carbon dioxide pollution by 4.4 million tons per year as lost power would have to be replaced with alternative sources, likely fossil fuel based generation (NPCC 2007b).
- The Pacific Northwest Waterways Association estimates that \$2 to \$2.5B in cargo is shipped through inland waterway each year. Removing the Lower Snake River dams would eliminate a significant portion of that cargo.

In their evaluation of dam breaching, the Corps (2002) found that breaching the four Lower Snake River dams would result in:

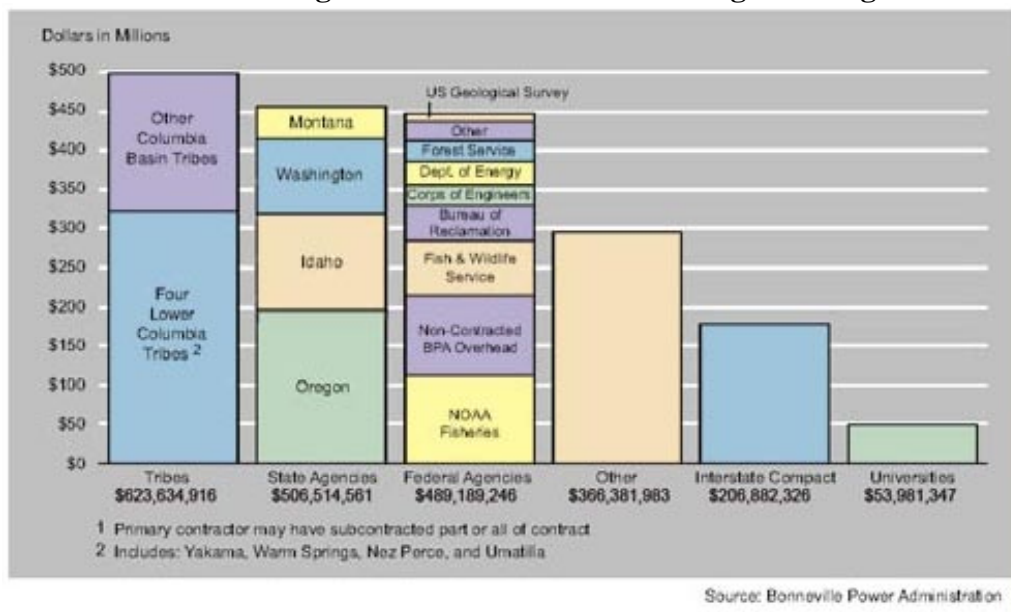
- Loss of \$271M in hydropower revenue each year.
- Loss of navigational capacity.
- Downstream migration of an estimated that 100 - 150 million cu. yds. of sediments.
- Impacts to irrigation and water supplies.
- Short-term gain and long-term loss of jobs and income.
- Gain in recreation opportunities.
- Dam breaching costs in power, transportation and water supply = \$373M per year.
- Dam breaching benefits including recreation and fishing = \$106M per year.
- Net Annual Cost: \$267 million (over a 100-yr period).

- **Fish and wildlife agencies directly receive millions of dollars from the region's ratepayers each year to fund mitigation projects.**

BPA does not directly develop or implement fish and wildlife projects. Instead, they contract with the region's fish and wildlife managers to conduct this work. While these agencies care about successful fish and wildlife mitigation they also have a self-interest as they receive the funding. Therefore, good science and oversight needs to be applied to ensure funds are well-invested and to guard against self-dealing.

Fish and wildlife management agencies have received significant amounts of money from BPA since 1978. Figure 1 illustrates the amount of money paid to these various agencies. Columbia River tribes have received over \$600 million, while the four northwest states have received over \$500 million over this time period. The Northwest Power and Conservation Council recently found that only about 60% of the funds provided to the states and tribes were actually used to help fish and wildlife resources via on-the-ground projects (NPCC 2008). The remainder was spent on research, monitoring and evaluation and administrative expenses within the agencies.

Figure 1. Funds Paid to the Region’s Fish and Wildlife Management Agencies 1978-2007



Studies used to support this myth?

Fish Passage:

- PATH (Plan for Analyzing and Testing Hypotheses)

The Council’s ISRP found PATH a complex model that was no longer useful and recommended it be “retired” in 1999 in favor of other modeling/analytical efforts (ISRP 1999).

- The Fish Passage Center’s Comparative Survival Study (CSS)

Several independent research organizations in the region have been critical of the CSS. In a June 29, 2007 review of the CSS study, Dr. Usha Varanasi, Science and Research Director for the NOAA-F Northwest Fisheries Science Center stated that:

“The data presented, and the discussion and conclusion section all seem focused through the lens of specific positions favored by the authors: hydropower-system related latent mortality is large in magnitude, transportation is not beneficial, management actions directed at the hydropower system have generally failed,”...

“Results that do not support desired positions are usually discounted by carefully placed language”.

Dr. Varanasi concluded by stating that the CSS study was based on “*weak scientific methodology*” and that the FPC “*Ignores data from other systems*” (NOAA-F 2007).

Economics:

Save Our Wild Salmon's 2006 report titled: *Revenue Stream: An Economic Analysis of the Costs and Benefits of Removing the Four Dams on the Lower Snake River*. The Council's Independent Economic Advisory Board (IEAB) was critical of this report and found that the authors over estimated the value of recreation and underestimated the cost of replacing lost generation. In summary the IEAB found that..." *the Revenue Stream's reported benefits from salmon recovery in the Snake River appear unreliable.*" (IEAB 2007).

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