



Virginia Oyster Aquaculture Production and Marketing Survey

Report of a Study Conducted between 1 October 2003 and 1 January 2005

By

Paul Jespersen and Shawn Stickler, Ph.D.

Chesapeake Bay Oyster Farms

Post Office Box 1429

White Stone, Virginia

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Abstract

As aquaculture replaces wild harvest of oysters in the Chesapeake Bay region, we felt that there was a need to reevaluate how producers could get their products to market in the most efficient, profitable way. In order to do this, we wanted to capture the lessons learned in other regions that have already made the progression from wild harvest to aquaculture, such as France, New England, and the Pacific Northwest.

In this study, we examined the methods of productions and marketing that are currently in use in regions beyond the Chesapeake, including the Northeastern United States, the Pacific Northwest, and the Cançale region of France. Additionally, we conducted a market analysis study to determine the options available to local growers, and specifically, the potential for developing a central market or co-op.

Our study indicates that there are approximately one dozen commercial oyster farms in Virginia, with annual production at around 250,000 oysters per farm. Most animals are sold to local niche markets, including restaurants, grocery stores, and farmers markets, in addition to some online sales. While some growers are interested in increasing production, their current markets won't support increased production, and the growers cannot afford the resources needed to expand to larger, more lucrative markets beyond Chesapeake Bay. Forming a co-op could potentially allow growers to expand their markets in an efficient manner.

In looking for co-ops in other regions, we found a few limited examples of success. The most notable of these, Taylor United Shellfish, located in Washington, consisted of several farms owned by the company, and several small growers who sold their product to Taylor's, providing a way for small growers to have access to larger markets. In searching for a local analogy, we found that Cherrystone Aquafarms in Cheriton, Virginia, expressed an interest in using their marketing abilities to sell oysters produced by Virginia growers, if supply were adequate. The development of a Virginia oyster co-op would provide adequate supply.

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Project Description

As the wild harvest of Eastern oysters (*Crassostrea virginica*) has declined in Virginia, interest has arisen in the potential for the development of large-scale commercial oyster aquaculture. Currently, there are one dozen commercial oyster farms operating in Virginia, with most of those farms producing about 250,000 oysters annually. There are also two larger farms, with annual production greater than 1 million animals, but these farms produce mostly for ecological restoration, rather than the consumer market.

The increased costs associated with cultured production versus wild harvest, have forced growers to look for new markets in order to increase revenue, by-passing traditional local seafood distributors. Coincident with the development of commercial oyster culture in Virginia, there has been a nationwide shift in consumer demand, moving from the traditional shucked product that supported dozens of Chesapeake Bay shucking houses, to increased call for live, whole product for the half-shell market. This shift comes at an opportune time for aquaculture, as cultured animals are seen as a premium product, and command much higher prices at market beyond the Chesapeake Bay area. However, the limited production of Virginia growers does not allow for the expense and effort to move animals to these remote markets.

Our objective in this study was to determine the best market strategies for the emerging class of oyster farm in Virginia's Chesapeake Bay area. One approach that we particularly wanted to explore since it has had success in other areas is to have a co-op or centralized mechanism that handles the marketing and distribution of product allowing the grower to concentrate on growing. By examining other regions, species, and systems, we have established what we think are the best options available to growers in our area.

Methodology

We researched production methods and marketing strategies employed in several prominent oyster producing regions, including the Pacific Northwest, Northeast US, Gulf of Mexico, and Virginia Chesapeake Bay. Research consisted of direct contacts, including site visits with producers and distributors in all regions. Informal interviews conducted with individuals included discussions of production methods and histories, current marketing issues and strategies, and future plans for market development and growth. Discussions concerned both their particular entity, as well as the entire industry in their area. Site visits also included examinations and discussions of production methods, concentrating on technological aspects and issues of production and packaging for initial distribution. Also included were site visits to large "central market" such as New York City's Fulton Fish Market, Seattle's Pike Street Market, and markets in France.

In addition to contacting industry members in each region, we also contacted individuals from government management agencies and industry associations in various regions. In interviews with these individuals we discussed concerns and issues with aquaculture in general, and oyster production in particular. We also discussed various collaborative industry efforts in production, marketing, and policy making, including results, issues, concerns, and potential future collaborative efforts.

We also conducted an extensive literature and online resource research market survey, examining production and sales figures, as well as current market price information gained from the previously described regional studies. Additionally, US National Marine Fisheries Service commercial landings data and individual state management data were examined for officially reported production amounts and values.

Regional Reports

There are several key oyster-producing areas in North America – Canada, New England, Pacific Northwest, and the Gulf of Mexico. The Chesapeake Bay was once the epicenter of the American oyster industry, but its decline is well documented. The Gulf of Mexico is still foremost a wild fishery, so we did not study the market there. Canada also fell

outside of the scope of our investigation as we felt it was a distinctly different environment. Outside of North America, France in particular also has an interesting tradition of oyster aquaculture – especially in that its history closely parallels the fortunes of the Bay, so we wanted to look at it as well.

Pacific

We made a trip to the Pacific Northwest one of our top priorities, as there is a strong, well-established tradition of successful oyster aquaculture there. Our research indicates that more than 200 million oysters are produced annually in the Pacific cultured oyster industry. The Pacific industry is centered in the Puget Sound region of Washington and British Columbia, but there are several operations all along the Pacific coast, such as the Humboldt Bay area of California. Among our primary visits and interviews were the Pacific Coast Shellfish Growers Association and Taylor Shellfish, as well as several smaller growers. While the Pacific growers are often using different species from the Chesapeake – primarily *Crassostrea gigas*, but also other species, including *C. virginica*, the Asian oyster *C. ariakensis*, the Kumamoto, *C. kummoto*, and the native Olympia *C. olympia* – the challenge of bringing product to market is largely the same. In the Pacific Northwest we got our first intuition that there were two distinct classes of producers. On the one hand, you have the individual grower, producing and marketing his own product. These producers generally bring between 100,000 and 250,000 animals to market. On the other hand, you have large corporate style, centralized operations with product volumes orders of magnitude greater than the individual grower. In the case of Taylor Shellfish, their oyster production alone is well over 100 million annually, not to mention their clam and geoduck. Clearly, these two types of participant have markedly different approaches to market, and often have completely different target customers.

The Pacific industry is very well established, having developed from practices begun nearly a century ago. Typically, seed oysters are distributed in large (tens of acres) on-bottom, intertidal tracts. Tracts are generally privately owned, or in some cases leased from the state. Farms range in size from a single tract to several in a bay or small estuary, and companies may consist of a single tract or be a conglomeration of several farms throughout the region. Seed oysters remain in culture until 75-100mm – generally two to

three years. Maintenance during grow-out is minimal, consisting of periodic turning of beds to prevent over silting. For harvest, oysters are shoveled into large metal cages with float lines attached. At high tide, a barge retrieves the float lines and attached cages. Marketing is usually done by individual firms, and ranges from small niche markets for smaller farms to large wholesale shipping operations in the case of the larger firms. Traditionally, nearly 75% of all oysters were marketed as shucked, but currently, the whole oyster sales for the half-shell trade exceed those of shucked sales. Additionally, while value-added products such as stews, and smoked shucked oysters were primarily niche items, larger companies have also begun marketing a wide variety of value-added products such as pre-made half-shell recipes, such as Oysters Rockefeller, and frozen, pre-shucked oysters in the shell. Finally, it is interesting that as many as half of the oysters produced on the Pacific coast are exported – primarily to Asian markets.

Northeast US

In New England we also found the individual growers – just not as much of the large, centralized producers. There are however, a couple of “collectors and distributors” who provide an intermediate market for a number of smaller growers. We were a little surprised that there wasn’t an East Coast equivalent to Taylor.

The oyster culture industry in New England is relatively new in its current form, having developed over the past quarter century. It is based on the Eastern oyster, and is almost entirely off-bottom, with suspended culture being done in deep water. Firms in the Northeast are relatively small, with annual production averaging around 250,000 oysters per firm. Marketing consists of small niche and end-user markets, such as direct sales to restaurants and storefronts, farmers markets, and some online sales. Additional sales channels are to local and regional seafood distributors and use of larger wholesale seafood markets, such as New York City’s Fulton Fish Market.

Gulf of Mexico

Oyster culture in the Gulf of Mexico is culture by definition only, and consists of harvesting wild seed oysters from public seed beds, and then transplanting them to privately held lease grounds. For all intents, the Gulf oyster industry is considered a wild

fishery. Some ventures have been made into developing an intensive hatchery-based culture industry, but such ventures are made economically non-feasible by abundant wild oyster stocks. Five of the top six oyster-producing states are along the Gulf of Mexico coastline, and Louisiana alone accounts for around 70% of the total US oyster production.

Gulf harvesters typically sell their oysters to local distributors who then market in a variety of ways. Some oysters are shucked and packed locally, while nearly 1,000,000 bushels are shipped to Chesapeake Bay packinghouses annually. Nearly 70% of all Louisiana oysters are shipped to California, primarily for the domestic half-shell trade or further exportation.

France – Cancale

Oyster culture in France is also well established, with the country producing several million tons of oysters annually. Nearly that entire product is sold as whole, live product to meet the demand of the domestic French market. Farms are relatively uniform in size, with an individual production averaging between 10 to 20 tons of oysters. While the native “Belon” or European flat oyster (*Ostrea edulis*) offers a premium, most oysters grown are *C. gigas*.

In France seed is generally caught as free-swimming larvae, although some hatchery production exists, and is increasing. Grow-out methods are nearly identical among farms, consisting primarily of rack-and-bag systems, and harvesting is done by loading bags on barges at low tide that are gloated out on the high tide, or by loading bags onto trailers hauled out by large trucks during the low tide cycle.

Marketing in France is much more organized and highly developed than in the US. Oysters are graded by species and size (ranging from ~60mm to well over 125mm), and as being wild or cultured. At a typical market, there will be perhaps a half dozen selections of various grades and species offered. There are a variety of collective marketing mechanisms in France, typically regional cooperative arrangements where various producers in a region participate in a common marketing effort.

Virginia Chesapeake

In our own area here in Virginia, we are dealing with a young, dynamic environment where there are a number of growers, most trying different things to get established, but again, mostly on the level of being smaller, individual producers and marketers. Here, and in New England, the general model seems to be: 1) grow what you can handle yourself (or as a very small team), 2) sell as much as you can at a premium to a select handful of customers, 3) sell the rest for whatever you can get from a local seafood distributor or at market (Fulton St, etc.). In studying the Chesapeake market however, we felt that there was a great opportunity for a co-operative engine that would allow several producers to reach a greater market that they would otherwise not be able to meet based on volumes. In other words, something like Taylor's could do very well, but there is currently a vacuum on the Atlantic – one that is available, but mostly being met by wild product from the Gulf of Mexico.

Market Analysis

A century ago, the Chesapeake Bay produced more than twenty million bushels of oysters annually, and demand exceeded the supply. While there is some concern that decline of Chesapeake harvests has led to a present decrease in informed consumers – not as many people know how good oysters are – such concerns appear unfounded. The Pacific Northwest currently farms hundreds of millions of oysters – equal to millions of bushels. Gulf Coast harvests have steadily increased over the past several years, and now total several million bushels annually. Worldwide, oyster production has increased dramatically over the past few decades – France alone produces several million tons of oysters each year. And distributors still need more oysters to meet consumer demand.

Contrary to practical wisdom, prices have actually increased with increased production. A chief reason is that the nature of the market has changed. While historically, shucked, packed product accounted for most of the oysters consumed, half-shell oysters have recently become more plentiful. Although half-shell oysters require less labor, they command a premium price, often being worth more than double their shucked counterparts. Additionally, because of how they are grown, cultured oysters are

considered to be a premium product. For example, at New York's Fulton Street Market, the price of wild harvested oysters averaged \$0.15-0.20 each. In contrast, cultured oysters averaged more than \$0.40 each.

In summary, the market for half-shell oysters is virtually limitless, far outstripping any current supplies. With US production alone exceeding several 100 million oysters annually, the market can easily absorb additional 10's of millions of oysters without materially affecting pricing and demand equations. What's more, the indications from the large distributors, such as Taylor's, is that increased supply of between 10 and 100 million oysters will have little effect on price. While the supply of farmed half-shell oysters has grown rapidly over the past several years prices have not only held steady, but actually increased, with a premium available to properly marketed cultured oysters. There is no greater time for the development and growth of a Chesapeake oyster culture industry. The only limitation is the region's ability to consistently supply oysters.

Industry and Organization

In our search for a regional solution to meet the demands of the volume market, we talked with a number of seafood distributors about the possibility of co-oping several growers to attain the volumes needed (generally in excess of one million oysters annual production) to be a player in the bigger market. We feel that this is a strong opportunity for the right distributor to seize and would position them to be a major player in the industry. We feel that it is unlikely that one of the smaller individual growers will be able to build out the infrastructure and relationships needed to get into that market. As we were looking for more clues, we decided to meet with Cherrystone Aquafarms. While they are strictly a clam producer and marketer, we felt we had found our East Coast equivalent to Taylor's. Although Taylor's owns and operates most of their own beds, Cherrystone is both an operator and a co-operative central market for most of the clam farmers on the Eastern Shore. It is our feeling that Cherrystone would be well suited as a co-op operator representing Virginia oyster farmers to their same high volume customer base that they sell their clams to. Initial inquiries to this effect were promising, although they are skeptical that Virginia growers can meet their volume requirements without introduction of *C. ariakensis*. However, we feel that if enough growers were aware of this

market AND were willing to participate, they would be interested as well. Even if they weren't, Cherrystone's success at this scale with clams is a good indication of the potential for a similar success for a large-scale oyster producer in the East.

We also felt that there were lessons to be learned from the oyster aquaculture industry in France. Just as the Bay industry collapsed over the last couple of decades, the French industry was decimated by disease and over fishing. Through re-introduction of species and the introduction of aquaculture, a new, thriving industry replaced the old one. In our visit to the Cancale region, one of the dominant producer areas in France, we were able to see how aquaculture can turn around an industry in decline.

Chesapeake Bay was once the center of US oyster production, and Chesapeake Bay oysters were renowned for their overall quality. The decline of Chesapeake production, and subsequent importation of oysters from other regions has led to perception of lower quality in Chesapeake oysters. We heard comments that Chesapeake oysters were of lower quality than their Northeast counterparts, and that there was also a general concern about consumer health issues related to the movement of oysters into and within the Chesapeake Bay region. Additionally, efforts by various individuals to introduce the Asian oyster, *C. ariakensis* into Chesapeake Bay have led to concerns about taste and durability of oysters from Chesapeake Bay.

While such perceptions may or may not be accurate, their existence prompted us and other commercial growers to distinguish between native *C. virginica* oysters grown and harvested in Virginia waters, and imports or other species. As the Virginia Department of Agriculture had already developed a marketing campaign and designation, "Virginia's Finest" (VF), and had also recently accepted guidelines for the designation of cultured hard clams as VF, we wished to develop industry guidelines pertaining to cultured native oysters. We felt that the development of a Virginia-wide industry organization would increase the credibility of such guidelines. Additionally, our discussions with industry members and organizations from other regions made us aware of additional potential issues and concerns, including public education, water-column use conflicts, and environmental impacts. We saw that a Virginia industry organization would be

particularly able to deal with such issues.

With that in mind we attempted to organize the Virginia Commercial Oyster Growers Association (VCOGA) while simultaneously working with other growers to develop VF guidelines, and we sent out a general call for membership. There was little response to our call, so we invited a small target group of growers to participate in an initial organizational meeting, after which membership would be opened to all Virginia growers. Three individuals attended the meeting, including a representative from VIMS. At the meeting it was suggested that perhaps the target group of just commercial oyster growers was too small to form a functional association, and that perhaps we should either reorganize the Virginia Shellfish Growers Association, or that we should organize a Virginia Alliance within the already established East Coast Commercial Shellfish Growers Association. We are currently examining both ideas.

Concurrent with our efforts to organize the VCOGA, in cooperation with individuals from the VIMS and other growers, we helped develop a proposed set of VF guidelines, which were forwarded to the twelve known commercial oyster firms in Virginia. These proposed guidelines met with a great deal of discussion and controversy, and after several weeks of heated communications, we tabled action on them. Recently, with Mike Oesterling of VIMS acting as referee, a much more positive discussion has begun on the development of VF guidelines for cultured native oysters, with the probable result that a final proposal will be sent to the Department of Agriculture by summer 2005.

Conclusion

A clear picture forms when considering all the factors together. The most important to our study is that there is a clear delineation in all the regions in farm sizes. One end of the spectrum are "individual" level operations, which number from as few as ten to twelve in the Northeast region, to several dozen in Pacific Northwest, and which typically market in a range of 50,000 to 250,000 oysters annually. As Virginia's Chesapeake Bay area is at an early stage in the growth of its oyster aquaculture business, most of the current participants are operating in a relatively small range of successfully marketing around 200,000 animals each. These ten or so smaller farms operate as side, or

supplementary businesses run by curious or progressive watermen, or local seafood distributors who are interested in being prepared to take advantage of a potentially resurgent local market. There is also a much smaller class (fewer than ten such entities nationwide) of centralized organizations, which produce and market more than 1 million, and upwards of 10 million oysters annually. The only two Virginia oyster farms that even approach falling into this latter category produce oysters primarily for ecological purposes rather than the commercial market.

The classification by operation size is an important one when considering marketing strategies. One of the reasons for this natural stratification is that 250,000 oysters, plus or minus, seems to be about the limit that a small operation can handle by itself, both on the grow out side, and on the distribution side. The next logical level of production seems to be in the multi-million-oyster range. It appears that it is difficult to operate within the area between these two extremes, not only because increased production requires additional resources in labor, transportation, and equipment. Marketing also becomes more difficult. While the increased production exceeds the capacity of the small niche markets within the local geographic area, it is still below the level needed to expand beyond that geographic region, or to be attractive to existing distributors. However, if several small farms were to combine their production, as in the case of a co-op or centralized market force, the individual farms would gain the marketing benefits of a larger operation, while retaining the lower production costs of a smaller operation.

So, the choice to Chesapeake aquaculturalists is: are they happy being an individual producer, or do they want to be part of a larger enterprise? Ultimately this is a personal choice. Many of the participants at this early stage are fiercely independent and enjoy being responsible for their own successes and failures. However, we feel that others may be interested in trying to address the volume market, whether by forming a co-op, leveraging an existing seafood business to become a local "market" for growers, or by partnering with an existing force in the volume market, such as Cherrystone. Through these options all parties could benefit with shellfish being offered in bulk to the volume marketplace.