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Marine Extension
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Oyster Farming In Alabama

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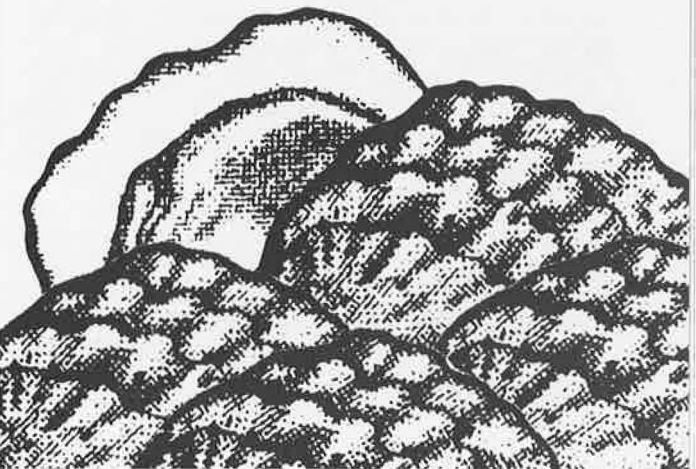


Oyster Farming In Alabama

Oyster production on the east and southeast coasts of the United States has fallen from 48.8 million pounds of meats in 1982 to 21.9 million pounds in 1991. Alabama landings have followed a similar trend but have recently rebounded. Meanwhile, Pacific coast oyster production has remained relatively steady at 7.4 to 10.8 million pounds. Most of the oysters harvested on the west coast are grown by oyster farmers.

Despite the apparent success of Pacific coast farmers, oyster farming has not been adopted to any extent along the Gulf coast or in Alabama.

This publication outlines the basics of oyster farming and reports results of experimental oyster farming in Alabama.

Overview

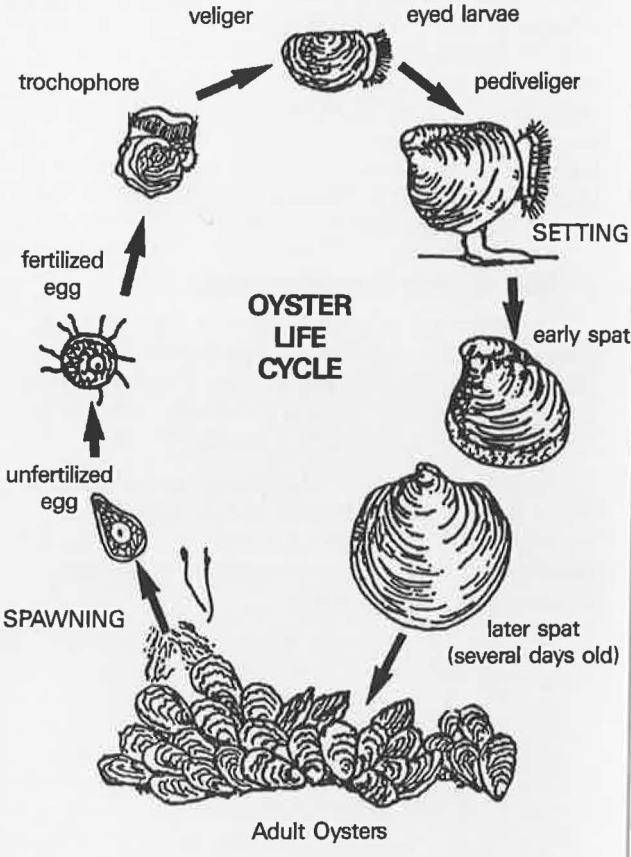
The key to farming any organism is to have control over the entire life cycle of the organism. Farming that relies on nature to provide the stock is more risky than farming in which the stock can be produced on demand.

Gulf coast oyster producers have long practiced a very rudimentary type of oyster farming in which oyster or clam shells are "planted" to provide a substrate for oyster larvae to set on (see life cycle, right). After 18 to 36 months market-sized oysters are harvested—the amount being totally dependent on the natural production of wild oyster larvae and the subsequent survival of the oysters.

Oyster farming as practiced in other parts of the world includes producing oyster larvae, setting the larvae, protecting the juveniles (spat), and then "planting" in natural waters with various degrees of control ranging from scattering the spat on the bottom to keeping it in plastic mesh bags on some kind of support frame or belt.

Oyster Hatcheries

It should be obvious that oyster farming as described above can only take place if there is a means to produce oyster larvae, set the larvae, and grow the resulting spat. An oyster hatchery does these things as follows:



Oyster life cycle, from *The Oyster Fishery of the Gulf of Mexico, United States: A Regional Management Plan,* Gulf States Marine Fisheries Commission, 1991. Used with permission of Richard L. Leard of the Commission.

- Adult oysters are brought to the hatchery and heat-shocked with 86° to 90°F water. As the oysters begin to spawn they are segregated by sex into small bowls.
- After 20 or 30 minutes, the oysters are removed and a small amount of sperm is mixed with the eggs. A single female may produce several million eggs.
- The fertilized eggs are placed in larger aerated tanks where they will develop into swimming larvae in 24 to 48 hours.
- The larvae are fed either cultured algae or wild algae from filtered seawater. Cultured algae is more reliable but requires special equipment and experience.

- As the larvae grow they are moved from one tank to another every few days by sieving.
- After 10 to 14 days, the larvae have reached the eyed larvae stage and are ready for setting.
- The eyed larvae can be set on very finely ground and sieved oyster shell ($\frac{1}{100}$ of an inch) that is placed in special setting tanks, or the larvae can be set on whole shell in mesh bags.
- The finely ground shell is referred to as *microcultch,* and the subsequent single oysters are called *cultchless* oysters since they do not appear to be attached to anything. These oysters are good candidates for the "half-shell" raw oyster market.
- Larvae set on whole shell will eventually form clumps and are similar to oysters found on natural reefs.
- Eyed larvae can be kept in the refrigerator for several days, which means that eyed larvae can also be shipped on ice to farmers who then set the larvae themselves. This eliminates the need for each farmer to have a hatchery.

Oyster Grow-Out

If the oysters are set on microcultch, they must be maintained for several weeks in special containers with a good flow of filtered seawater or fed cultured algae. After reaching $\frac{1}{8}$ to $\frac{1}{4}$ inch, the oysters are large enough to be put into plastic mesh bags. The cultchless oysters are maintained in bags until harvest. The bags are placed on racks or suspended from ropes to keep them off the bottom. As the oysters grow they are sieved, reduced in density, and moved to larger mesh bags. Traditionally, there are five bags in the series with the last bag having a $\frac{5}{8}$-inch mesh opening and holding 200 to 225 oysters.

If the oysters are set on whole shell, they can be held for a few days in the hatchery until the spat establish themselves. The bags of shells can then be placed in saltwater ponds or in protected natural waters on racks. The mesh of the bags and the close packing of the shells provide protection against predators such as blue crabs until the oysters get larger. The oysters can then be scattered on suitable bay bottoms or placed in trays until they are ready for harvest.

Results Of Work In Alabama

The Auburn University Marine Extension and Research Center has worked with all the hatchery and grow-out techniques described above on a limited basis. For example:

- Cultchless spat purchased from a hatchery were held in ponds for several weeks and then moved to bags on racks or suspended by ropes in Mobile Bay. The oysters reached harvestable size (around 3 inches) in 16 months and were mostly singles.
- Larvae bought from a hatchery were set on whole oyster shells in mesh bags. The spat were held in a saltwater pond several weeks and then placed on racks in Mobile Bay. Several weeks later the oysters were dumped from the bags onto trays on the bay bottom. After 16 months, 76 percent of the oysters were 3 inches or larger. Thirty-four percent of the oysters were singles, and the remaining were in clumps of 3 to 4 oysters.

Both the cultchless and the oysters set on whole shell described above were grown in areas where there are no recent records of oyster production. These localities apparently can support good oyster growth but, for whatever reason, do not have a regular, surviving spat set. One of the chief advantages of oyster farming would be to use currently unproductive areas to increase the overall oyster harvest.

Economic Considerations

The economics of oyster culture in Alabama are not well known. Buying or producing larvae and buying spat are costs that traditional oyster harvesters normally do not have. If oysters are kept in bags, the cost of bags and the support system (racks or belts) as well as the cost of labor to sieve and keep the bags clean must be considered. As in any business, the income has to justify the cost.

Legal Considerations

The bay bottom belongs to the state of Alabama. Bay bottoms can be leased from the state for oyster production, but the Corps of Engineers must approve any structures put into the Bay (pilings, racks, and any planting of shell or live oysters).

Waterfront property owners can plant and grow oysters to a distance of 600 yards from shore. This right can only be exercised after providing a survey

of the area by a registered surveyor to the Alabama Department of Conservation and Natural Resources, Marine Resources Division, and marking the boundaries at the corners of the area and at 600-feet intervals. The Corps of Engineers regulations would still apply to any out of the ordinary structures placed on the bottom. Areas within 600 yards of the shore that are classified as natural reefs cannot be used under this procedure.

Public Health Considerations

Oysters can only be harvested from areas approved by the Alabama Department of Public Health. Some areas of the bay are regularly closed to harvesting while others are normally open but are temporarily closed if water quality declines.

In summary many of the basic aspects of oyster farming have now been tried in Alabama. Questions remain about the economic feasibility. However, it appears that some forms of oyster farming could increase oyster production.

The Alabama Cooperative Extension Service

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Auburn University
Marine Extension & Research Center
4170 Commanders Drive, Mobile, AL 36615
(205) 438-5690

Cooperating Agencies
Alabama Cooperative Extension Service
Alabama Sea Grant Extension Program
Alabama Agricultural Experiment Station
Auburn University College of Agriculture
Department of Fisheries and Allied Aquacultures

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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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