Partnership Restores Historic Marsh in Northwest

Decade-long Project Aids Salmon Recovery

A HISTORIC MOMENT for the environment, ten years in the making, was finally reached at Naval Air Station (NAS) Whidbey Island, WA last summer in the Pacific Northwest. In late August 2009, high tide rolled into the Crescent Harbor salt marsh—an event that hadn't happened in nearly a century.

But, after Chinook salmon became a threatened species in 1999, and a state-wide push for salmon recovery was established, the Navy recognized that its land was a great candidate for restoration. August 2009 marked the culmination of the base's ecosystem restoration project.

refuge near shore to continue growing. "They actually have no place to go in a lot of cases once they leave the estuaries to start transitioning to saltwater habitat," said Phillips.

Allowing Crescent Harbor to flow into the marsh will directly benefit juvenile salmon. The new habitat will give fish

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>
> *–John Mosher, U.S. Pacific Fleet Northwest environmental liaison*

Background

In the 1920s, farmers built dikes in the Crescent Harbor salt marsh so their cows could graze. This led to the marsh being cut off from its main water source—Crescent Harbor. A tide gate and a manmade barrier [a berm] prevented water from flowing in, thereby preventing juvenile salmon and other fish from swimming into the wetlands. This was a problem because the marsh is an ideal refuge for juvenile salmon to mature before swimming out to the ocean.

"The primary objective was to bring tidal flow back in," said John Phillips, NAS Whidbey Island's natural resources program manager who oversaw the project. "To do that, a new channel had to be cut or the tide gate had to be removed. We decided to have a new channel cut."

Need & Benefits

When the volume of salmon is too high in rivers, or when river flooding occurs, juvenile salmon are pushed out of their habitat and forced to find new feeding opportunities, safe refuge and a chance to mature before swimming out to the ocean.

The first step was a feasibility study conducted by Philip Williams and Associates (PWA) and the University of Washington Wetland Ecosystem Team (UW WET). The study determined that the project would reconnect the marsh to the harbor ecosystem on a variety of biological levels, improve tidal flow and tidal levels, and enhance the quality of habitat for juvenile salmon.

This 2003 aerial photo shows the channel snaking around the wastewater sewage treatment plant to let rain water out under E. Pioneer Way via a tide gate. The Navy permanently opened the tide gate in 1994 to re-establish a saltwater connection from Crescent Harbor to the wetlands system behind the dike.
U.S. Navy photo

"It should heavily increase survivorship of smolts [juvenile salmon] that come out of the river and then head out to sea," said Phillips.

Steve Hinton, director of habitat restoration for Skagit River System Cooperative (SRSC) agreed. "I anticipate that salmon will occupy it immediately if they are in the vicinity," he said. "These little near-shore habitats are actively sought out by the little guys."

SRSC is a natural resources management organization that represents the interests of the Swinomish Indian Tribal Community and Sauk-Suiattle Indian Tribe. The SRSC's work is dedicated to enhancing fisheries management in a variety of ways, one of them being habitat restoration. The SRSC was instrumental in executing the project. Hinton helped secure funding, finalize designs for the restoration actions, and set the plan in motion.

The Crescent Harbor Salt Marsh project was part of SRSC's Skagit River Chinook Recovery Plan. "There are a number of these areas that are unique habitats," said Hinton. "We prioritized estuarine and near-shore projects as the most important."

Brian Cladoosby, chairman of the Swinomish Tribe, approved of restoring the land to its original condition. "Over the last 100 years, there have been environmental

The key managers behind the NAS Whidbey Island Salmon Saltwater Marsh Restoration project are Matt Klope, who headed the project until 2001, and his successor John Phillips, the air station's natural resources program manager. Klope is now head of the U.S. Navy's Bird Air Strike Hazard Program.
Walter Haussamen

Miles of early Dutch farmland bought by the U.S. Navy in 1941 to develop the Seaplane Base is open to tide flow after being blocked from the ocean for 100 years.

Naval Aircrewman 1st Class Chad Lewis

Revitalizing this habitat is a tremendous step in recovering threatened Chinook salmon populations in the state of Washington.

–Rear Admiral James Symonds, Commander, Navy Region Northwest

impacts, and for every action there's a reaction," he said. "When they started cutting off these estuaries that the juvenile salmon use to grow up in, it really disrupted their lives and our lives. And so to be able to see projects like this and to reintroduce these kind of estuaries for the salmon to basically hole up in before they go out to the ocean is really awesome," Cladoosby said. "This only helps in our efforts to continue to try to restore and rebuild the wild salmon stocks on the Skagit River."

Hinton added that both tribes were excited to see the project fulfilled. "They feel it's a big step in realizing their long term goals," he said.

Bill Oakes, public works director for Island County, also supported the restoration project. "Coastal estuaries are threatened nationwide, and Puget Sound is no exception," he said.

John Mosher, U.S. Pacific Fleet Northwest environmental liaison, noted the impact of the project as well.

"This project directly benefits the environment and wildlife in Puget Sound," he said. "Projects like this are happening all the time and demonstrate the compatibility of the Navy's mission with the natural resources that we share."

The Process

Getting water to flow through the marsh wasn't as easy as simply digging a new channel. A 30-acre wastewater treatment plant lies in the middle of the marsh, and several access dikes prevent water from circulating freely.

Enabling water to flow into the wetlands required modifications to the

marsh's infrastructure. "The construction project was divided into four parts corresponding to the four areas that blocked the restoration of natural tidal inundation at the site," said Tom Slocum, a professional engineer for the Whidbey Island Conservation District.

Step 1: Breaching a Sewer Intake Dike

The first action was breaching a sewer intake dike between the northwestern and eastern parts of the marsh. A 4.5-foot round culvert that connected the two sectors was sealed off, and a new 30-foot wide channel was constructed to allow more tidal flow and create bigger passages for fish.

Step 2: Replacing Conduit Pipe

Step two consisted of replacing a 43-foot long, 1.5-foot wide conduit pipe between the southwest and eastern parts of the marsh. Four new, 43-foot long, two-foot diameter drains were installed. Capacity for tidal flow and fish passage increased even more with this addition to the marsh.

Step 3: Improving the Dike

The third part of the restoration focused on improving the dike that separates the southwest and northwest parts of the marsh. Two 50-foot "notched weirs" [dam-like devices used to regulate water flow] were installed to better control erosion. This prevented the water from damaging the wastewater treatment plant.

Step 4: Building a Channel

The last part of the restoration was the most critical because it reconnected the marsh to Crescent Harbor. A new 680-foot-long channel, 92 feet wide at its mouth, was built to join the marsh and harbor and allow the tide to flood into the wetland. Once the mouth of the channel was opened up, the final barrier between the new channel and the main channel of the marsh was breached.

Funding

The project received funding from several sources. Island County Public Works applied for a grant through the Salmon Recovery Funding Board and was awarded approximately $225,000 in 2000. Island County contributed $38,000 to the project, which was used to fund the restoration studies completed in 2003 by UW WET and PWA. Approximately $590,000 came from the SRSC after the project's forward progress was temporarily stalled.

Pocket estuaries are within one day's migration from the Skagit River delta to Crescent Harbor by fry migrant Chinook salmon.

Courtesy of Skagit Chinook Recovery Plan, Washington Department of Fish and Wildlife and SRSC

At high tide, about 300 acres of marsh now becomes a habitat for juvenile Chinook salmon to populate and thrive.
Mass Communication Specialist 2nd Class Tucker Yates

Additional costs brought the total cost of the project to around one million dollars. Most of that was the $450,000 spent by Construction Battalion Seabees based in Port Hueneme, CA to install a bridge over the new channel.

Working Together

The various partnerships between the Navy, non-governmental organizations, local agencies and governments, and Native American tribes made the project a reality.

"This is a historic occasion for the Crescent Harbor Salt Marsh, and the Navy feels privileged to have been part of such a noteworthy restoration effort," said Rear Admiral James Symonds, Commander, Navy Region Northwest. "Revitalizing this habitat is a tremendous step in recovering threatened Chinook salmon populations in the state of Washington."

Captain Gerral David, NAS Whidbey Island commanding officer, spoke to the Navy's stewardship as well.

"The Navy tries to be environmentally conscious," he said. "We were aware that this [the marsh] was artificially created by the farmers when they put the dike in, and so our environmental department recognized that we needed to restore it to its natural habitat."

Partners in Flight

THIS RESTORATION IS doing more than giving juvenile salmon new critical habitat. It is also benefiting migratory birds.

Matt Klope, the Navy's Bird Aircraft Strike Hazard program manager, said that this project helps accomplish the Partners in Flight bird conservation plan.

Partners in Flight (PIF) was started in 1990 to prevent the decline of neotropical migratory bird populations. "Neotropical" refers to birds that live in the United States and Canada during warm months and migrate south during the winter. Since more than half of the bird species in the United States are neotropical, the need for conserving their populations is clear.

PIF is made up of more than 300 state and local agencies and nongovernmental organizations, and the Navy is doing its part as a member to protect birds on its installations.

Now that the wetlands at Crescent Harbor have been restored, Klope said that the Navy can anticipate seeing different types of birds return to the habitat during monitoring. He is well versed in this area, having been the NAS Whidbey Island project lead on the saltwater marsh restoration project until 2001 when he assumed his current duties.

"We're going to see the different species of birds come back. The shore birds will be in here, different kinds of ducks will be in here, the vegetation is going to change, and we're going to get mud flats back. Mudflats are a limiting factor for migrating shore birds–but now we're going to have them."
[Mudflats are sedimentary intertidal areas left bare by retreating tides. They have a high organic content and are attractive to some bird species.]

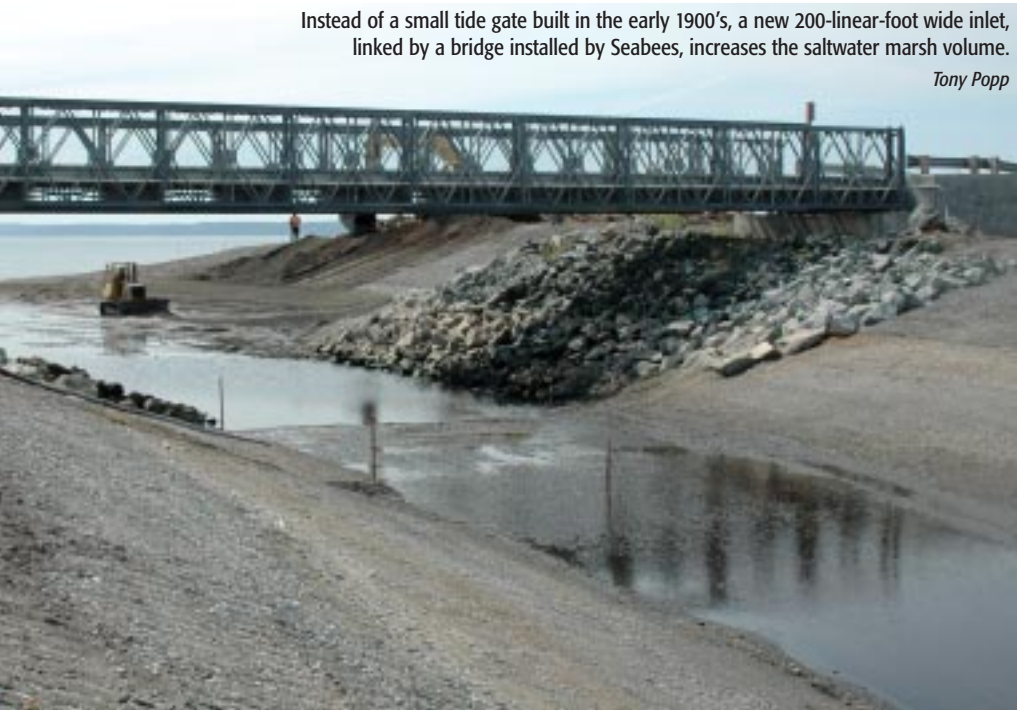
"This is a real win," Klope states, "not only for the salmon, but for the birds."

Access to the new saltwater inlet is breached (left) to the old channel (right) allowing one overall tidal flow system.
Tony Popp

Hinton said that one of the SRSC's goals was to have a strong partnership with the Navy. "We want to be able to work on projects in the future," he said. "I can't say enough about the cooperation and support that I received from the environmental division."

Oakes also applauded the partnership element. "It's been a great environmental partnership with the Navy on their property," he said, also praising UW WET and PWA as partners. "This is a great benefit to Island County," he added. "The aquatic environment is one of the things we love about living here."

The mayor of Oak Harbor, Jim Slowik, is also glad to see the Navy caring for the environment. "The city is focused on sustainability. It continues to develop more modern and better practices in environmental sustainability as well," he said. "It's very gratifying to see that the Navy is also doing that." ⚓



Instead of a small tide gate built in the early 1900's, a new 200-linear-foot wide inlet, linked by a bridge installed by Seabees, increases the saltwater marsh volume.
Tony Popp

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