

Dungeness crab production: An ecosystem service provided by the oysters Ostrea lurida and Crassostrea gigas By: Jessica Ramsay¹ and Brett Dumbauld²

Introduction:

Reef forming shellfish provide structured habitat for fish and invertebrates such as the commercially important Dungeness crab, Metacarcinus magister. In many US West coast estuaries, this ecosystem service was once provided by the native oyster, Ostrea lurida. The Pacific oyster, Crassostrea gigas, was introduced as a commercially cultured substitute after the decline of *O.lurida* in the late 1800's.



However, reef morphology and location of *O.lurida* and C.gigas in the estuary differ substantially. An experiment where shell bags were placed at four locations and four tide heights was conducted in Yaquina Bay, Oregon to examine how these factors affected crab settlement. We also surveyed intertidal areas in Willapa Bay, Coos Bay, and Netarts Bay estuaries for crabs in oyster aquaculture, remnant and restored populations of native oysters, eelgrass, and open mud habitat to estimate tradeoffs in crab production.



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Methods and Materials:

Yaquina Bay Shell Bag Experiment

- 4 sites at approx. equal intervals
- 3 shell bags at 4 tide heights at each site
- Soak time:1 month for crab recruitment



Habitat Sampling: Three, ¼ meter quadrats per habitat Willapa Bay: 4 sites



Coos Bay: 2 sites Habitat Types: • O. lurida Eelgrass



Netarts Bay: 1 site Habitat Types: • C. gigas • O. lurida Eelgrass







Yaquina E
8.0- 6.0- 4.0- 2.0- 0.0
Fig.1: Lengt juvenile sta
Mean Dens 140 120 100 100 80 40 20 0 -2 -1 Tide
Fig.2: Mean densi height for all four
<u>Habitat S</u>
Willapa Bay
Point, Willapa Point, Willapa
Density of <i>M.mag</i> Bay, OR), and Net sampled.
In Yaquina magister se intertidal d gigas and d heights in Initiative, d and promo oysters in increase juy
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ister in Stony Point (Willapa Bay, WA), Isthmus Slough and Haynes Inlet (Coos arts Bay, OR. Stony Point was the only site in which four habitat types were

Conclusion:

Bay, we found that a higher mean density of *M*. ettled and recruited to shell bags at low (<MLLW) lepths. Juvenile crab were more abundant in C. O. lurida habitats than in eelgrass at similar tide all three estuaries. The National Shellfish created in 2011, seeks to restore native oysters ote oyster aquaculture. Efforts to restore native Pacific Northwest estuaries could potentially venile Dungeness crab habitat.

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