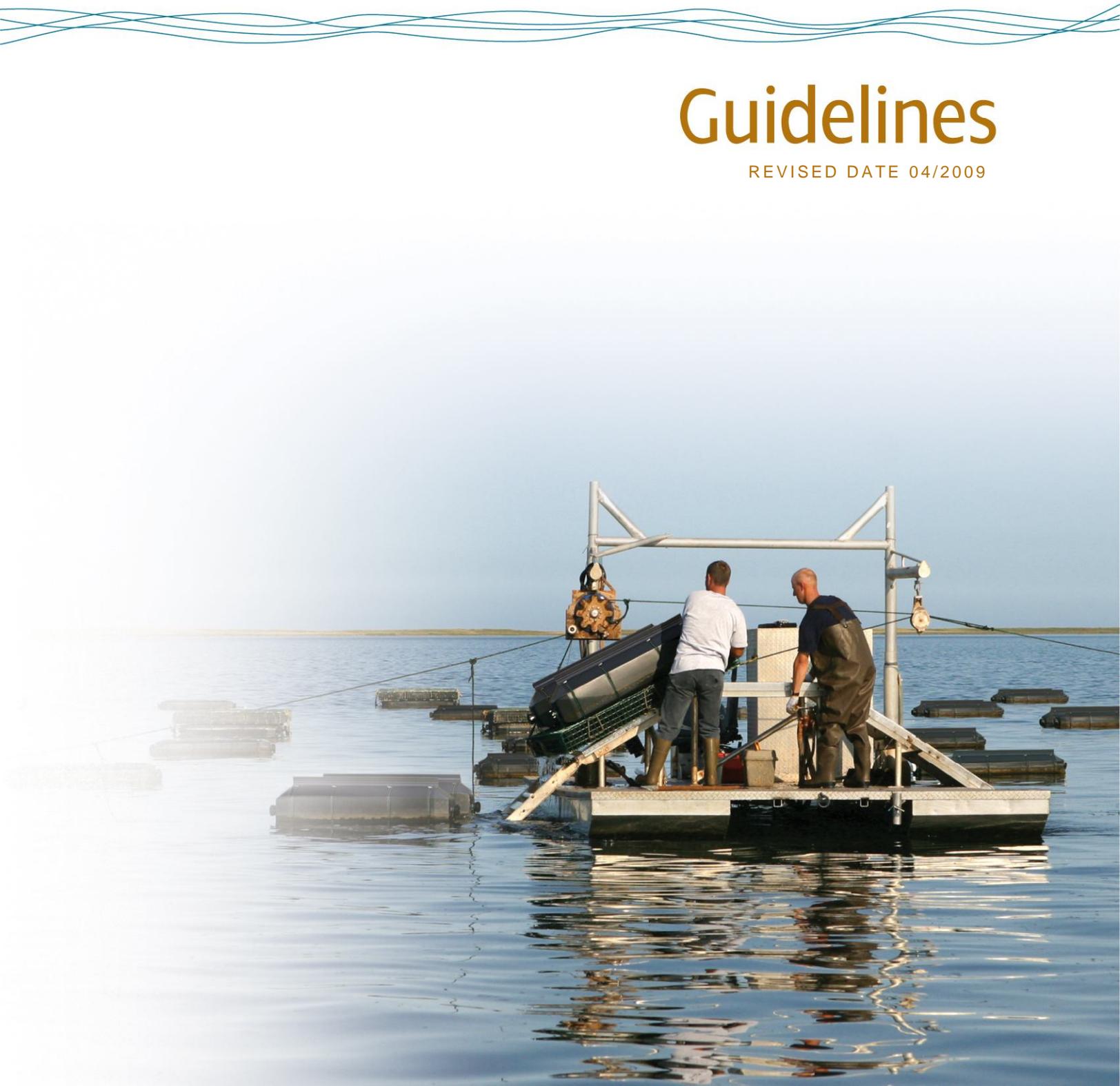


# OysterGro™

THE COMPLETE FARMING SYSTEM

## Guidelines

REVISED DATE 04/2009



## Guidelines

### Growing Oysters with the OysterGro System (OGS)

**Congratulations**, you have just invested in one of the most efficient oyster growing system there is, the OysterGro. Developed in the late 1990, it was designed to provide the versatility, efficiency and the effectiveness on which business success depends on. This guide is intended for all oyster growers, big or small. This document was prepared to help you with the basics in using the OGS.

**Our goal is to help you succeed in this business venture.** The OGS has proven itself in many areas under commercial oyster rearing conditions where it consistently exceeded predicted labor savings, produced a top quality oyster and established the basis for a viable aquaculture business with attractive profitability. Following the guidelines listed below will greatly increase your chances of building a profitable oyster growing operation. With time and experience, using the OysterGro, you may wish to fine tune some of the operations to better suit your working environment and the tools and equipment that are available to you. Bouctouche Bay Industries Ltd will support you in anyway we can. Please contact us.

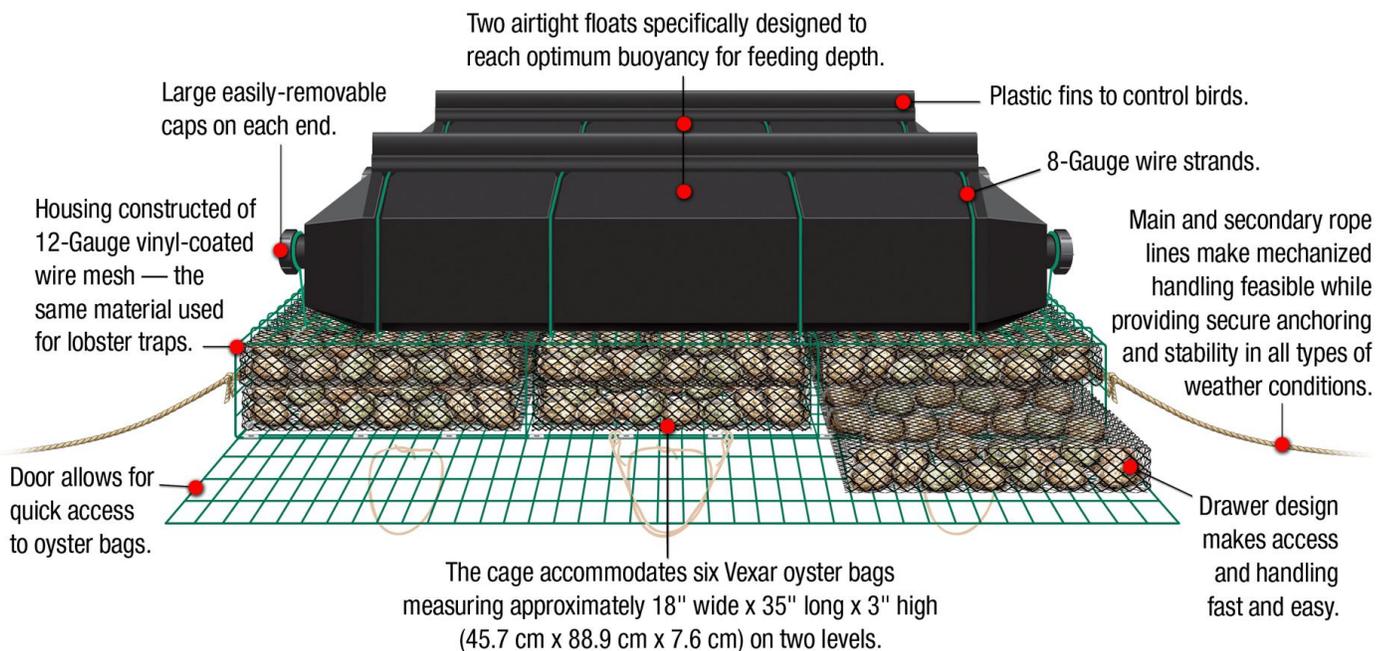


*Notice: This is a working document. Information will be updated on a continuous basis as additional information is available. Please check regularly on the website for your most updated copy.*

## Overview

The OysterGro consists of a compact wire mesh housing with two specially designed floats. Every component is designed for strength, durability and convenience. OysterGro creates an ideal environment for growth, cleaning, sorting, protection and survival. As a result, OysterGro helps you produce the highest quality oysters at an extremely competitive cost.

Figure I – The complete farming system



PATENTED - US D578, 424; CA 125,146

### Site selection

A good site must offer both food and protection. It is therefore important to measure all the physical parameters affecting site quality on the basis of using the Oyster System. The main parameters that make it possible to assess the true potential of a site are as follows:

### Surface Area

Obviously, the size of a site has to meet production requirements. Oyster aqua culturists must obtain an aquaculture lease from the proper authorities (Department of Aquaculture). It is important to obtain the surface area necessary for the production being contemplated. Suggested density – 100 cages per acre.

### Accessibility

The distance between the rearing site and the offloading site can be a major constraint to management of aquaculture operations. Fuel costs will be proportionate to the distance to be covered. Long distances will also have a direct impact on labor costs. Certain sites are hard to get to at low tide. Oyster growers therefore have to adapt to the tidal cycle, which does not always keep traditional hours.

### Water Dept

With the OysterGro System, water dept is very important in areas where ice is prevalent in the winter months. Careful calculations must be made so that the cage, when submerged will not be crushed by ice. This calculation must take into account maximum ice thickness in your particular area.

### Other parameters to consider

- Riparian owners and other users
- Growing area classification
- Leases & licenses

Your Department of Aquaculture or your local Oyster Growers Association could offer you invaluable information on these topics.

## Layout of Long Lines

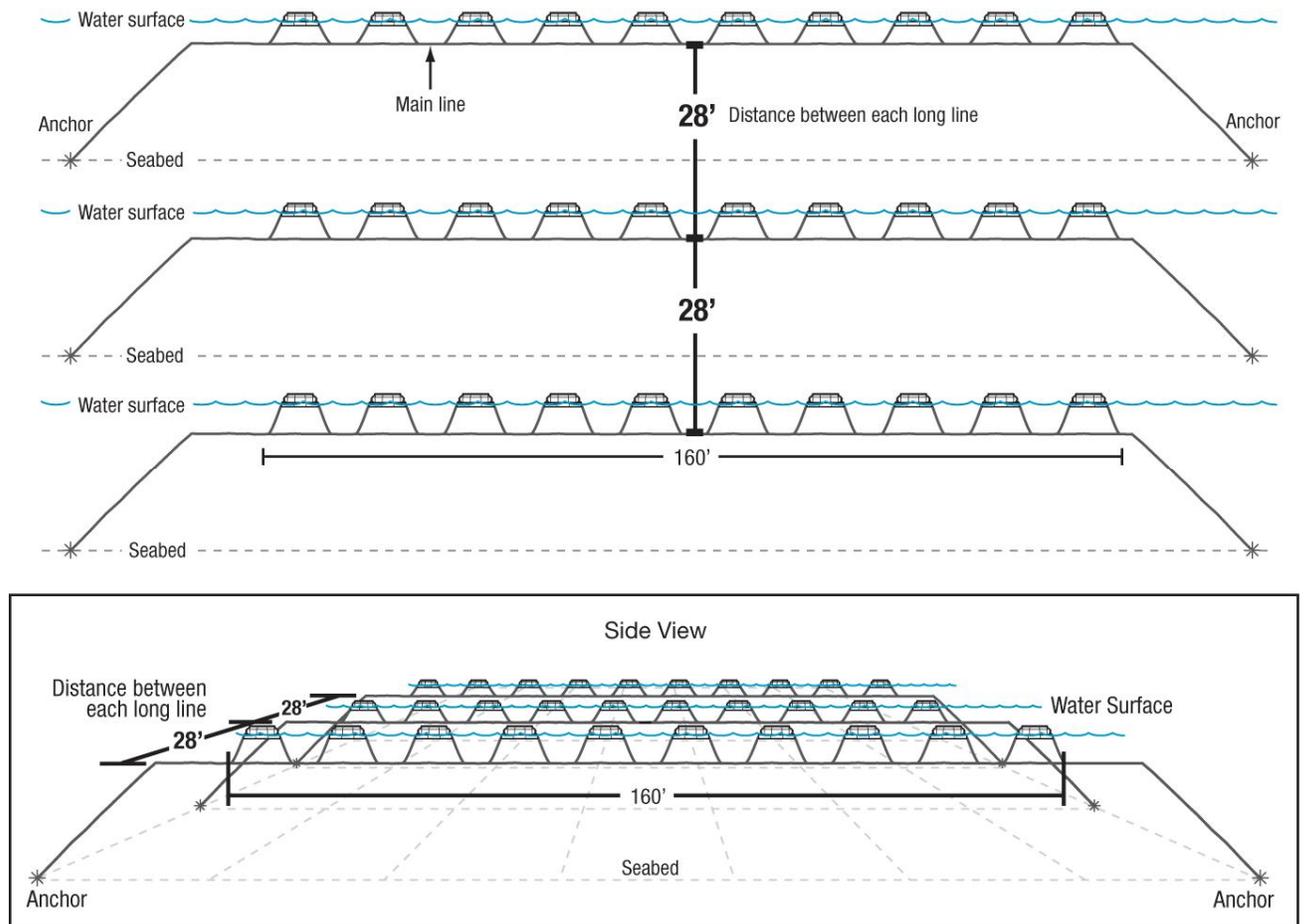
A typical long line consists of one individual row of 10 to 12 OysterGro Units (view figure II). The units are linked together with 3/8" ropes (view figure III). Proper anchorage is necessary to hold the units to the seabed. A long line is about 160 ft long and rule of thumb, 100 OysterGro cages can be set on a one-acre lot.

The distance between the long lines must be sufficient to allow for navigation and to provide easy access when tending to the cages - 28 feet is suggested.

Bouctouche Bay Industries Ltd will supply a rope kit to new growers. This kit can be used as a model.

### Figure II – Long lines

This figure shows the layout of 3 - 10 OysterGro cages long lines on the water surface.

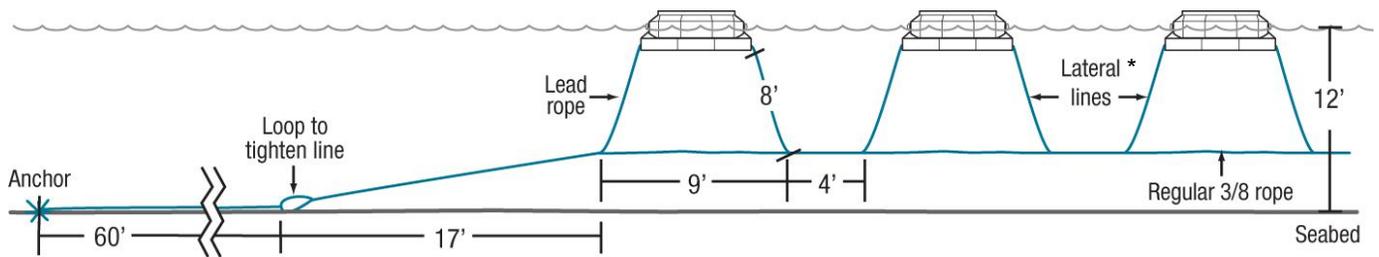


**Figure III – OysterGro rope system**

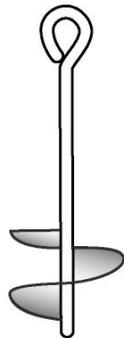
These diagrams show the rope system.

For water dept of 7' to 12' (ideal depth)

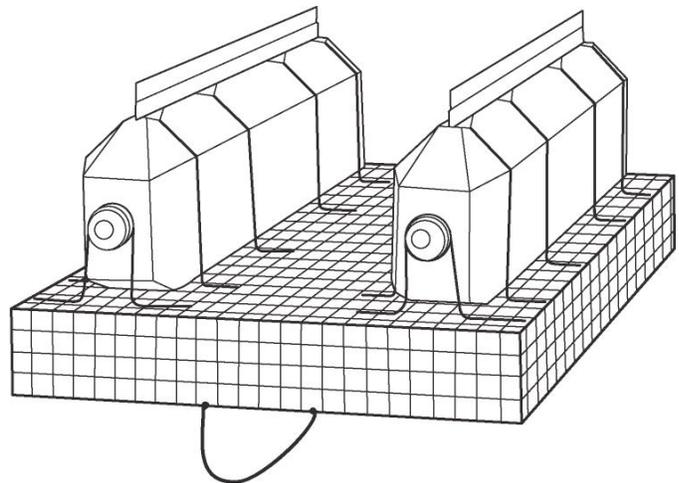
- Calm / protected area: 12 cages / line
- Windy area: 10 cages / line



Marine Anchor



Screw Anchor



Rope bridle on each ends.

\*Lateral lines are attached to rope bridle

## Density

The number of oysters in each Vexar bags defines density (Table I). The density of oysters inside each Vexar bag is very important and will have a direct impact on the growth and the quality of oysters you produce. Higher densities than what is recommended will likely produce a lower quality oyster and could stifle its growth. Bag density is expressed in the terms of the number of oysters in each Vexar bags (250, 500, 1000), or in terms of volume or weight. The densities recommended at each stage are based on facts collected from oyster growers using the OysterGro System.

Table I shows the commonly used density and the number of OysterGro units and Vexar bags need to produce 100,000 oysters.

**Table I - Rearing densities – Bags & OysterGro Units required**

		Number of oysters	Density: oysters per bag	Number of bags needed	Number of OysterGro units needed
Year 1	Current year	100,000	1,000*	100	17
Year 2	Current year	100,000	1,000*	100	17
	Preceding year	100,000	500	200	33
Year 3	Current year	100,000	1,000*	100	17
	Preceding year	100,000	500	200	33
	Preceding year	100,000	225	444	74
Sale in Fall		100,000	225	444	Bags ready for reuse

\* Spat

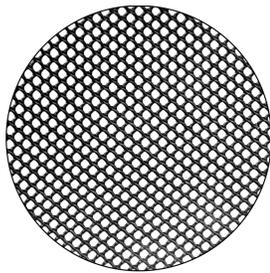
**Table II - Weights and volumes corresponding to the suggested densities**

Age Class	Oyster size (mm)	Density (oysters / bag)	Weight (kg / bag)	Volume (L / bag)
1	15 – 25	1,000 – 1,500	2 – 3	4.0
2	25 – 50	500	4 – 5	4.0
3	50 – 75	200 – 250	4 – 6	6.0

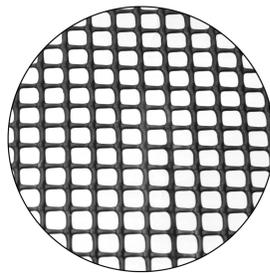
## Vexar Bags

Vexar bags are made with fairly rigid plastic netting used to hold the oysters inside the OysterGro cage. Each OysterGro cage holds 6 Vexar bags. Vexar bags (figure IV) come in several different sizes to accommodate the oysters at various stages of growth. Most commonly used mesh sizes are 4, 7, 9, and 14 mm. Vexar bags are available in diamond and square mesh.

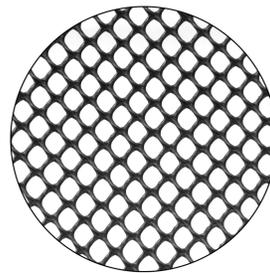
**Figure IV** – Vexar bags - Assorted samples



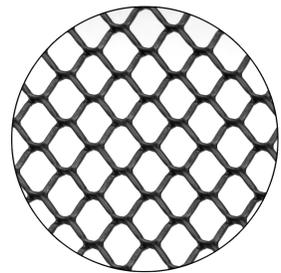
4 mm / diamond



9 mm / square



9 mm / diamond



14mm / diamond

## Why is it necessary to vary the number of oysters per bag?

The rim that forms around the valves as the oyster grows is very fragile and breaks easily. Growth is reduced if the oyster is shaken too vigorously and for too long. Small oysters are shifted easily inside the bag, which moves under the action of the waves. Having a sizeable mass of oysters in a bag stabilizes it and limits movement. The weights and volumes corresponding to the suggested densities are shown in Table II.

Having a large number of small oysters in a bag provides stability owing to the additional weight. Waves have less of a hold on the bags because they are less buoyant. Older oysters are larger and heavier. They take up more room in the bags. In order not to overload the bags, density is reduced.

### Oyster Sizes



75 mm - Oyster  
3"



50 mm - Oyster  
2"



25 mm - Spat  
1"



15 mm - Spat  
0.6"

## Controlling Biofouling and Secondary Spat

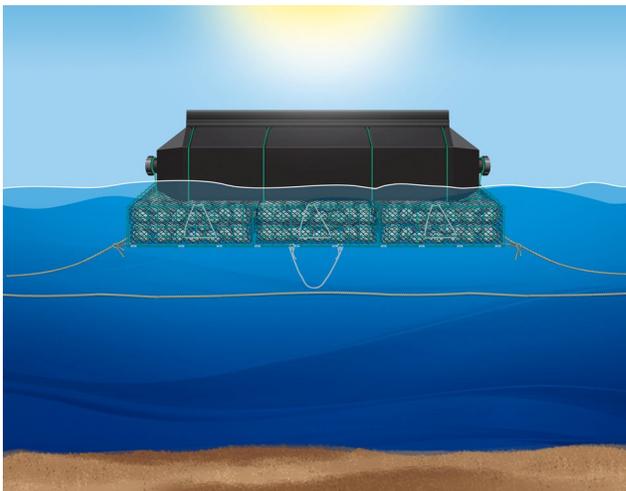
The OysterGro System is amongst the most efficient systems on the market today to control fouling and secondary spat. The two floats on top of the cage (figure V) have been designed specifically for this cage and for this purpose.

Controlling fouling and secondary spat is as easy as flipping the cage over on the two floats (figure VI). This will expose the cage and all its content to the sun and wind and within a short period of time (no more than 48 hours) all the fouling and secondary spat should be eliminated.

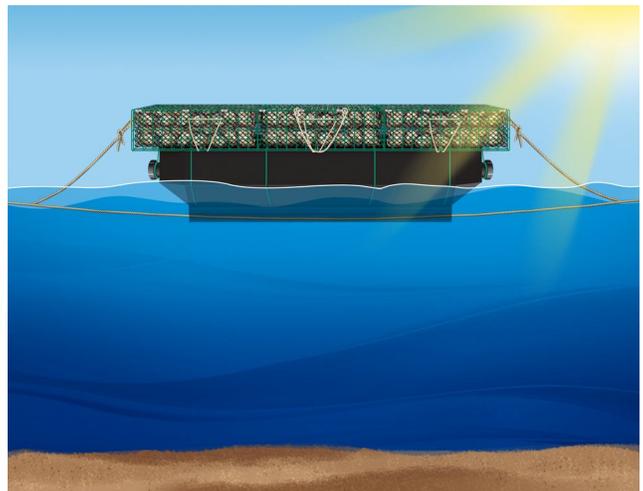
Please note: Exposing the oysters to the sun should be done with care. Even if oysters can survive a few days outside their natural habitat (water) we have found that if the oyster is stressed it could stop feeding, thus affecting its growth. It is strongly recommended that you pay careful attention to these suggestions:

- Do not flip the cages over if it calls for very hot and sunny weather.
- Do not flip the cages over if it calls for strong winds – the wave action will keep the bottom of the cage wet and therefore will not eliminate the fouling and secondary spat.
- Ideal time to flip: Warm, dry, calm weather forecasted for a few days.

**Figure V** – Feeding position - Positioned for profitable growth



**Figure VI** – Prescribed exposure to sun (UV) and air controls secondary spat, competitors, predators and contaminants



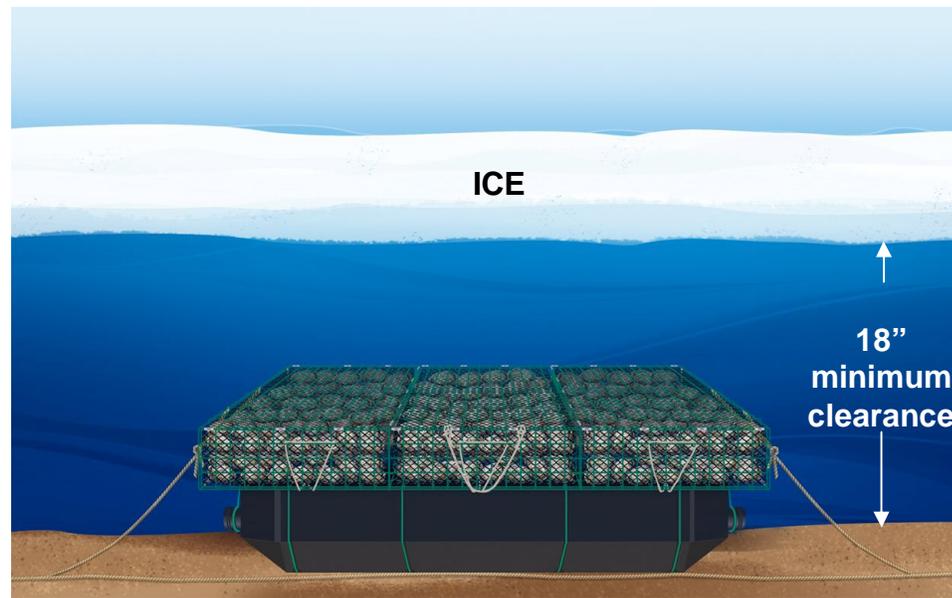
The stability of the OysterGro system optimizes conditions for continuous feeding and maximum growth each year. In the feeding position, the Vexar bags are maintained level and steady at the ideal feeding depth of 6" to 12" (15.2 cm to 30.5 cm) where plankton is plentiful. Since the bags are held securely to prevent shaking and sliding, the distribution of oysters within the bags remains constant, contributing to a higher quality oyster.

## Over Wintering / Submerging the OysterGro Cages

Oysters lower their metabolism when the water temperature drops below 10°C (50°F).

In the fall, before the ice begins to form, it is time to submerge the cages to the seabed. Submerging the OysterGro cages is as simple as removing the caps from the floats. This will enable the water to enter the floats and act as a ballast to sink the unit to the sea floor.

**Figure VII – Wintering Position - Wintering is a matter of cap removal compared to arduous equipment removal.**



OysterGro™ is specially designed for shallow waters inside of bays. As illustrated above, the floats keep the oysters off the ocean floor, thus substantially reducing winter mortality rates. Wintering amounts to a process of “cap collection” — not the back-breaking, time-consuming work of retrieving buoys and lines and transporting them to shore for winter storage.

The Oyster Cage T-Bar (tong) (image available soon) is a wonderful tool that was developed by oyster growers to make the operation of submerging fast and easy. This tool also lets you guide the oyster cage to the bottom, making sure that your cage is resting on the floats and not on the cage. This is very important because your oysters will not be sitting in the mud. This should help keep your mortality rate much lower.

## Re-Floating

Come spring, you will reverse the process and re-float the cages. The OysterGro cages are designed to empty quickly when they are positioned at an inclined angle (See Figure IX). Some growers have constructed a platform on pontoons to make handling the cages easy and fast. Typically, the platform is equipped with a boarding ramp, hydraulic winch, and worktable and re-floating ramp. The re-floating operation can also be accomplished with commercial boat such as the Carolina Skiff (See Figure X).

**Figure IX – Emptying a cage**



In this diagram, we can see the cage being brought up from the seabed. The floats, when positioned at an inclined angle, will empty quickly.

**Figure X – Marine Vessel**



The individual flipping the cage is standing in a metal platform (see below) that is attached to a marine vessel. This position facilitates the flipping of the cage.



## Tools & Equipment

(missing info)



## Pontoon



Customized pontoon platform makes handling easy and quick. Equipped with boarding ramp hydraulic winch, work table and re-floating ramp.



Revised date: 04/13/09

## Managing Your Aquaculture Business For Success

Farming oysters has many challenges but we are confident that the above guidelines will help you succeed. The OysterGro System has helped oyster growers, big and small build profitable farming businesses. Like any other business, you will need to invest a considerable amount of time and money if you wish to succeed. Buying the right tools and equipment and doing the required tasks in a timely fashion are all crucial elements that will bring you towards your goal.

We strongly suggest that you join an Oyster Growers Association so that you may exchange ideas with other growers and also be kept abreast on the latest development in the oyster industry. The proper authorities can also help you in many ways, either with technical advice or literature on many subjects relating to the oyster industry.