

Importance of U.S. West Coast Shellfish

West Coast shellfish (wild-harvest and aquaculture) provide significant socioeconomic and recreational benefits to coastal communities in Washington, Oregon and California, in addition to providing nutritious, delicious seafood. Equally important, problems with shellfish portend potentially significant changes in marine ecosystems.

Wild harvest shellfish - Average annual (1998-2009) revenue to fishermen (dockside value) from shellfish fisheries is \$159 million for Washington, Oregon and California combined.

Shellfish contribute about 50% of total commercial fishery dockside revenue in Oregon and Washington, and about 60% in California.

- 🐚 In Washington, Oregon and Northern California, the most important species for commercial fisheries are Dungeness crab and Pacific Ocean (pink) shrimp.
- 🐚 In Southern California, market squid, sea urchin, spiny lobster and spot prawn are important commercial fisheries. Shellfish represent 62% of total commercial fishery revenue in this region with most of that value contributed by squid.
- 🐚 Recreationally important species include clams, oysters and geoducks in Washington and Oregon, abalone in Northern California, and spiny lobster in Southern California.

Aquaculture shellfish production - Annual producer revenue is \$117 million to coastal economies in Washington, Oregon and California (\$278 million wholesale).

- 🐚 Accounts for 3,000+ jobs in coastal communities.
- 🐚 Cultured species are oysters, clams, geoducks, mussels and scallops.
- 🐚 Pacific oyster production (a 2-4 year crop) declined 22% between 2005 and 2009.
- 🐚 In Willapa Bay, Washington, the largest oyster-producing region on the West Coast, wild oyster larvae failed to "set" in six consecutive years, resulting in steep declines in harvest rates.
- 🐚 In Washington and Oregon, two of the three major West Coast oyster seed hatcheries experienced production declines of up to 80% from 2006 to 2009.



Recommendations and Next Steps...

West Coast Ocean Acidification-Shellfish Workshop participants reviewed existing research, identified information gaps, and proposed modifications and potential solutions to improve the state of knowledge of ocean acidification on the West Coast and to address problems faced by shellfish hatcheries, growers and harvesters.

Recommendations included:

(1) A West Coast Ocean Acidification Research Coordination Working Group* should be established to provide recommendations on best practices and standardized research methods to achieve a coordinated network of ocean observations and experimental studies, in order to observe, understand and quantify the evolving threats posed by ocean acidification along the West Coast of the United States.

(2) A West Coast Ocean Acidification Data Exchange, integrated with IOOS, and consisting of a single website that serves as an entry portal to data and information, should be established to provide easy access to available data sets and information regarding ocean acidification processes affecting West Coast fish and shellfish.

(3) The proposed NOAA West Coast Ocean Acidification Observing Network should be enhanced and expanded to include sites on the West Coast where in-field biological response studies are conducted.

The workshop organizing committee thanks all the workshop participants and invites others to participate in future efforts.

*Nine participants volunteered to serve on a steering committee to develop the framework for the working group.

All workshop materials and related information are posted online at:
www.sccwrp.org/Meetings/Workshops/OceanAcidificationWorkshop.aspx

Workshop Organizing Committee:

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Workshop sponsors:



Photography courtesy of: Richard Wilson (cover/background: Willapa Bay, WA), Washington Department of Fish and Wildlife (cover: clamming) Pauline Yu (pluteus-stage sea urchin larvae), Pacific Coast Shellfish Growers Association (shellfish), Dave Rudie (urchin diver), Washington Sea Grant (wave), Richard Feely, Dana Greeley, Dr. Steve Schroeter, Jesse Vance

Is Ocean Acidification Affecting Shellfish?

A NOAA Sea Grant West Coast Workshop Seeks Answers

July 7-8, 2010, Costa Mesa, CA

*No new Pacific oysters recruiting to oyster "beds."
Shellfish larvae dying at commercial hatcheries.
Corrosive, acidified seawater measured for the
first time off the Pacific Coast.*

These and other observations, beginning in 2005, prompted members of the West Coast shellfish industry to seek help from scientists to explore what is causing the shellfish losses, what role ocean acidification and other factors might be playing, and how to adapt to sustain West Coast shellfish resources.

An organizing committee planned a face-to-face meeting as a logical first step to frame the problems, assess what information is available and what is needed, and to suggest future actions.

The West Coast Ocean Acidification-Shellfish Workshop was held July 7-8, 2010, in Costa Mesa, CA, with 51 invited participants, including biologists, oceanographers, state and federal agency managers, industry members and representatives from the Sea Grant Programs in Washington, Oregon and California.

This brochure summarizes the information shared and recommended next steps.

