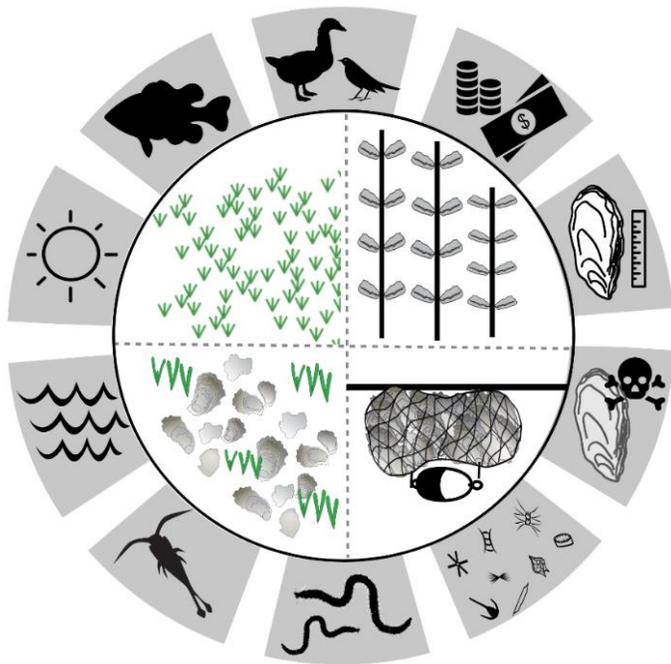


Ecological Function & Interactions of Oyster Culture & Eelgrass

Main Goals: A coast-wide assessment of eelgrass response to shellfish culture practices to better understand the value of habitats for managed fish and invertebrate species, including juvenile salmonids (*Oncorhynchus spp*), Dungeness crab (*Metacarcinus magister*) and English sole (*Parophrys vetulus*). We will measure three response variables relevant to management: amount of eelgrass, production of oysters, and nekton abundance.

Background: Native eelgrass, burrowing shrimp, and other estuarine species have overlapped with oyster aquaculture for more than a century in the single largest cultured oyster production site in the U.S., Willapa Bay, Washington (Dumbauld et al. 2011) and elsewhere on the west coast. Ensuring shellfish aquaculture is environmentally and economically sustainable is a primary concern and challenge for resource managers and commercial shellfish producers. Shellfish aquaculture activities, including new farm sites, expansions, new gear and/or farming methods, are required to obtain numerous federal, state and county permits. Resource managers must assess the environmental impacts of these activities in complex intertidal habitat that includes and overlaps with native seagrass or eelgrass (*Zostera marina*), which is designated as Essential Fish Habitat (EFH) for multiple Pacific salmon species. This project directly addresses the Pacific Coast Shellfish Growers Association (PCSGA) current research priorities, and “Recommendations for Future Actions to Achieve Consistency” in the WA Eelgrass and Shellfish Aquaculture Workshop (NMFS 2017).



Simplified representation of the biological and physical response variables we will assess across habitat types, including: eelgrass, longline, bag, on-bottom oyster culture and mud flats (not shown). Oyster production via growth and survival will also be assessed, and monetary parameters.

Project Summary: In collaboration with shellfish farms along the west coast, we will assess the interaction of eelgrass with various oyster culture systems, and the ecological functions of these habitats for managed fish and invertebrate species. We will also review and evaluate existing approaches and new aerial imagery collected with drone technology for mapping aquaculture and eelgrass, and calculate the relative cost of materials and labor involved in multiple oyster gear types, under various management scenarios.

In addition to the field research and analysis, our team will organize three ‘state of the science’ workshops. The workshops will be held in Washington, Oregon and California and serve to connect scientists, resource managers and shellfish farmers in order to disseminate project results and eelgrass/aquaculture interactions. Proceedings will also be compiled in a comprehensive report intended for reference by federal, state and local shellfish aquaculture permit reviewers.

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Fostering sustainable shellfish resources & a healthy marine environment through research & education.