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Legal Influences on Shellfish Aquaculture Nursery Facility Siting in Rhode Island

This study was produced by the Rhode Island Sea Grant Law Fellow Program. Research and drafting was provided by Law Fellows Jordan Viana and Joseph Bingaman under the guidance of Read Porter, Senior Staff Attorney.

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Rhode Island aquaculture employment and revenue have grown at an exponential rate over the past decade.¹ Nursery facilities are a critical component of shellfish production and play an important role in the success of the shellfish aquaculture industry. Limitations on appropriate nursery sites therefore could become an important constraint on the industry in the future. This case study examines the governance of shellfish nursery facility siting in Rhode Island to identify whether and how legal systems support or create impediments to nursery siting or enable siting in creative ways.

Part 1 describes nursery systems. Part 2 considers relevant Rhode Island law governing nursery system siting. Part 3 examines local authority over nursery system siting. Part 4 identifies key nursery system siting opportunities and challenges and analyzes how Rhode Island law enables or hinders them. Part 5 concludes with thoughts for the application of this case study in other jurisdictions.

1. COASTAL RESOURCES MGMT. COUNCIL, [AQUACULTURE IN RHODE ISLAND](#) (2017).

1 Shellfish Aquaculture Nurseries

Nursery systems support a crucial step in the shellfish aquaculture cycle. After obtaining juvenile shellfish seed from a hatchery, growers place their new crop in a nursery to grow to approximately an inch in size.² When the shellfish are large enough they are placed in a lease area for grow-out, where they remain until ready for market.³

Nursery systems come in a variety of forms, including simple “rack and bag” systems, floating upwellers, and land-based upwellers or raceways.⁴ Floating upweller systems, commonly known as “FLUPSYs,” are a common choice, but other floating systems, such as “Taylor Floats,” may also be used.⁵ Upweller systems pump seawater into the bottom of a container of juvenile shellfish.⁶ The juvenile shellfish feed on the nutrient-rich water, which flows out the top of the container before returning to the environment.⁷ Upweller nursery systems can be found on land or in the water.⁸ This study focuses primarily on FLUPSYs, which are used to grow oysters—the most prevalent species under cultivation in Rhode Island.⁹

Nursery upwellers must be sited appropriately to grow shellfish. Juvenile shellfish require a strong flow of seawater containing food and oxygen. Growers must consider salinity, temperature, phytoplankton, and water quality when selecting a nursery site.¹⁰ In addition, areas susceptible to harmful phytoplankton blooms or diseases may not be appropriate for nursery facilities.¹¹ Nursery upwellers provide flowing water with electric pumps¹²—requiring that they be connected to a source of power, such as cables to shore or solar panels. Alternatively, in areas with strong tides, water can be pushed through the system naturally.¹³

2. NORTHEASTERN REGIONAL AQUACULTURE CENTER, SHELLFISH AQUACULTURE FEASIBILITY STUDY PART II: THE FEASIBILITY OF NEW, SMALL-SCALE OYSTER CULTURE BUSINESSES at 6.

3. *Id.*

4. Dale Leavitt, *Shellfish Upweller Nurseries* (illustrating upweller designs).

5. GEF FLIMLIN ET. AL., BEST MANAGEMENT PRACTICES FOR THE EAST COAST SHELLFISH AQUACULTURE INDUSTRY 10. Taylor floats are constructed from watertight PVC pipe connected in a rectangle, with netting in the center to hold the seed. *Id.*

6. *Id.* at 9.

7. *Id.*

8. *Leavitt, supra* note 4.

9. CRMC, *supra* note 1.

10. *Id.* at 19.

11. *Id.*

12. *Id.* at 32-33.

13. *Id.*

Shellfish growers also must consider their own needs when siting nursery facilities. Access to fresh water (and electricity for a powerwasher) is beneficial to clean the juvenile seed, silos, and other equipment, but may create noise impacts.¹⁴ Growers also need consistent access to nursery sites by boat or by land to monitor the safety and health of their shellfish.¹⁵ Lastly, growers may require a place on land to store upweller equipment that is not in use (e.g., during the winter).¹⁶ In Rhode Island, upwellers are often found at marinas and docks where growers can meet these conditions and water quality is appropriate.

2 How State Law Affects Nursery Siting

The state of Rhode Island controls all tidal waters below the high water mark.¹⁷ The Rhode Island Coastal Resources Management Council (CRMC) regulates use and development of these waters, including permitting of aquaculture facilities.¹⁸ In addition, the Rhode Island Department of Environmental Management (DEM) issues aquaculture permits which are required to sell shellfish in the state. This section focuses on how CRMC and DEM permitting and public health regulations affect nursery facility siting.¹⁹

2.1 CRMC Assent and Water Type and Use Classifications

CRMC regulations govern uses of coastal areas according to activity type and water classification. There are six water types defined in the regulations, ranging in intensity of use from Type 1 (conservation) waters to type 6 (industrial and commercial).²⁰ In Rhode Island, approximately 70 percent of the water that abuts the shoreline is classified as either type 1 or type 2 (residential).²¹ Different activities are allowed by Council Assent (i.e., permit) or prohibited in each of these water types.²² Activities that are not prohibited may be authorized under two types of assents.

14. *Id.* at 26.

15. *Id.* at 32.

16. *Id.* at 28.

17. *See* Greater Providence Chamber of Commerce v. State, 657 A.2d 1038, 1041 (1995) (discussing state title to submerged lands).

18. R.I. GEN. LAWS § 20-10-3 (2013).

19. This section does not provide a comprehensive analysis of aquaculture siting and permitting requirements. Instead, it focuses on provisions most clearly relevant to siting of nursery facilities.

20. 650 R.I. CODE R. 20-00-1.2.1(A)(2). Type 1 waters are found in conservation areas where “the construction of docks and any dredging, are considered . . . unsuitable.” Type 2 waters abut residential areas, where docks are permitted but larger structures such as marinas are prohibited. Type 3 waters support commercial boating infrastructure, such as marinas and boatyards. Type 4 waters are found in “open waters of the Bay and Sounds . . .” Type 5 and 6 waters support ports and industrial waterfronts. *Id.*

21. *Id.*

22. *Id.* § 1.1.5 (providing activity matrix for each water type).

Category A activities are eligible for streamlined review by CRMC so long as certain requirements are met, while Category B applications are subject to stricter requirements.²³ Aquaculture is identified as an activity category, as are the locations where nursery systems may be located, including (i) marinas; and (ii) residential docks, piers and floats.²⁴

2.1.1 Aquaculture Assent and Stipulations

Aquaculture can be authorized in tidal waters (though prohibited in coastal wetlands) in all water types as a category B activity.²⁵ To obtain assent for a category B aquaculture project, a grower must first submit a preliminary determination application that is reviewed by CRMC and other agencies and stakeholders.²⁶ CRMC then provides a preliminary determination, after which the applicant can complete a full aquaculture application.²⁷ This application is reviewed again, including a public notice period and hearings (if CRMC receives objections).²⁸ CRMC will then approve the application and issue a lease (with conditions) or deny it.²⁹

In practice, the assent process for aquaculture operations will identify site-specific limitations requiring modification of proposals, and, if approved, assents will include substantive conditions limiting how growers can conduct their businesses. Siting restrictions that may arise in permitting include prohibitions on locations that “contain significant shellfish stocks” or that pose “a navigation or public safety issue.”³⁰

Siting conditions may include stipulations preventing the use of upwellers on lease sites, particularly in the Rhode Island salt ponds where oyster aquaculture is prevalent. Notably, a common stipulation provides that “[v]essels, barges, or floating docks shall not be anchored or moored at the lease site, unless the permittee is actively engaged in operations such as setting or hauling cages, cleaning or harvesting.”³¹ This stipulation bars the use of FLUPSYs on leases where it is applicable, although submerged nursery methods remain feasible.

23. *Id.* § 1.1.6.

24. *Id.*

25. *Id.* § 1.1.5.

26. *Id.* § 1.3.1(K)(2)(c); RHODE ISLAND SHELLFISH MANAGEMENT PLAN 214 (Ver. II 2014).

27. RHODE ISLAND SHELLFISH MANAGEMENT PLAN 216 (Ver. II 2014).

28. *Id.*

29. *Id.* at 217.

30. 650 R.I. CODE R. 20-00-1.3.1(K)(1).

31. CRMC Aquaculture Assent B2016-02-051 at 4 (Nov. 28, 2016, modified July 5, 2017); *see also* CRMC Aquaculture Assent No. B2016-03-024 at 4 (Oct. 12, 2016); CRMC Aquaculture Assent No. B2016-08-092 (May 1, 2017).

CRMC regulations contain two specific provisions reducing permitting burdens for nursery upwellers by classifying them as Category A activities.

- Nursery upwellers at “marinas, residential docks, and piers” are eligible for Category A review under certain conditions.³² These conditions require that the upweller be proposed by (and all shellfish there owned by) an existing aquaculture leaseholder as an incidental use of the dock.³³ While aquaculture is allowed in all water types, however, upwellers cannot be added to existing docks in Type 1 waters (nor can new docks be placed in those waters).³⁴ This restriction limits where upwellers can be placed, although Type 2 waters are common in shellfish-producing areas.³⁵
- Nursery upwellers also may be reviewed as category A activities when located within an approved marina perimeter limit, provided that the applicant received a Special Permit for Aquaculture for the activity from DEM.³⁶ The shellfish in such nurseries must also be transferred to an approved grow-out location before reaching a maximum size determined by DEM.³⁷

2.1.2 Aquaculture conditions in assent for marinas and docks

Provisions governing siting and use of marinas and private docks—can affect nursery facility siting. Marinas and docks are reviewed under similar standards as “recreational boating facilities.”³⁸ In these locations, nursery facilities require Council assent, but do not require leases because they are located in areas already leased to the dock or marina owner.

32. 650 R.I. CODE R. 20-00-1 § 1.3.1(K)(2)(i).

33. *Id.*

34. *Id.*; see also 650 R.I. Code R. 20-00-1.2.1(A)(2). Docks in type 1 waters can remain if they were built before CRMC adopted the regulations and the dock is used in a manner that is “consistent with the public trust.” *Id.* § 1.2.1(A)(2). See also *id.* § 1.3.1(D)(a) (“public trust resources means the tangible physical, biological matter substance or systems, habitat or ecosystem contained on, in or beneath the tidal waters of the state, and also include intangible rights to use, access, or traverse tidal waters for traditional and evolving uses including but not limited to recreation, commerce, navigation and fishing.”).

35. See CRMC, [Maps of Water Use Categories](#).

36. 650 R.I. CODE R. 20-00-1.3.1(K)(2)(i).

37. *Id.*

38. See *id.* § 1.1.2 (defining “recreational boating facility”).

New or changed residential docks, piers, and floats (including dockminiums) are allowed in all waters except type 1 waters.³⁹ These facilities may be reviewed as either Category A or a Category B activities, depending on the characteristics of the specific proposed activity.⁴⁰ CRMC authorizes marinas in type 3, 4, 5, and 6 waters as a Category B activity.⁴¹ However, CRMC recognizes that few new marinas are likely:

Areas suitable for marinas are severely limited, and the steady growth in the number of recreational boats is increasing the competition for the available facilities. Unfortunately, sheltered waters suitable for marinas are limited, and most of the remaining potential sites contain salt marshes that could only be developed at great environmental as well as high economic costs. Persons proposing new marinas are also hampered by local zoning and high land costs, and neighborhood opposition is frequently vociferous.⁴²

Consistent with this policy, the regulations therefore support the continuation of existing marinas in type 2 waters.⁴³ Expansion by more than 25 percent at these marinas is prohibited, but “maintenance dredging, dock reconfigurations, activities such as travel lift operations and other best available technologies, and other ancillary activities necessary to maintain the operational viability of the facility” are expected to continue and are reviewed as recreational boating facilities.⁴⁴

The recreational boating facilities provisions applicable to marinas and recreational docks contain some limitations on activities that can occur at those facilities. For example, “unloading of catches by commercial fishing vessels” is prohibited at recreational docks.⁴⁵ However, aquacultural use of these facilities is not specifically addressed in these regulations. As a result, the residential boating facility regulations do not meaningfully restrict the location of nursery systems at these locations when desirable.

39. *Id.* § 1.1.5(A)(2).

40. *Id.* § 1.3.1(D).

41. *Id.* § 1.1.5(A)(2).

42. 650 R.I. CODE R. 20-00-1.2.1(C)(2)(c).

43. *Id.* § 1.2.1(B)(3)(b).

44. *Id.*

45. *Id.* § 1.3.1(D)(7)(c). This prohibition excludes shellfish growers unless they are using a vessel with a commercial fishing permit and unloading product for market. Even in such circumstances, it would not apply unless cultured product is considered to be a “catch.”

2.2 DEM Permitting and Water Quality

DEM restricts the locations and operation of aquaculture facilities to protect public health. An aquaculture license from DEM is required to sell shellfish from an aquaculture lease or facility.⁴⁶ CRMC assent and an approved operational plan are required to obtain this license.⁴⁷ In addition, water quality at any aquaculture site must be appropriate for aquaculture activity.⁴⁸

Rhode Island has implemented two forms of water quality classification. First, the DEM Office of Water Resources assigns all waters within the state to designated use classification.⁴⁹ Only those waters designated as “Class SA” are appropriate for shellfish cultivation for direct human consumption.⁵⁰ “Class SB” waters may be appropriate for relay and depuration.⁵¹ However, in practice, DEM has not authorized private organizations to conduct relays from Class SB waters to date.⁵² Second, DEM determines the pollution status of waters in compliance with the National Shellfish Sanitation Program (NSSP).⁵³ Under the NSSP, aquaculture is generally allowed only in “approved” or “conditionally approved” areas.⁵⁴ Cultivation in “restricted” or “conditionally restricted” areas may be allowed for relay or depuration.⁵⁵ Waters in or adjacent to marinas cannot be approved for harvest, but may be conditionally approved, restricted, or prohibited based on analysis of the waters.⁵⁶

Nursery facilities may be appropriate for placement in restricted or conditional waters under these rules. These facilities do not produce shellfish for direct human consumption; rather, shellfish are transferred from nurseries to lease sites for grow-out. As a result, placement of nurseries in less pristine waters, including marinas, does not pose a risk to public health provided that growers ensure depuration of contaminants prior to sale for consumption.

46. 250 R.I. CODE R. 40-00-1.8.

47. *Id.*

48. *Id.* Land-based nursery facilities will require additional water discharge permits. RHODE ISLAND SHELLFISH MANAGEMENT PLAN 292 n.334 (Ver. II 2014). Water discharge permitting requirements are not covered in this study.

49. 250 R.I. CODE R. 150-05-1.9.

50. *Id.* § 1.9(C).

51. *Id.*

52. Email from Robert Rheault, Executive Director, East Coast Shellfish Growers’ Association, to Read Porter (Nov. 3, 2018).

53. R.I. GEN. LAWS § 20-8.1-4. It is unlawful to take shellfish from areas determined to be polluted without approval from the Director of DEM. *Id.* § 20-8.1-5; 250 R.I. CODE REGS. 90-00-4.7.

54. U.S. FOOD AND DRUG ADMIN., NATIONAL SHELLFISH SANITATION PROGRAM (NSSP) GUIDE FOR THE CONTROL OF MOLLUSCAN SHELLFISH: 2015 REVISION § IV.03 (2015).

55. *Id.* § IV.03(D). Cultivation in such areas would not violate NSSP guidance but in practice require DEM approval, which may not be granted. Additionally, CRMC regulations prohibit private aquaculture leases within restricted areas that contain significant shellfish stocks available for relay. 650 R.I. CODE R. 20-00-1.3.1(K)(4)(b).

56. U.S. FOOD AND DRUG ADMIN., *supra* note 54.

CRMC and DEM regulations work together to ensure that nursery upwellers in polluted waters do not pose risks to public health. These restrictions work by mandating the transfer of seed cultured in conditionally restricted or restricted areas to approved waters before reaching a maximum size. DEM defines the maximum size of “shellfish seed” for each organism; for example, oysters are no longer considered “seed” once they are larger than 1.25 inches.⁵⁷ DEM regulations require that “seed cultured in other than approved waters . . . must be transferred by the aquaculturist to an approved aquaculture lease in approved waters . . . prior to the shellfish exceeding the seed size limit.”⁵⁸ Similarly, CRMC regulations require that, to receive Category A review, upwellers at marinas must provide proof that the nursery stock will be transferred to a permitted aquaculture facility, educational or research institution, or government agency before it reaches the maximum seed size.⁵⁹ Nursery facilities at residential docks, floats, and piers may be eligible for Category A review without providing such proof⁶⁰—but will nonetheless need to detail their protections in their operational plans to receive a permit from DEM.

2.3 Pathogen Protection

The transportation of seed shellfish into different waterbodies can transfer shellfish disease. Rhode Island restrictions on the transportation of shellfish seed to prevent disease transmission may affect nursery facility siting.⁶¹ Specifically, movement of shellfish seed may require approval from a “biosecurity board” within CRMC.⁶² As explained in the Rhode Island Shellfish Management Plan:

The board works to minimize potential outbreaks and movement of aquatic diseases with a goal of maintaining a healthy aquaculture and shellfish industry. The board creates shellfish zones around RI based upon current levels of shellfish disease. Shellfish cannot be moved between zones unless: a pathology report documents acceptable disease levels of the proposed shellfish to be moved; or the shellfish are being moved from an area known to have minimal disease to an area known to have a higher incidence of disease.⁶³

57. 250 R.I. CODE R. 40-00-1.7(A)(26).

58. *Id.* § 1.9(G).

59. 650 R.I. CODE R. 20-00-1.3.1(K)(2)(h).

60. *Id.* § 1.3.1(K)(2)(i).

61. RHODE ISLAND SHELLFISH MANAGEMENT PLAN 216-17 (Ver. II 2014).

62. R.I. GEN. LAWS §§ 20-10-1.1 (creating biosecurity board); 20-10-1.2 (vesting powers in board).

63. *Id.*

To avoid the cost and time associated with triggering the pathology testing requirement, Rhode Island growers may seek to locate their nursery site in the same biosecurity zone as their lease site. A map of biosecurity zones as established by the board is provided in Figure 1.

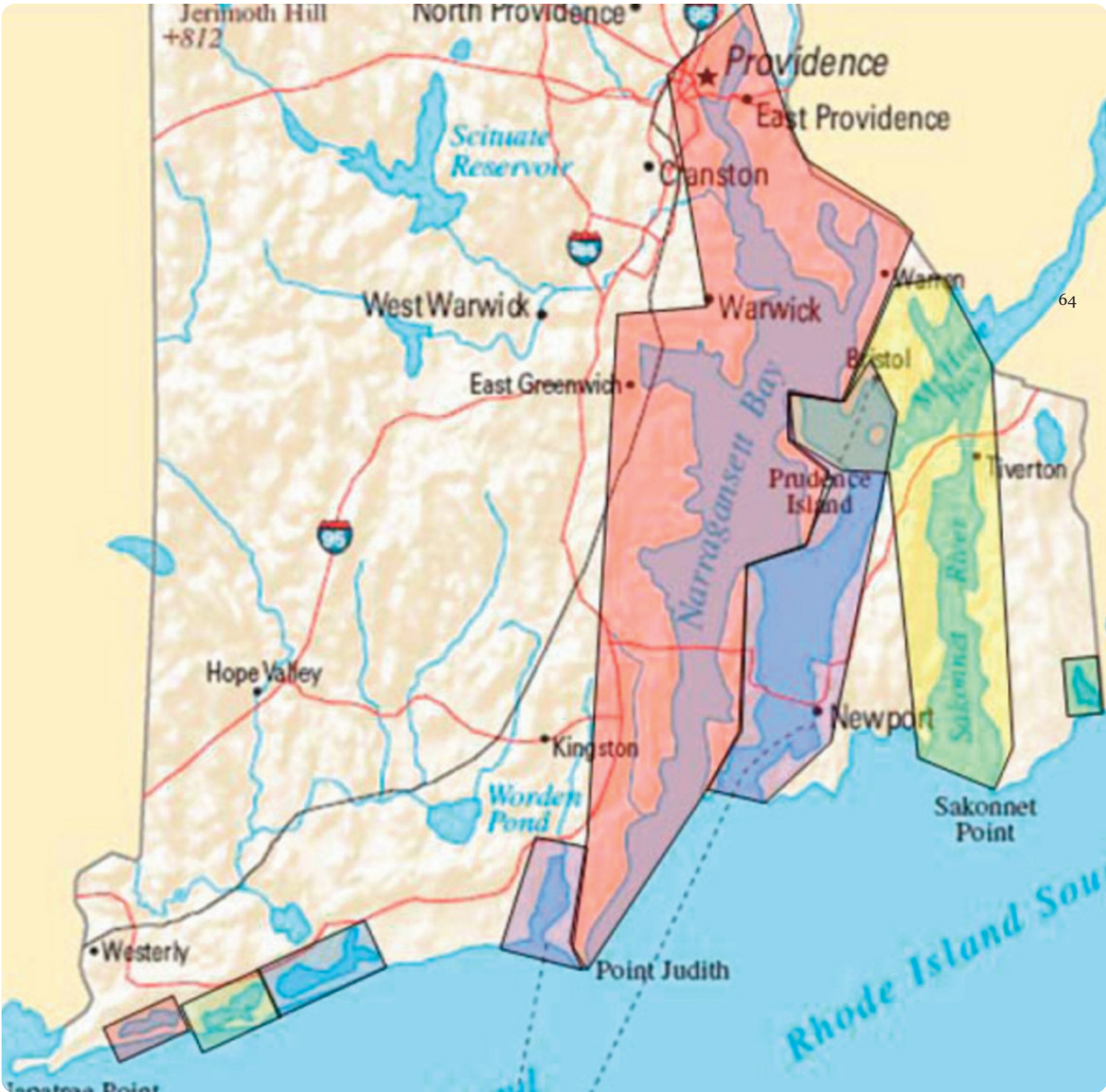


Figure 1. Rhode Island Biosecurity Zones⁶⁴

64. CRMC Biosecurity Board, [Meeting Minutes](#) (Jan. 19, 2012).

3 Local Ordinances

Municipal ordinances—and particularly local land use and zoning restrictions—have the potential to influence the siting and operation of aquaculture facilities, including nurseries. As one recent study notes, “local ordinances related to dock access, shoreline and floodplain development, and agri-tourism are often enacted by municipalities wishing either to limit or foster aquaculture endeavors.”⁶⁵ While Rhode Island municipalities lack legislative authority beyond the high tide mark, their ordinances have the potential to affect the use and creation of structures attached to land.

This section reviews local ordinances in three coastal Rhode Island municipalities to identify whether zoning restrictions may present challenges to nursery siting.⁶⁶ The three towns examined in this case study—Charlestown, Jamestown, and South Kingstown—were chosen due to their coastal location in proximity to active shellfish aquaculture operations.⁶⁷ This review of the zoning ordinances in these towns suggests at least three ways in which zoning could affect nursery siting, including: (i) special permitting of aquaculture as a regulated activity; (ii) zoning district limitations on the use of potential nursery areas for aquaculture nurseries; and (iii) conditions on permits required for marinas.

Ordinances in only one of the municipalities specifically mention aquaculture. Jamestown zoning ordinances define aquaculture as a regulated use and allow it with a special use permit in any zones other than conservation lands and the commercial downtown areas.⁶⁸ Thus, land-based and other nursery facilities requiring zoning approval can be placed in commercial waterfront (CW) zones, where marinas are located, and at residential docks.⁶⁹ A special use permit requires a public hearing and that the proposed project demonstrate a range of requirements, such as “[g]eneral compatibility with lots in the same or abutting zoning districts” and the effects of the use on neighboring lots.⁷⁰ This requirement to obtain a special use permit provides a mechanism for the town to limit where and how nursery facilities can be located.

65. Amanda Nichols, NAT’L SEA GRANT LAW CENTER, [ZONING 101: A STAKEHOLDER’S GUIDE TO UNDERSTANDING THE ZONING DECISIONS IMPACTING SHELLFISH AQUACULTURE PERMITTING](#), NSGLC 18-06-04, at 1 (2018).

66. This study does not consider potential restrictions on winter storage of gear, noise impacts, or other operational considerations. However, we note that such restrictions may affect the feasibility of nursery operations and are important considerations for growers.

67. See DEM, [Interactive Aquaculture Lease Map](#) (mapping all active aquaculture leases in Rhode Island).

68. JAMESTOWN, R.I., MUN. CODE § 82-301, Table 3-1 (land use table).

69. *Id.*

70. *Id.* § 82-600.

Even where existing zoning does not address aquaculture specifically, it could theoretically prevent the use of nursery locations. For example, Charlestown does not define aquaculture as a specific use type, so it could be considered several types of uses, such as hatchery, agricultural operations or a commercial use.⁷¹ This determination would determine whether nursery facilities are consistent with zoning requirements in critical areas bordering salt ponds in Charlestown, which are primarily zoned for residential or open space.⁷² Agricultural uses are allowed in all zones, while hatcheries are allowed in all but require a special use permit in residential areas, and most commercial activity is prohibited in residential zones and open space.⁷³ The town Building Inspector is responsible for this interpretation upon request.⁷⁴ This determination of the appropriate use category for aquaculture nurseries will have important implications for whether this use is allowed and, if so, whether a special use permit would be required.

Finally, waterfront zoning restrictions may limit aquaculture through zoning processes associated with marina development. For example, the fourteen marinas within South Kingstown exist in either the Commercial Waterfront zone (“CW”) or a Public Marina Special Management District (“PMSMD”).⁷⁵ Under either designation, development at marinas requires a special use permit.⁷⁶ Issuance of a special use permit requires a public hearing and may result in conditions, as explained by the town ordinances:

[I]n granting a variance or special use permit . . . , the Board may apply such special conditions that may, in the opinion of the Board, be required to promote the intent and purposes of the Comprehensive Plan of the Town and this Ordinance.⁷⁷

Such conditions could potentially limit (or require) the use of an approved marina for nursery facilities, even though the South Kingstown ordinances do not explicitly regulate aquaculture.

71. CHARLESTOWN, R.I., MUN. CODE § 218a (land use table).

72. See CHARLESTOWN, R.I., *Interactive Zoning Map*.

73. CHARLESTOWN, R.I., MUN. CODE § 218a.

74. *Id.* § 218-35. While the Charlestown Building Inspector can allow unspecified uses, other municipalities prohibit any use not listed in the table. See SOUTH KINGSTOWN, R.I., MUN. CODE App. A § 300 (“Any use which is not specifically included in the use provisions of this article is prohibited, unless the Zoning Enforcement Official rules that such use is included in another ‘Use Code’”).

75. TOWN OF SOUTH KINGSTOWN, R.I., HARBOR MANAGEMENT PLAN 28, 46 (2010) (describing marinas, coastal zoning).

76. SOUTH KINGSTOWN, R.I., MUN. CODE at App. A § 301 (land use table).

77. *Id.* at App. A § 907.

This review of town zoning identified several ways in which such ordinances could potentially affect nursery facilities. However, it did not identify any indications that such effects are occurring today. In addition, it did not investigate the potential limitations on municipal authority to restrict aquaculture activity.⁷⁸ As a result, local land use limitations on nursery facility siting—and specifically on siting of FLUSPYs connected to land only by attachment to a dock—appears to remain limited to theory rather than practice.

4 Implications of Regulation for Nursery Siting

Shellfish aquaculture nursery siting depends on the interaction of the state and local laws discussed in Part 3. This section assesses how these disparate legal requirements affect nursery siting in practical terms, to identify whether and how they create impediments to or support for the deployment of this critical infrastructure in Rhode Island.

4.1 Rhode Island has established streamlined standards for floating nursery permitting

Shellfish growers will generally need both assent from CRMC and a license from DEM before they can site nursery facilities, and some nurseries may also require municipal permits. Some types of nurseries, such as submerged bag systems located on a lease area, may not require permitting beyond that undertaken for the lease and grow-out operations. Floating upwellers located off the lease area will require assent from CRMC, but can qualify for streamlined, Category A review if located at a marina or private dock.⁷⁹

DEM permitting may not require substantial process if the nursery facility is detailed in the grower’s operational plan and is located in appropriate waters.⁸⁰ However, land-based facilities are likely to require an additional permit for discharges that do not apply to floating facilities.⁸¹

Nursery facilities that have a connection to land may also trigger zoning approval under local ordinances. Some municipalities do not define where aquaculture is allowed, and others may require a special use permit (with conditions) for this use in all or certain areas, as detailed in Part 3. As a result, local approval has the potential to be a significant impediment when triggered.

78. Nichols, *supra* note 65, at 12-16 (reviewing issues limiting zoning of shellfish aquaculture).

79. 650 R.I. CODE R. 20-00-1.3.1(K).

80. *See* 250 R.I. CODE R. 40-00-1.8 (detailing DEM permit requirements).

81. RHODE ISLAND SHELLFISH MANAGEMENT PLAN 292 n.334 (Ver. II 2014).

4.2 Floating upwellers are restricted at lease sites, but authorized at marinas and private docks

Growers seeking to use a FLUPSY or other floating system may be able to deploy them only in certain areas. Some aquaculture permits, especially in the salt ponds, prohibit the use of floats or rafts at lease sites.⁸² These prohibitions mean that FLUPSYs must be located off site or other methods must be used. Other assents may not include the same conditions, so careful review is needed to determine whether on-site upwellers are an option for particular growers.

By contrast, CRMC rules specifically endorse siting of FLUPSYs at marinas and private docks, easing the burdens for nurseries in these sites.⁸³ This location may be convenient for growers, who may be able to rely on power and regular access. However, attachment to land raises the possibility of local land use review. FLUPSYs at marinas or docks that do not connect to shore (e.g., are solar-powered) may avoid local review.

An upweller located in a marina may face water quality limitations based on designated uses and growing area classification.⁸⁴ However, DEM and CRMC regulations allow upwellers in restricted waters that may not be suitable for producing shellfish for direct human consumption—provided that shellfish seed is relocated to an approved grow-out location while still under a maximum size threshold.⁸⁵ By incorporating this consideration in operational planning during DEM review, the state seeks to protect public health without creating impediments to nursery systems.

CRMC water type classifications present a second restriction on floating upweller siting, as these facilities are not approved for Type 1 (conservation) waters.⁸⁶ While conservation waters may have ideal water quality for growing shellfish, many areas in other water types may also be appropriate and available. In particular, marinas may not be expected to occur in Type 1 waters.

82. *See supra* note 31 and accompanying text.

83. 650 R.I. CODE R. 20-00-1.3.1(K).

84. 250 R.I. CODE R. 150-05-1 § 1.9, 250 R.I. CODE REGS. 90-00-4.7.

85. *See supra* note 57 and accompanying text.

86. 650 R.I. CODE R. 20-00-1.3.1(K).

4.3 Biosecurity protections may restrict nursery siting in some areas

Rhode Island’s provisions related to pathogen transmission create a potential siting challenge for shellfish growers in some areas. Nurseries must be located in the same biosecurity zone as the ultimate grow-out location to avoid pathogen testing prior to any transfer between facilities.⁸⁷ In some areas—notably, the smaller salt ponds along the state’s southern coast and in areas with substantial areas classified as Type 1 waters—growers could have limited options for nursery locations meeting this criterion. In other areas, however, the biosecurity zones encompass large areas and may not prove serious impediments to nursery siting.

4.4 Local land use ordinances may present challenges for siting nurseries with a connection to shore

Nursery facilities located on shore or that are connected to shore (e.g., for power or water service) could trigger local land use approval requirements, as detailed in Part 3. These requirements could affect whether the nursery is allowed in the desired location, whether a special use permit is needed, and what conditions might be placed on its use. If a special use permit is required, impacts such as noise may be restricted. The specific requirements will depend on the municipality and the zoning district where the nursery is proposed. As a result, careful and site-specific consideration is needed to determine the effect of local ordinances on nursery siting.

5 Conclusion

Nursery facilities are critical to shellfish aquaculture in Rhode Island. This case study evaluated the legal requirements applicable to nursery facilities in the state, including CRMC regulations, DEM regulations, and local land use requirements. Consideration of these requirements suggests that legal requirements may restrict location of floating upweller systems on lease areas, but provide incentives for them at residential docks and marinas via streamlined permitting and allowances for location in restricted waters. Finding marinas and docks in the same biosecurity zone and in non-Type 1 waters may thus pose the primary challenges to siting of floating upwellers. Connection to land—whether for floating upwellers or land-based facilities—may raise issues of compliance with local land use law. Where applicable, additional permits and conditions may apply that restrict whether, where, and how these facilities can operate.

⁸⁷. See Part 2.3, *supra* (detailing biosecurity board).