

PROBLEM IDENTIFICATION

There are many problems in attempting to move from an open access fishery to one that values private production. Among the issues raised by growers (*see chapters on 1979 and 2002 leaseholder surveys*) have been:

- 1. Mortality:** When disease became the principal factor in oyster production, the extreme mortality that it inflicted upon populations quickly made it a limiting factor in production. Since most leases were located in higher salinity areas, epizootics quickly affected oysters planted there. If the disease problems can be solved, it will do a lot to enhance production on natural reefs and private leases. The two segments, however, should not be confused. While solving mortality in the restoration of public reefs will require animals that can reproduce and survive, the need in aquaculture is only for animals that get to market without dying. Recent industry demonstration projects have shown that selective breeding and genetic manipulation may be able to provide this for growers. Expansion of the technology, methods, and areas available for growing are problems to be addressed for this to succeed.
- 2. Theft:** This has been a key problem for as long as there has been leasing. It is also a key factor in effective restoration projects. For the past few years, it has been estimated that all managed reserves and many sanctuaries have, at one point or another, been illegally harvested. Early efforts by the state to control illegal harvest led to creation of the Maryland Oyster Navy, which in later years became the Natural Resources Police. Today, with that agency in decline, the resources to deal effectively with theft on both public and private culture areas seems woefully inadequate, having seen a 38% decline in officers from 1990-2007. Upon this issue, and the ability and will of government to deal with it, will largely rest the fate of oyster aquaculture and restoration in years to come.
- 3. Seed availability:** This has been a continuing problem for almost as long as there has been a leasing program. During the first part of the twentieth century, common practice was to place clean shell on grounds and wait for natural spatfall to place oysters on the lease. This was the model envisioned by early biologists who recommended the leasing program. As time passed and oysters, in many

cases, became scarce, natural spatfall could not be relied upon as a means of continuing production. The choice, for those having the capital, was to purchase seed from the James River, since Maryland restricted the sale of seed from its grounds to private growers. Today, with selected lines available to provide spat for production, the limited amount of hatcheries in existence is restricting growth.

- 4. Lack of available lease areas:** It must be understood, as a fundamental precept of management, that the original Bay Bottom Survey was carried out not to locate natural oyster reefs as the sole locations for production but to delineate barren bottom for leasing. The biologists who championed that survey, indeed the principal one who conducted it, envisioned that there would be 200,000 acres of natural grounds, and between 100,000 and 300,000 acres of leased ground in the state. Unfortunately, once watermen began to work through local politicians, the Maryland leasing program was quickly constrained and ultimately stopped in most important oyster producing counties. Without access to bottom, private aquaculture cannot be expected to advance. Oyster aquaculture cannot be expected to expand without access to quality growing areas. Most bottom is now either prohibited by counties or off-limits due to its historical designation as a Natural Oyster Bay (NOB), even though most acreage of the NOBs no longer meet the vague criteria for them.
- 5. Capital:** Access to financing has always been a key problem for oyster aquaculture. This is an inherently risky business that places a crop on the bottom where it cannot easily be viewed, and leaves it there for several years until it is harvestable. Starting such a business is more akin to beginning a fruit orchard, with a long period between initial investment and cash flow beginning. Today, with selected lines and triploids reaching market in less than two years, this may see a change. Capital, however, to begin renovating bottom, purchasing larvae, producing spat, and guarding it until harvest, will be necessary. Until sufficient production is recorded to provide financial markets with the background on the ability of borrowers to repay their loans, it will likely fall to the public sector to provide financial support to encourage development.
- 6. Pollution:** This has been a management problem in the Chesapeake and coastal bays. While there has been a great deal of effort by government, there is much more to do. Significant expenditures have been made to upgrade

wastewater treatment plants, retard sediment and nutrient flow into tributaries, and enact environmental regulatory and management programs. Oyster aquaculture can provide a way to utilize the phytoplankton that proliferates in waterways, as well as aiding the transfer of nutrients. There must be a continuing effort to control human pathogens so that quality shellfish can be raised in numerous areas of the bays and reach markets that will provide the profit to further expand the industry. This will allow oyster aquaculture in areas where it is now discouraged and aid in controlling the result of much of the nutrient runoff into the bays.

7. **Bottom type:** The best areas to grow oysters are on firm substrates, thereby allowing the oysters to remain in areas where they can filter at maximum rates. Unfortunately, with the loss of many oyster reefs, and buildup of sediment over time, these areas have become scarce. Leaseholders have long identified this as a problem, and the restriction by many counties to further leasing has led to a lack of suitable bottom for production. There is a need to address this issue with both legislative changes as well as technology to assist in renovating areas in which shell exists but is buried and unusable for production at present.
8. **Poor growth:** A principal goal in aquaculture is to get products to market as quickly as possible. This minimizes the exposure time that a grower has to disease and theft, and maximizes cash flow and, hopefully, profitability. Oysters do not grow uniformly in all areas or at all times of the year. The best grounds, methods, and strains of oysters should be researched with information provided to current and prospective growers to help create profitable ventures.
9. **Markets:** The availability of markets and exvessel prices were not an issue in 1979 but did get mentioned in 2002. This may reflect lower prices that leaseholders still in production were receiving. It may also reflect an industry lacking serious production being able to drive markets. If the industry could be expanded, it would help to once again penetrate traditional markets and enter new ones, justifying investment in new products and technology. As an oyster buyer commented many years ago, "You need oysters to sell oysters."
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