Olympia Oyster, *Ostrea conchaphila*, Restoration in Fidalgo Bay, Washington

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History

The native or Olympia oyster is native to the Pacific Coast of North America and was once common in Puget Sound prior to the arrival of European settlers. Over harvest in the late 1800s, combined with severe pollution in the 1900s from pulp and paper mills, drove Puget Sound stocks to near extinction. Skagit County Marine Resources Committee, together with Puget Sound Restoration Fund and other partners, has initiated a native oyster restoration project in Fidalgo Bay, the first native oyster restoration site in North Puget Sound.

Locations

Native oyster seed have been planted at two sites in South Fidalgo Bay: 1) Underneath the railroad trestle in areas of standing water, flowing water, and in a shallow channel at low tide and 2) on Samish Tribal land where a plot is dedicated to experimental manipulations and construction of an artificial reef composed of oyster shell and rock.

Samish Tribe Experimental Site

Seed Plantings

Native oyster seed were produced from broodstock collected from both Samish Bay and Mud Bay on Lopez Island. Plantings were made in 2002 (one-year olds), 2003 and 2004 (both several month-old seed). Number of seed planted each year was: 20,000 (2002), 67,000 (2003) and 143,000 (2004).


Seed on a cultch shell

Survival

Survival of the seed planted in both 2002 and 2003 has been excellent. Sampling has shown about 95% survival of the 2002 seed and survival estimates for the 2003 seed are similar. There have been no signs of summer or winter kills, and few signs of predation. Fidalgo Bay is, so far, free of the Japanese oyster drill (*Tritonalia japonica*). Local predators include the red rock crab (*Cancer productus*), purple crab (*C. gracilis*) and Dungeness crab (*C. magister*). A few sea stars are also present. See below for Related laboratory predation studies.

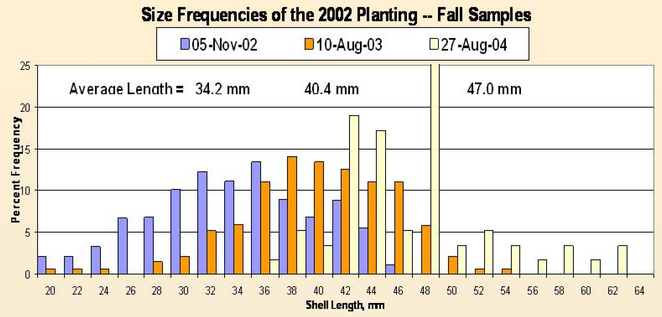
Experimental Studies

The Samish Tribe is conducting experiments to help determine the best substrate for supporting native oyster restoration. Their studies have evolved from cage studies to artificial reef construction on a sandy intertidal flat at Weaverling Spit. Survival and growth will be monitored on the artificial reef in coming years.

Growth

Native oyster growth in Fidalgo Bay has been excellent. The 2002 seed, planted at an average size of 25 mm in August 2002, grew to 34 mm in Nov 2002, 40 mm in August 2003 and 47 mm in August 2004 (see histogram below). Maximum size of the 2002 seed was 63 mm in August 2004.

The 2003 seed were planted in August 2003 at an average size of 5 mm. In May of 2004, these seed averaged 19 mm and then 30 mm in August 2004.



Laboratory Predation Studies

Predation studies carried out at the Shannon Point Marine Center by undergraduate student Katie Henoch showed that Japanese oyster drills, one species of sea star (*Evasterias troschelii*), and two species of crabs (red rock and purple) can be significant predators of native oysters. However, observations in Fidalgo Bay showed very little predation by these predators, suggesting that predators may have many food possibilities and only feed on oysters if they are the only source of food.


Red rock crab predation

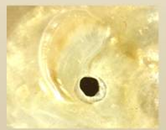
Estimated rates of monthly native oyster consumption by five potential predators in laboratory tank experiments. The oysters were juveniles about 20 mm in length.

Predator	Oysters consumed/month
Japanese Oyster Drill	2.4
Sea Star	2.6
Red Rock Crab	310
Purple Crab	236
Dungeness Crab	0


Sea Star

Japanese Oyster Drills


Purple Crab


Oyster Drill hole

Project Partners

Native oyster restoration in Fidalgo Bay is a community-based restoration project primarily using volunteers. Funding was provided by the Northwest Straits Commission, the Puget Sound Restoration Fund (special thanks to Betsy Peabody) and the Anacortes Shell Refinery. Additional project partners included:

Taylor Shellfish Farm, Lummi Tribal Hatchery, Swinomish Tribe, Tesoro Refinery, City of Anacortes, People for Puget Sound, WDFW, WDNR, WDOE, NOAA and the Shannon Point Marine Center.