

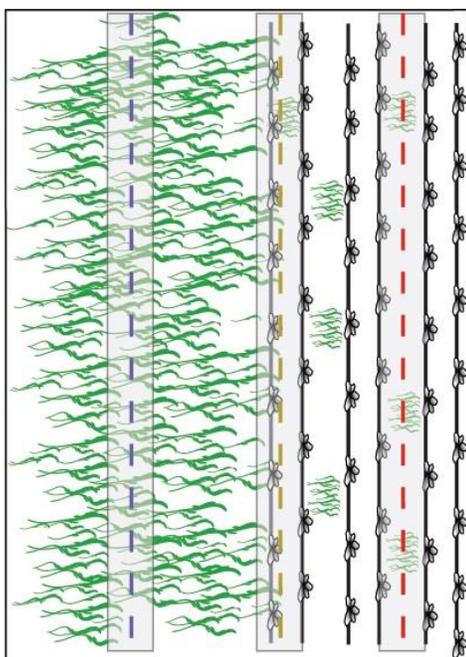
Comparative Habitat Use Study: Native Seagrass and Cultured Shellfish in West Coast Estuaries

Main Goals: This research aims to expand opportunities for shellfish aquaculture on the west coast of the U.S., while maintaining healthy estuarine conditions for other managed fish and invertebrate species. This study will elucidate actual versus perceived environmental effects of shellfish culture on eelgrass communities and estuarine processes, aiding managers in decision making and allowing for more targeted conservation efforts.

Background: Estuarine habitats, such as seagrass or “eelgrass” communities serve as critical refugia and feeding grounds for a diverse array of juvenile fish and invertebrate species, including endangered salmonids and economically important crab species. Current environmental regulations aimed at protecting estuarine habitats for endangered and threatened species have been hindering the expansion of shellfish aquaculture. Provisions under state and federal regulations that include no-net-loss of native seagrasses (primarily *Zostera marina*) to protect essential fish habitat have led managers to take a precautionary approach when approving activities that may have a direct impact on these habitats. Managers have little information regarding environmental impacts of shellfish culture on estuarine



Longline oyster culture adjacent to beds of native eelgrass, *Zostera marina* in Willapa Bay, WA.



Sample design for eelgrass survey transects in the three distinct habitat types: eelgrass, edge and aquaculture. Image design: Daniel Sund

habitats and processes, while scientific studies documenting ecosystem services of shellfish culture within estuarine environments are limited.

Project Summary: Habitat use by estuarine fish and epibenthic invertebrates will be compared across three distinct habitats for this study: structure provided by native eelgrass, structure provided by oyster aquaculture and habitat at the intersection of these two communities in four west coast estuaries -- Willapa and Samish Bay, WA, Tillamook, OR, and Humboldt Bay, CA. The research team will create GIS data layers mapping the spatial distribution of seagrasses and existing shellfish culture for each site. Predictive models will be developed to assess overlap and change analyses of seagrass in relation to proposed shellfish culture.

Team Leaders: Bobbi Hudson (PI) and Daniel Cheney at the Pacific Shellfish Institute, Brett Dumbauld at USDA-ARS in Newport, OR, Jeff Cordell from the University of Washington, Fiona Tomas Nash from Oregon State University and Neil Kalson from H.T. Harvey & Associates in Arcata, CA. This work is supported by the NOAA Saltonstall-Kennedy program grant no. 2004246.

