

# Oyster Gardening on Mobile Bay

► The eastern oyster, *Crassostrea virginica*, is an important species both commercially and ecologically, but it has been on the decline in Alabama. In 2019, oyster harvests in the Gulf of Mexico were 12.348 million pounds, representing 67.4 percent of all United States commercial landings; however, only 234,000 pounds of oyster meats (less than 2 percent of the Gulf-wide landings) were reported in Alabama.

## Oysters in Estuarine Ecology

The oyster plays an important role in estuarine ecology. Oysters grow naturally in groups referred to as beds or reefs. Juvenile oyster larvae swim for about 10 days to 2 weeks and then settle and permanently affix themselves to adult oyster shells or other hard substrates, becoming what is called spat (figure 1). Oyster reefs serve as habitat for about 300 species of vertebrates and invertebrates that help form the food web of the estuarine ecosystem.

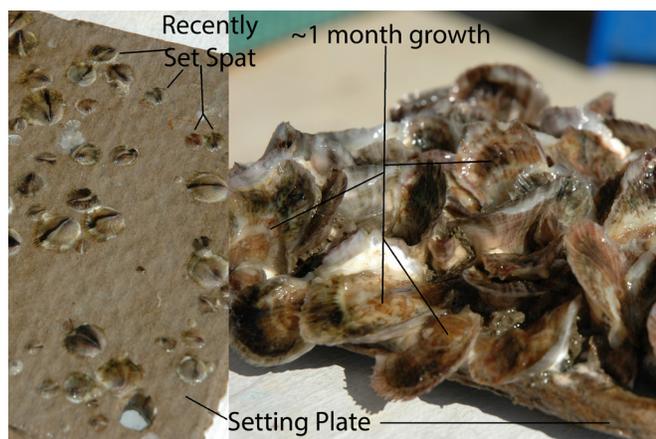


Figure 1. Juvenile oysters affix themselves to adult oyster shells or other hard substrates and become what is called spat.

Adult oysters filter as much as 2 gallons of water per hour, which helps remove phytoplankton from the estuarine waters they inhabit. This filtering improves the water quality in critical nursery areas where numerous fish and shellfish species develop.

The health of oyster reefs varies widely and is affected by both natural and human impacts. Oyster drills (figure 2), for example, can significantly reduce oyster populations by taking advantage of the elevated salinities in Mobile Bay during drought years in the watershed. Over time, sediment from upstream sources can bury oyster reefs as can sediment formed in a single day from a hurricane.



Oyster aquaculture is designed to help reduce variability in the consumer market supply as well as enhance restoration. In Alabama, culture techniques are primarily off-bottom applications with farming efforts using hatchery-reared larvae set as single units for use in the half shell market. Restoration efforts include planting natural larvae to set on as well as planting hatchery-reared larvae set shell to form clumps. In each method, oyster larvae are spawned naturally or in a hatchery. The larvae develop, settle, and undergo



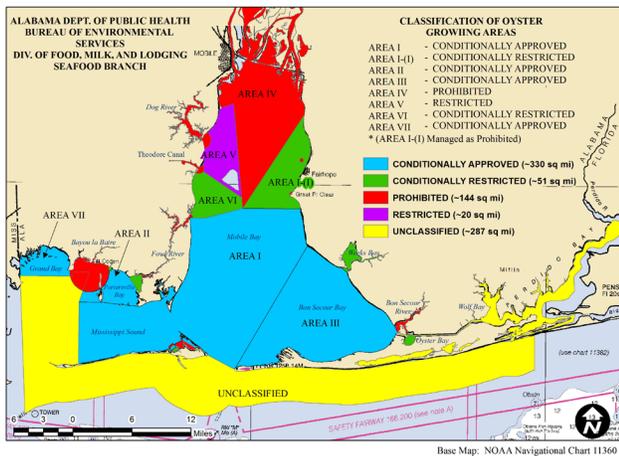
Figure 2. Oyster drills are a primary predator of oysters.



**Figure 3.** Microcultch is finely ground oyster shell used to set larvae for the half-shell market.

metamorphosis, becoming permanently affixed to hard substrate (figure 3). The resulting spat are grown to a desired market size for farming or a desired planting size for restoration.

Oyster gardening started in the Chesapeake Bay region. In Alabama, it is a group of individuals who provide nursery care for spat set shell from May or June through November. When the season ends, all oysters are returned to the program for planting on restoration sites or inclusion in restoration projects such as living shorelines within Mobile Bay and the Alabama side of the Mississippi Sound. There is no consumption within the oyster gardening program; however, a similar program has recently been established in Alabama that demonstrates growing oysters for personal consumption. The gardening program provides dime- to quarter-size spat set shell to each gardening site. By the time the oysters are ready to be picked up for planting, the nursery care provided by the gardeners results in oysters averaging 2.5 inches. Commercial farming methods including hatchery-spawned oyster larvae that are set on whole, recycled shell are used to obtain the spat set shell.

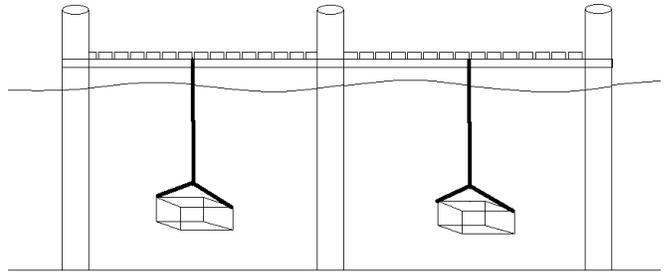


**Figure 4.** Alabama Department of Public Health pier classifications.

## Mobile Bay Volunteer Oyster Gardeners

As with the Chesapeake Bay program, the Mobile Bay program relies on volunteer gardeners from Mobile and Baldwin Counties who have piers located in conditionally open waters as classified by the Alabama Department of Public Health (figure 4).

Each gardener grows oysters in up to four gardens from late May to November or December. During this time, the juvenile oysters grow from a few millimeters to more than 2 inches. The gardens are suspended from the gardeners' piers so they remain off the bottom and away from pilings. This increases the water flow through the garden, which brings more food and oxygen while removing wastes from the oysters and other inhabitants of the gardens (figure 5). Keeping the gardens off the bottom and away from pilings also better protects the juvenile oysters from predators including oyster drills. On average, each volunteer produces 250 to 300 oysters ready for planting per garden, with average site totals of approximately 1,100 per season.



**Figure 5.** Oyster gardens are suspended to remain off the bottom and away from pilings.

Once each week, gardeners pull each of their gardens out of the water and rinse the mud, algae, and any other fouling material from them. A water hose is helpful but not required. Gardeners who do not have running water on their piers can rinse their oysters by rapidly raising and lowering the gardens at the water surface several times (figure 6). Alabama gardens are also outfitted with a clipping system that allows the gardens to be quickly disconnected from their lines, allowing them to be easily moved to more convenient locations for cleaning.

After rinsing the fouling material from the oysters, gardeners inspect the gardens for predators including blue crabs, stone crabs, and oyster drills. Any predators are removed, and the gardens are returned to the water until the next week. This weekly maintenance enhances the oysters' growth and prevents them from growing through the mesh, which would make them impossible to



**Figure 6.** Gardeners can rinse their oysters by rapidly raising and lowering the gardens at the water surface several times.

stock on the restoration reefs. The maintenance process for four gardens typically takes about 30 minutes.

## Checking for Oyster Growth

Throughout the season, Mobile Bay Oyster Gardening Program personnel visit to survey the oyster growth. If the oysters grow rapidly, a mid-season pickup is scheduled to remove a portion for early planting and to give the remaining oysters more room to grow. This has the added benefit of making the gardens lighter and the weekly maintenance more effective.

In mid-November, program personnel return to each oyster gardening site, collect the remaining oysters, and stock them on restoration reef sites or projects in Mobile Bay or on the Alabama side of the Mississippi Sound. Reef restocking efforts are coordinated with the Alabama Marine Resources Division to ensure that selected sites are outside of the harvestable area. The protection and maintenance that gardeners give their oysters allow the

oysters to grow larger and more rapidly than they would in the wild. This larger size helps improve the survival rate, increasing the probability of restoration success.

## Considering Participating in Oyster Gardening?

The Mobile Bay Oyster Gardening Program is always looking for new gardeners. Some questions to think about when considering participating in this program include the following:

- Do you have a pier or access to a pier in waters considered conditionally open for shellfish harvesting by the Alabama Department of Public Health? (See figure 4 or e-mail [oystergardening@auburn.edu](mailto:oystergardening@auburn.edu) for help).
- Are you at the location or can you arrange for the necessary weekly maintenance from June to November?
- Are you able to spend about 30 minutes a week maintaining the oysters?
- Will you allow program personnel access to your pier periodically to deliver spat, check on oyster growth, and collect oysters for planting?

If you answered yes to these questions, contact us at [oystergardening@auburn.edu](mailto:oystergardening@auburn.edu) to join us for the next gardening season.



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**For more information**, contact your county Extension office. Visit [www.aces.edu/directory](http://www.aces.edu/directory).

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