



**Project Title:** Sustaining Tribal Forests by Increasing Disease Tolerance of Trees

**Headline Title (2-5 words):** Northwestern Tribal Forest Improvement

**Brief Summary (Abstract):** Climate change will likely bring warmer, wetter weather to the Pacific Northwest – ideal conditions for the spread of forest pathogens. Located on the Washington’s Olympic Peninsula, the Quinault Indian Nation is selectively propagating and replanting reservation-grown, disease-tolerant Douglas-fir to ensure working forests and resilient ecosystems well into the future.

**Project Location:** Quinault Indian Reservation, Taholah, WA

**Partners:** Quinault Indian Nation, USDA APHIS, Washington Coast Douglas-Fir Cooperative, Northwest Tree Improvement Cooperative, US Forest Service, Swiss Needle Cast Cooperative

**Background:**

The Swiss needle cast (SNC) epidemic in Douglas-fir forests of the coastal Pacific Northwest is unprecedented and intensifying. SNC is caused by a windborne fungal pathogen (*Phaeocryptopus gaeumannii*) that causes Douglas-fir trees to prematurely shed needles. The disease reduces tree growth 20-50 percent. The epidemic is associated with replacement of diverse coastal forests with monocultures of Douglas-fir and the onset of warmer, foggy and drizzly weather, milder winters and earlier springs – weather patterns typical of long-term climate change scenarios.

Heavily dependent on forestry and timber harvest, the Quinault Indian Nation (QIN) is based on a 208,000-acre reservation on the Pacific coast of Washington’s Olympic Peninsula that lies squarely in the infection zone. Approximately 5% of the Reservation forest is already infected with SNC. Because the QIN and other tribes are restricted by reservation boundaries, their attachment to the land, and off-reservation treaty rights, moving to new areas to accommodate climate shifts is not a viable option. It is therefore critical that the QIN begin adapting its forests to changing conditions.

The QIN Forestry Department has been selectively propagating trees for growth, yield and pest tolerance for more than 30 years. In 2012 the QIN began a long-term effort to propagate SNC-tolerant Douglas-fir to mitigate the effects of the disease and to sustain the reservation forest and tribal economy well into the future. Reservation-grown Douglas-fir seeds have been harvested and are being propagated in a nursery. In 2014 approximately 5,000 nursery-grown seedling plugs will be planted on three reservation test sites. They will be assessed in succeeding years for disease tolerance. The most tolerant Douglas-fir families will be selectively bred and propagated to replant in reservation forests.

**Project Goals:** The goals of this project are to: 1) develop new plant materials that are tolerant of forest pathogens likely to be introduced and spread as the climate changes and precipitation increases; and 2) interplant reservation forests with disease-tolerant Douglas-fir to ensure working forests and resilient ecosystems well into the future.



**Strategy Goals Implemented:**

- Goal 2 (*Manage species...to protect ecosystem functions and provide sustainable cultural, subsistence, recreational and commercial use in a changing climate*), Strategy 2, Actions 2.1.1., 2.1.7, 2.2.3 and 2.3.4
- Goal 3 (*Enhance capacity for effective management...*), Strategy 1, Action 3.1.7
- Goal 3 (*Enhance capacity for effective management...*), Strategy 2, Action 3.2.6
- Goal 5 (*Increase knowledge...on impacts and responses of fish, wildlife and plants...*), Strategy 2, Action 5.2.4
- Goal 7 (*Reduce non-climate stressors to help fish, wildlife, plants, and ecosystems adapt to a changing climate*), Strategy 3, Action 7.3.8

**Climate Impacts Addressed:** Impacts on tree species; spread of forest pathogens.

**Status of Project Implementation (Timeline, Milestones, Next Steps):** Project just began Year 2. Reservation-grown Douglas-fir seeds are being propagated in an off-reservation nursery. Three test sites on the reservation will be prepared this spring and approx. 5,000 nursery-grown seedling plugs will be planted. Initial assessments of disease tolerance will be conducted in spring/summer 2015.

**Project Outcomes:** The short-term outcome (by mid-2016) of this project is identification of 10-15 native Douglas-fir families that are tolerant of Swiss needle cast (SNC). Over succeeding years, the tribe will maintain 50-60 SNC-tolerant specimens in its seed orchard to produce seed that can be planted throughout the Reservation for reforestation of logged and other disturbed areas. The medium-term outcome (7+ yrs) is that Reservation landowners – the majority of whom are interested in the value of timber on their land – will have the opportunity to plant SNC-tolerant trees that will not be stunted by disease despite projected climate changes. Larger, faster-growing trees mean more frequent harvest and, therefore, increased income for Reservation families and tribal enterprises. The ultimate outcome (80+ yrs) of this project is establishment of a more SNC-tolerant and therefore sustainable working forest on the Reservation in a time of global climate change.

**Funding Sources:** Quinault Indian Nation, USDA APHIS

**Photos/Attachments:**

**Photo/Figure Credits (do we have permission to print):**

Photo by James Plampin, Silviculturalist, Quinault Indian Nation (You have permission to print.)

**Suggested Photo Caption:**

Douglas-fir seedlings - offspring of carefully selected reservation trees - are transplanted into logged areas on the Quinault Indian Reservation to rebuild strong forests.