

I. Introduction

XXXXXXX currently operates a one acre oyster lease in Portsmouth, RI and has worked intimately with the aquaculture and shellfish restoration community in Rhode Island for the past fourteen years with employment in state, federal, academic and non-governmental organizations. In efforts to increase oyster, kelp and bay scallop production I propose to operate a four acre shellfish and sugar kelp lease within the embayment between Rome Point and Green Point, North Kingstown, RI (Figure 1, Table 1). At the closest point, the proposed lease is situated 510 ft. from the shoreline and between two existing aquaculture leases; 397 ft. away from the lease to the north and 550 ft. away from the lease to the south (Figure 1). The proposed lease is sited within an embayment outside of commercial boat traffic and within an area of limited recreational use. The expanse of navigable water between the proposed lease and existing leases to the north and south (397 ft. and 550 ft., respectively) is adequate to allow boat traffic to enter the cove. Substrate below the proposed lease consists of soft mud with no evidence of aquatic vegetation. Impact to the wild harvest shellfish industry will be limited as quahog densities are low (0.7 clams m⁻² ± 0.4 SE; Leavitt and Griffin 2013, unpublished data) and natural oyster populations are non-existent within the proposed lease. XXXXX has operated a commercial viability oyster and kelp lease within the footprint of the proposed lease for a period of 15 months. Within the trial period, no conflicts arose with commercial or recreational boat traffic and growing practices of oysters and kelp described herein proved viable.

II. Operational Plan

1. *Name and address:*

XXXXXX XXXXX
 XXXXX Avenue
 XXXXXX, RI XXXXX

2. *CRMC file number:* TBD

3. *DEM aquaculture license number:* 000120

4. *Type of facility:* Commercial lease site

5. *Location of facility:*

North Kingstown, Rhode Island
 West passage of Narragansett Bay
 Between Rome Point and Green Point



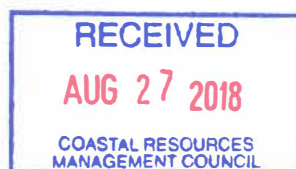
Site Corner	Latitude	Longitude
NW	41.542017°	-71.422677°
SW	41.541442°	-71.422727°
NE	41.542131°	-71.419537°
SE	41.541563°	-71.419594°

Table 1. Coordinates of corner points of proposed lease.

6. *Species grown:*

Crassostrea virginica Eastern oyster
Argopecten irradians Bay scallop
Saccharina latissima Sugar kelp

All shellfish and kelp operations will be conducted in accordance with the Rhode Island Biosecurity board protocols.



7. *Gear description:*

Oysters: Eastern oysters will be grown in two types of floating cages: OysterGro cages constructed of 4 inch vinyl coated wire mesh with two polyethylene floats fixed to the top and Low Pro Grow cages constructed of 1/2 in. wire mesh with polyethelne floats attached to the top. If possible both cages will be constructed to maintain a maximum of 4 in. above still water, allowing for minimal visual impact. OysterGro Cages are configured with 3 rows of two tiers, capable of holding six 35 in. x 18 in. vexar mesh bags and have outside dimensions of 41 in. x 42 in. x 12 in. (Figure 6). Low Pro Grow cages have outside dimensions of 37 in. x 25 in. x 9 in (Figure 7). Twelve cages will be spliced into a 160 ft. longline (½ in. polysteel), running north to south, and anchored on each end with 5 ft. helical screws (Figures 2 and 3). During the growing season, April to November, cages will be floated on the surface. During winter months, November to April, the majority of the cages, baring those designated for winter harvest, will be submerged to the bottom (Figures 4 and 6). Each floating cage will have a bird deterrent fin to dissuade birds from perching on the gear (Figure 6). Market size oysters will be stocked in bottom cages, consisting of two rows with four tiers each, capable of holding a total of eight 3.3 ft. x 1.7 ft. vexar mesh bags (Figure 8), a minimum of 2 days prior to harvest. A maximum of 43 long lines, spaced 20 ft. apart, totaling 516 cages will be deployed on the lease.

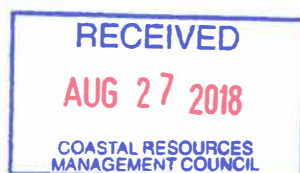
Bay scallops: Bay scallops will be placed in vexar mesh bags with appropriate mesh size, held inside bottom cages. Bottom cages consist of two rows with four tiers each, capable of holding a total of eight 3.3 ft. x 1.7 ft. vexar mesh bags (Figure 8). Ten bottom cages will be attached to a 200 ft longline (Figure 5). Up to 50 bottom cages will be deployed within the lease on the 5 western most trawls (Figure 2).

Note. The applicant is aware of the challenges associated with growing bay scallops in an aquaculture setting. Production of bay scallops will not be the primary focus of this aquaculture site, rather a secondary crop to further personal and communal knowledge of bay scallop culture techniques in New England and to diversify farmed species to mitigate financial loss in the event of a single species failure (i.e. oyster mortality associate with disease). Bay scallop culture on the lease will begin on a small scale and grow dependent upon successful growth and marketability of the product.

Kelp: During winter months (November-May) sugar kelp will be grown on a second longline, above submerged Gro cages, at a depth of 5 feet below the surface (Figure 4). The longlines will utilize the same helical anchors as the Gro cages. Long lines will be suspended in the water column using 5 ft., ½ in. PVC spacers with a six pound concrete block tied into the longline and an 11 inch lobster buoy providing floatation (Figure 7). Spacers will be deployed every 50 ft. along the kelp line. After harvest in April, the kelp long line and buoys will be removed and the Oyster Gro cages will be floated to the surface.

8. *Identifying markers:*

Each of the four corners of the site will be marked with a 12 in. buoy and a 5 ft. highflyer (radar reflector). Buoy color will be chosen in coordination with the North Kingstown Harbor Commission and CRMC to allow for differentiation from existing leases in the area. The poles of the high flyer will be wrapped in reflective tape. The CRMC assent number will be printed on each of the four corner markers.



The north and south sides of the lease will be marked with a unique system to provide clear marking for boating access to the shoreline (e.g. red buoys on the south side, green buoys on the north side). The marking system to allow for clear boating access to the shoreline will be developed in coordination with the North Kingstown Harbor Commission and CRMC.

9. *DEM Shellfish Harvesting Classification:*

Narragansett Bay, West Passage, 3w - Approved waters.

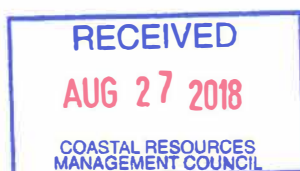
10. *Description of practices and procedures:*

10a. *Seed Source and Husbandry*

Oysters: Oyster seed will be sourced from a New England based commercial hatchery or oyster farm (e.g. Mook Sea Farms, Muscongus Bay Aquaculture, Fisher Island Oyster Farm, Aquaculture Research Corporation), with an approved pathology report. Determination of exact seed source will be dependent upon hatchery supply. The CRMC Aquaculture Coordinator will be notified of seed source and provided a corresponding pathology report (if source is outside the biosecurity zone) at least five days in advance of moving any seed onto the farm. Seed will be purchased with a minimum valve length of 4 mm and grown in Oyster Gro cages until market size is achieved. Market oysters will be held in bottom cages prior to harvest. Throughout the growing season oysters will be sorted according to size and density of oysters in bags will be thinned to mitigate overcrowding and food competition. Floating gear with juvenile oysters will be submerged during the winter months (November-April). Number of seed purchased annually will be dependent upon available space on the farm. Maximum annual oyster yield for the proposed lease is 275,000 individuals.

Bay Scallops: Scallop seed will be sourced from a New England based commercial hatchery or oyster farm (e.g. Mook Sea Farms, Muscongus Bay Aquaculture, Fisher Island Oyster Farm, Aquaculture Research Corporation), with an approved health certificate. Determination of exact seed source will be dependent upon hatchery supply. The CRMC Aquaculture Coordinator will be notified of seed source and provided a corresponding pathology report at least five days in advance of moving any seed onto the farm. Seed will be purchased with a minimum valve length of 4 mm and grown in bottom cages as described in section II, 7. Throughout the growing season scallops will be sorted according to size and density of oysters in bags will be thinned to mitigate overcrowding and food competition. Number of seed purchased annually will be dependent upon available space on the farm. Maximum annual scallop yield for the proposed lease is 50,000 individuals.

Kelp: Kelp will be purchased on seeded spools from: Matha's Vinyard Shellfish Group, Woods Hole Oceanographic Institution or Walrus and Carpenter Oysters. Reproductively active kelp tissue will be harvested from Rhode Island water and provided to the hatchery for spore production. The CRMC Aquaculture Coordinator will be notified at least five days prior to planting kelp and provided required documentation if needed. Kelp will be planted on the longlines in November, timing dependent upon water temperature (<50°F), and grown until March or April. Growing kelp does not require maintenance of shoot density or anti-fouling practices, therefore, husbandry will be limited to making sure lines are secure and correctly positioned in the water column.



10b. Gear Maintenance

Oysters: To mitigate fouling, floating cages will be turned upside down on the integrated floats, twice per month, allowing the oysters, bags and cages to air dry for 24 hours. Oyster will be hand sieved on site. Anchors and longlines will be checked via SCUBA annually to insure cages are secure. Fouled vexar bags will be replaced with clean ones and stored onshore at the home residence of this applicant. No onsite gear storage will be employed.

Bay Scallops: Fouled bags will be removed from the site, to air dry on shore at the home residence of this applicant, and replaced with clean bags. Cages will not need regular fouling control as they will be constructed of 4 in. wire mesh allowing adequate flow when fouled. If necessary in-situ hand scrubbing of cages will be employed.

Kelp: Growing kelp does not require maintenance of shoot density or anti-fouling practices, therefore, husbandry will be limited to making sure lines are secure and correctly positioned in the water column.

10c. Harvest, Storage and Transportation

All handling of shellfish to be consumed will follow the recommendations/regulations set forth by RIDEM (Rhode Island Marine Fisheries Regulations, Part IV Shellfish) and in accordance with the RIDEM Vibrio Management Plan, as instituted 1 July 2014. All handling of kelp to be consumed will follow recommendations/regulations set forth by regulating agencies as protocols are developed. All shellfish/kelp movement and sales will be recorded with appropriate tagging as mandated by the RI shellfish regulations and those records will be maintained by XXXXXXXXXX and will be available for review upon request. Shellfish and kelp will be sold to wholesale dealers for public consumption. Market size oysters will be placed in bottom cages a minimum of 2 days prior to harvest for public consumption.

10d. Time table of work performed.

Farm work described herein will take place 3-5 days per week, between sunrise and sunset, during the shellfish growing season (April – November). Kelp work on the farm will be limited to 1 day a week (November – May) to assure gear is properly in place.

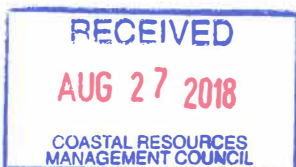
11. Procedures for maintaining records for operations using seed acquired from out-of-state. Description of notification, disease certification, and labeling/tagging of product.

Records of seed purchases will be maintained by XXXXXXXXXXXX for review by CRMC upon request. CRMC will be notified prior to seed purchases and supplied with the appropriate documentation including: the origin of the seed (hatchery name and location), spawn date, number purchased, date of delivery and pathology report(s).

12. Procedures for maintaining records for upwellers in prohibited waters.

Not applicable to this application.

13. Procedures for maintaining records for operations using seed from prohibited waters.



Seed purchased from a third party that originated from prohibited waters will be kept separate from other cohorts by marking bags with red tags. Tags will contain the date the seed was purchased to insure sales do not occur prior to 6 months of growth in approved waters of the lease. Seed which originated in prohibited waters will not be mixed with seed originating from approved waters.

2. *Produce Management and Sales*

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The proposed leaseholder shall be responsible for the production, management, and sale of the produce grown on the leased land. The leaseholder shall be responsible for the production, management, and sale of the produce grown on the leased land. The leaseholder shall be responsible for the production, management, and sale of the produce grown on the leased land.

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