Study results from Downeast Institute:

Can vacant lobster pounds in Washington and Hancock Counties be used for oyster aquaculture?

Background

Most efforts to join Maine's growing oyster aquaculture industry have not been viable in the downeast region because cultured oyster seed grows very slowly in its colder water. American oysters take four to six years (or longer) in eastern Maine to reach market size, compared to two years in the Damariscotta River region.

Photo Courtesy of Maine Sea Grant

Downeast Institute (DEI) is a nonprofit marine research facility located in Beals. They have spent over 30 years studying commercially important shellfish to help understand and sustain these fisheries. Two former lobster pounds are located on DEI's campus, and it was noticed the water in these pounds is warmer than the adjacent ocean. DEI scientists wondered if this was a common phenomenon, and if so whether that warmer water might present opportunities for owners to repurpose vacant lobster pounds for oyster and other shellfish aquaculture.

Farming oysters could be an opportunity to diversify working waterfronts in Washington and Hancock Counties. Commercial oyster hatcheries in Maine are already equipped to sell oyster seed. Growing techniques and equipment are readily available. Since oysters are the most commonly farmed shellfish in Maine, it seemed the question about successfully growing them in unused lobster pounds downeast should be answered.

Deploying the test bag

The Study

Several lobster pound owners between Beals and Deer Isle volunteered for a small study conducted by DEI to capture a one-year snapshot of water temperatures and oyster growth rates. In June 2020, floating oyster bags were deployed in 13 lobster pounds, totaling about 29 acres. The bags contained a HOBO temperature logger, and most also contained 100 American oyster seed with an average shell length of 7.5 mm (slightly larger than

¼-inch). In addition, unseeded bags were placed outside two of the pounds to compare water temperatures. The study ended in November.

The average water temperature in the oyster bags varied depending on geographic location, size of the pound and location of the bag within the pound. The average final shell length of the oysters in the lobster pounds also varied but was associated with water temperature. The pounds with the highest average temperatures and the most instances of temperatures greater than 70°F had the best growth. The two pounds for which water temperatures were recorded both inside and outside their perimeter had warmer daily and average temperatures. About half of the pounds showed good potential for oyster farming.

Oyster farming is occurring experimentally in Washington County as a result of this study. More will be known in the spring of 2021 and beyond when winter survival rates have been determined.

June 20, 2020

August 26, 2020

Considerations for Lobster Pound Owners

Some concerns were raised that oysters grown in lobster pounds would spawn and create a population of wild oysters that would out-compete clams or other shellfish in the intertidal. Currently, seawater temperatures in this region would not allow oyster spat to survive. Oyster spat can survive in the Damariscotta River area, where oyster aquaculture and wild clamming have co-existed for over 30 years, but is subject to predators and natural mortality. When small populations of “wild” oysters are found in that region they have high value and are harvested by clammers. Unlike soft-shell clams, wild oysters need to attach to rocks and other hard surfaces. Wild oysters have not been found east of Frenchman Bay.

Lobster pound owners are required to obtain an aquaculture lease or license from the Maine Department of Marine Resources to grow any organism in their pounds except lobsters. Applications for Limited Purpose Aquaculture licenses (LPAs) are relatively easy to complete, and lobster pounds are exempt from some requirements. Depending on the DMR’s workload, LPAs can be granted in 30-90 days. LPAs are intended to be small, and 400 sq. ft. is the maximum size. One individual can hold a maximum of four LPAs for a total of 1600 sq. ft.

Experimental leases can be the size of an entire pound, but applications are more complex, and the process can take about a year, depending on the DMR’s workload and other factors. These

must be converted to standard leases after three years. The maximum carrying capacity of a lobster pound will vary and is mainly affected by food availability. This will need to be determined by scaling up a farm gradually. DEI is planning one or more demonstration farms to learn more about the scale of oyster farming that is possible in a lobster pound.

Oyster seed is purchased from DMR-approved hatcheries and grown in floating bags or cages. Assuming a maximum of 88 floating bags on one LPA (400 square feet), costs for equipment will be under $1,500, and bags can be used for many years. (More expensive gear is available that reduces the labor involved). The upfront cost of the 44,000 seed needed to result in 88 bags with 250 mature adults each (22,000 market size) will be $1,320 annually. (Yield assumes 50% of seed survives to adulthood). Using a typical wholesale price ($0.75/cents each) gross income of $16,500 would be expected. Many farms offer sales direct to consumers to increase their income. As with any farm, many factors can affect success and results will vary.

Oyster bags in a lobster pound

If you own a lobster pound and are interested in using it to grow oysters, it is important that you know the temperature near the surface of your pound. This fluctuates throughout the summer depending on the time low tide occurs, flow in the pound and other factors. It may be possible to manipulate temperature by controlling flow. Inexpensive HOBO temperature loggers placed in oyster bags in one or more locations in the pound can provide this information. For help contact Kyle Pepperman at the Downeast Institute, 207-497-5769 ext. 103.

Assistance and Resources

Oyster farmers must obtain an aquaculture harvest license from the DMR to sell wholesale product. A certified dealer license is needed to sell directly to consumers or restaurants. Contact the DMR to be sure you understand all the requirements associated with selling shellfish from your LPA or lease, as they vary. License applications and rules are available on the DMR's web site or call 207-624-6550.

Never import live shellfish from outside Maine as they can carry diseases that will quickly spread. The DMR has a permitting process for moving live shellfish between regions of Maine, called LPA Health Zones, and other handling precautions to protect shellfish and human health. Consult their website or call the DMR to be sure you understand all of these rules before you engage in shellfish aquaculture.

As with wild shellfish harvesting, shellfish farmers must be aware of and observe biotoxin closures. A lobster pound located in a bacterial closure will not be issued an LPA to grow shellfish to market size.

Maine Sea Grant's extension specialists and network of professionals can help you find assistance in planning and establishing your farm. Aquaculture in Shared Waters is a training program for individuals interested in becoming growers and covers all aspects of farm development. For information contact Heather Sadusky, Maine Aquaculture Hub Coordinator: heather.sadusky@maine.edu 207-581-1435.

Oyster growing equipment is available through Brooks Trap Mill and other Maine companies. (Brooks Trap Mill Jonesboro: 207-434-5791, www.brookstrapmill.com)

Oyster seed sources:

Mook Sea Farm, Walpole, Maine: www.mookseafarm.com (855) 563-1456

Muscongus Bay Aquaculture, Bremen, Maine: www.muscongusbay.com, 207-529-4100

Downeast Institute, Beals, Maine: www.downeastinstitute.org, 207-497-5769. (DEI is conducting a selective breeding program to develop a cold-tolerant oyster and will have surplus seed for sale for the foreseeable future at market rates. All seed sales help support the nonprofit's mission.)

For a more complete list of available resources, visit the Maine Aquaculture Innovation Center web site, www.maineaquaculture.org/business-assistance

DEI's research shellfish hatchery exists to support innovations in wild and cultured fisheries. Other shellfish may also be good candidates for growing in lobster pounds, such as quahogs, surf clams, and even soft-shell clams. In 2021, the Maine Aquaculture Innovation Center will experiment with growing scallop seed in three Washington County pounds. If you are interested in experimenting with any species, contact Kyle Pepperman at DEI. www.downeastinstitute.org

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