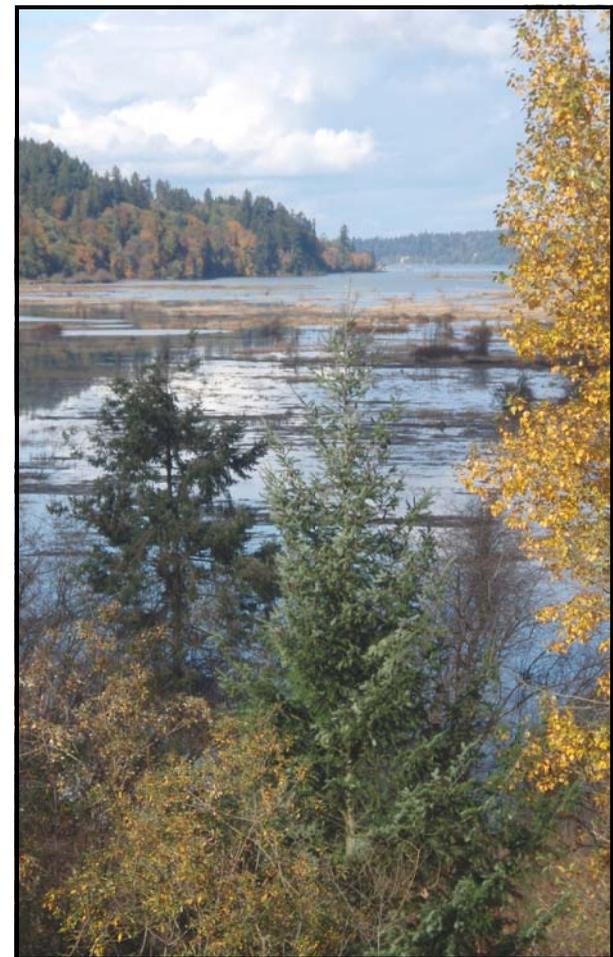


Estuary Restoration

The Return of the Nisqually Delta



What actions have been taken to restore habitat on the Nisqually Delta?

In the summer of 2008 a new exterior dike was constructed to protect 246 acres of freshwater wetlands and headquarters facilities and to prepare for estuary restoration. The dirt to construct this dike was taken from the seasonal freshwater wetland area to deepen and enlarge seasonal ponds. In May 2009 the major dike removal phase commenced. The majority of the Brown Farm Dike was gradually lowered, the borrow ditch was filled, rock armoring was removed, and several major sloughs were reconnected with Puget Sound. This extensive work was necessary to fully restore natural processes, including tidal circulation, channel formation and migration, sediment transport, nutrient exchange, and to provide habitat connectivity.

A 25-acre riparian surge plain forest area was created above the high tide line northeast of the Twin Barns, including snags for use by raptors. It will be replanted with native trees and shrubs over the next two winters. Other work included construction of an engineered logjam near the River overlook to protect the new dike from erosion while creating habitat for fish and wildlife.



A view of the restoration area with a variety of waterfowl and a Bald Eagle on top of a snag.
Photo by Jesse Barham, USFWS

Enhancements to the freshwater wetland area were largely completed during the summer of 2010. The restoration of tides in October 2009 has already begun to reestablish channels, providing habitat for fish and birds and initiating the natural processes which will restore the Nisqually estuary.

How will the restoration area be managed and monitored?

The restoration area will be closed to public access, including boating, except for the new trail and boardwalk. This is necessary to allow natural processes to heal the estuary and provide sanctuary habitat for fish and wildlife, particularly migratory waterfowl. The Refuge has partnered with the US Geological Survey and the Nisqually Tribe to monitor the changes and support adaptive management that have already started to occur in the restoration area. Monitoring includes data collection on bird and fish use, invertebrates, vegetation, tidal inundation, sediment transport, salinity, geomorphology, and effects on the nearshore.

Monitoring during the first summer after restoration indicates that large tracts of invasive reed canarygrass have succumbed to tidal inundation and salt marsh vegetation is colonizing portions of the site. Researchers from the Tribe have documented five species of juvenile salmonids using one of the restored sloughs in the restoration site: Chinook, pink, chum, coho, and cutthroat trout. Diet samples indicated that they were feeding heavily on the newly colonizing marine invertebrates within the restoration area. Shorebirds, waterfowl, and seabirds have also been seen using the site.

Cover photo: The Nisqually Estuary from Interstate 5.

Photo by Sheila McCartan, USFWS

How is the project being accomplished?

Many partners have joined the Refuge to help make this project a reality, including the Nisqually Indian Tribe and Ducks Unlimited. The Tribe recently restored 140 acres of estuary habitat on the east side of the Nisqually River and together these projects will restore more than 900 acres in the Nisqually estuary. Funds contributed by partners include Ducks Unlimited; the Salmon Recovery Funding Board or Puget Sound Acquisition and Restoration funds from all five south Puget Sound watersheds; the Estuary and Salmon Restoration Program administered by Washington Department of Fish and Wildlife; National Fish and Wildlife Foundation; National Oceanic and Atmospheric Administration; and Environmental Protection Agency.

How can I find out about the changes?

The Refuge will make every effort to keep the public informed about any temporary trail closures and other important events. For on-going information you may:

- Call the Refuge anytime at (360) 753-9467. If you do not get a live person, you may leave a message.
- Check the Refuge website at www.fws.gov/nisqually. Go to Events and News button.
- Get on the Refuge mailing list to receive the quarterly newsletter *The Flyway*.

Also, watch for signs at the fee station, Visitor Center reader board, and on the trails.

How can I find more about the entire project?

The Nisqually NWR Comprehensive Conservation Plan, which details the changes, effects to wildlife, and more can be found online. Go to: <http://www.fws.gov/pacific/planning/main/docs/WA/docsnisqually.htm>.

Also see: www.nisquallydeltarestoration.org for science and monitoring information.



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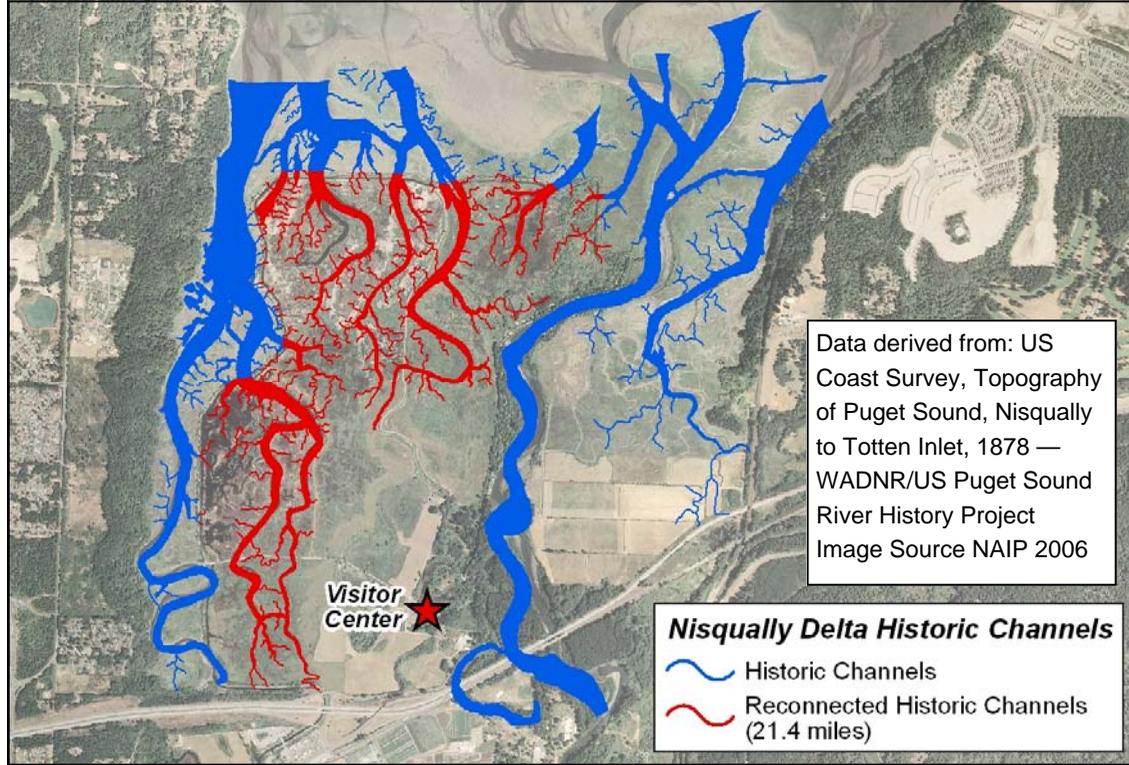
November 2010

What has been restored at Nisqually National Wildlife Refuge?

Nisqually NWR has restored 762 acres of the Nisqually estuary, by removing dikes and introducing tidal waters after an absence of more than 100 years. Riparian surge plain forest is being replanted on 25 acres to provide more of this rare but important habitat for juvenile salmon and songbirds. Enhancement of 246 acres of freshwater wetlands will allow intensive management for migratory birds and other wildlife.

While the importance of estuaries to the health of Puget Sound has become well known, more than 80% of estuary habitat in Puget Sound has been lost due to diking, draining, and development. Many fish and wildlife species that are dependent on estuaries are declining.

From 1996-2004, the Refuge conducted an extensive planning process with partners and public involvement to consider what would be best for the wildlife resources of the delta. In 2004, the



Cartography by J. Cutler, Nisqually Indian Tribe

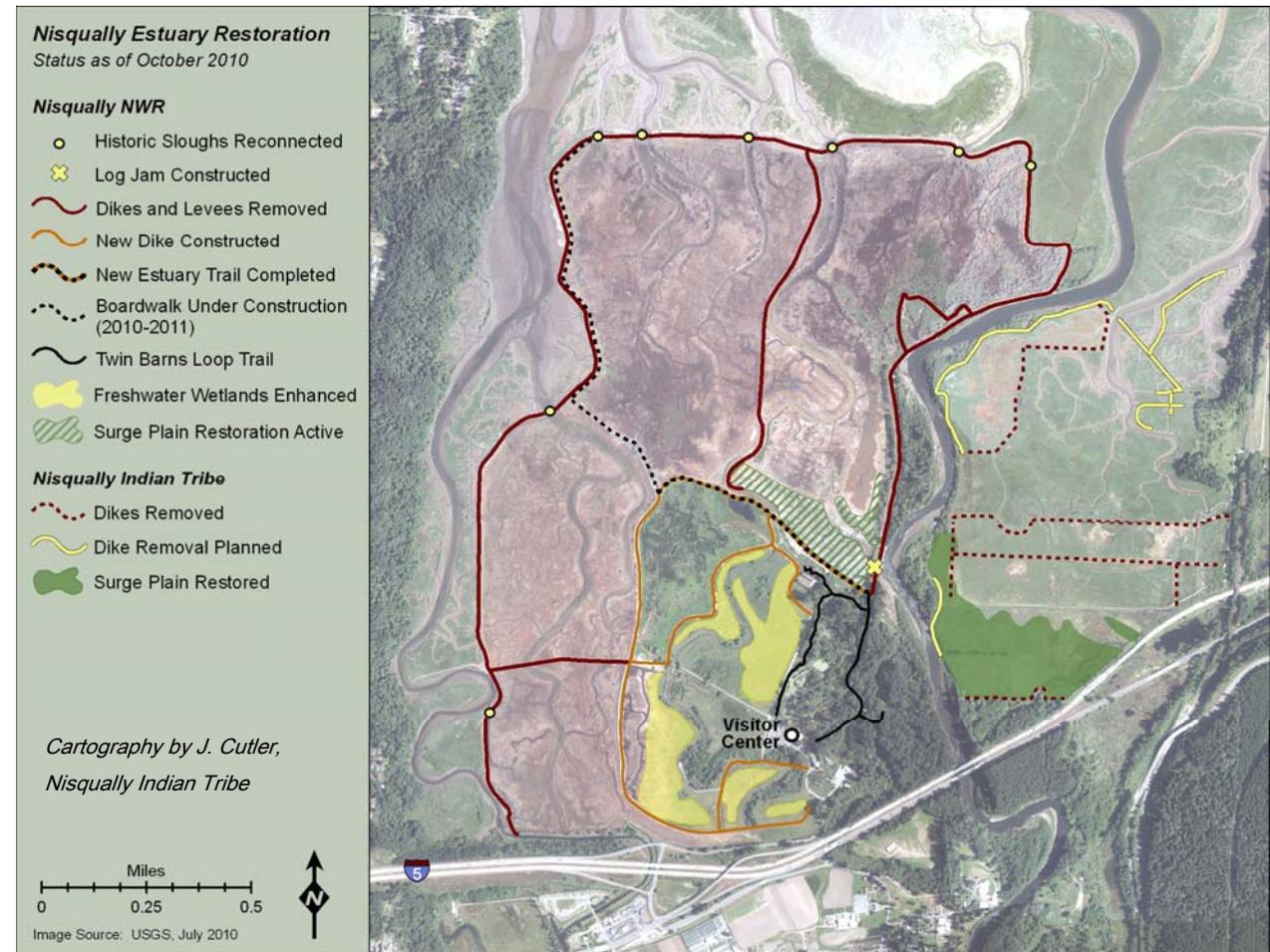
Why is habitat restoration needed?

Prior to the late 1800s, the Nisqually estuary was intact. However by the early 1900s, 1000 acres of the Nisqually Delta were diked for farming; cutting off the salt marsh from the Nisqually River, McAllister Creek, and the tides of Puget Sound. Since the 1970s the Refuge has managed this area as freshwater wetlands and grasslands. Overtime, these habitats have become degraded and difficult to manage.

Nisqually NWR Comprehensive Conservation Plan was completed with the decision to restore the estuary. This project is the top priority to recover federally threatened Chinook salmon in the Nisqually watershed. Migratory birds that depend on estuaries will also benefit, including waterfowl, waterbirds, shorebirds, and seabirds.

What is an estuary and why is estuarine habitat so important?

Estuaries are places where freshwater from rivers meet and mix with bodies of salt water like Puget Sound,



to create one of the most productive environments on earth. Estuaries support unique communities of plants and animals that make up the basis of the food web, provide a buffer from flooding, filter sediments and pollution, and provide a source of recreation and economic benefits for people.

The Nisqually River estuary is one of the most extensive and productive estuaries in Puget Sound and it provides a unique, large scale restoration opportunity. The magnitude of this project provides regional benefits to the greater Puget Sound area, including for many species of plants and animals that depend on the delta for one or more phases of their life cycles.

How will estuarine restoration change the trails at Nisqually NWR?

The Brown Farm Dike Trail was permanently closed in May 2009. The trail to McAllister Creek, the McAllister Creek Bank Fishing Area, and the Ring Dike Trail were also closed permanently to allow restoration. The Twin Barns Loop Trail remains open. The new Nisqually Estuary Trail includes a half mile of the new exterior dike, which opened in the fall 2009, and a one-mile boardwalk to the northwest corner of the delta, near the mouth of McAllister Creek. The boardwalk will open in the winter of 2011, with a portion closed seasonally during waterfowl hunting season. This unique trail will be 4 miles round trip from the Visitor Center.