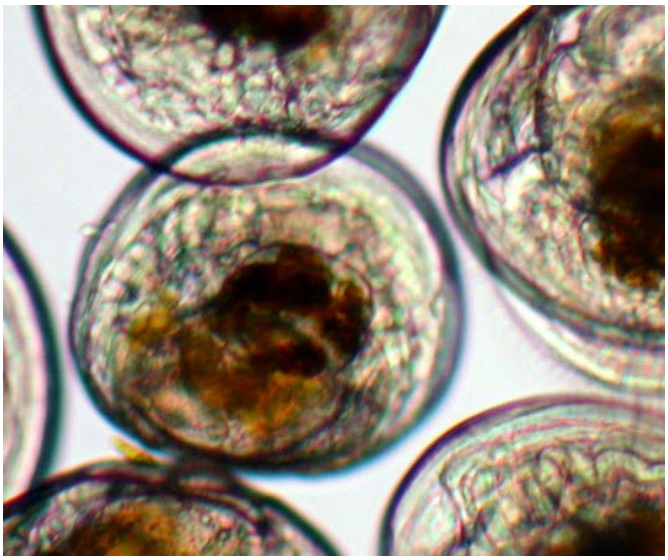
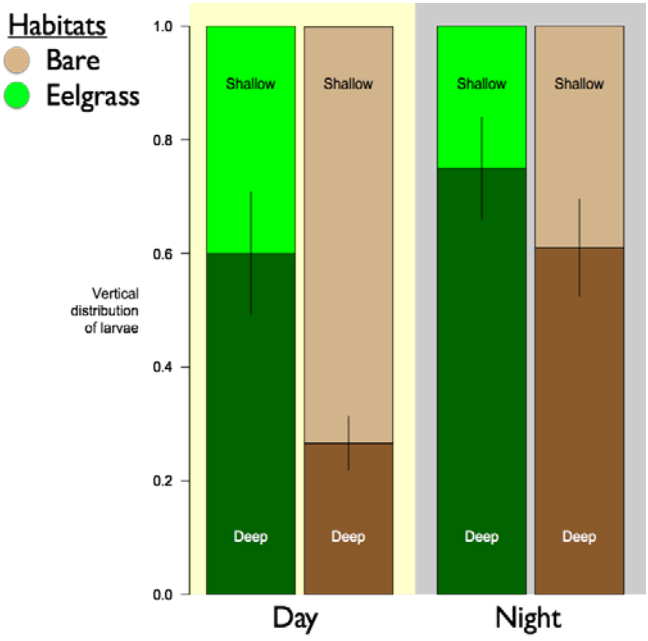
WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

Shellfish larvae distribution across habitats



Shellfish spend their early life as microscopic larvae.



In daylight, Pacific oyster larvae are more likely to be near the seabed in eelgrass than in bare tideflats. Larvae are more dispersed between the two habitats at night.

Are shellfish larvae more abundant in eelgrass habitat?

Shellfish are vital to recreation, culture, and economic activity in Washington State, but they are likely to suffer as our oceans become more acidic. Laboratory studies show that shellfish are most sensitive early in life, when they're microscopic larvae. In 2015, WDNR and the University of Washington, Tacoma set out to explore where shellfish larvae spend their time, and to test whether they move into photosynthesizing eelgrass, where shell-building conditions are better.

We focused on Pacific oysters, Olympia oysters, and geoducks. At Fidalgo Bay, Port Gamble Bay, Case Inlet, and Willapa Bay, we anchored kayaks over eelgrass meadows and over bare tideflats and used portable pumps to take water samples from near the surface and from near the seabed. We sampled at mid-day, when eelgrass was photosynthesizing, and before dawn, when it was not.

Rather than counting larvae under a microscope, we developed a new technique to measure the amount of shellfish DNA in each sample and estimate the number of larvae present for each of our three species, a technique called qPCR.

We found that Pacific oyster larvae appear to move towards eelgrass when it is photosynthesizing. The decrease in local acidity and increase in oxygen from photosynthesizing eelgrass may provide a favorable environment for larvae as they build their shells. In the face of ocean acidification, eelgrass may be important for survival and growth of oyster larvae.