

Oyster Gardening on Mobile Bay

The Eastern oyster, *Crassostrea virginica*, is an important species commercially and ecologically. Oyster harvests in the Gulf of Mexico were 22.019 million pounds in 2007, or 89.9 percent of the total U.S. landings. During the same year in Alabama, 768,823 pounds of oyster meat were harvested at a value of \$2.69 million. The oyster plays an equally important role in estuarine ecology. Oysters grow naturally in beds. Juvenile oyster larvae settle and permanently affix themselves to adult oyster shells, becoming spat (Figure 1). These beds serve as habitat for an estimated 300 species of vertebrates and invertebrates that help to form the food web of the estuarine ecosystem. By filtering as much as 4 gallons of water per hour, adult oysters help to remove phytoplankton from the estuarine waters they inhabit. This filtering activity improves the water quality in critical nursery areas where numerous fish and shellfish species undergo crucial developmental stages.



Figure 2. The oyster drill, a snail, is a major predator.

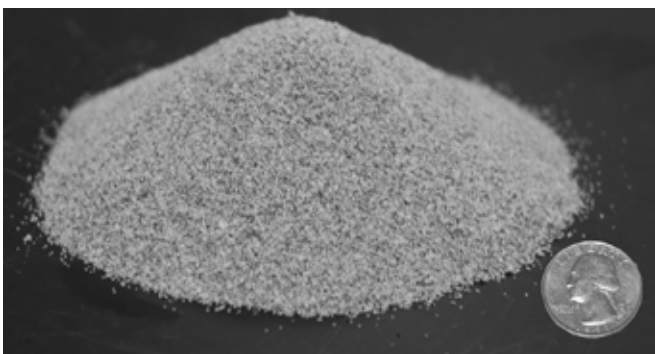


Figure 3. Microcultch for setting single oysters, which are valuable to the half-shell market and research applications



Figure 1. Juvenile oysters set on hard substrate, such as adult oyster shells, and form clumps.

The health of oyster beds varies widely and is subject to both natural and anthropogenic impacts. Oyster drills (Figure 2), taking advantage of the elevated salinities seen in drought years, can significantly reduce oyster populations. Oyster beds can be buried over time by sedimentation from upstream sources or in a single day from a hurricane.

Oyster aquaculture attempts to reduce the variability in the supply for the consumer market. Culture techniques range from planting shell to catching natural oyster larvae, to hanging ropes in deep water to collect larvae, to using intensive culture to produce single oysters for the half shell market. In each method, oyster larvae are collected from the wild or are hatchery spawned, set on a substrate (Figure 3), and the resulting spat are grown to a marketable size.

Oyster gardening began in the Chesapeake Bay. Borrowing from the aquaculture approach, the Mobile Bay Oyster Gardening Program collects and sets wild and hatchery-spawned oyster larvae, protects the resulting oyster spat in small cages (Page Cages), grows them for a period of time, and returns them to restoration reefs within Mobile Bay.

Like the Chesapeake Bay program, the Mobile Bay program relies upon volunteer oyster gardeners from Mobile and Baldwin counties who have wharves located in conditionally open waters as classified by the Alabama Department of Public Health (Figure 4).

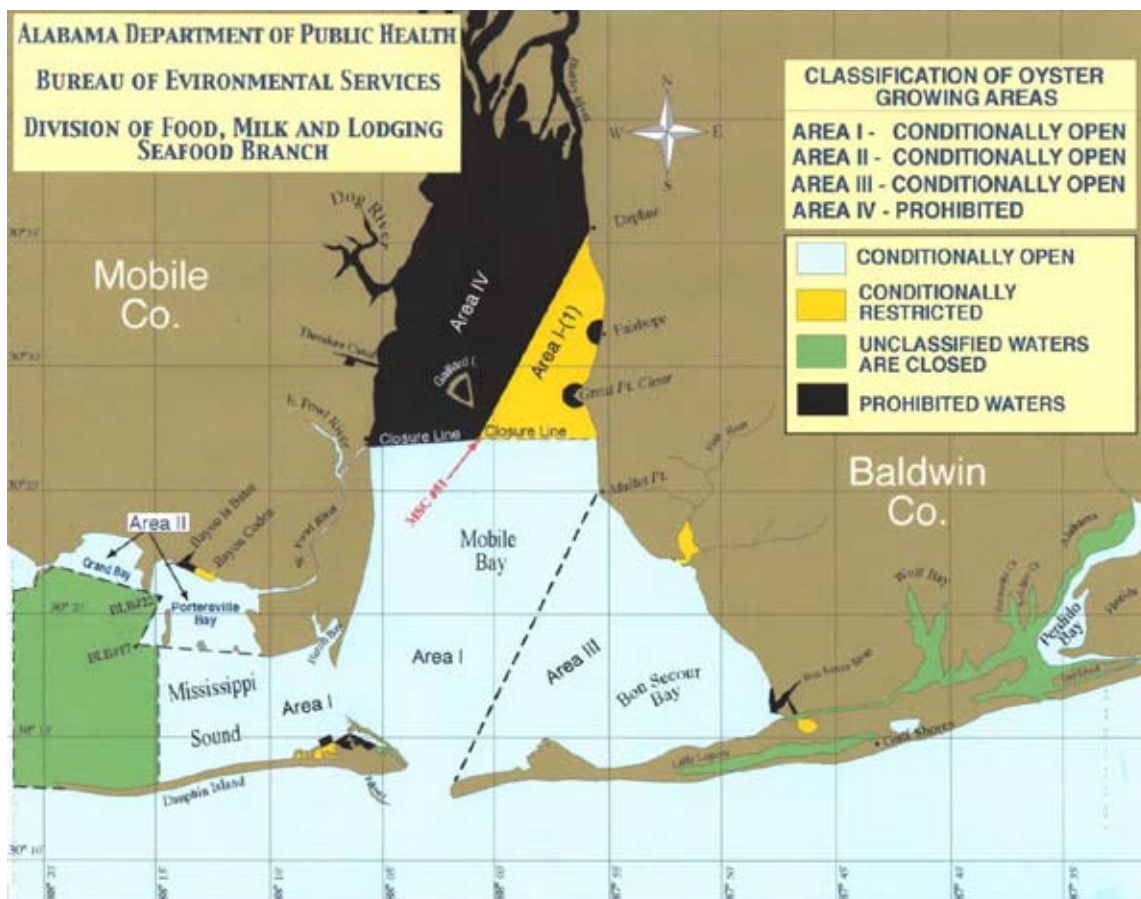


Figure 4. Alabama Department of Public Health classification map of oyster growing areas

Each oyster gardener grows oysters in up to four Page Cages from late June to November. During this time, the juvenile oysters grow from a few millimeters to more than 2 inches. The Page Cages are suspended from the oyster gardener's wharf so they remain off the bottom and away from pilings, increasing the water flow through the cages (Figure 5). Increased water flow brings more food and oxygen while removing wastes and improving the growth rates. Additionally, by keeping the cages off the bottom and away from pilings, the juvenile oysters are protected from predators including oyster drills. On average, each volunteer grows 250 oysters per cage.

Once a week, volunteers pull each cage out of the water and rinse the mud, algae, and any other fouling material from the cages. A water hose is helpful, but not a requirement. Oyster gardeners who do not have running water on their wharf can rinse their oysters by rapidly raising and lowering the Page Cages at the water surface three or four times (Figure 6). After the fouling material has been rinsed from the oysters, oyster gardeners visually inspect the cages for predators including blue crabs, stone crabs, and oyster drills. Any predators are removed, and the cages are returned to the water until the next week. This weekly maintenance not

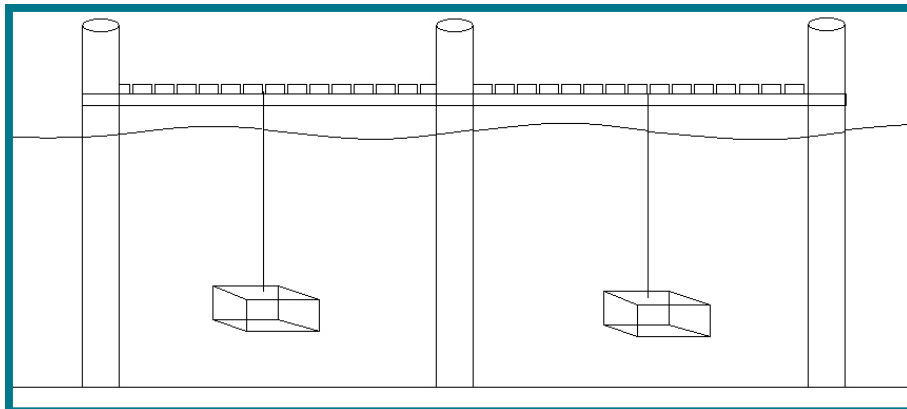


Figure 5. Diagram showing correct placement of Page Cages. Each is positioned between pilings and off the bottom.

only keeps the oysters growing, but also prevents them from growing through the mesh of the Page Cage, which will make them impossible to stock on the restoration reefs. The entire maintenance process for four cages takes 20 to 30 minutes each week.

Near the end of August, personnel with the Oyster Gardening Program visit each site to survey the oyster growth. If at this time the oysters have grown rapidly, Extension personnel remove



Figure 6. A Page Cage being washed of fouling materials at the water surface a portion of the oysters to stock on reefs, giving the remaining oysters more room to grow and making the weekly maintenance more effective.

In mid-November, program personnel return to each oyster gardening site, collect the remaining oysters, and stock them on the reefs (Figure 7). The reefs are carefully selected to be outside normally harvested areas. The protection and maintenance the oyster gardeners give their oysters allow them to attain a larger size more rapidly than they would in the wild. This larger size will improve the survival rate, increasing the probability of restoration success.

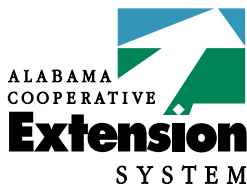
The Oyster Gardening Program of Mobile Bay is always looking for new oyster gardeners each spring. Some questions to think about when considering participating in this program include the following:



Figure 7. Students from Alma Bryant High School stock oysters grown by oyster gardeners on restoration reef sites.

1. Do you have a wharf or access to a wharf in waters considered conditionally open for shellfish harvesting by The Alabama Department of Public Health?
2. Are you at the location (or can make arrangements for the necessary maintenance) weekly from June to November?
3. Are you able to spend 20 to 30 minutes a week maintaining the oysters?
4. Will you allow Extension personnel associated with the Oyster Gardening Program to access your wharf periodically to check the growth and condition of the oysters in the Page Cages during the project?

If you are interested, please contact the Auburn University Marine Extension and Research Center at (251) 438-5690.



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For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

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