

Step One: Evaluate Your Site

Will your site support growth?

The first two things you need to know are whether the location you have chosen for your oyster garden will actually support oyster growth, and whether it will be safe to eat the oysters grown at that site. An oyster garden needs to be located where you have 5 basic things:

- the correct water salinity range
- a minimum water depth
- adequate amounts of oxygen
- adequate amounts of plankton (algae)
- absence of sewage and other contamination

Salinity

The salinity of the water at your site will influence the growth rate of your oysters and whether they may become exposed to oyster-specific diseases. Salinity is measured in grams of salt per liter of water, or parts per thousand (ppt or ‰). Oysters require a salinity of at least 8 ppt to grow and oyster growth increases with increased salinity. Below 10 ppt salinity oyster growth rates are generally reduced; some oysters show intermediate growth rates at salinities between 10–20 ppt and highest growth rates at high salinities >20 ppt. You can test your water salinity using a simple device known as a hydrometer. Hydrometers may be found easily at pet stores that sell saltwater fish or online. The map on the opposite page shows the general areas of salinity in Tidewater Virginia. It is a good idea to keep records of the salinity at different times of the year, under varying environmental conditions (for example, after a rainfall), and at different tidal cycles. Also keep in mind that as sea level rises, high salinity waters will move up the Bay and tributaries.

Water depth

For two reasons your site must have a minimum water depth of one foot, even at the lowest tide: 1) oysters can only filter water and grow when they are submerged - so they will grow faster if they are always under water; 2) in the winter, when tides and winds may cause oysters to be exposed, they may freeze. Oysters can be frozen solid in the water and survive, but they can die if exposed to sub-freezing air temperatures.

Dissolved oxygen

Oysters need water with dissolved oxygen levels of at least 3.2 milligrams per liter, but 5.5 mg/l or more is best for survival and growth. Colder water can hold more oxygen than warmer water. That is why “anoxia events” (low oxygen

situations) usually occur in the summer. Generally Virginia's coastal waters have sufficient oxygen to support oysters grown close to the shore and off the bottom. If you are concerned about oxygen levels, you can measure dissolved oxygen using a field kit purchased online.

Plankton

The quantity and quality of food available to oysters can vary considerably from location to location. The quantity and quality are a function of the hydrodynamics at a site (how the water is moving through the site) as well as the abundance of phytoplankton in the water. If you have access to more than one site, you may want to experiment with the different areas to see which produce the biggest oysters. If you have only one location, you may have to evaluate different seed stocks and handling strategies in order to maximize oyster growth and survival.

Will it be safe to eat oysters grown at your site?

As oysters pump water through their gills and filter out microscopic food particles, they may also ingest bacteria and viruses. And because oysters, including their intestinal tracts, may be eaten raw, care must be taken to ensure that oysters harvested for consumption are taken from very clean water. Waters approved for harvest of shellfish must be much cleaner than waters approved for swimming and fin-fishing.

Not all gardeners choose to eat their oysters, but if you do, you must determine whether they are safe to eat. As is true with meat, proper cooking kills disease causing micro-organisms. The Virginia Department of Health (VDH), Division of Shellfish Sanitation (DSS), tries to minimize our risk by monitoring and classifying shellfish waters for safe commercial and recreational harvest. VDH/DSS maintains boats at each of its field offices and collects and analyzes fecal coliform samples monthly at designated stations throughout shellfish growing waters in tidal rivers, Chesapeake Bay and the Seaside of Virginia's Eastern Shore. DSS collects and analyzes about 22,000 seawater samples per year. Visit the Virginia Department of Health's online maps of condemned shellfish areas at www.vdh.virginia.gov/EnvironmentalHealth/Shellfish/closureSurvey/index.htm. The maps are updated about 4 times a year but more frequently in areas subject to rapid change.

Tidewater Virginia Salinity Zones

