



## NOAA FISHERIES SERVICE NORTHWEST REGION

### What is Aquaculture?

The broad term “aquaculture” refers to the breeding, rearing, and harvesting of plants and animals in all types of water environments, including ponds, rivers, lakes, and the ocean. Similar to agriculture, aquaculture can take place in the natural environment or in a manmade environment. For example, marine aquaculture production includes oysters, clams, mussels, shrimp, and salmon. Aquaculture techniques are used for the production of food and for restoration purposes. Worldwide, aquaculture is beginning to outpace wild caught fisheries in supplying seafood for human consumption.

## From the Tides of Puget Sound to Your Plate: Northwest Shellfish Industry Provides Important Ecological & Economic Value

In the Pacific Northwest, the shellfish industry injects an estimated \$270 million a year into the region’s economy, bringing jobs to over 3,200 people, primarily in coastal communities. For over 150 years, Washington State’s tidelands have served as productive farm beds for nutritious and delicious oysters, clams and mussels.

Shellfish production requires a healthy, functioning ecosystem to provide safe water quality and appropriate quantities of phytoplankton for food. Scientific research indicates well-managed shellfish farming can improve water quality, species diversity, and habitat complexity. To enjoy the benefits of a thriving shellfish industry - from jobs in our communities to food on our tables - we need a healthy ecosystem.



Photo: Taylor Shellfish

### DID YOU KNOW?

Shellfish growers are the largest private employers in Pacific County and the second largest in Mason County, contributing over \$27 million in payroll every year in just those two counties.

Learn more: [www.wsg.washington.edu](http://www.wsg.washington.edu), [www.psp.wa.gov/shellfish.php](http://www.psp.wa.gov/shellfish.php), <http://aquaculture.noaa.gov>



## NOAA Fisheries' National Shellfish Initiative

In June 2011, NOAA Administrator, Dr. Jane Lubchenco, announced a new *National Shellfish Initiative*, in conjunction with the newly released *National Aquaculture Policy*, focused on increasing shellfish populations through aquaculture and restoration activities. The agency has begun to work on regional approaches to implementing the shellfish initiative with shellfish industry associations, environmental groups, tribes, state agencies, and scientists. To begin in the Pacific Northwest, NOAA is working with key regional partners, including the Pacific Shellfish Growers Association, the Puget Sound Restoration Fund, and The Nature Conservancy, to identify and implement a limited number of concrete actions or projects that achieve near-term production, jobs, and/or conservation objectives.

### DID YOU KNOW?

Shellfish are approximately 1.4% nitrogen and 0.14% phosphorus by weight. When shellfish are harvested the nutrients are permanently removed from the water. A weekly harvest of only about 200 oysters can compensate for the nutrient inputs of a typical waterfront homeowner on a properly functioning septic system.

# Shellfish Farming Requires & Contributes to a Healthy Ecosystem

## Clean Water

When shellfish feed, they filter phytoplankton (floating marine plant life containing nutrients like nitrogen and phosphorous) out of the water, resulting in improved water clarity and quality. Clearer water allows more sunlight to reach the seafloor, aiding in the growth of seagrass habitats like eelgrass. Shellfish can also benefit seagrass habitat through the nutrients they excrete after feeding, which act as a natural fertilizer.

Without the filter feeding of shellfish, algae can undergo uninhibited growth, which results in unclear water and excessive detritus (decaying matter on the ocean seafloor). Decaying plant matter reduces the level of oxygen in the water and can lead to oxygen-low areas called 'dead zones'. Shellfish help to manage algal growth and this helps to ensure the water maintains sufficient oxygen levels.

Washington Sea Grant's Bivalves for Clean Water program uses shellfish as a focal point to educate South Puget Sound shoreline residents about ways to improve water quality.

## Biodiversity

Shellfish enrich the Northwest's tidal habitats. They provide nourishment for crucial seagrasses on which marine life depend for sustenance and protection from predators. Shellfish structure can act like reefs, providing habitat and protection for many organisms. Scientists consistently find higher populations of marine life around shellfish beds.



Photo: Puget Sound Restoration Fund

For example, researchers found greater diversity and richness of species in sea beds with shellfish farming gear than in bare seabed or seabed habitat with eelgrass. In addition, in a two year study of a variety of shoreline habitats, Ferraro and Cole (2004, 2006) found that eelgrass and commercial oyster flats were equal in creating habitat for diverse populations of marine life.

NOAA's proactive efforts are changing the course for Puget Sound's ecosystem. Together with our partners, we are strengthening the health of our ecosystem and contributing to the vitality of a sustainable shellfish industry, because, after all, the two are inextricably linked.

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