



Photo: The OysterMom

Oysters are one of the most sustainable foods in the world, in addition to being nutritious and delicious. Like all bivalves, they require no greenhouse gas-producing feeds or inputs, but instead filter nutrients out of coastal waters, thereby improving water quality and conditions for other aquatic plants and animals. Oysters also help protect the coastline and provide habitat and nurseries for many other species. It is no surprise that oyster farming is increasingly part of conservation as well as economic revitalization strategies for coastal areas.

After decades of decline, the oyster industry is staging a mighty comeback, attracting many new entrepreneurs and investors. The U.S. oyster industry is currently measured at \$214M per year,¹ with value doubling since 2003 alongside relatively stable production volumes.² Oysters are among the most valuable seafood available, with an average ex-vessel price of \$7.76/lb.¹ To appeal to the increasingly knowledgeable consumer, oysters are now often sold like wine, with details of their variety, origin, and season marketed as distinguishing features.

The oyster industry's key constraint is the lag in development of necessary supporting industries and network capabilities. Shortages of commercial-scale oyster seed hatcheries, microalgae larvae feed, and oyster substrate suppliers continue to create bottlenecks. Oyster growing, which has traditionally been very labor-intensive, limiting profitability and scalability, is ready to be modernized with technology. To satisfy strong market demand, the industry needs to scale to increase the volume as well as variety of its supply.

Climate change (especially ocean acidification) and water quality deterioration present challenges for oyster growers, but are also leading to exciting innovations. The industry is readying itself for these environmental challenges by developing more disease-resistant varieties, more stormproof equipment, greater monitoring capabilities, and mechanisms to manage environmental risk locally. Conversely, growers are borrowing from nature's ingenuity by co-siting oysters with seaweed or kelp that oxygenate the water and balances pH, thereby helping oysters thrive.

The booming value of US oysters



Source: data from National Marine Fisheries Service, compiled by theatlant.com

Areas of Opportunity

Wanted: Oyster Infrastructure

Demand for oyster seed and substrate currently outstrips supply. Traditionally, many oyster farmers grew their seed in-house, but there is now increasing demand for large quantities of seed from specialists who can develop greater expertise, varieties, and economies of scale. Innovators are also developing replacements for supply-limited oyster cultch, the traditional substrate. These new substrates are intended to be more plentiful, cheaper, and biodegradable as well as making it easier for larvae to settle on, making harvesting easier, or offering more flexibility for use in different environments.

Tech to Counter Climate Change and Other Threats

Monitoring and managing water conditions is crucial for growing oysters, which thrive or survive only in certain ranges of temperature, salinity, oxygen, pH, and nutrients. New water monitoring technology and analytics platforms will allow oyster growers to better manage environmental risk and increase oyster growth rates, while also making it more viable to farm farther from shore. Similarly, novel and easy disease detection methods that do not require lab analysis could greatly reduce monitoring costs as well as operational and reputational risks.

Mechanization Is Coming to Oyster Farming

Much like land-based agriculture has done, oyster farming is moving toward greater automation and mechanization to improve productivity, reduce operational costs, and become more scalable. Innovations are directed toward novel growing systems that can be more easily seeded, tended, harvested, and handled by machines than typical bags and cages. To avoid new permitting, growers are focusing on ways to expand their farms vertically, and increase yields without enlarging their footprint.

Reviving (and Growing) One of the Oldest U.S. Seafood Industries

Most of the players in the burgeoning oyster industry are young newcomers who lack traditional experience and who are interested in modernizing and transforming the sector. To allow experience to meet new ideas, the industry needs efforts to develop collective knowledge through R&D, training programs, and sharing of best practices. It also needs organizations that facilitate sharing and that can represent the sector effectively with regulators and other stakeholders.

Source:
 1. NOAA, *Fisheries of the United States 2015*, Sept 2016.
 2. NOAA, Fisheries Statistics Division

