

# Dammed If You Do, Dammed If You Don't

Dam removal on the Elwha spawns a battle over hatchery fish

▲ BRIAN IRWIN

**T**HE ELWHA RIVER is a striking flow of green water that winds through the center of Washington's Olympic Peninsula. Frothy eddies and bouncing haystacks of whitewater are lined by giant hemlocks dripping with moss, Paleozoic-sized ferns ringing their huge trunks. But under the surface the fish in this river, which was once one of the most productive salmon fisheries in the country, are fighting to survive. And that fight is about to become much more difficult.

Coursing from the alpine glaciers of the Olympic Mountains, the Elwha used to run unobstructed over 70 miles into the Strait of Juan de Fuca. It boasted rich populations of five species of Pacific salmon, as well as healthy populations of bull trout and rainbows.

In 1910, construction of a dam 4 miles upstream from the river mouth blocked passage for migrating fish. A second dam 8 miles upstream from the first contributed to the problem. Those dams are now in the process of being removed, an initiative that will hopefully restore the river to its former state. The project, however, is the largest dam removal and salmon restoration program in the world and will not come without some harm to the fish, the ecosystem, and the economy.

The concept of restoring the Elwha began decades ago, and in 1992 was eventually inked as the Elwha River

Photo | Tom Roorda

► **This photograph** taken in April 2012, shows sediment from the Elwha Dam removal reaching the Strait of Juan de Fuca. Together with the removal of Glines Canyon dam upstream, the Elwha Restoration Project is the largest dam removal project anywhere with an estimated 24 million cubic yards of sediment to manage.

Ecosystem and Restoration Act. That piece of legislation earmarked \$325 million to fund dam removal and river restoration, the majority of which was placed in the hands of Olympic National Park authorities and other federal agencies. The park and the agencies in turn funded and executed an extensive series of studies to determine the least harmful way of proceeding with dam removal and rejuvenating the river's ecosystem and salmonoid population to its once-historic levels.

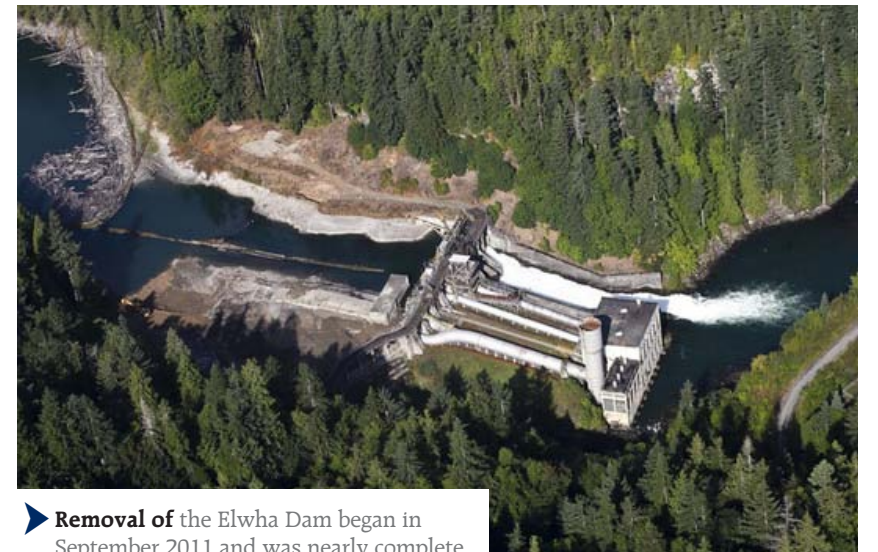
The dams were built during a time when the Olympic Peninsula was still developing frontier. The Elwha and Glines Canyon dams stopped up the Elwha, filling Lake Aldwell and Lake Mills, respectively. Within a few years the hydropower project had become vitally important to the region, offering the electricity that hoisted small towns like Port Angeles, Washington, into economic stability. Over time, the manual controls of the dam became antiquated, the structures fell into disrepair, and their productivity became overshadowed by more efficient electricity-producing endeavors.

Olympic National Park, the Lower Elwha Klallam Tribe (who used to rely on the Elwha's harvestable salmon population) and other conservancy groups had to make a decision: fix the dams and build fish ladders to restore the salmon run, or try to turn back time on what was once the most prolific salmon river in the United States. They chose the latter.

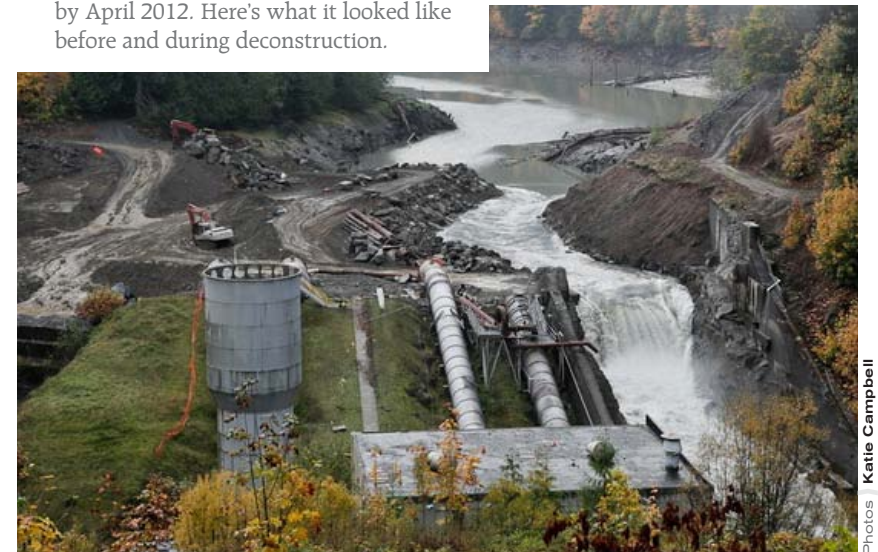
The dam removal began in September 2011 by Barnard Construction, a contractor from Bozeman, Montana. For a sum of almost \$27 million, Barnard will strip the two dams out over a period of three years. The upper dam will be "notched down" step by step, allowing Lake Mills to drop its level slowly. The Elwha Dam was removed after the river was rerouted to circumvent the current site.

What happens next is unknown, however large bodies of scientific data support the theory that although there will be significant short-term harm to the hydrosystem, it is anticipated to recover, possibly to its native state, within a period of a few years.

The tear-down project will likely do much more than allow passage for spawning salmon. According to Olympic's Elwha River Restoration Plan, it will liberate "nearly 24 million cubic yards of sediment" that have settled in the reservoirs. As this



► **Removal of the Elwha Dam** began in September 2011 and was nearly complete by April 2012. Here's what it looked like before and during deconstruction.



Photos | Katie Campbell

fine and coarse sediment flows downstream, it is anticipated that the trout and salmon in the middle and lower river will suffer gill abrasion and stress, which Olympic assumes will kill most fish "due to exposure to extreme levels of turbidity."

This seemingly unavoidable sequela of the project may not be catastrophic in the long term. History has shown that rivers can be essentially scoured by debris and rebound. The Toutle River that seeped from the toe of Mt. St. Helens was flushed nearly clean when the cataclysmic eruption of 1980 sent entire forests and the top of a volcano crashing downstream. Within a few years the river's population of steelhead had returned, albeit not quite to their previous numbers.

The fish population's recovery likely occurred via a complicated series of factors, the least of which was not access to secure tributaries. As such, Olympic's plan places high priority on access to what they refer to as "refugia," tributaries where the already unhealthy populations of bull, rainbow and cutthroat trout can hide from turbid water.

Snorkel studies of the Elwha from 2007 and 2008 showed that the Elwha's bull trout population constituted only 3 percent of the trout species in the river. Likewise, these fish were found to "be of poor fitness" compared to bulls found in neighboring watersheds. The leading theory is that their weakness is a direct result of a lack of access to abundant food supplies due



▶ A new hatchery operated by the Lower Elwha Klallam Tribe has sparked lawsuits from conservation groups which argue hatchery fish will spoil the genetic integrity of native Elwha fish species.



Photo: Katie Campbell

to elimination of anadromous salmon runs. By restoring safe passage for migrating salmon, not only will their population rebound, but that of the other trout species in the water will as well. Further, studies suggest that “downstream recolonization” will likely occur, leading to a resurgence of sea-run bulls and rainbows.

Not all experts agree that dam removal is enough to restore the salmon in a timely manner. Of the \$325 million set aside for the dam removal project, \$16 million dollars was diverted to fund a large-scale hatchery operated by the Lower Elwha Klallam Tribe.

The salmon that teemed in the river were the lifeblood of this tribe 100 years ago, and the tribe is motivated to restore the population to harvestable levels as soon as possible. They believe that stocking the watershed with 4 million steelhead and salmon per year is the fastest means to this end.

Kurt Beardslee, the executive director of the Wild Fish Conservancy disagrees with the hatchery initiative. Citing abundant third-party research, he states that “the evidence does not show stocking will be necessary.”

He believes that as the world’s largest salmon restoration project, decisions should consider the world’s best research and that “many of the world’s scientists feel the Elwha can regenerate on its own.”

“The preponderance of studies show that hatcheries do not help long term sustainability of native fish populations. In a single generation, the breeding of wild fish in a hatchery for purposes of release generates detrimental genetic change that is passed down to their progeny. We are essentially domesticating fish and releasing them into the wild.”

The release of hatchery fish carries potential impact beyond the concept of introducing “domesticated fish” into ecosystem. Some experts believe that the introduction of the altered gene pool will introduce maladaptive genetic properties into the previously native genetic makeup of the wild fish, making them less suitable to survive in the Elwha and less likely to retain their intrinsic spawning patterns.

In response to the opening of the new hatchery last May, the Wild Fish Conservancy, The Federation of Fly Fishers Steelhead Committee, and other conservation groups threatened litigation against Olympic National Park and others. Those parties, which included NOAA and the US Fish and Wildlife Service, were accused of violating the Endangered Species Act based on the notion that the introduction of hatchery fish is harmful to the threatened native bull trout, chinook salmon, and steelhead populations. The notice of possible lawsuit

was filed by a Seattle firm on September 16, 2011 and stated the intent to sue, should the federal agencies fail to arrest their current hatchery-based restoration plan. The statuses of the hatchery and the lawsuit have not changed to date; it’s unclear how Olympic and other groups will respond at this time.

The Elwha may also have other challenges. Clear-cutting has been rampant on the peninsula over the last few decades. Many of the stands of trees that encircle most of Olympic National Park have been mowed down, leaving the park an isolated island of wilderness, but one that is separated from the surrounding ecosystem by fields of tangled stumps incapable of supporting wildlife in the same matter the forest could.

Olympic has been trimmed into vacuum of timber harvested forest and although its size will help it survive, it is unknown if the long-term impact of peripheral logging, sometimes right up to the park’s boundary, will allow the river to regenerate as predicted. 🐟

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