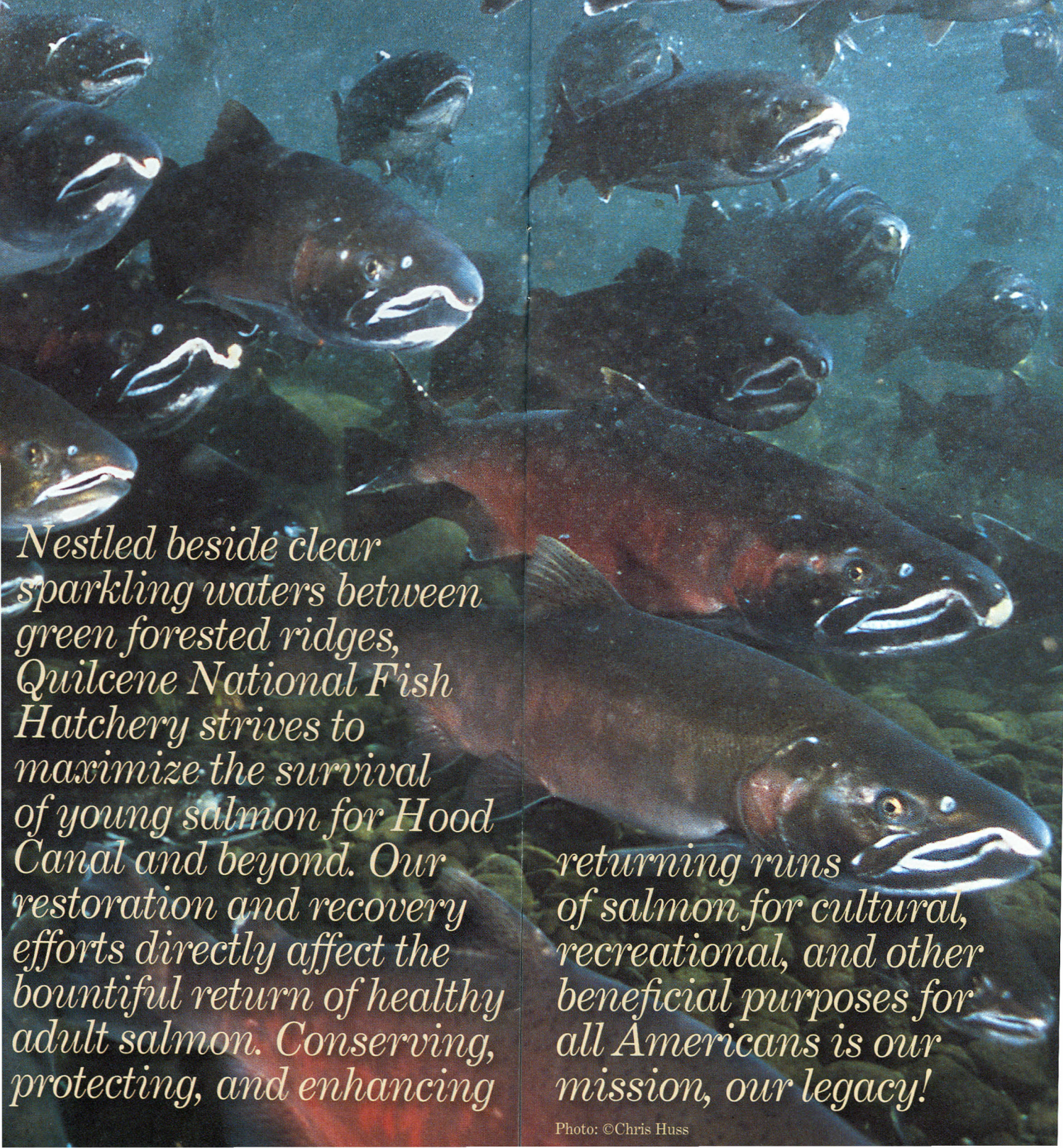


U.S. Fish & Wildlife Service

Quilcene

National Fish Hatchery





Nestled beside clear sparkling waters between green forested ridges, Quilcene National Fish Hatchery strives to maximize the survival of young salmon for Hood Canal and beyond. Our restoration and recovery efforts directly affect the bountiful return of healthy adult salmon. Conserving, protecting, and enhancing

returning runs of salmon for cultural, recreational, and other beneficial purposes for all Americans is our mission, our legacy!

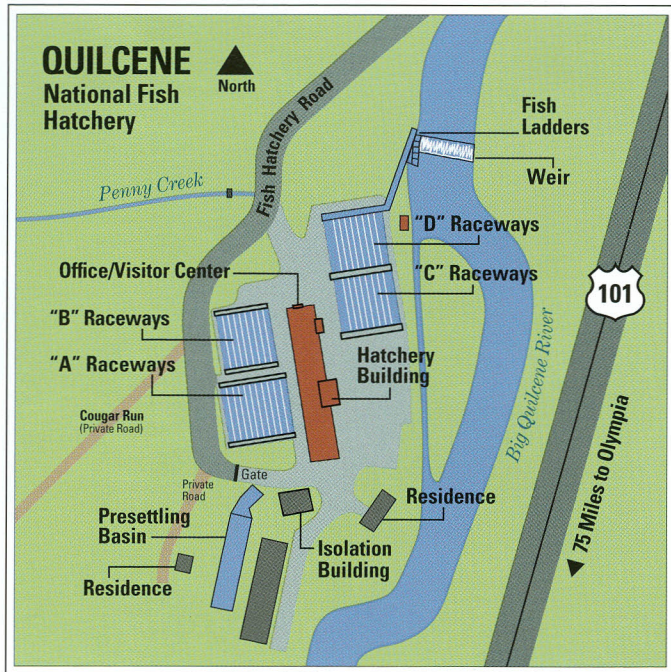


Quilcene National Fish Hatchery (NFH) is located along U.S. Hwy 101, a beautiful section of the Big Quilcene River 2 miles south of the town of Quilcene, 75 miles north of Olympia, Washington.

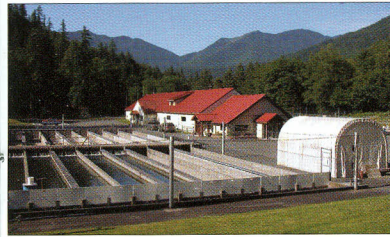
The hatchery is open to the public on weekdays and some weekends during various times of the year. Please call 360/765 3334 to verify visiting hours. Conducted tours for schools and other groups can be arranged, by contacting the office in advance.

To view adult coho salmon, plan your visit during late August through October. Please contact the hatchery for best dates to see the spawning operation for coho salmon, which begins in October.

Area Locator



Welcome



USFWS/Ron Wong

Quilcene NFH is operated by the U.S. Fish and Wildlife Service, U.S. Department of the Interior, originally established in 1909 as one of two or more fish culture stations on Puget Sound, or its tributaries in the State of Washington, "for the propagation of salmon and other food fishes."

The hatchery's specific mission is to restore and enhance fish runs in the Hood Canal and north coast areas. Quilcene is one of three national fish hatcheries on the Olympic Peninsula.

A Long History of Fish Culture

The hatchery was completed in 1911. Since then many species of fish including coho, chum, pink, Chinook, and sockeye salmon and brook, cutthroat, and rainbow trout have been raised at the hatchery. These fish were released into streams and rivers flowing into Hood Canal and the Strait of Juan de Fuca.

Currently coho salmon are raised on site. About 400,000 coho, equal to 20,000 pounds, are released annually directly into the Big Quilcene River. Another 200,000 coho, equal to 9,000 pounds, are transferred to the Skokomish tribal net pen in Quilcene Bay each spring.

At the hatchery, more fry survive to be released than in the wild.

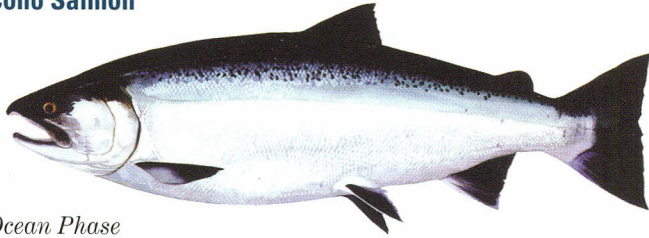
©Chris Huss



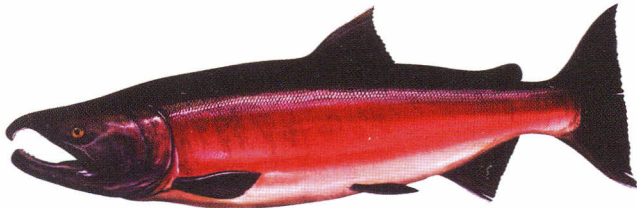
Hatchery Species Distinctions

How can you tell which is which? In many ways, the life histories of Pacific salmon are similar. All are born in fresh water and spend their early lives there (freshwater phase), migrate to the sea (ocean phase) where they grow to adult size and then return to their home streams to spawn.

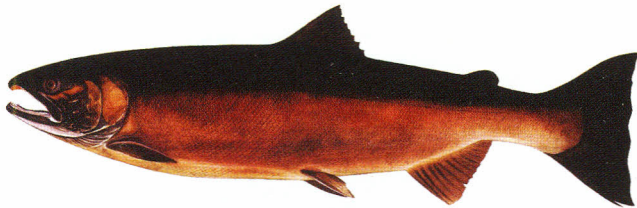
Coho Salmon



Ocean Phase



Male - Freshwater Phase



Female - Freshwater Phase

Length: Ranges from 10 to 32 inches.

Weight: 6 lbs average; 25.34 lbs. is the state record catch in saltwater in the state of Washington.

Identifying Features: When the fish are in the ocean and first enter the fish hatchery, they are silvery. They have small black spots on their backs and upper lobe of the tail fin. The gums at the base of the teeth are white. An amazing transformation takes place after returning to their natal



USFWS employee holding silvery adult coho male when first returning to fresh water.
USFWS/Ron Wong

stream. Males sport bright red flanks, dark heads, bellies, and backs and a grotesquely hooked snout referred to as a “kype.” Females retain the more rounded snout, and are an olive color with gray bellies. The gums of both are white – very noticeable when the fish are in their dark spawning colors.

Life History:

Most coho spend 1.5 years in fresh water and 1.5 years at sea, although a small percentage of males, called “jacks,” stay only 6 months in salt water. The jacks can fertilize the eggs, just like a full grown adult. The full grown adults and jacks die after spawning.



Typical salmon purse-seine net fishing vessel in the near shore fishery.
USFWS

Once in the oceans, they range from northern California to Alaska and migrate back to their “home stream” in late summer and fall then spawn from late September through the early November. Coho are very powerful and can jump water falls that most salmon cannot negotiate. An average of about 4% of the fish released from Quilcene NFH survive to return to the hatchery or are caught in the near shore fisheries off the coast of Canada and Washington.

Fish Culture Then and Now

Early methods of fish culture were primitive. To feed the fish, parts of a cow or horse would be suspended above the water in a fish pond and flies would lay their eggs in the decaying flesh. The eggs would develop into maggots, fall into the water, and feed the fish.

Fish food was initially made at the hatchery using ground up fish carcasses, ground up beef liver, and adding salt and vitamins, to be extruded over the water in a fish feeder (similar in design concept of a cookie press) to feed the fish. Today, commercial fish feed manufacturers prepare specialized fish food for different species and sizes of fish from fry to adult). The fish food is manufactured in the form of a pellet that is loaded with nutrients for healthier fish stocks and a higher survival rate.

Today fish pathologists monitor our fish year round and are available on call to address any abnormal fish behavior or elevation in mortality. Abnormal behavior can be an indication of the fish starting to get sick. The fish pathologist then recommends treatments for specific fish diseases and gives advice on how to prevent or minimize the impacts of disease on fish populations.

The hatchery strives to raise healthy fish in a clean, shaded rearing environment. When the coho return to the hatchery, they swim up a fish ladder and into the hatchery's holding pond.

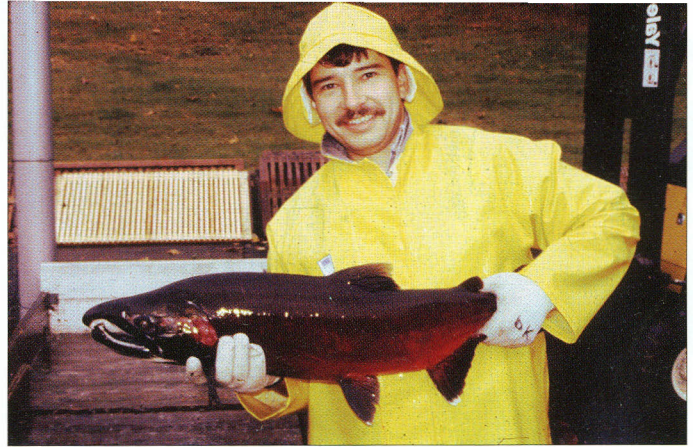


*Quilcene NFH
in 1938*



*Fish at the
hatchery are
monitored for
diseases and
parasites.*

USFWS/Ron Wong

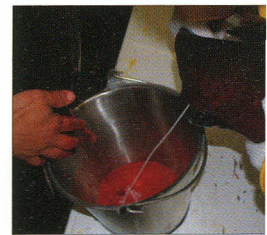
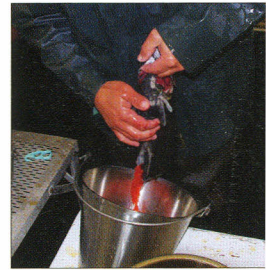


*Hatchery staff
holds a male coho
salmon in ripe
spawning color*

The fish are held until the eggs are mature, with spawning starting early October. In nature, all Pacific salmon die after spawning. Fish are spawned at the hatchery according to genetic guidelines which help promote the long-term survival of that particular species. Returning coho salmon that are in excess of the number needed for spawning are utilized as food by tribal communities.

Female fish are cut open to release their eggs into a bucket and the sperm (milt) from a male is mixed with the eggs. Water is then added to the eggs and milt mixture to help activate the sperm, and fertilization takes place almost immediately thereafter. Samples taken throughout the egg collection process are checked for diseases by a fish pathologist to safeguard healthy offspring.

*Taking eggs from
adult coho salmon
USFWS/Ron Wong*



*Above: Adding milt
(sperm) to fertilize
the eggs*

USFWS/Ron Wong

*Weighing fish food
USFWS/Ron Wong*





Continuing from here...

All the fertilized eggs are taken to the incubation building, rinsed, disinfected, and poured into incubator trays for hatching. Clean, cold, oxygen-rich water runs through the incubators imitating the flow of a natural stream environment.

Hatcheries provide a safe environment for the development of salmon eggs, sac fry, fingerlings and smolts. The hatchery can increase the survival rate of the salmon through the smolt stage in their life cycle. In the wild, about 15 percent of the eggs survive to the fry stage, while hatchery survival is about 90 percent. Increased hatchery survival rate could mean many more returning adults.

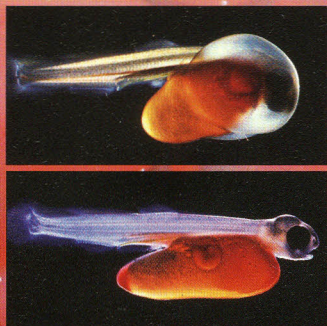
The warmer the water temperature the faster the eggs develop. After about 50 days at 50 degrees Fahrenheit the eggs hatch into "sac fry (alevins)," larval fish with sacs of egg yolk attached to their bellies. The yolk sustains the fish for several weeks (the fish are not fed during this time). In the wild, they would stay hidden in their gravel nests until they emerge as buttoned-up fry.

Eyed eggs being inventoried and prepared for hatching

Sac-fry with yolk sac
USFWS/Ron Wong



Buttoned up sac-fry.
USFWS



Photos above show the hatching of an eyed egg into an alevin (sac-fry). Note the clear eggshell around head of hatching alevin. ©Chris Huss

Background photo: Eyed eggs
USFWS/Ron Wong



**Coho "fry"*
USFWS/Paul Kaiser



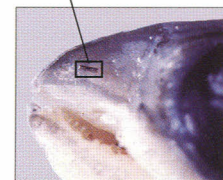
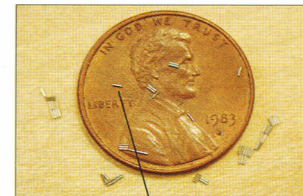
***Coho "smolt"*
USFWS/Paul Kaiser

When the yolk is completely absorbed, the young salmon are now called "buttoned up" or fry. At the hatchery, the fry are transferred to nursery tanks or outdoor raceways and fed a nutritious pelleted food containing fish, grain meal and vitamins. When the fish are around seven months of age, a coded wire tag is inserted in some of them for research purposes in a specially designed fish marking trailer.

Around eighteen months of age, the body becomes silvery and more streamlined, and the fins turn to a paler color or become clear. The tail fin often develops a dark border along the rear edge. The fish are now called "smolts," signifying they are ready to begin their journey down the river and into the sea.

Hatchery smolts are released in the spring (around April) matching the wild smolt migration. The fish move downstream under the cover of darkness without resisting the pull of the river currents flowing toward the sea. They linger in the estuaries, areas where fresh and salt water mix, for several weeks. After acclimating to salt water, they head out to sea for about a year and a half. They then return to the Big Quilcene River to begin the life cycle again.

Enlarged model of a coded wire tag (CWT) and size comparison of a CWT and a penny.
USFWS/Ron Wong



Above: Coded wire tags (1mm) are inserted in the nose of some smolts prior to their release. RMPC

Working to Recover Imperiled Species

Quilcene NFH has a history of helping recover species that are listed as “threatened” or endangered” under the Endangered Species Act (ESA). The Isolation Building built in 1999 uniquely set up the hatchery to work with imperiled fish stocks originating from outside of the Quilcene Basin. This building is supplied with pathogen-free water and can be used to incubate eggs and hatch and rear fish for a short period of time.

Summer Chum Salmon

In the early 1990s, the number of adult summer chum salmon returning annually to Hood Canal and the Strait of Juan de Fuca severely dropped to less than a thousand spawners. Seven of 16 historical spawning populations in Hood Canal became extinct and these fish were listed as Threatened under the ESA in March of 1999.

The hatchery participated in a summer chum salmon supplementation program for 12 years from 1992 until 2003. After 2003, adult runs were returning to the Big Quilcene River in the tens of thousands. These fish returns are being monitored, and if there is a drastic decline in the future, the hatchery and its partners could once again intervene.

Steelhead

In 2007, a large scale, long term study was initiated within Hood Canal to determine if a conservation hatchery program can recover a threatened steelhead population. This sixteen-year project is being led by NOAA Fisheries, with collaborating efforts from tribes, state and federal agencies and private non-profit groups.

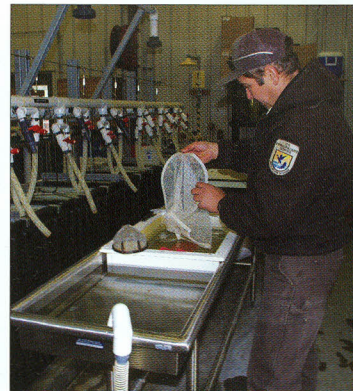


“A beautiful Steelhead!”
USFWS/Chris Pasley

The Hood Canal Steelhead Project is being carried out across multiple rivers in Hood Canal. The Skokomish, Dewatto, and Duckabush rivers receive hatchery-reared natural-origin steelhead. Naturally-spawned eggs were removed from each of the test streams and taken to either Quilcene NFH or McKernan State Fish Hatchery for incubation and short term rearing. These fish were then transferred to another facility for extended rearing and eventual return to their natal river. The Hood Canal Steelhead Program within the Isolation Building at Quilcene NFH drew to a close in 2014.

Lake Sammamish Kokanee

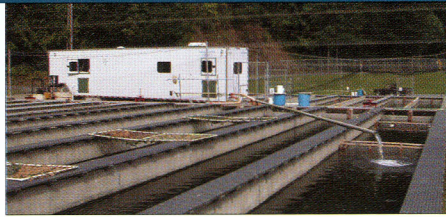
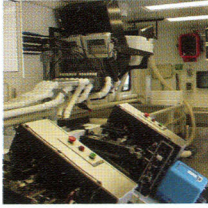
Quilcene NFH partnered with the Lake Sammamish Kokanee Work Group in 2010 for a successful pilot feasibility study using the hatchery’s Isolation Building.



The Isolation Building at Quilcene NFH is poised to help with future recovery of other threatened or endangered fish species.

Left: Isolation Building, receiving wild laid eggs
USFWS/Ron Wong

Partners for the Future



Fish tagging facilities
USFWS/Ron Wong

The production program at Quilcene NFH is a cooperative venture involving many partners - the Point No Point Treaty Council, five Tribes (Skokomish, Jamestown S'Klallam, Port Gamble S'Klallam, Lower Elwha Klallam and Suquamish Tribes), Washington Department of Fish and Wildlife, the U.S. Fish & Wildlife Service offices (Fisheries & Aquatic Conservation Office - Lacey, WA, the Olympia Fish Health Center, Abernathy Fish Technology Center), NOAA - Fisheries and other federal offices, Long Live The Kings and the Hood Canal Salmon Enhancement Group. Any changes in fish production programs must adhere to several management plans and are developed collaboratively, for the benefit of both the people and the salmon!

Partnering contributes to the continuing abundant return of salmon.
USFWS



Olympic Peninsula

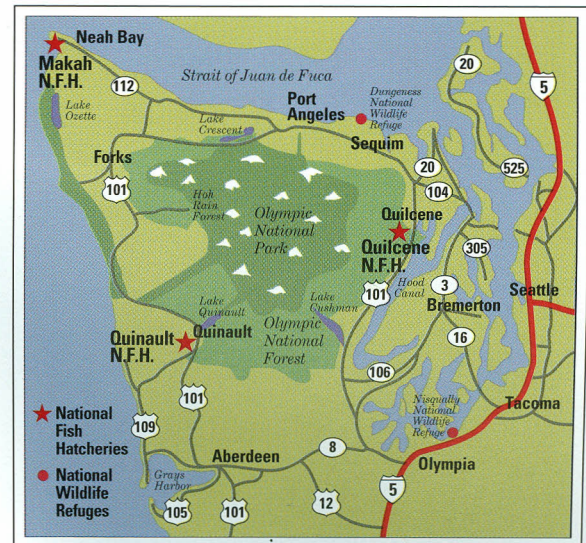


View from Mt. Walker, located just south of the hatchery.
©Al Jensen

The Olympic Peninsula abounds with unmatched natural beauty, snow-capped mountains, clear streams, numerous lakes, sandy beaches, and majestic rain forests. While exploring the natural beauty of our area, you are welcome to visit Makah and Quinault national fish hatcheries. They are located on the Olympic Peninsula along the scenic route around one of the nation's largest wilderness areas.

The rugged Olympic range is an unspoiled wilderness with high lakes, fishing, camping facilities, skiing, and hiking.

Other places to explore are the Olympic National Park, Hoh Rain Forest, U.S. Forest Service trails and campgrounds and national wildlife refuges.



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