



partners in marine conservation

Fort Townsend Nearshore Restoration Project

Northwest Straits Foundation, Jefferson County Marine Resources Committee (MRC) and Washington State Parks partnered to restore nearshore habitat, sediment sources and transport at the beach access area of Fort Townsend State Park. The beach, located at the base of a feeder bluff, is located on the southwest shore of Port Townsend Bay within Jefferson County, WA.

Fort Townsend was historically used as a military installation. The trail to the beach was constructed prior to 1885 and a dock can be seen in old photos from that time. It is likely that the area was used by local tribes prior to European settlement for shellfish gathering and possibly a canoe landing.

The shoreline around Fort Townsend has been documented by Washington Department of Fish and Wildlife as spawning substrate for Pacific sand lance and surf smelt, two species of forage fish that use the beaches for their spawning habitat. The landing, however, is an impediment to spawning as it sits in the tidal range used by both species. Recent surveys found eggs nearby, but not within the area of the landing. The reduction of the size of the landing should allow for spawning by sand lance as they tend to spawn lower on the beach in sandy sediments.

This project is designed to restore natural erosion and sediment transport along and across the shoreline creating a viable habitat for juvenile salmon, forage fish spawning, marine and shore birds while improving public access to the beach. The project significantly reduced the size, scale, and impact of the existing fill pad area. Most of the rock armoring and fill was removed. The remaining smaller landing was regraded to allow for easier access on the north side of the site including a kayak ramp. Large woody debris placed on the face of the landing, interspersed with remaining riprap provides

PROJECT PROFILE

Investment

Feasibility & Design Phase	\$ 65,523
Construction Phase	\$ 422,000

Partners Jefferson County Marine Resources Committee
Washington State Parks

Benefit Remove 1,700 CY of fill and riprap
Approximately 2/3 reduction in the size of the beach landing area
Improved feeder bluff and nearshore processes
Improved public access to beach

Funders Estuary Salmon Restoration Program
Puget Sound Marine & Nearshore Grant Program
US Environmental Protection Agency
Northwest Straits Commission/
Jefferson MRC
Puget Sound Partnership
Alcoa Foundation

protection from erosion in this high energy marine environment.

Nearshore Processes

The nearshore habitat and habitat forming processes at the site were degraded and impeded by the landing. Natural processes such as wave action, landslides, and erosion shape the shorelines of the Northwest Straits. Bulkheads, seawalls, docks and groins can interrupt sediment flow from naturally eroding shoreline bluffs.

Riprap causes a coarsening of beach sediment in front of the bulkhead by increasing turbulence and mobilizing and washing away finer sediment. This decreases the total volume of beach sediment and creates a mixture of fine and coarse sediments unsuitable for forage fish spawning.

This increasing turbulence and wave energy also degrades the nearshore habitat for smaller juvenile Chinook salmon, which favor nearshore habitats with low gradient, shallow water, fine-grained substrates and low wave energy.

Forage Fish Habitat

Pacific sand lance and surf smelt are important prey for many marine fishes, birds and mammals. Surf smelt is also fished recreationally in Puget Sound.

Sand lance spawn on mid-intertidal sandy beaches while surf smelt spawn in high intertidal sands and gravels. Eggs of surf smelt have been shown to be highly susceptible to high summer temperatures on beaches that do not have at least partial shading to help keep the developing eggs cool and moist.

The riprap and landing at Fort Townsend buried suitable forage fish spawning habitat. Reduction of the size and volume of the landing allows for natural sediment transport processes, a decrease in wave turbulence allowing finer sediments, large woody debris, and marine wrack to settle providing a suitable habitat for potential future forage fish spawning. The removal will also allow for the habitat to move landward as sea levels rise.

Monitoring

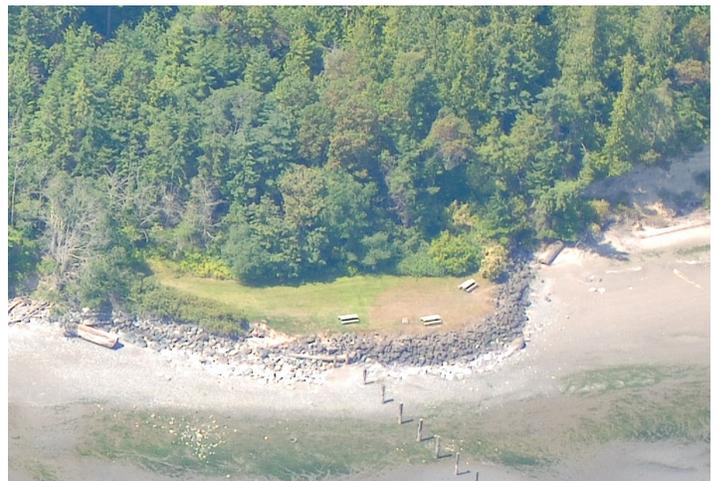
Pre and post-construction monitoring is being performed by citizen scientists to determine what changes in habitat and habitat usage will occur. Monitoring parameters include forage fish spawning surveys, large woody debris and wrack accumulation, sediment composition, elevation surveys, insect fallout, and surface epifauna and algae surveys. Interested volunteers are encouraged to get involved!

For more information contact:

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Fort Townsend pier in the late 1800's



2006 Dept. of Ecology aerial photo prior to piling removal



Design drawing shows the landing before restoration and new smaller area outlined with dashes and picnic tables