

Impacts of coastal acidification on the Pacific Northwest shellfish industry and adaptation strategies implemented in response.

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ABSTRACT

In 2007, the US west coast shellfish industry began to feel the effects of unprecedented levels of larval mortality in commercial hatcheries producing the Pacific oyster *Crassostrea gigas*. Subsequently, researchers at Whiskey Creek Shellfish Hatchery, working with academic and government scientists, showed a high correlation between aragonite saturation state (Ω_{arag}) of inflowing seawater and survival of larval groups, clearly linking increased CO₂ to hatchery failures. This work led the Pacific Coast Shellfish Growers Association (PCSGA) to instrument shellfish hatcheries and coastal waters, establishing a monitoring network in collaboration with university researchers and the US Integrated Ocean Observing System. Analytical developments, such as the ability to monitor Ω_{arag} in real time, have greatly improved the industry's understanding of carbonate chemistry and its variability and informed the development of commercial-scale water treatment systems. These treatment systems have generally proven effective, resulting in billions of additional oyster larvae supplied to Pacific Northwest oyster growers. However, significant challenges remain, and a multifaceted approach, including selective breeding of oyster stocks, expansion of hatchery capacity, continued monitoring of coastal water chemistry, and improved understanding of biological responses will all be essential to the survival of the US west coast shellfish industry.

Full text: [0865 CoastalAcidImpactsShellfish.pdf](#)