



## THE QUILEUTE TRIBE: Navigating a Sea of Change

### Background

The people of the Quileute Tribe of the Quileute Reservation, located on the Pacific Coast of Washington's Olympic Peninsula at the mouth of the Quillayute River, have for centuries depended on the sea and the rivers that flow through the community from the coastal mountains. The tribe's ancestors plied the waves in massive canoes to harvest whales, seals and other marine animals and, until recent decades, enjoyed an abundance of fish, shellfish, land-roaming game, and native-plant resources.



But environmental pressures likely tied to climate change have diminished the tribe's traditional food sources, at times pushing some species below harvestable levels, including salmonids whose migration cycles have been disrupted by changes in snowfall patterns. Other problems have arisen as a result of shifts in precipitation and average temperatures, storm intensity, and changing marine chemistry. They include an increase in flooding and shoreline erosion; higher risk of wildfires in and around tribal land; an invasion of non-native plant species such as Scotch Broom and knotweed, which supplant native forbs on which elk and deer feed; and weakened shells in mollusks and possibly other marine invertebrates as ocean pH levels rise.

As climate change continues to impact the Quileute community, tribal members are rethinking not only their means of sustenance but their geographic location. Federal legislation in 2012 gave the small tribe an additional square mile of higher land to which they are slowly relocating parts of their community—a limited but possibly critical option.



Figure 1 Local flooding has at times blocked access to the nearest hospital. Photo by Tony Foster, Chief of Quileute's Dept. of Natural Resources Enforcement.



Figure 2 The Quillayute River, a multi-tributary spawning route for salmonids, runs through the Quileute community as it enters the Pacific Ocean. Google Earth image.



Figure 3 Sandbagging the Solduk River—joint effort by WA Dept. of Fish & Wildlife and Quileute. Photo by Debbie Preston.

### **Water: Source of Bounty, Source of Risk**

"The fishery is the tribe's lifeblood," says Katie Krueger, Environmental Policy Analyst/Lawyer with the Quileute Tribe's Natural Resources Department. That resource has been stressed from several angles: Salmonid species that spawn throughout four rivers in the Quillayute River Basin have diminished in recent years, some species crashing in 2015. Decreasing average snowfall in the Olympic Mountains has reduced summer flows but increased winter flows where salmonids spawn and their fry develop before their journey to the sea. During the 2015 crash Quileute tribal members, with help from salmonid co-manager Washington state, were forced to sandbag a riverbed to raise the water level sufficiently for chinook salmon to reach their spawning grounds.

Krueger says no one knows precisely what is depleting salmonid stocks. She suggests two possibilities: disruption of habitat during the juvenile stages in-river; and/or phenology (changes in the timing in which prey resources are available during the ocean phase of their life cycle). "While none of the rivers supporting our ten runs of salmonids is glacially fed, three of the four rivers that flow into the Quillayute mainstem depend on winter snowpack in the Olympic Mountains for consistent water supply in the summer. Recently we've gotten rain instead of snow, which runs off fast and causes flooding."

Dungeness crab, another tribal mainstay and a resource that is commercially important coast-wide for tribes and state alike, was judged unsafe to eat during 2015 because of high levels of domoic acid, a toxin produced by harmful algal blooms that thrived in a vast warm water presence that year along the entire west coast. The toxin level led to coast-wide closure of the fishery, state and tribal alike. Marine finned-fish species on which tribal commercial anglers depend—primarily black cod and halibut—have not yet been significantly impacted, but as the ocean warms and its chemistry changes, harvesters and scientists watch with concern. Salmon are very likely impacted by ocean acidification since a major food supply in their early ocean phase is pteropods, highly susceptible to shell damage by the lower pH.

Changing water conditions also represent a direct threat to the area's human population. Because the Quileute Tribe lies within a tsunami zone, the tribe is engaged in an expensive, long-term "Move to Higher Ground" program, a multidepartment effort that will also help to protect low-lying homes, businesses and structures at risk from flooding and marine storms.

Individuals at risk include not only approximately half of the Quileute Tribe's membership (some 350 residents) residing in the shoreline community of La Push but employees and public visitors using the tribe's resort; staff of the local U.S. Coast Guard station are also at risk. Among the concerns, says Krueger: local flooding has at times temporarily blocked access to the closest hospital, and storms that

she says have grown more intense erode the shoreline and have damaged the tribe's protective jetty. The Army Corps of Engineers performed emergency repairs last year; the Corp also periodically dredges local watercourses.

### **Assessing and Addressing the Threats**

With its tribal treaty partners (Hoh and Quinault), Quileute recently participated in a natural resources vulnerability assessment. Supported by limited funding, the tribe also created a climate adaptation plan and a hazard mitigation plan. Krueger says that the tribe's response options are limited; the 2012 legislation that increased their land base did not include funding. The tribe will continue to carefully manage fish populations, and as funds permit will gradually move tribal structures and homes to higher ground. The tribe is encouraging community gardens to help maintain food security as traditional food sources are impacted. The Army Corps of Engineers periodically dredges the river, helping to keep the channel open and lessening the flood risk.

The tribe and other Washington State treaty tribes, all of which co-manage fish resources with the state of Washington, have responded to recent drops in salmonid populations by annual review and revision of fish harvest regulations. "We are already reducing fishing schedules when needed," says Krueger, "and tightening regulations related to harvest overall, while working to improve on-shore habitat through a multitude of grant programs."

Tribal staff participate in a number of statutorily established federal, state and tribal intergovernmental committees as well as the Northwest Indian Fisheries Commission (an association of 20 Washington State treaty tribes) whose agendas include climate planning, marine and freshwater fisheries, forestry, game, noxious-weed control, salmon-habitat restoration, mapping of marine habitats, harmful algal-bloom monitoring, and marine spatial planning.

"Because we have problems specific to our reservation and treaty-managed resources," Krueger says, "we still need to plan for our separate needs. The treaty resources are complex. Because we share jurisdiction and resource management with state and federal agencies off-reservation, and with our treaty partners inside Treaty of Olympia terrestrial boundaries and offshore in their ocean Usual and Accustomed Fishing Grounds, cooperative planning is essential."

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This profile was developed in 2017 by Katie Krueger, Quileute Natural Resources Department, and Dennis Wall, Institute for Tribal Environmental Professionals, Northern Arizona University, with financial support from the Bureau of Indian Affairs. The profile is available on the Tribes & Climate Change website: [www7.nau.edu/itep/main/tcc/Tribes/](http://www7.nau.edu/itep/main/tcc/Tribes/). The tribal climate change profiles featured on the website are intended to be a pathway to increasing knowledge among tribal and non-tribal organizations interested in learning about climate change mitigation and adaptation efforts.