

## Washington Oyster Aquaculture Update

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### ***The shift to single oysters***

Over the past decade there has been a shift in oyster consumption patterns that reflects an increasing preference, and a price premium, for single or “half-shell” market oysters. Washington’s shellfish aquaculture industry has responded by increasing intertidal single oyster culture, and especially specialty single oyster culture, primarily in bags made from extruded polyethylene material. Further innovation to “flip bag” oyster culture is commonly credited to the late John Lentz of Chelsea Farms, in South Puget Sound. The method has subsequently been widely adopted, using bags with some sort float that forces the bag to flip with the ebb and flow of the tide. The flipping agitates the oysters to reduce clustering and breaks down the shell margins (edges furthest from the hinge), effectively increasing the oyster’s cup shape with adequate tidal action.

At the same time, single “seed” oyster production continued to be refined at Washington’s private shellfish hatcheries. The land-based hatcheries spawn broodstock oysters, grow the resulting larvae in tanks and then “set” the larvae, using nearly microscopic sized cultch to encourage development of single oysters. However, as hatchery produced oyster seed demands increased, oyster larvae was dying at unprecedented levels. Research revealed that the primary cause was ocean acidification. Low-pH seawater upwelling along the West Coast was creating conditions corrosive to shell forming organisms like young oysters (Washington State Blue Ribbon Panel on Ocean Acidification 2012). While the West Coast continues to experience these low-pH upwelling events, hatcheries now intensively monitor intake of marine water used for shellfish seed production. Hatcheries have also developed methods to avoid the most corrosive water, primarily through the timing of intake pumping. Many facilities also routinely adjust pH by adding natural products, such as soda ash, to achieve more favorable conditions.

### ***Coastal Washington and burrowing shrimp populations***

Since at least the 1940s, two native species of burrowing shrimp (ghost shrimp, *Neotrypaea californiensis* and mud shrimp, *Upogebia pugettensis*) have caused impacts to Pacific Coast commercial clam and oyster production by disrupting the structure and composition of the substrate, causing shellfish to sink and suffocate (WDOE 2014). In April 2015 the Willapa-Grays Harbor Oyster Growers Association (WGHOGA) obtained approval from the Washington Department of Ecology (WDOE) to use a formulation of the insecticide imidacloprid for burrowing shrimp control in the aquatic environment of Willapa Bay and Grays Harbor. The permit followed years of research, and coordination with state and federal regulatory agencies, to replace carbaryl, which had been used since the 1960s.

However, WGHOGA subsequently withdrew their request for the permit to apply imidacloprid. In early May 2015, WGHOGA President Don Gillies wrote:

“While we continue to support the responsible decision by the Department of Ecology to issue this permit, recent action by the media, other groups and on social media, have mischaracterized the impacts and use of our permit, and led to an incredible amount of misinformation based on misunderstanding.” (WGHOGA 2015)

Likely the most significant media-perpetuated misinformation was that imidacloprid was not registered for aquatic use. In fact, it is, by both the U.S. Environmental Protection Agency and the Washington Department of Agriculture, specifically for use on shellfish beds (Schild 2015). Use of the pesticide was also to be limited to specified acres of commercial oyster and clam beds where burrowing shrimp cause economic harm, and required intensive water and sediment monitoring according to WDOE approved methods (WDOE 2015). The industry continues to struggle with the problem of burrowing shrimp, and not coming up with a solution could mean a sharp decline in Washington’s clam and oyster production (Schild 2015). Some companies, including Washington’s two largest, Taylor Shellfish and Pacific Seafoods, have abandoned efforts related to chemical control for burrowing shrimp. Both companies are exploring modified oyster culture gear in Willapa Bay and Grays Harbor, but abandonment of shellfish beds with high burrowing shrimp populations is also expected.

### Citations

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