

# Oyster restoration in chesapeake bay essay sample



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Oyster reef restoration has been practiced in the Chesapeake Bay for more than 100 years using simple methods. Oyster larvae attach to shells of other oysters making thick, elevated deposits of aggregated shells (reefs). There are large, 10km<sup>2</sup> oyster reefs off Louisiana and Mississippi having oyster shell deposits greater than 10 m deep. These reefs are essential habitats for a wide variety of marine organisms that serve as essential forage species for valuable marine fish populations. The principal problems and threats to these reef ecosystems are mining /dredging for shell and building materials, bottom trawling sedimentation, pollution and altered salinity regimes (removal of freshwater flows).

Suitable oyster grow out areas may lack sufficient bottom substrate for productive natural populations to thrive. Oyster restoration aquaculture replenishes bottom substrate with cleaned, unencrusted shell (cultch) for oyster larvae in the water column (meroplankton) to settle (set) and grow out as adult filter feeders. In addition, restoration aquaculture efforts have evolved into community-based initiatives called oyster gardening (Rickards, Suchman and DuPaul).

In the 1980s the Virginia Institute of Marine Science, USA, encouraged a group of amateur shellfish growers to culture oysters using gardening techniques. The Chesapeake program has grown to 2000 participants, spread to neighboring states - including to a large program in Maryland, USA, and has been newly adopted in Mobile Bay, Alabama, USA. Oyster gardening begins with small seed oysters obtained from an aquaculture hatchery where broodstock are spawned. Eggs are fertilized in the water column, and planktonic larvae settle on to provided cultch (crushed gravel or <https://assignbuster.com/oyster-restoration-in-chesapeake-bay-essay-sample/>

broken shell), where they are grown to the juvenile stage. Floating cage baskets made of PVC frames with plastic or metal mesh netting are used to hold juvenile oysters. The baskets are suspended just beneath the water surface. Baskets have lids to exclude predators. Mesh sides are cleaned regularly by gardeners to permit good water exchange. At 2 months of age, seed oysters are distributed to gardeners for planting in areas deemed suitable for oyster growout.

An innovative restoration aquaculture project in Maryland, USA, is based on the hypothesis that seagrasses have declined because of declines in oyster populations in Chesapeake Bay. Decline in oyster filtering capacity due to population decline would lead to greater water turbidity and consequent declines in seagrasses. As seagrasses decline, they are less able to trap sediment, which would lead to an even greater reduction in water clarity owing to increased sediment resuspension. Researchers are now working on methods to restore both seagrasses and oysters (Wieland).

### The Restoration Project

The project report describes activities that will contribute to the restoration of oyster biomass and populations in the Virginia portions of the Chesapeake Bay. Construction and related activities to be undertaken in the proposed project include and related activities to be undertaken in the proposed project include creating new oyster habitat, planting disease-free spat and adult brood stocks on restored habitat, and relocating disease-resistant spat-on-shell to other portions of the bay. The guidelines emphasize enhancing biogenic stability and ecological services, activities that are consistent with

the mandate to restore habitat. Successful restoration will require a long-term strategy that is linked to commitment and funding. Its approach does not specifically include restoration for the purposes of supporting a commercial fishery (Burreson et al.).

Although the answers to questions concerning the future of oyster restoration are not evident from preliminary results, experimental and pilot restoration projects do provide the basis for formulating future management strategies. Recent oyster restoration programs have taken advantage of earlier projects and the lessons learned by earlier researchers and have incorporated many of the biological and technical factors that were previously identified as necessary for success. Moreover, many of the political and socioeconomic conflicts have been put aside in efforts to focus on specific management and restoration objectives. A group of oyster experts met in 1999 to develop recommendations to restore and protect the oyster resources of Chesapeake Bay. They identified essential components of oyster restoration projects; construction of three-dimensional reefs, maintaining permanent sanctuary reefs, and selecting sites where natural spatfall will occur.

The proposed goals were to restore 10% of the historic productive reef acreage, to restore a sustainable public fishery, to enhance natural recruitment, and to demonstrate the effectiveness of sanctuaries. The consensus of a group of oyster experts was that restoration efforts must move away from strictly fishery-driven objectives in order to focus on ecological objectives. The restoration philosophy should be to restore and manage oyster populations for their ecological value but in such a manner

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that a sustainable fishery can survive. A baywide oyster assessment is currently being conducted under the aegis of the Chesapeake Bay Program. The principal objectives are to develop quantitative projections of the efficacy of various management options, to develop management recommendations based on the most biologically effective combinations of options, and to develop concise recommendations for managing commercial oyster fisheries consistent with restoration goals (Wieland).

When the primary objective for oyster resource restoration is to increase landings, evaluating success is straightforward. The economic return from increased landings and sales combines with the economic benefits to various industry sectors provides a measurable outcome for restoration programs. The amount of money spent on restoration programs can be compared directly with the revenues generated by the harvesting and sale of oysters. From 1993 through 2002, oyster harvests have not increased with increasing expenditures and efforts from Virginia's restoration programs (Burreson et al.).

#### Works Cited:

Burreson, Eugene, et al. "Chesapeake Bay Oyster Restoration." Chesapeake Research Consortium (1999).

Rickards, Dr. William L., Dr. Cynthia L. Suchman, and Dr. William DuPaul. "Oyster Restoration in the Chesapeake Bay: Can Native and Asian Oysters Co-Exist?" Sea Grant Virginia Research (2006).

Wieland, Robert. "Managing Oyster Harvests in Maryland's Chesapeake Bay." NOAA Chesapeake Bay Office, Non-native Oyster Research Program. (2007).