



GALVESTON BAY **OYSTER GARDENING**

A How-to Guide



Community-based Oyster Reef Restoration Program

Thank you for your interest in oyster gardening and improving the health of **GALVESTON BAY!**

This guide will cover the following topics to guide you in your oyster gardening experience:

- *What is Oyster Gardening?*
- *Oyster Facts*
- *Oyster Status*
- *Importance of Oysters*
- *How Can I Get Involved?*
- *Creating Oyster Bags*
- *Hanging Oyster Bags*
- *Maintenance*
- *Monitoring*
- *Next Steps*



WHAT IS OYSTER GARDENING?

OYSTER GARDENING is a method used to provide an appropriate place and substrate on which free-floating oyster larvae, or spat, attach and start to grow.

At the Galveston Bay Foundation, we work to get bayfront communities and volunteers involved in oyster gardening. The oysters that grow from this process are then used to 'seed' selected reefs around Galveston Bay.

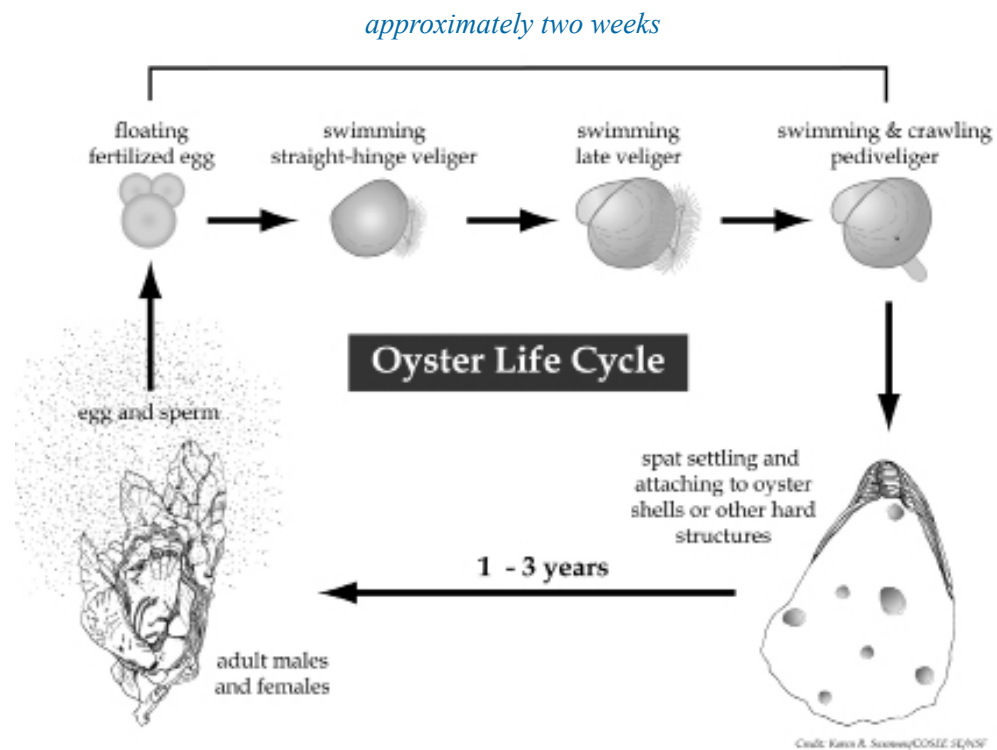


STEPS AT A GLANCE...

- 1** *Oyster shells are packed into plastic mesh bags secured at both ends.*
- 2** *Oyster shell bags are hung from piers or docks so that drifting spat can encounter and attach to the shells.*
- 3** *Bags are regularly pulled and monitored to check for the presence of spat and rinsed to remove algae and predators such as crabs and oyster drills.*
- 4** *Matured oysters are relocated to existing oyster reefs or reef restoration sites around Galveston Bay.*

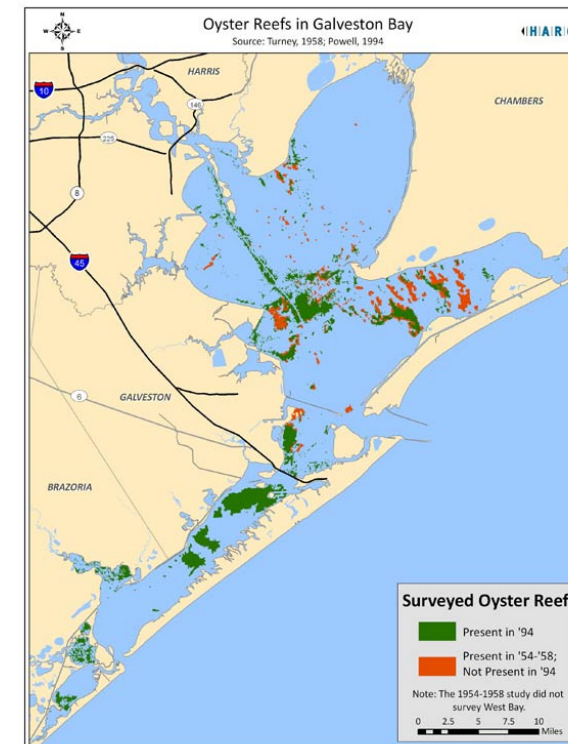
OYSTER FACTS

- The Eastern oyster (*Crassostrea virginica*) is native to Galveston Bay.
- Adult oysters are sessile (cannot move).
- Free floating larvae (spat) require hard substrate on which to attach in order to develop.
- Ideal conditions include good water circulation, temperate water (68-86 °F is ideal), and moderate salinity (10-30 ppt).
- Oysters reefs can be intertidal or subtidal (to depths up to 25 ft).



OYSTER STATUS

- Recent studies show that oyster reef is the most threatened marine habitat worldwide, with 85% loss on a global scale (Source: Beck, et al. Shellfish Reefs at Risk, 2009. pg. 2).
- Prior to 2008, Galveston Bay accounted for 80% of all oysters harvested in Texas.
- In 2008, Hurricane Ike severely impacted nearly 60% of Galveston Bay's oyster reefs as sediments from the storm deposited on reefs and physically smothered oysters. East Bay lost 80% of its reefs.



WHY ARE OYSTERS IMPORTANT?

- *Oyster reefs provide shelter and foraging opportunities for many different species of fish, shrimp, and crab.*
- *Oyster reefs stabilize the bay bottom and break wave energy, protecting shorelines from erosion.*
- *Oysters act as a natural filtration system by filtering silt and contaminants from the water, making it cleaner and clearer.*
- *A single oyster can filter up to 50 gallons of water a day!*



Oyster and Erosion Protection

Near shore oyster reefs help to dissipate wave energy and can decrease shoreline erosion. Reefs cause waves to break before they reach the shore, decreasing the wave impact on the shoreline. Reefs can even help build more shoreline, as breaking waves may deposit sediments behind the reef, building more land.

Oysters & Water Quality

Oysters are filter feeders. As water passes over their gills, they take in plankton from the surrounding water. An adult oyster can filter up to 50 gallons of water a day. Sediment is also removed in the process. So, the more oyster reefs we have in Galveston Bay, the cleaner the water in the bay can be.

HOW CAN I GET INVOLVED WITH OYSTER GARDENING?

The Galveston Bay Foundation is pleased to help you get started. We provide the following to assist you in oyster gardening at your own bayfront location:

- *Oyster shell, properly cured and ready for use*
- *Plastic mesh bag materials, ties, and rope*
- *Technical assistance and training*

You Provide:

- *A bayfront location with a pier or dock suitable for hanging bags*
- *A commitment of regular monitoring and maintenance of the bags*



HANGING OYSTER BAGS

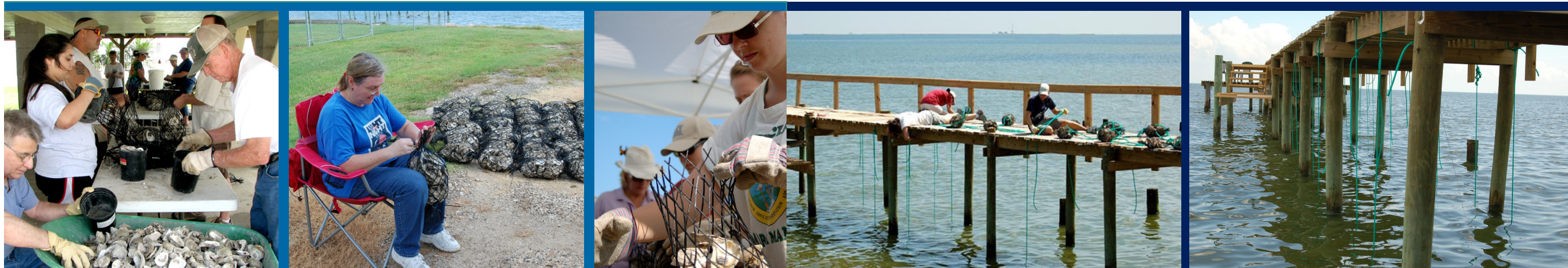
CREATING OYSTER BAGS

Oyster bags are easy to make and require minimal supplies.

- *Close one end of each mesh bag. Depending on the type of bag, you can tie a knot in the bag or use a zip tie.*
- *Fill the bag with oyster shell. Use only shell provided to you that has been cured to remove parasites and non-native organisms! Leave enough room at the top of the bag to close it.*
- *Close the top of the bag in the same manner as the bottom. Securely attach a rope to the top of the bag.*

Oyster bags can be hung from piers or docks or attached to bulkheads and other sturdy structures. There are many ways to hang an oyster bag, but there are a few things that you need to keep in mind.

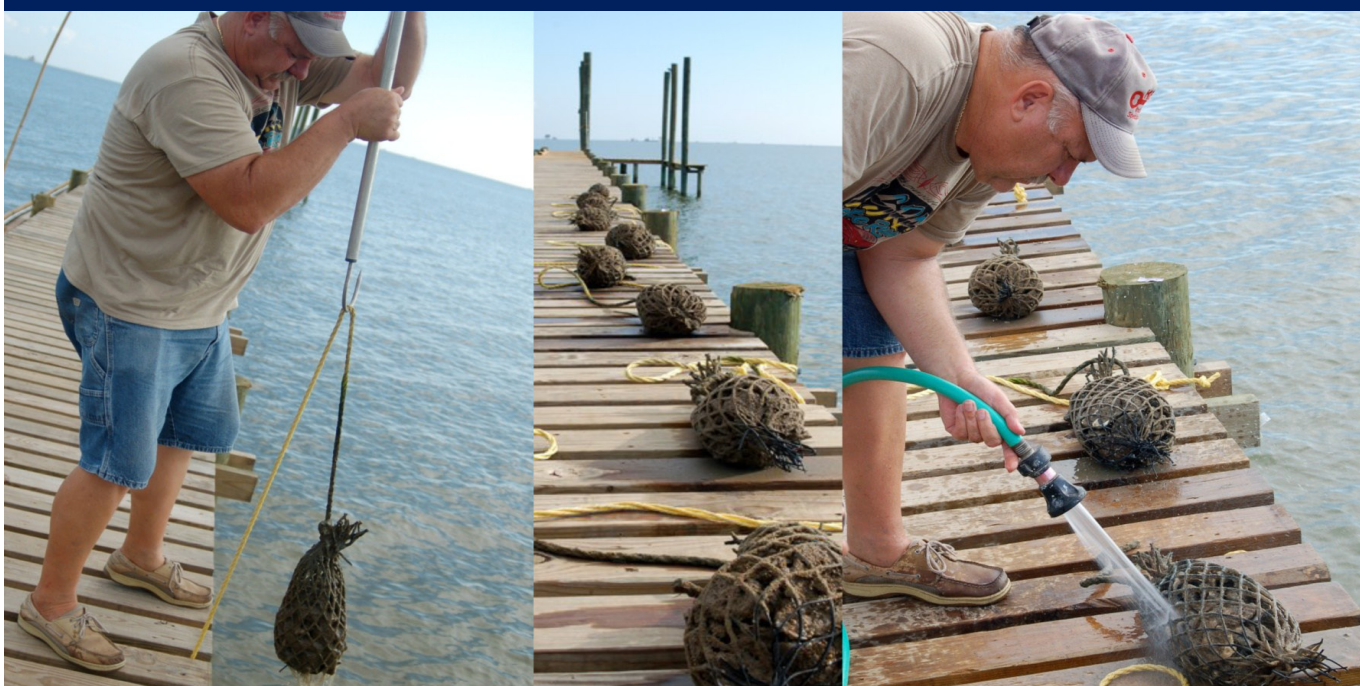
- *Oyster bags should be submerged except during extreme low tides.*
- *Oyster bags should not rest on the bay bottom.*
- *Oyster bags should be hung under a pier or dock to keep them out of the way of boats, wade fishermen, and swimmers.*
- *Oyster bags should be hung in such a way that it is easy to pull and check them.*
- *Ropes should be tied in such a way that knots aren't likely to come loose.*



MAINTENANCE

While you don't have to provide any special food or shelter for your growing oysters, there are some general maintenance checks that will help increase your chances of success in oyster gardening.

- *Pull the bags on a regular basis, ideally every week and minimally every two weeks, and lay them on the pier or dock.*
- *Check for the presence of spat, predators, algae, damage to ropes or bags, etc.*
- *Remove predators and debris and hose off algae that may be attached to the bag or oyster shells.*
- *Repair any damaged rope before returning bags to the water.*



COMMON PREDATORS

- *Blue crab — uses its claws to break through an oyster's shell to prey on the oyster inside*
- *Oyster drill — a snail that bores through the oyster's shell and eats the oyster inside*



Blue Crab



Oyster Drill

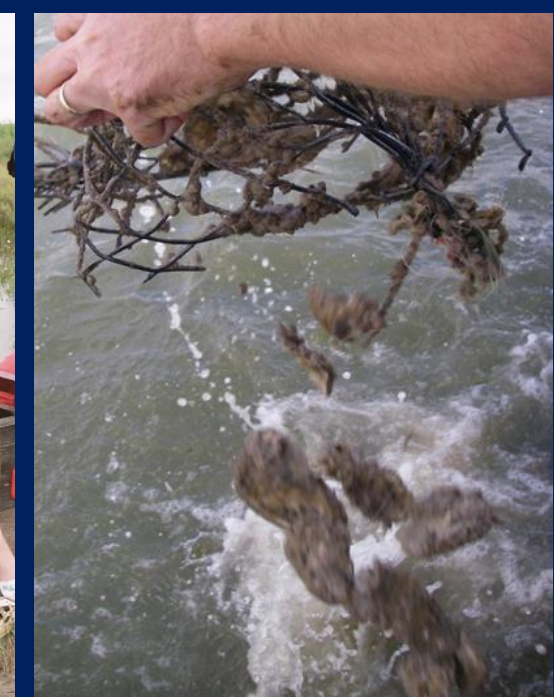
SAFETY FIRST!

- *Don't eat your oysters! Oysters grown through the gardening process are not for consumption and are only for ecosystem services such as water quality, habitat creation, and shoreline protection.*
- *Wear gloves and be cautious when handling the shell and bags. Oyster shells are sharp.*
- *Secure all loose ropes.*
- *Use caution around piers and docks, especially when wet.*

WATCHING FOR PROGRESS

Monitoring your oyster bags is a big part of the gardening process. When making observations, here are some things to look for:

- *REMEMBER: Spat start off very small, so take your time and look closely.*
- *Can you estimate how many spat are in each bag or on each shell?*
- *Do spat numbers vary with location?*
- *Do spat numbers vary with the time of year?*
- *As spat grow in size, do their numbers vary?*
- *GBF will provide data sheets to keep track of your bags*



Collecting spat is kind of like fishing. Sometimes you catch more than you thought possible, and other times you get to enjoy a nice day on the water.

WHAT HAPPENS NEXT?

You've successfully grown oysters! Now what?

Your oysters can be relocated to approved reef locations in Galveston Bay with assistance from the Galveston Bay Foundation. The gardened oysters provide a "seed" source for establishment of oysters at these reef restoration sites and contribute to the restoration of oyster reefs in Galveston Bay.

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THANK YOU

Thank you for your interest and involvement in gardening oysters for the Galveston Bay Foundation's oyster reef restoration program. This is one of many community-based restoration programs offered by the Galveston Bay Foundation. Please visit our website at www.galvbay.org to discover the many ways you can get involved with the Galveston Bay Foundation. Without the commitment of our volunteers, we would not be able to carry out these important projects that restore lost or degraded resources and habitats and help to preserve the bay in ways that benefit its residents.

For more information on Galveston Bay Foundation's oyster reef restoration projects, please contact:

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