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## **Snake Oil on the Lower Snake**

The Army Corps of Engineers and Bonneville Power Administration continually mislead the public regarding the status of threatened and endangered salmon and steelhead on the Columbia and lower Snake Rivers. Ports and special interest groups echo these government agencies' misinformation. Claims about the survival rate of juvenile fish passing through the hydropower system provide prime examples, with the following statements typical:

*The [lower Snake River] dams are now on track to achieve standards of 96 percent average dam survival for young spring Chinook and steelhead migrating downstream and 93 percent for young summer-migrating fish.*

Bonneville Power Administration *Fact Sheet* March 2016

*The Walla Walla District is on track to meet performance standards of 96 percent survival for spring migrating juvenile fish and 93 percent for summer migrants through each lower Snake River dam.*

Walla Walla District, Army Corps of Engineers January 1, 2016

*The survival rate of juvenile fish traversing the dams has reached 97 percent, and adult fish returning to spawn have a dam passage rate of nearly 100 percent.*

Executive Director of the Pacific Northwest Waterways Association as reported in the *Lewiston Morning Tribune* April 7, 2016

*For the young salmon who do pass by these dams on their way to the ocean, survival rates are incredibly high: 97 percent on average, similar to survival rates in undammed rivers.*

Executive Director of Northwest River Partners, *Opinion, Spokesman Review*, May 28, 2016

The intent of this messaging is that the reader associate 93%-97% survival of juvenile fish with the operation of the Columbia/Snake hydropower system. These messages frequently fail to make clear that this claimed survival rate is *per dam*, nor do they address the cumulative impact of such a survival rate.

Let's look at the full truth.

If the survival rate at each of 8 dams averages 95% and the rate of survival is evenly distributed across all dams, the cumulative loss to dam passage would be 34%. Thus a more accurate survival rate to associate with the hydrosystem is 66%, not 93%-97%.

However, 66% survival tells only part of the story. BPA, the Corps, PNWA, NWRP and their followers neglect to mention problems that accrue because of the dams' *reservoirs*. The reservoirs behind these dams increase yearling fish travel times, raise the temperature of the water, create a perfect habitat for salmon predators such as pike minnow and bass, and expose the yearling salmon and steelhead to those predators for long periods of time. According to Fish Passage Center data, from 1999 through 2013 the average survival rate for wild Chinook salmon through dams *and* reservoirs was .54. For wild steelhead, the survival rate was .45. Hatchery fish survival rates were generally lower.

In 2013, NOAA Fisheries acknowledged that no fish passage improvement had occurred for many years by stating, "Chinook survival through the hydropower system has remained relatively stable since 1999 with the exception of lower estimates in 2001 and 2004" —this despite the expenditure of well over a billion dollars on so-called fish passage improvements. Thus the most accurate figure to associate with juvenile fish survival through the hydropower system is not 95% or 66%, but rather about 50%, though the latter figure is still misleading. Here's why....

The Army Corps of Engineers created islands in the lower Columbia River composed of the sediment the agency has dredged to maintain the shipping channel. East Sand Island, for example, is the most notorious for providing perfect nesting grounds for Caspian terns and double-breasted cormorants, avian predators that thrive on juvenile salmon and steelhead. Predation by these birds further reduces juvenile fish survival by an estimated 14.5%. Thus the average survival rate for wild juvenile Chinook salmon drops to 46% and for wild steelhead to 38.5%. Even these percentages are accurate only before *delayed mortality* takes its toll— the further loss of juvenile fish in the Columbia estuary caused by the rigors of dam and reservoir passage.

Any organization that attempts to associate a 93%-97% survival rate with juvenile salmon and steelhead migrating down the lower Snake and Columbia Rivers is either ignorant of the facts, purposely misleading, or lying. Government agencies that perpetuate this misinformation are perpetrating a public hoax. They are also hastening the demise of the Pacific Northwest's most iconic wild species.

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