SUCCESS STORY


Photo taken by NOAA/NMFS/SWFSC

PUGET SOUND RESTORATION FUND

Shellfish Research and Living Marine Resource Restoration in Puget Sound

Bainbridge Island, WA

In Puget Sound of Washington, Olympia oysters, kelp, and pinto abalone serve as ecosystem engineers; building and maintaining habitat critical for not only themselves, but numerous other species who rely upon the ecosystems that they create. Through their existence, these organisms also generate an array of benefits for humans that span from food production to employment to storm protection and recreation. However, each of these critical organisms is teetering on the brink of endangerment or disappearance in the Puget Sound.

Currently in Puget Sound, less than five percent of dense Olympia oyster beds remain at the intertidal area; floating kelp beds have nearly disappeared from the southern portion of the Sound; and the pinto abalone population has been on a steep decline, decreasing 98 percent between 1992 and 2017 according to the Washington Department of Fish and Wildlife.

In 2011, The Puget Sound Restoration Fund (PRSF) approached NOAA with the idea of expanding their hatchery capacity in order to increase their production of oyster seed, kelp, and abalone.

Web
http://restorationfund.org

The NOAA Technology Partnerships Office (TPO) consists of the NOAA Small Business Innovation Research (SBIR) Program and the NOAA Technology Transfer (T2) Program. The SBIR Program provides funding to small

PROJECT

A Collaborative Research and Development Agreement (CRADA) between PSRF, the NOAA Manchester Native Shellfish Hatchery, and the Northwest Fisheries Science Center Manchester Laboratory was established in 2014. NOAA provided dedicated facilities having key attributes for project work (e.g., shellfish hatchery access with adequate flows of sea water) and technical expertise (e.g., species genetics) and PSRF was responsible for securing project staff and implementing project activities. With the aim to increase the scale of research and restoration activities focused on the Olympia oyster, kelp, and pinto abalone in Puget Sound, PSRF and NOAA focused project research and restoration activities in three areas:

- Producing Olympia oyster larvae and seed that is planted to restore native oyster beds.
- Establishing a kelp lab for further applied research.
- Establishing new pinto abalone operations at NOAA's Manchester Research Station to increase the number of abalone able to be produced and, subsequently, introduced into the wild.

BENEFITS

Since the inception of the CRADA in 2014, over 10 million oyster seeds have been produced and planted in priority areas. Olympia oysters are the only oyster species native to the Pacific Northwest region of the US and they are critical to the delicate ecosystem as they help regulate water quality, cycle nutrients, and create habitat for sea grasses and fish. The kelp lab and research efforts enabled PSRF to secure a 5-year grant worth $1.5 million from the Paul G. Allen Family Foundation to investigate seaweed cultivation as a potential strategy for mitigating ocean acidification through the removal of carbon dioxide (CO_2). Operations made possible through the CRADA have tripled the production of pinto abalone, the only abalone species native to Puget Sound, when compared to pre-CRADA volumes. The abalone grazing, digesting, and excreting micro- and macro-algae clears habitat space for settlement of new organisms, improves nutrient cycling, and provides food to prey species. The CRADA also has economic benefits from the oyster product sales. PSRF indicated that product sales over the last year totaled $25,000, all of which can be attributed to work done through the CRADA.

NOAA SUPPORT

PSRF Executive Director, Betsy Peabody described the CRADA with NOAA as being "life changing." She articulated that NOAA has worked with PSRF step-by-step to accomplish a shared vision. NOAA's support for PSRF's work has come in several forms. NOAA has provided the facilities needed to conduct research and restoration activities, technical assistance critical to advancing the work being conducted, and an influx of resources as PRSF has grown throughout their CRADA experience.