

**Figure 1:** Vicinity map created in ArcMap version 10.1 using digitized NOAA Charts.

**Location:** East of Israel Point and West of Thomas Island, Mt. Desert Narrows, Bar Harbor, Hancock County, Maine

**Purpose:** Suspended culture of American oysters (*Crassostrea virginica*) and European oysters (*Ostrea edulis*).

Site Review: Jon Lewis and Marcy Nelson  
Report Preparation: Marcy Nelson and Jon Lewis

April 29, 2016

On September 25, 2015 Maine Department of Marine Resources (MDMR) scientists Jon Lewis and Marcy Nelson conducted a site assessment of the proposed aquaculture lease.

The applicant is applying for a standard 10-year lease to culture shellfish using floating (spring - fall) and submerged (winter) cages. At full site development (year three) a maximum of 1,240 OysterGro™ cages would be deployed in 160 foot long-line sections, supporting 10 cages each, for a total of 124 lines or strings. The applicant proposes to maintain 28-30 foot spacing between long-lines to allow for small vessel navigation. According to the application, each cage (including floatation) measures 68”L X 40.5”W X 20”H and is capable of holding up to 6 mesh oyster bags. During the winter months cages would be submerged.

Presently, the applicants hold 7 Limited Purpose Licenses (LPAs) for the culture of shellfish within the general vicinity of the proposed lease area (Figure 2). At the time of the Department’s site assessment, one string of 3 OysterGro™ units was observed in the area (Image 1).

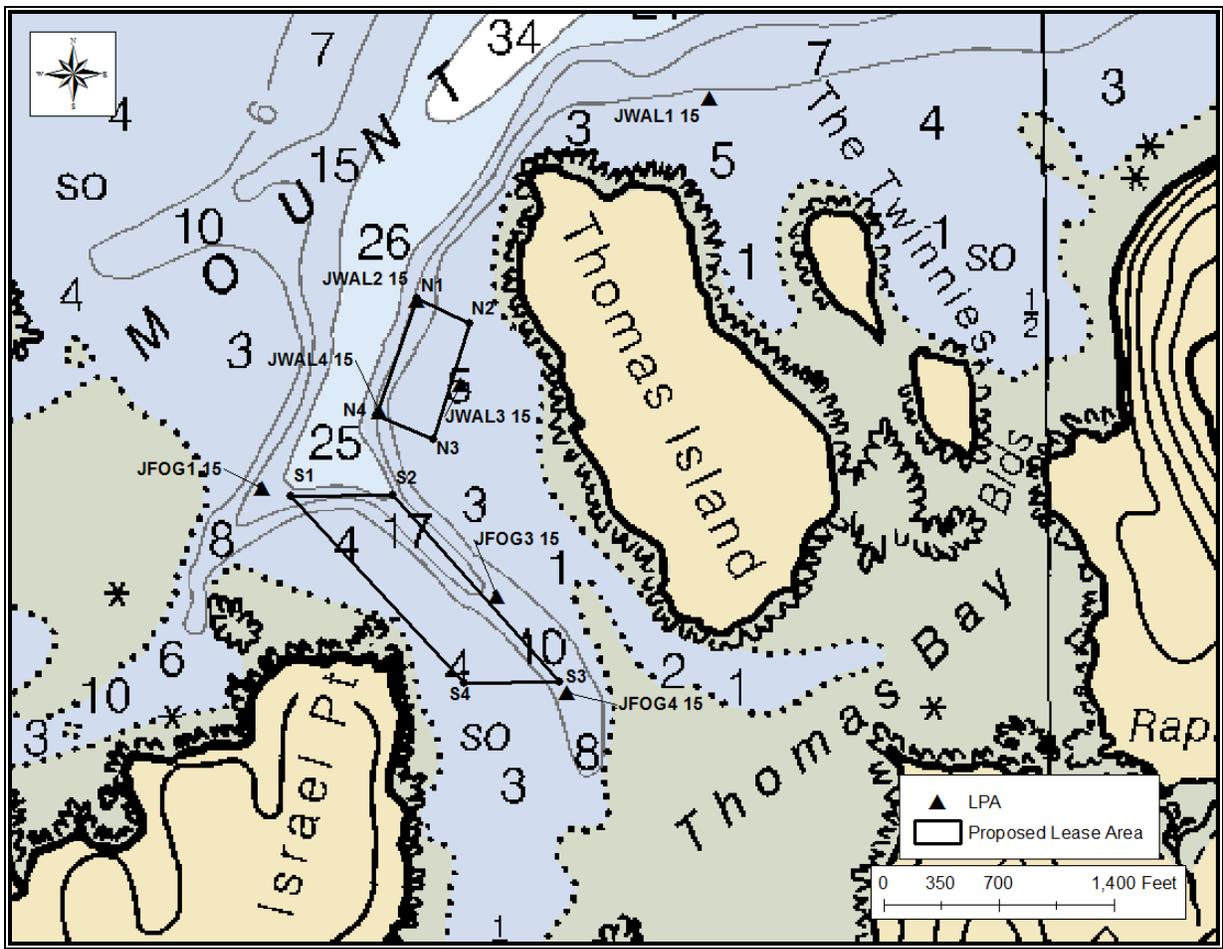


Figure 2: Vicinity map created in ArcMap version 10.1 using digitized NOAA Charts.



**Image 1:** String of 3 OysterGro™ cages observed on September 25, 2015.

Storage and Processing: A floating upweller and work platform measuring 24’LX12’WX4’H and supporting a shelter measuring 8 feet in height, is proposed for deployment in the southeastern corner of the South Tract.

### **General Characteristics**

#### **Bottom Topography and Sediment Composition**

Throughout the majority of the proposed lease area, the benthos is characterized by fine sediments with little topographical variation. No attached or rooted vegetation was observed.

## Depth

### Mount Desert Narrows, Maine

25 September 2015

44.4333° N, 68.3667° W

Low Tide	02:34 EDT	-0.14 feet
High Tide	08:50 EDT	11.00 feet
Low Tide	14:55 EDT	0.04 feet
High Tide	21:10 EDT	12.06 feet

<http://tbone.biol.sc.edu/tide/index.html>

The predicted time of low tide for Mount Desert Narrows was 2:55 p.m. Tidal height was predicted at 0.04 feet above mean low water (MLW). Depths within the proposed lease site were collected by dive computer, between 11:24 am and 12:26 pm, during the Department's SCUBA assessment. Observed water depths ranged from 5 to 9 feet throughout the South Tract and 8 to 9 feet within the North Tract. Correcting to Mean Low Water (0.0') depths are approximately 4-5 feet throughout the majority of both proposed lease tracts, deepening to a maximum of ~17 feet along the eastern boundary of the South Tract. Observed and corrected water depths are consistent with those reported in the lease application and are adequate for the use of the floating cages and lines described above.

## Position and Distances to Shore

On September 25, 2015 MDMR staff used a handheld GPS and the application coordinates to navigate to each corner of the proposed lease tracts.

The coordinates and metes and bounds describing the proposed standard lease are below. POSAID Positioning Software was used to verify the distances and bearings between corners.

The measuring tool available in ArcMap 10.1, geo-referenced NOAA Nautical Charts and aerial photographs (low tide 2013), and the below coordinates were used to approximate distances to shore.

### Application Coordinates (Datum WGS84) – 22.04 acres (Figure 2)

#### North Tract (6.21 acres)

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>
N1	44° 26' 03.37"N	68° 20' 52.62"W then 351.60 feet at 115.60° True to
N2	44° 26' 01.87"N	68° 20' 48.25"W then 738.98 feet at 197.49° True to
N3	44° 25' 54.91"N	68° 20' 51.31"W then 379.85 feet at 293.24° True to
N4	44° 25' 56.39"N	68° 20' 56.12"W then 751.10 feet at 19.76° True to N1.

**South Tract (15.83 acres)**

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>
S1	44° 25' 51.54"N	68° 21' 03.30"W then 618.25 feet at 90.00° True to
S2	44° 25' 51.54"N	68° 20' 54.78"W then 1526.56 feet at 138.79° True to
S3	44° 25' 40.20"N	68° 20' 40.92"W then 583.45 feet at 270.00° True to
S4	44° 25' 40.20"N	68° 20' 48.96"W then 1549.73 feet at 317.82° True to S1.

**Distances to shore (Figures 1 & 2):**

North Tract

- N1 to Trenton Boat Launch: ~3,750 feet to the northeast
- N1 to Bar Harbor Airport (Runway 35): ~4,321 feet to the northeast
- N2 to Thomas Island (MLW): ~243 feet to the east
- N4 to Western Edge of Channel, 12 foot contour (MLW): ~480 feet to the west

South Tract

- S2 to 6 foot contour line (MLW): ~130 feet to the east
- Eastern boundary to 6 foot contour line (MLW): ~120 feet to the east
- S3 to nearest intertidal mudflat (MLW): ~267 feet to the east
- Western boundary to Israel Point (MLW): ~137 feet to the west
- Western boundary to Israel Point (MHW): ~260 feet to the west

*The criteria MDMR uses to determine the suitability of an aquaculture operation to a particular area (DMR Regulations Chapter 2.37(1) (A)) are discussed, with respect to the application, below:*

**(1) Riparian Owners Ingress and Egress**

During their site assessment, MDMR staff observed no docks or moorings with which the proposed activities would interfere. The proposed Northern Tract is approximately 240 feet (MLW) to the west of the undeveloped western shore of Thomas Island. The proposed Southern Tract is approximately 137 feet from Israel Point at mean low water. Although no docks or moorings were observed, the proposed Southern Tract lies adjacent a developed shoreline property. Images 2-6 below were taken between 10:38 am and 10:45 am on September 25, 2015 and depict the uplands adjacent to the proposed Southern Tract.



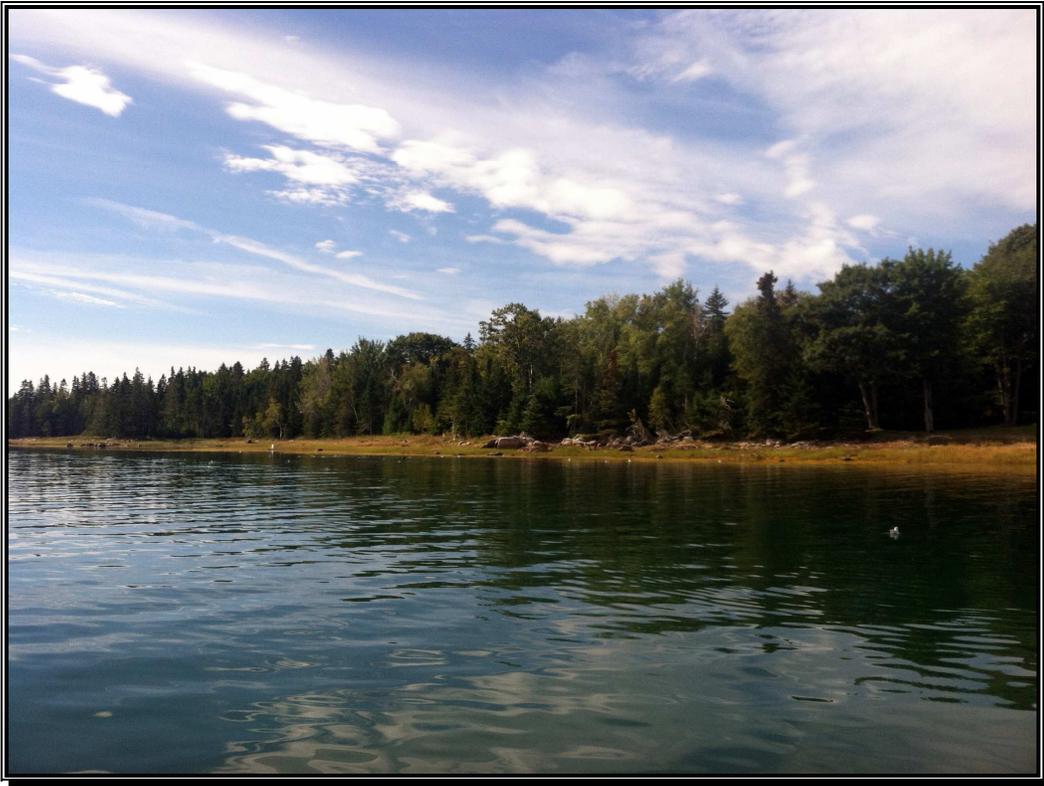
**Image 2:** Northern shore of Israel Point (September 25, 2015).



**Image 3:** Northeastern tip of Israel Point (September 25, 2015).



**Image 4:** Northeastern shore of Israel Point (September 25, 2015).



**Image 5:** Eastern shore of Israel Point (September 25, 2015).



**Image 6:** View of nearest residential properties, northeastern shore of Israel Point (September 25, 2015).

## **(2) Navigation**

The proposed lease tracts occupy the shallow subtidal waters to the east and west of a small channel leading into Thomas Bay. The Southern Tract encroaches on as much as 230 feet of the western side of this secondary channel, leaving a minimum of ~110 feet of navigable waters greater than 6 feet in depth available to mariners at mean low water. This secondary channel terminates into extensive intertidal mudflats at the head of Thomas Bay. Navigation at lower tidal stages is likely dominated by local clammers and wormers accessing the intertidal mudflats.

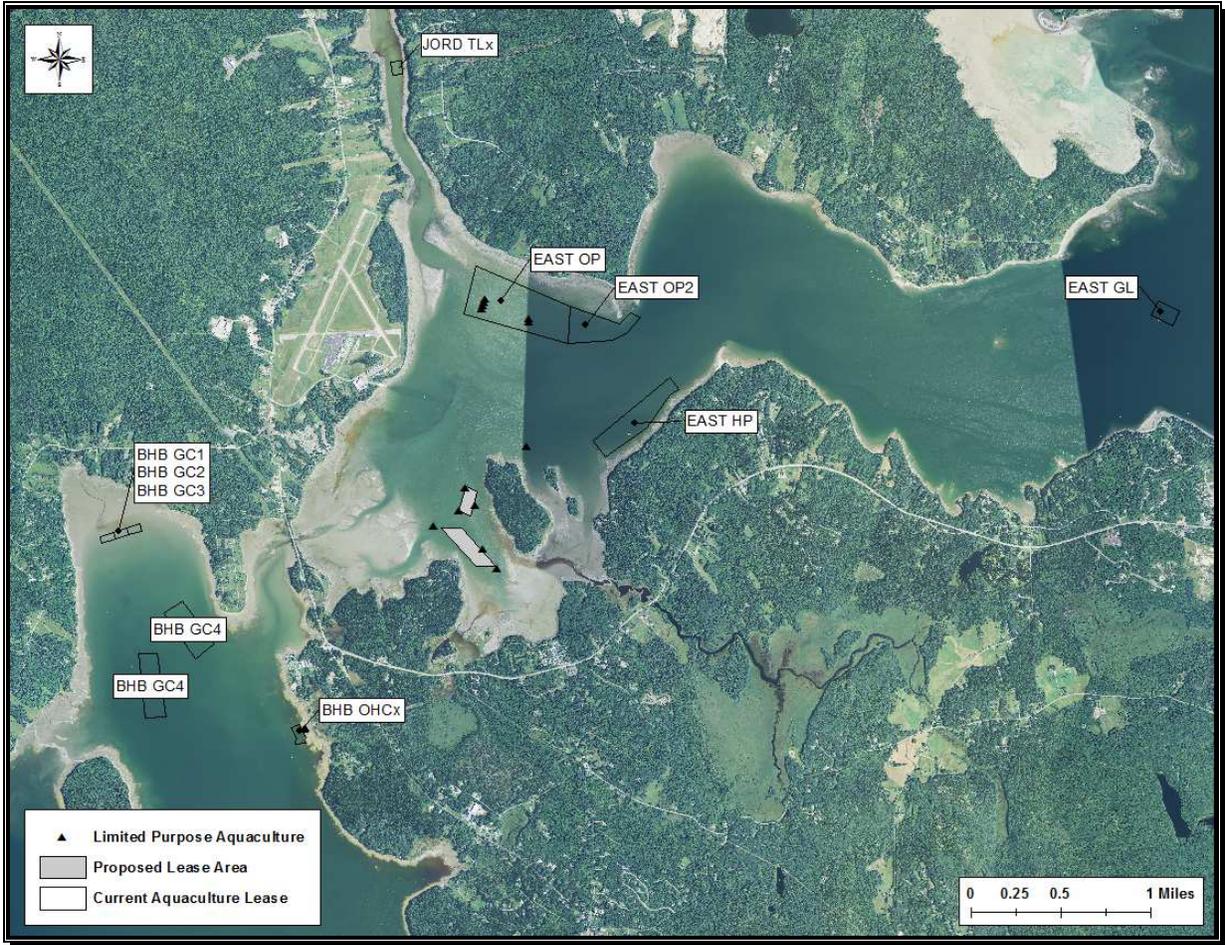
## **(3) Fishing**

On September 25, 2015 no commercial or recreational fishing was observed within the boundaries, or immediate vicinity, of the proposed lease. The patchy presence of mussels on the bottom may be a remnant of past mussel dragging in the area. Clamming and worming likely takes place on the intertidal mudflats surrounding the proposed lease areas.

## **(4) Other Aquaculture Uses**

The applicants, Jesse Fogg and Joanna Walls, currently hold 7 Limited Purpose Aquaculture Licenses (LPAs) for the suspended culture of oysters in the area surrounding Thomas Island (Figure 2).

Additionally, there are 3 aquaculture leases (EAST HP, EAST OP, and EAST OP2) designated for the bottom culture of blue mussels (*Mytilus edulis*) within 1 mile of the proposed lease site. Within the boundaries of lease EAST OP are 6 LPAs (MBEA1 16, MBEA2, 16, RSMI1 16, RSMI2 16, RSMI3 16, and RSMI4, 16) for the culture of blue mussels on long-lines. There are additional leases and licenses located more than 1 mile (straight-line distance) to the north, east, and west of the proposal (Figure 3).

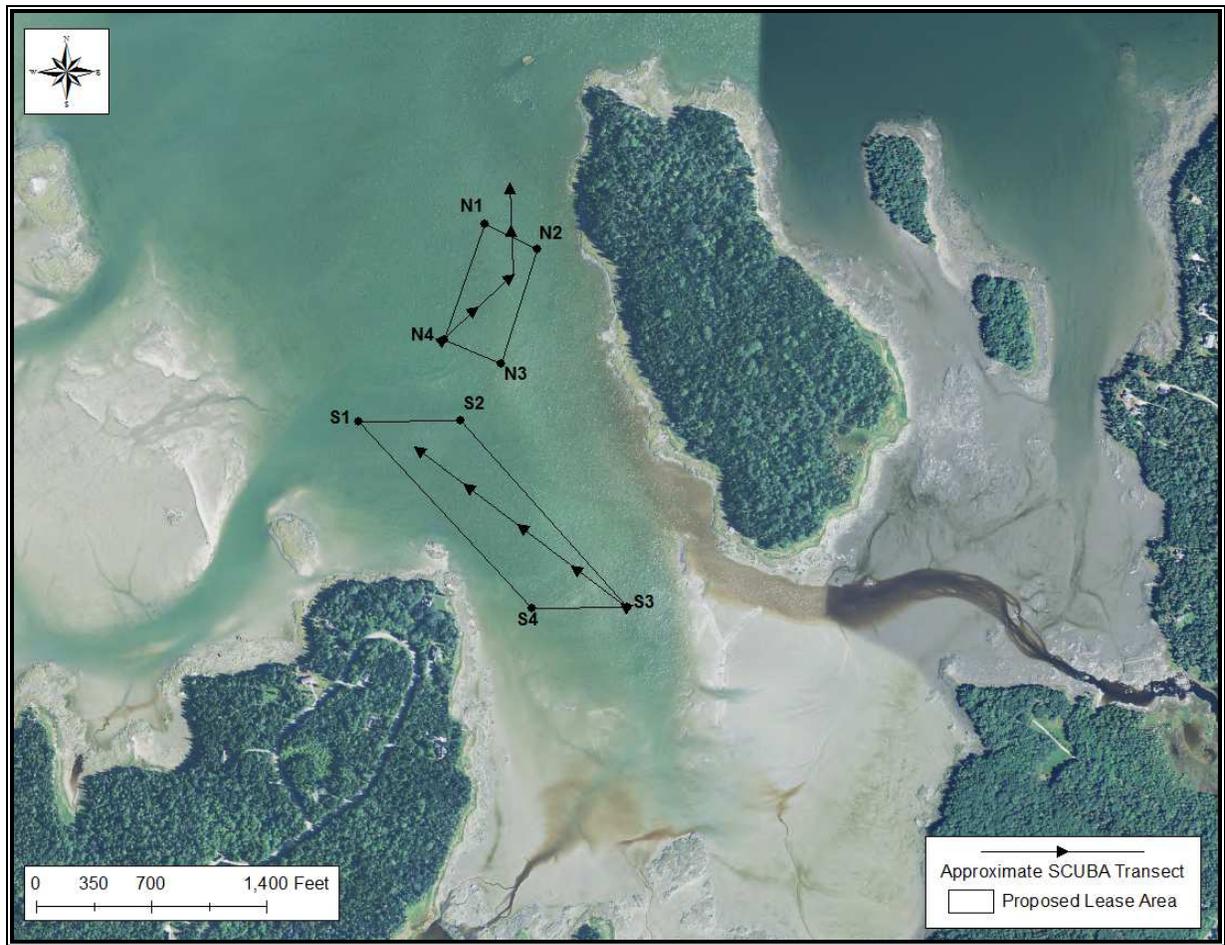


**Figure 3:** Map depicting nearby aquaculture operations and created in ArcMap version 10.1 using geo-referenced aerial photographs provided by The Maine Office of GIS (Low Tide 2013).

**(5) Existing System Support**

A) Flora and fauna from underwater video observations

On September 25, 2015, Maine Department of Marine Resources (MDMR) staff documented the benthic ecology within the proposed lease area using SCUBA observations and a hand-held digital video recorder contained within an underwater housing. Please, refer to Figure 4 for a graphic representation of the approximate course followed.



**Figure 4:** Vicinity map created in ArcMap version 10.1 using geo-referenced aerial photographs provided by The Maine Office of GIS (Low Tide 2013).

The relative abundance of epibenthic macro- flora and fauna observed throughout the video transects is described below:

South Tract (representative images are included below):

- Worm holes/castings - abundant
- Blue mussels (*Mytilus edulis*) – common to abundant in scattered clumps
- Green crab (*Carcinus maenas*) – common
- Frilled anemone (*Metridium senile*) – commonly associated with mussels
- Sand Shrimp (*Crangon septemspinosus*) – common
- Mysid Shrimp (*Praunus flexuosus*) – common
- Common sea star (*Asterias sp.*) - occasional
- American lobster (*Homarus americanus*) – occasional
- Rock crab (*Cancer sp.*) – occasional
- Burrowing anemone (*Edwardsia sp.*) – occasional
- Mud snails (*Littorina sp.*) – one large patch associated with decomposing knotted wrack (*Ascophyllum nodosum*)

Waved whelk (*Buccinum undatum*) – one shell  
Kelp (*Laminaria/Saccharina sp.*) – unattached and occasional  
Red algae (unidentified) – occasional  
*Beggiatoa sp.* – single patch near decaying seaweed



**Image 7:** Underwater video screen capture depicting the regular scattering of small clumps of blue mussels (*Mytilus edulis*).



**Image 8:** Underwater video screen capture showing the representative fauna (*Metridium senile* and *Asterias sp.*) commonly associated with blue mussels (*Mytilus edulis*).

North Tract (representative images are included below):

Worm holes/castings - abundant

*Enteromorpha sp.* – common

Sand Shrimp (*Crangon septemspinosus*) – common

Mysid Shrimp (*Praunus flexuosus*) – common

Green crab (*Carcinus maenus*) – common

Rock crab (*Cancer sp.*) – occasional

American lobster (*Homarus americanus*) – occasional

Crab/lobster burrows – common

Blue mussels (*Mytilus edulis*) – occasional small clump

Frilled anemone (*Metridium senile*) – occasionally associated with mussels

Common sea star (*Asterias sp.*) - occasional

Burrowing anemone (*Edwardsia sp.*) – occasional

Kelp (*Saccharina sp.*) – unattached and occasional

Red algae (unidentified) – occasional

*Beggiatoa sp.* – single patch



**Image 9:** Underwater video screen capture portraying the commonly observed *Enteromorpha* sp.



**Image 10:** Underwater video screen capture portraying a commonly observed crab and burrow.

B) Eelgrass (*Zostera marina*)

The last local survey of eelgrass density and distribution conducted by The Maine Department of Marine Resources Ecology Division was in 2008. At that time eelgrass was not documented within the general vicinity of the proposed lease (Figure 5). Furthermore, eelgrass was not observed during the Department’s SCUBA assessment on September 25, 2015.

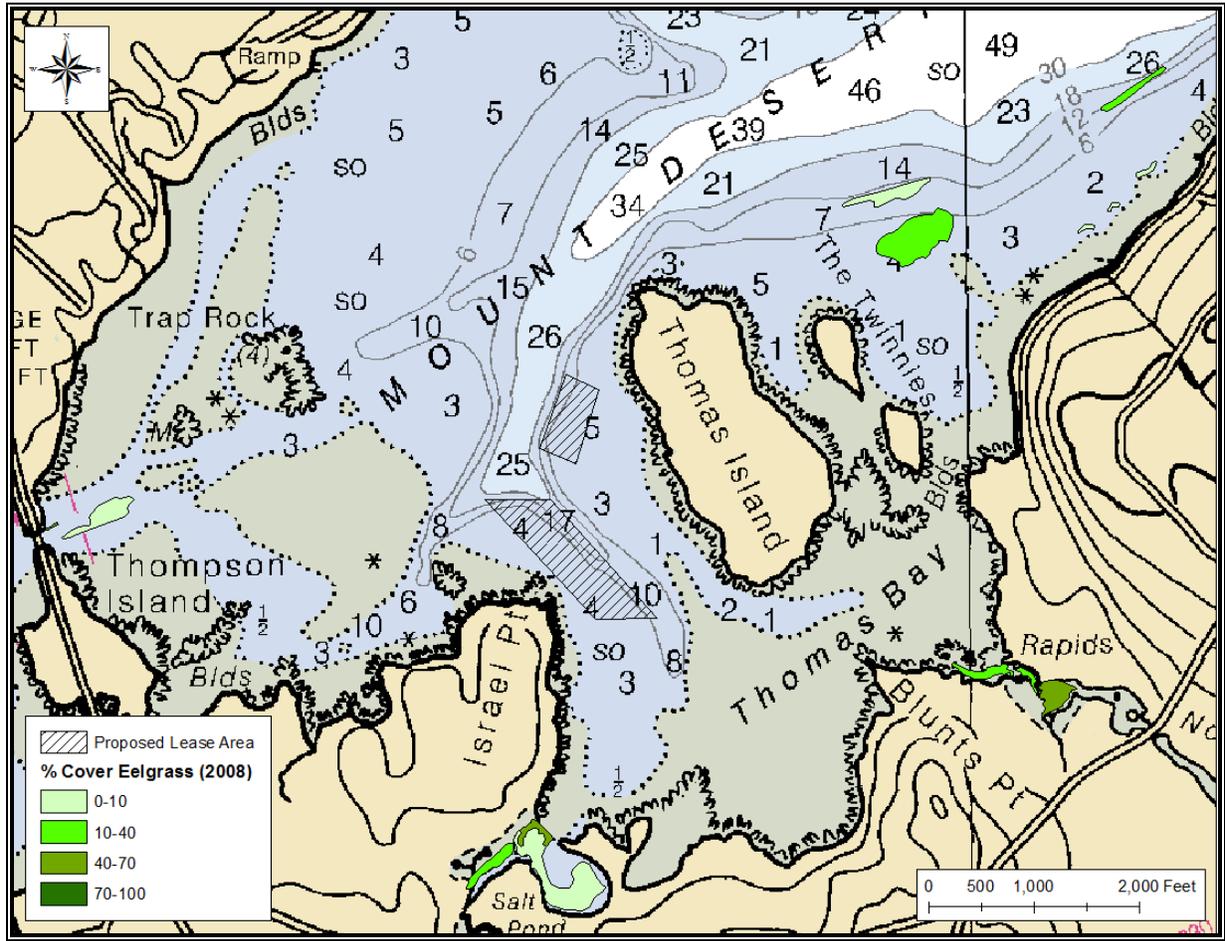
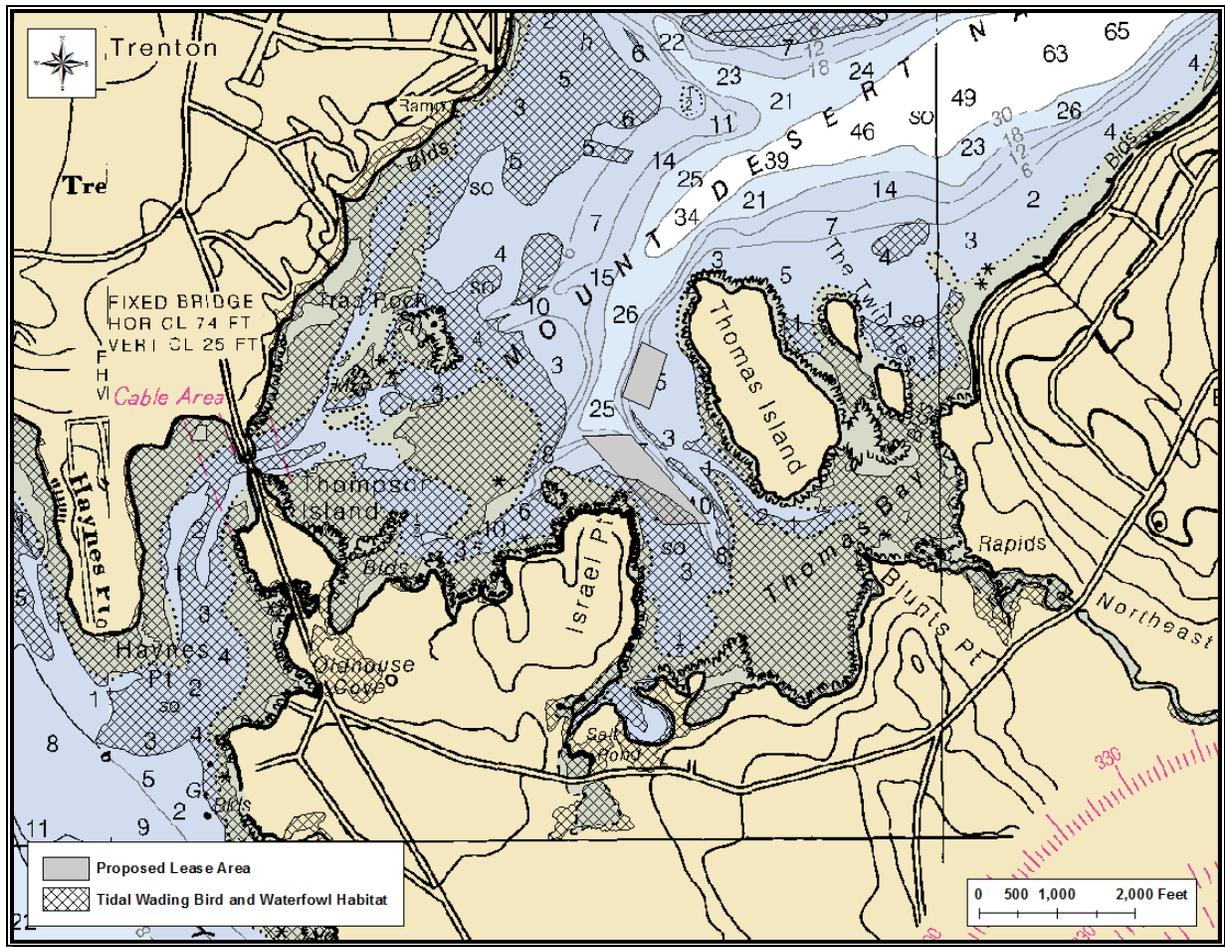


Figure 5: Eelgrass (*Zostera marina*) distribution, 2008.

C) Fisheries and Wildlife

According to GIS (Geographic Information System) data maintained by The Maine Department of Inland Fisheries and Wildlife a portion of the southern tract of the proposed lease falls within designated moderate to high value tidal wading bird and waterfowl habitat. In an email to MDMR on June 30, 2015, John Perry (Environmental Review Coordinator for the Maine Department of Inland Fisheries and Wildlife) recommended that the “project not intersect with any mudflats”.



**Figure 6:** MDIF&W Tidal Wading Bird and Waterfowl Habitat (Maine Office of GIS).

On September 25, 2015 MDMR staff observed a small flock of ~20 Bonaparte’s gulls (*Chroicocephalus philadelphia*) between the proposed Southern Tract and Israel Point. Three cormorants (*Phalacrocorax spp.*) were observed resting on the three existing OysterGro™ cages on the LPA.

**(6) Interference with Public Facilities**

There are no publicly-owned beaches, conserved lands, or docking facilities within 1,000 feet of the proposed lease. Thomas Island, to the east of the North Tract, is privately owned and managed by Maine Coast Heritage Trust. The Twinnies Islands, more than 2,000 feet to the east of the proposed lease area (Figure 1), are owned by the U.S. Fish and Wildlife Service. The nearest boundary for Acadia National Park (Thompson Island) is more than 2,000 feet to the west of the proposed South Tract. Finally, The Maine Bureau of Parks and Land maintains an easement along the shoreline of Thomas Bay, to the east of Blunt Point and more than 3,000 feet from the proposed lease area. All conserved land data were acquired from the Maine Office of GIS.

## **(7) Lighting**

No lighting is proposed for use at this lease site. An exception would be made for emergency situations such as a boat malfunction.

## **(8) Noise**

The applicant proposes to use four-stroke outboard power on each of the three vessels that would be used on site, if approved: a 15' skiff, a 20' skiff, and a pontoon deck –barge with dimensions of approximately 20'x10'. Four-stroke outboards are the quietest gasoline powered outboards available and are barely audible at idle.

Other noise inputs include the use of a hydraulic sorter and hauler powered by a Honda engine. The engine, while not fully contained, will be housed in a box outfitted with noise-dampening insulation. A secondary muffler will also be installed on the engine. Rubber vibration dampening pads will be employed when mounting the hydraulic pack to the vessel.

Finally, solar panels will be used to charge the batteries that power the upweller pump.

The applicant has clearly invested in the best available technology and made every accommodation to minimize noise intrusion.

## **(9) Visual Impact**

The applicant proposes to use floating cages and bags to contain the cultured oysters. The surface gear is black in color with black floatation and would protrude a maximum of 20 inches above the water's surface, when in the drying position. The proposed upweller/work float is of wood construction and supports a shelter measuring 10' LX 12' WX 8' H. Coupled with the dimensions of the float itself, the tallest point of the structure measures ~12 feet, including the portion of the float that is submerged.

## **(10) Water Quality Classification**

The area is currently classified by the Department of Marine Resources Water Quality Classification program as "Open/Approved" for the harvest of shellfish.