# Repairing Ecosy

The first phase of the Dosewallips Estuary Restoration Project was completed in fall 2004.
marsh of the Dosewallips estuary. More than 350 cubic yards of spoils were removed using
restoration project had less impact on the sensitive soils of the salt marsh wetlands. This
remaining mild for the duration of the project. Planning for t

# stem Function, One Shovel-Full at a Time

## Dosewallips Estuary Restoration Project

*By Micah Wait; WT Conservation Ecologist*

Over forty WT staff and volunteers pitched in to remove an earthen dike from the tidal salt
g hand tools and light machinery. By not utilizing heavy machinery to take out the dike, the
meant that the project took over six weeks to complete, but the fall weather cooperated by
he second phase of the project was initiated in winter 04-05.

*Photo: Kurt Beardslee*

The Dosewallips Estuary Restoration is a cooperative project being managed by Washington Trout. Project partners include the Dosewallips State Park, Port Gamble S'Klallam Tribe, Hood Canal Coordinating Council, Point No Point Treaty Council, Washington Department of Fish and Wildlife, and Jefferson County. The project will restore the natural structures and functions of the lower Dosewallips River. It is hoped that restoring these natural elements of the ecosystem will aid in the recovery of depleted wild-fish populations in the Dosewallips River, including Puget Sound chinook and Hood Canal summer chum salmon, both listed as Threatened under the Endangered Species Act.

*WT and Americorps crews limited impacts from the project on sensitive wetland soils and plants by using handtools and wheelbarrows to remove a dike on the Dosewallips estuary. Photo: Micah Wait*

**Phase One**

The ultimate restoration objectives of the project include reestablishing connectivity of the lower river to its floodplain and distributary network, improving tidal circulation in the blind channels of the salt marsh, and assisting in the development of native forest in the upper tidal fringes of the estuary. Phase One of the project focused on enhancing tidal circulation and native forest establishment while phase two will work to reconnect the lower mainstem Dosewallips to its historic floodplain.

The dike was removed virtually one handful at a time, using shovels and a mini-excavator to load wheel barrows. The wheel barrows were then walked along the footprint of the dike, across a network of temporary wooden scaffolds and bridges that protected tidal channel banks, wetland soils, and native salt marsh vegetation, to a small dump trailer located in a central staging area. From the staging area, a small tractor hauled the spoils off of the salt marsh. The tractor traveled via a temporary road constructed of cedar bark chips known as hog fuel. Limiting tractor and wheel barrow traffic to the footprint of the dike, the wooden scaffolding network and the hog fuel road minimized compaction and damage to wetland soils in the project area.

All of this extra care required an intensive amount of people power. The project would not have been possible without a heroic and effective effort by Americorps crews from the Washington Conservation Corps and the Northwest Service Academy. The young volunteers put in long hard hours sweating over shovels and wheelbarrows, making the low-impact restoration possible.

The dike was originally constructed for agricultural purposes, to exclude tidal inundation in a 10-acre cell of salt marsh. Subsequently, the dike had been breached in two places, but tidal flooding and channel development in the salt marsh cell was limited by the portions of dike still in place. Blind tidal channels serve as conduits of water, nutrients, and energy between the highly productive salt marsh flats and the Hood Canal nearshore. Tidal salt marshes are some of the most productive ecosystems on the planet, and the profuse annual growth of vegetation provides the detrital base for the nearshore food web juvenile salmon depend on. Removing the dike will increase tidal circulation and flow in the Dosewallips esstuary, enhancing its ability to provide a rich rearing habitat for juvenile salmon.

In addition to the dike removal effort, Washington Trout crews spent the fall and winter working to reestablish native forest communities on the upper tidal fringes of the estuary. Invasive Himalayan blackberry had taken over portions of what was once a native Sitka spruce estuarine forest. In some places the blackberry had created exclusive patches greater than an acre in area. Blackberry patches are removed in two-stages. In the first stage the stand is cut down using chainsaws, then the roots and tubers of the blackberries are pulled from the ground to prevent re-sprouting. Once the blackberries are cleared a mix of native coniferous tree species and deciduous understory vegetation is planted. The tree species planted included Sitka spruce and western red cedar.

**Reach Analysis**

Part of the phase one work included creating a reach analysis to further our understanding of the current of historic geomorphic setting in the Lower Dosewallips River. Bob Barnard, an engineer with the Washington Department of Wildlife, authored the reach analysis, while Washington Trout crews surveyed and mapped the estuary to collect the data used to support the reach analysis. Analysis of historic maps, current aerial photos, and topographic models determined that the river delta is both prograding and aggrading. As sediments reach the lower river, they build the estuary up by increasing river bed elevation, and out through the deposition of sediments into the Hood Canal. The reach analysis demonstrated that the lower river was perched and needed to be reconnected to the surrounding floodplain. Rip rap and gravel spoils from river bed dredging had been placed along the river

*Photos: Micah Wait and Kurt Beardslee*

*The faces of the individuals who helped to bring down the dike.*
*Left to right: Jeannine Wallach, James Longmire, Michael Koenen, Joel Breems, Frank Staller, Micah Wait, Lisa Lantz*
*Richard Brocksmith, Ann Jeanette, Erin Robertson, Kurt Beardslee, Deb Grainer, Doug Hinton, Dave Crabb*
*Kelli Burke, Heather Reese, Troy Warnick, Kyle Beaty, Ryan Price, Jessica Garrett, Connor Nakoa*
*Shawn Zaneiwski, Elizabeth Knopf, Benjamine Amador, James Herbert, Apollo Stone, Kathy Steele, Stephanie Dulac*
*Jamie Glasgow, Sean Hogle, Nigel Pendley, Matt Smith, Tim Chamberlin, Stacia Dreyer, Laura Miller*
*Dale Russell, Stephen Whetherholt, Carter Davis, Jim Brennan, David Coffey, Cara Reese*

banks, constricting the river's flows, sediments, and energy, resulting in a homogenous linear channel that can not retain the large woody debris needed to create adequate habitat complexity.

Reach-Analysis recommendations included selectively removing rip rap and dredge spoils at the mouths of remnant distributary channels, and engineering log jams to encourage high water to flow overbank into the floodplain of the lower river. Reconnecting remnant distributary channels will increase habitat diversity and complexity in the lower river, providing the varied habitats that benefit both juvenile and adult salmon. The engineered log jams will restore habitat structure that is missing from the ecosystem and will facilitate habitat forming processes such as overbank flow, large woody debris recruitment, and channel meander.

Over the 04-05 winter, Washington Trout and the Port Gamble S'Klallam Tribe applied to the Bureau of Indian Affairs (BIA) for additional funds to implement the recommendations of the Reach Analysis, and have learned that the second phase of the project has been approved for funding by the BIA. Planning and permitting for phase two of the project will occur through the winter of 2006, and restoration actions will occur in the summer of 2006.