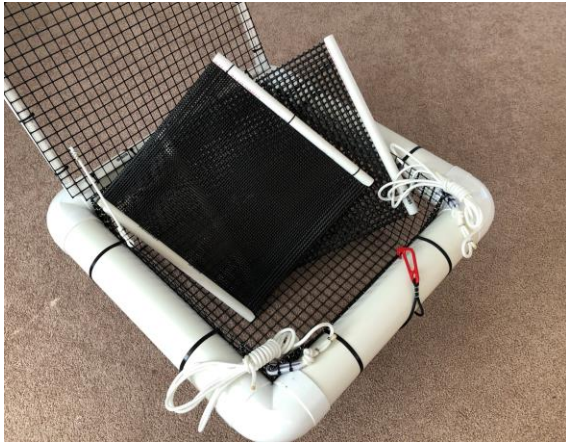


OYSTER GARDENING

Taylor Floats and More...



Short Oyster Float



Long Oyster Float



Keeper Caddy

"Capt. Tom's Oyster Floats"

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Introduction

This manual offers information and advice on how to grow oysters via aquaculture.

Aquaculture with Taylor Floats

This method employs the "Taylor Float" which suspends the oysters in a wire mesh basket near the surface of the water. Many homeowners prefer this method because the floats are easily accessible and require minimal maintenance. This system provides advantages for the oysters as well including:

- a good supply of food and oxygen near the water's surface
- reduced threat from predators
- reduced amount of sedimentation
- easy maintenance for oyster gardeners

The Capt Tom's Oyster Float is a version of the "Taylor Float" that implements features that allow the float to withstand the elements and test of time. Each float is constructed of the finest materials including:

- vinyl coated 16 gauge wire mesh to prevent rust
- stainless steel connection hooks also to prevent rust
- reinforced corners to provide extra support
- hinged predator-proof tops with ties downs to keep oysters protected
- dock lines to secure your float to your dock or pier
- 2 sizes of oyster mesh grow bags to provide spat a safe area to mature

Oyster Seed

Oyster Hatcheries

Oyster "seed" is an oyster that is transplanted to another location for the purposes of grow-out or restoration. The type of seed used by oyster gardeners and oyster growers is spat (clutched oysters produced from a hatchery).

In producing spat in the hatchery, the brood oysters are stacked in breeding tanks, river water is added and heated to temperatures that will enhance the setting of free-swimming larvae seed. Once the oysters have metamorphosed and set, they are referred to as spat. Spat are generally kept in the tanks for several days before they are removed to nursery grow tanks to be fed nursery-produced algae. They are then sold in large numbers to commercial growers. The growers use various tanks where river water is pumped over the oyster spat to provide water exchange necessary for growth and survival. When spat size reaches $\frac{1}{4}$ " , they are ready to be used by oyster growers.

Oysters can exhibit rapid growth, sometimes reaching 25 mm or 1" in two months after settlement. Growth is extremely variable and depends on the interaction of many water quality factors, especially, dissolved oxygen, salinity, temperature and food availability.

Deploying Oyster Seed

One starter mesh grow bag containing spat is placed inside the Taylor float. The oysters can be kept in this bag until they are large enough to move to the next size grow bag. The oysters are then transferred to the larger growing bag. When they are large enough to be contained in the float without the grow bag they can be transferred to the float itself. The bag is opened and the oysters are spread in a thin layer across the bottom of the float. If you let the spat grow too large before removing them, they could begin growing through the mesh bag, which makes them difficult to remove and usually results in a significant number being damaged or destroyed. Oysters can also potentially grow through the mesh of your Taylor float, so you should shake the float to dislodge oysters whenever the float is removed from the water for maintenance.

Location of your floats is important. Oysters grow best when they are placed in areas with maximum water flow around them. Tie the float to a dock where there is good tidal flow. It is recommended to use the included dock lines to tie the float between two pilings so it doesn't bang against the dock. Banging can cause the oysters to close their shells and stop feeding. Consistent banging can also compromise the integrity of the Taylor Float.

Oyster Care and Maintenance

To ensure the most efficient growth a) you will need to keep the float clear of fouling organisms such as barnacles, mussels and algae, b) remove sediment and oyster feces that collect in the float, c) do your best to exclude predators such as flat worms which can feed voraciously on young oysters (see the Brine Bath section below).

You can best accomplish all of these objectives by periodically pulling the float onto a dock or shore and letting it dry out. Shading the float by tying it under a dock can also help reduce fouling. The following expands on steps you can take to optimize the growth and survival of your oysters.

Control of Fouling Organisms

Some species of barnacles and mussels can withstand periodic exposure to air, though most are controlled through desiccation or drying out. While oyster spat are capable of withstanding extended periods of exposure to air, the length of time will vary according to air, temperature, humidity and sunlight. It is not wise to allow oysters to sit in hot, direct sunlight for more than 3 or 4 hours, though this length of time should be sufficient to control most of the unwanted fouling organisms. During periods of cooler weather or overcast skies, or even rain, oysters can survive longer periods of desiccation and even leaving them exposed for a whole day should not cause problems of survival. Most Taylor Floats should be exposed to air at least once every two to three months. Experience in maintaining your float will be the best guide.

There are several methods of desiccation, for example:

- the float can be pulled out of the water and placed on a dock/pier
- it can be moved ashore during high tide and left to dry during low tide
- the lines supporting the float can be adjusted during high tide so that when the tide falls, the float is suspended out of the water until the tide returns

If you choose the latter technique, the float must be tied with four lines tied at the corners of the PVC frame and the wire. The method you use will depend on your site and your individual preference.

Filamentous algae are one of the most persistent fouling organisms; while they do not harm the oysters, they make handling difficult and impede your ability to observe the growth of your spat. The best way to control such algae is to make sure it does not get started. As soon as you detect algae in your Taylor float, you should begin a regular desiccation schedule. Once these plants are established, they can grow very fast. If your float has a heavy fouling of algae, remove as much as possible prior to desiccation; once established, it is unlikely that you will be able to totally remove it from the float.

Cleaning Floats

Taylor floats and all other forms of mesh bags used to cultivate and raise oysters trap sediment suspended in the water. Some tributaries have high loads of suspended sediment, while some typically have less. The type of sediments in the water can vary as well. Some are composed of heavy particles like sand while others are fine clay.

Examining the bottom sediment near your site will give an indication of what you may expect to see in your float. Sandy sediments are seldom major problems in mesh bag culture: sand particles tend to settle out of the water because of their relatively large size. Floats located in areas where there is high wave activity may occasionally require cleaning after major storms.

Fine clay sediment is more common in the Chesapeake Bay and, therefore, more of a problem. The oysters in floats and mesh bags serve as a system of mini baffles that cause suspended sediments to settle out from the water. In addition, the filtering activity of the oysters removes some suspended particles from the water; some of which are algae and some sediment. The sediment particles are released as “pseudofeces” while waste products are also expelled. Oysters deposit these particles on the bottom of the float. Sediment and oyster feces can be detrimental to survival of your oysters. Without routine cleaning, oysters can quickly become covered which can prohibit their ability to feed and breathe- When this happens, oysters found beneath this sediment are likely to die. For this reason, it is critically important that you clean your floats on a regular basis. The time between cleanings will vary according to the conditions at your sites but all floats should be cleaned at least every other month. Cleaning can consist of rapidly moving the floats up and down in the water until all sediments have been rinsed off, or by using a hose if available. An excellent time to do this would be when the floats are raised for desiccation.

Oyster Predators

While oysters have many natural predators in the Chesapeake Bay, Taylor Floats will help to exclude many of them. Still, several species of crabs, fishes, and other animals all may feed on oysters at one point in their life cycle. The mesh sides of your floats should limit most major predators with one exception, the oyster flatworm that can have a devastating impact on young oysters. The mesh of your Taylor Floats will not restrict flatworm infestation as the worms spread via a planktonic larval form. Flatworms reproduce throughout the summer in the Bay and one of their favorite foods is oyster spat. A heavy flatworm infestation could result in mortality rates greater than 90% mortality within a couple of weeks; therefore, it is important that you monitor the bag for flatworm presence. The good news is that your control flatworms through desiccation so the regular schedule of desiccation to control other fouling is likely to also control flatworm populations and mortality of your spat (see the Brine Bath section below).

Remove Blue crabs in your floats, a confined blue crab will eat what is available to it. It is not likely that most other oyster predators will cause problems in the floats. One advantage to spat is that they are generally more predation resistant than cultch-less oysters.

Check your floats for crabs, they can crack open the oyster shell and enjoy your oysters before you can!

Oyster Ecology

Organisms Associated with Oyster Habitats

Oysters are like the building blocks of the benthic (bottom) community and over time you should begin to see many organisms that are common to natural oyster bars, such as barnacles, mussels, bryozoans and worms. While some are predators of oyster spat, most of these organisms are not a threat to oyster survival. Mussels, for example may compete with oysters for food while barnacles do not generally cause any serious problems unless the barnacle set is extremely abundant, that is because barnacles feed on a different component of plankton. Other organisms such as filamentous algae and sea squirts can cause serious problems when they grow heavily on oysters.

You will also find several kinds of fishes and crabs that concentrate around oysters. Some are simply feeding on associated organisms, some are there for protection themselves, while some are there to lay their eggs and use the oyster shells as a nursery for producing their own young. The diversity of plants and animals found on oyster floats illustrates the important habitat role that oysters play in the Bay system.

Nursery produced spat oysters are disease resistant.

Thank you for helping to save the Bay for future generations!

Spat Essentials

It is very important that you keep your spat/seed cool and damp for the trip home. A small cooler with an ice pack is great. Do not place the spat directly on the ice pack. Please insulate them with newspaper or similar products and arrange them close to the cold source. At home, place spat in your creek, river, or tributary ASAP.

Pour oyster seed from the mesh bag/bags into the 1/4" starter first- stage bag. Slide slotted PVC pipe over bag end (start at bag side) and use cable ties provided to secure bag. The PVC should extend to each side of bag. Seal well with cable ties so that spat do not float out! Place starter first-stage bag into float and secure top.

Secure float to dock so that the float does not rub against pilings or other objects. Oysters perceive this movement as a predator and stop feeding.

Rinse starter bag as often as needed to remove sediment. Use low-pressure garden hose. Do not power wash!

The oysters should be ready to be moved into the second stage bag when they are 1-1/2" or larger. Not all oysters grow at the same rate. Cull your oysters and any that are 1" or less should remain in the 1/4" starter first stage bag until they are 1-1/2" or larger.

It is OK to have second stage bag and starter first-stage bag in the float at the same time. The starter first-stage bag should always be on top of the second stage bag.

The oysters will need to remain in the second stage bag until they are 1-3/4" in size. Cull or sort your oysters and any that are less than 1-3/4" should remain in the second stage bag until they are 1-3/4" or larger. Release oysters into the float when they reach 1-3/4".

Each week or so pull your dock lines up and down a few times to eliminate sediment on the oysters.

I order spat in the spring thru October. Some oyster gardeners like to start a spring batch and a fall batch. It is OK to have maturing oysters and bags in the float at the same time.

Refer to the manual for most of the information that you will need. I am always available for any questions. Contact me by phone or email. We are not open on Sunday.

Always wear good quality watermen's gloves when cleaning bags or culling the oysters.

Thank you for your help to save the Chesapeake Bay!

Brine Bath

Perform the following steps to remove oyster worms (small red worms) and sea squirts (sea grapes) from your Oyster Float.

- large non-metal trash can
- 40 lb. bag of salt cubes (yellow bag) - found in any hardware store
- 15 gallons of sea or creek water - not household water
- mix in trash can until Brine is created
- dip oysters in a mesh bag into Brine for 30 minutes
- oysters should be at least 2" in size - not for baby oysters
- remove bag and rinse oysters well - replace in float

This will kill the oyster worms and sea squirts. It will not harm the oysters if done properly.

Oyster worms can drill a small hole in the oyster shell and destroy the oyster. Sea squirts will diminish the feeding ability of the oyster.

Resources

Visit our web site and checkout the various related links section for an updated list of Oyster Gardening information:

- <http://www.oystergardening.com/>

Consider becoming a member of the Tidewater Oyster Gardeners Association (TOGA):

- https://docs.wixstatic.com/ugd/9d48db_0fb7394dc62c4a88a0dd4ea6b344065a.pdf

Virginia Marine Resource Commission also has some good resources:

- <http://www.mrc.virginia.gov/index.shtm> - overall resource for VA water activities and compliance
- <http://www.mrc.virginia.gov/miscellaneous/vaoystergarden.pdf> - oyster gardening pdf
- http://www.mrc.virginia.gov/Shellfish_Aquaculture.shtm - shellfish specific sections
- http://www.mrc.virginia.gov/forms/VGP3_Aquaculture.doc.pdf - permitting your floats

Shell Reclamation

- <https://www.cbf.org/how-we-save-the-bay/programs-initiatives/virginia/oyster-restoration/save-oyster-shell.html>

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