



ENVIRONMENTAL BENEFITS OF SHELLFISH FARMING

Shellfish farmers have a long history of environmental stewardship and sustainable farming. Growers depend on clean and healthy ecosystems and the net environmental benefits of shellfish farming are well documented.

SHELLFISH FARMERS ARE COMMITTED TO CLEAN WATER

Shellfish farmers began fighting for clean water in Puget Sound in the 1920's – fifty years before passage of the Clean Water Act.

Today, shellfish farming can only take place in the cleanest waters that have been certified under the National Shellfish Sanitation Program (NSSP), a stringent set of standards operated under the Food and Drug Administration. These standards include monitoring for fecal coliform bacteria (which is used as an indicator for human activity and the potential for pathogens in the water) Vibrios, harmful algal toxins, heavy metals and other contaminants.

The NSSP standards led to the first estuarine/marine monitoring programs, and are the most stringent of all water quality classifications, far exceeding those required for swimming.

Regular monitoring is required to maintain certification of shellfish beds, and harvesting is banned if a problem is detected. These bans remain in effect until the problem is corrected and water quality monitoring indicates the area once again meets standards.

Predictably, the best shellfish growing areas are in places with the least human population, because most waterborne pathogens originate in human and animal feces.^{1,2} In the Puget Sound for example, a century of human population growth between Everett and Tacoma has made this 80-mile stretch of otherwise suitable coastal habitat largely unsupportable for shellfish culture and harvest due to poor water quality and contamination.

SHELLFISH CLEAN OUR BAYS

Shellfish remove nitrogen from the water as they feed.³ But they also improve the shoreline marine environment in another way. Specifically, the nitrogen and phosphate that are not digested and incorporated into the tissue of the shellfish are processed and excreted in a form that is readily used by plant growth.⁴

In addition, shellfish, like other carbon fixers such as corals, help reduce the production of carbon dioxide, a “greenhouse” gas, by incorporating carbon into their shells.⁵

SHELLFISH FARMS PROVIDE HABITAT

Shellfish, as well as aquaculture gear used in their culture, can enhance habitat diversity, thereby benefiting a variety of organisms.

- Researchers have found that there was greater diversity and richness of species in sea beds with shellfish farming gear than in bare seabed or seabed habitat with eelgrass.⁶
- 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.^{7,8}

- In addition, ground-cultured oysters and shell placed in the intertidal portion of West Coast estuaries has been shown to provide equal or better habitat than eelgrass for juvenile Dungeness crab.^{9,10}
- Recent NOAA funded research found that mussel culture lines support more than 100 invertebrate species, and shiner perch and juvenile Pacific herring are seasonally concentrated in this habitat.¹¹
- Shiner perch, starry flounder, Dungeness and red rock crab, and a variety of hermit crabs are also more abundant in clam and oyster culture systems. Limited field data from 2005 sampling suggests these systems do not influence the migratory behavior or movement of juvenile salmonids.¹¹

Tidelands that support shellfish aquaculture also provide critical foraging habitat for a large variety of water birds. Researchers examined the comparative use of tidelands by birds with and without oyster long line sets. They found that the population and diversity of seven of the 13 shorebirds they studied and three of four wading birds was greater in tidelands with cultivated oyster beds.¹²

While some have raised concerns about the impact of shellfish farming on eelgrass due to short term and localized impacts from harvest, shellfish farming can actually enhance eelgrass in four principal ways:

- (1) Shellfish improve water clarity, which lets in more sunlight, enhancing the photosynthesis that sustains eelgrass.¹³
- (2) Filter feeders give off nutrients that fertilize the sediment in which eelgrass grows, increasing its germination and survival.^{14, 15}
- (3) Aquaculture gear used in raising oysters, clams, mussels, and geoducks provides additional habitat for epiphytic grazers, which may result in increased light absorption and enhanced eelgrass growth.¹⁶
- (4) Shellfish enhance the recruitment, germination, and survival of eelgrass.^{17,18}

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