Examining the Link Between Aquaculture and Urban Planning

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One conflict planners often encounter is balancing the space needs of an expanding city against the importance of preserving land for basic agriculture. Although a marine aquaculture operation doesn't occupy the same physical footprint a farming operation would, the core conflict is essentially the same: how do aquaculture businesses successfully coexist with coastal cities and the growth demands associated with new development? Rezoning decisions, nuisance complaints, and transportation investments all have the potential to escalate tensions. To develop a sound aquaculture policy, cities must first determine the existing value of local aquaculture activities and how they operate. From there, they must determine the basic land use needs of aquaculture operations and how those needs may be addressed through either zoning or other local policy apparatuses. Finally, municipalities must learn about the marketing needs of aquaculture businesses, and engage in ongoing efforts to facilitate the sale and purchase of local seafood products. By addressing these core matters, cities will have a sound plan of action that they can use to address the needs of aquaculture through local policy.

Land Use and Aquaculture: Setting the Story

At first glance, it would appear that aquaculture and the land use planning process don't have much in common. From a legal perspective, land below the mean high tide line is owned by the state and held in trust for the public, which means that a lot of issues involving the use and management of aquatic resources tend to fall under state rather than local jurisdiction.[1] While cities and counties may not manage fisheries and the sale and purchase of seafood, they often manage something just as important: the storage spaces and physical structures associated with an aquaculture operation. Even the smallest aquaculture operation requires storage space for maritime equipment and may even have an operation on the land from which to sell their product. Also, while an aquaculture operation may operate in public waters, its secondary effects may influence properties adjacent to the water. Traffic, noise, and hours of operation are examples of potential negative externalities that may be subject to regulation under local nuisance laws.

Oyster farms in particular may pose local zoning challenges, as oysters grow best where freshwater and saltwater mix, preferably in areas of salinity between 2 and 3 percent and where offshore reefs or barrier islands provide protection from ocean waves.[2] This means that oyster farms are frequently sited just offshore, where freshwater rivers and streams drain into the ocean. Therefore, the operation of oyster farms is likely to affect onshore land use and properties.

Additionally, many states also consider wharves, piers, and other structures that extend out into the water from the land as being under local jurisdiction.[3] The proximity of oyster farms to land, as well as local control over the construction and maintenance of piers and wharves, means that in many instances, local governments yield considerable control over the shellfish aquaculture industry.

Assigning Value to Local Fisheries

In order to understand what to do about local aquaculture and fisheries operations, city planners must first focus on why coastal aquaculture is an essential component of coastal communities. It is difficult to have robust aquaculture regulations without first communicating the value and importance of seafood production through local planning mechanisms such as comprehensive plans and master plans. One good example of this is the 2017 comprehensive plan developed for the city of Portland, Maine. The plan devotes an entire portion of the document to waterfront issues, which includes an extensive profile on the state of the city's aquaculture industry. From this section, one can gain valuable data on the city's seafood industry such as the number of seafood business located in Portland, the type of seafood that is harvested, and what public investments will impact the industry within the near future.[4]

Photograph of Rappahannock Oyster Company in Topping, VA; courtesy of Will Parson/Chesapeake Bay Program.

A comprehensive plan would not be complete without a number of specific goals and strategies tailored to each section of the plan. Within the waterfront section of the comprehensive plan there are 10 broad strategies outlined for waterfront planning. Many of the strategies listed, such as "adopt measurable objectives," and "dredge responsibly," have the potential to significantly affect local aquaculture. For example, one objective calls for the city to "support traditional and emerging marine industries." Additionally, subsets within the objectives direct action that could aid aquaculture, such as one suggestion that the city support the Portland Fish Pier and Fish Exchange as a hub for the seafood economy. By explicitly addressing the needs of local aquaculture within the comprehensive plan, the city is able to develop a road map to inform the city's interactions with the aquaculture industry.

Facilitating Aquaculture Through Better Land Use

The relationship between the aquaculture industry and the land use planning process is complex. Cities sometimes fail to account for secondary operations and uses that are essential to aquaculture businesses. Also, cities and states may have conflicting protocols and procedures governing new aquaculture businesses. One coastal municipality developed a policy document to answer these questions: the *Aquaculture: Local Policy Development*,[5] produced by the Middle Peninsula Planning District Commission, a regional planning organization in coastal Virginia. One of the more notable examples cited within the document is the permitted use table devised for Waterfront Maritime Zoning Districts in Annapolis, Maryland. This table provides details on different activities and machinery associated with seafood processing and local aquaculture, such as spar and rigging construction and metal casting for marine purposes.[6]

While a comprehensive use table is a start, it should be noted that zoning is an inherently political endeavor, so a community must do its best to anticipate concerns local citizens may have when it comes to aquaculture uses. Although no community can fully anticipate all worries and concerns specific to each zoning case, past experience can

be a reliable indicator of future issues cities should address in a proactive manner. In the realm of aquaculture, many of the biggest conflicts have centered on the expansion of oyster farming. Oyster farming has gained in popularity over the years because of the numerous environmental benefits associated with an expanding oyster population, as well as the economic gains. Because of this, many states and local governments have tried to develop regulatory practices that encourage oyster farming as an economic activity.

One state where oyster farming has experienced significant expansion is Maryland. Since the state liberalized its coastal leasing laws and offered financial assistance for oyster startups, private oyster production has increased from 3,340 bushels in 2012 to 74,066 bushels in 2017.[7] This expansion in oyster production has prompted complaints from a number of coastal residents who worry about the impact oyster cages and aquaculture operations will have on property values. The issue of jurisdictional authority further compounds these concerns, as city regulations on aquaculture may not be fully consistent with the state leasing program and vice-versa. While the State of Maryland is fully within its right to conduct a leasing program to establish oyster farms, many residents perceive oyster aquaculture as a land use planning conflict best resolved by local zoning regulations.

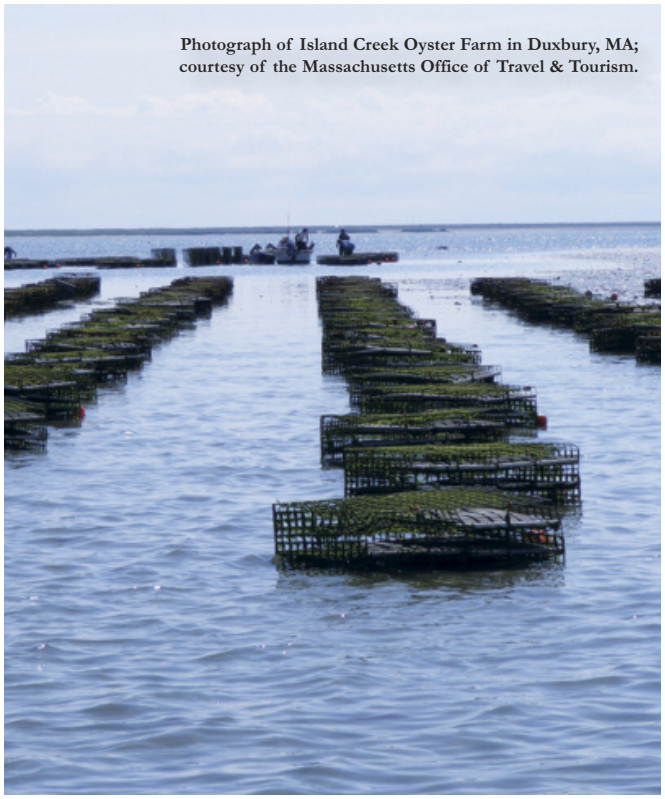
With that in mind, city and county governments should be viewed as essential partners of the state in the promotion and expansion of aquaculture activities. One way states can empower local governments to effectively address the objections of coastal residents is by having local regulations that govern the size and scale of oyster farming operations. One example of this is from Mathews County, Virginia, where local leaders instituted a more rigorous permitting process for commercial oyster aquaculture operations that exceed a certain size. In low density residential districts along or near the waterfront, the county allows shellfish aquaculture by right, as long as the operation is not in excess of 100,000 shellfish.[8] Shellfish operators wanting to farm more than 100,000 oysters must apply for a conditional use permit. This means that a large oyster farming project will be subject to the same review and oversight given to a local rezoning case. The Virginia Department of Health, Shellfish Sanitation mandatory sales records are used to verify the size and scale of each oyster operation to ensure compliance with county regulations.[9]

The strengths of the Mathews County arrangement is that it doesn't unduly burden oyster farming initiatives led by the state, and it effectively addresses homeowner concerns by making provisions for minimal oversight by the county government. The regulatory provisions set forth by Mathews County are also narrowly tailored to address the concerns voiced by a specific land use constituency, in this case coastal homeowners. While this regulatory change can't quell every concern or objection of coastal residents, it does provide local citizens with a sense of ownership in the day-to-day management of commercial aquaculture facilities.

Expand the Marketing Capacity of Local Aquaculture

Aquaculture, like many economic ventures, does not rely on raw production alone. Additional resources are required to market seafood to the public and get the product out in a manner that maximizes local seafood providers' revenue. One simple way communities can help local aquaculturists sell their product is through the construction of a market. In Foley, Alabama, city leaders received a grant to construct a Farmers and Fishermen's market within the city.[10] The facility, which was completed in October 2013, contains 30 vendor spots to sell local seafood and Alabama-grown crops. In addition to serving as a simple, physical facility for the purchase and sale of seafood, a market also provides institutional support and backing for the direct marketing of seafood. For example, the Foley Fisherman's market has vendor rules and regulations that are unique to its day-to-day operation.[11] These rules are consistent with state and federal health requirements, such as having an Alabama Seafood Dealer's License, or keeping all seafood products at a temperature of 41 degrees Fahrenheit or below. This helps quell worries about the quality and safety of the seafood in question, but it also helps ensure regulatory compliance for participating vendors, something that might be harder to ensure for a single operation such as a produce stand or food truck.

In lieu of a physical market building or structure, coastal communities can turn to Community Supported Agriculture (CSA) programs to provide institutional support and backing for local aquaculture operations. Individuals who join a CSA program pay a price upfront to receive a weekly share of an agricultural crop or commodity.[12] For seafood providers, the CSA model has been employed as



Photograph of Island Creek Oyster Farm in Duxbury, MA; courtesy of the Massachusetts Office of Travel & Tourism.

Community Supported Fisheries (CSF). A CSF serves as an institutional apparatus for the direct marketing efforts of local seafood providers. One example of a CSF in action is the Thimble Island Oyster Company based in Connecticut. A Thimble Island shareholder, who pays $175.00 per year, will receive one dozen oysters and two dozen clams each month for 6 months starting in April. Thimble Island shareholders can receive their products either directly from the docks or from another facility located within the community. A CSF program is a unique method for encouraging the consumption and sale of local seafood, while also providing for a more unified front for fishermen to engage with potential consumers.

Conclusion

While many coastal communities have witnessed positive economic growth and change due to coastal tourism, this growth has sometimes come at the expense of traditional economic and social activities that helped sustain the community. One of those traditional activities was fishing, embodied by the local companies and individuals who brought fresh catch of fish to market each day. Now that the aquaculture industry is advancing, especially in the case of shellfish, coastal communities must adapt and regulate for such uses.

If coastal communities are to become more resilient in the face of economic downturns, it is important that cities carve out room in which aquaculture activities can thrive and flourish. Cities can begin this process by incorporating aquaculture goals and objectives into their comprehensive plan and incorporating facts and figures detailing the current state of local aquaculture. From there cities can work on calibrating their zoning ordinances and land use categories to accommodate the unique needs of small aquaculture businesses and coordinate with state agencies on oyster farming initiatives. Last, but not least, a city can be a valuable ally in the direct marketing of seafood products, either by constructing a physical market space for local fisherman or by helping establish a CSF program. By working on these core planning recommendations, coastal communities can develop a solid plan for aiding local fishermen, which in turn will help preserve a coastal way of life that Gulf coast communities have come to cherish.

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Endnotes

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5. Middle Peninsula Planning District Commission, *Aquaculture: Local Policy Development* (2009).
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8. Mathews County, Virginia, *Article 6: Residential 1 District (R-1)*, Mathews County Code of Ordinances.
9. John Shaw, *County of Mathews, Memorandum* (July 16, 2014).
10. Guy Busby, *Farmers, Fishermen's Market set to open in Foley*, AL.com (Oct. 3, 2013).
11. *Vendor Info*, Coastal Alabama Farmers and Fishermen's Market (2018).
12. National Sea Grant Law Center, *Legal Guide for Direct Marketing Aquaculture Products in Alabama* (July 2014).