

Figure 1: Vicinity map¹

Location: Northeast part of Burnt Coat Harbor, Swan's Island, Hancock County, Maine

Purpose: Experimental lease for the suspended culture of American/eastern oysters (*Crassostrea virginica*)

Site Review by: Flora Drury and Cheyenne Adams
Report by: Cheyenne Adams, Flora Drury, Marcy Nelson
Report Completed: December 16, 2021

¹All figures in this report were created in ArcMap version 10.8 using digitized NOAA Nautical Charts or geo-referenced aerial photographs provided by The Maine Office of GIS (orthoCoastalDownEastCoast2008).

Application Overview

The applicants are requesting 1.66² acres in the northeast part of Burnt Coat Harbor, Swan’s Island, for the suspended culture of American/eastern oysters (*C. virginica*).³ The applicants propose to culture oysters using a maximum of 2,000 floating mesh bags (3’L x 1.5’W) in the spring, summer, and fall months. Oysters would be consolidated into a maximum of 1,600 bags, put into a maximum of 200 cages (4’ x 4’ x 4’), and sunk to the bottom during the winter months.⁴ The floating mesh bags would be deployed along (20) 150-foot longlines, which would be arranged in 2 sections with each section consisting of 10 parallel lines. The longlines would run approximately S-N in orientation.⁵

General Characteristics

On June 24, 2021 Maine Department of Marine Resources (MDMR) Scientists Flora Drury and Cheyenne Adams visited the proposed experimental aquaculture lease. MDMR staff arrived in the vicinity at 11:50 am, the tide was ebbing.

The proposed lease occupies subtidal waters in Burnt Coat Harbor, Swan’s Island (Figure 1). The adjacent shoreline is rocky, with a section of marsh grass, and leads to a residential and mixed forest upland (Images 1-4). To the southwest of the proposal is an active harbor with a mooring field and lobster buying stations (Image 5). The western shore of Burnt Coat Harbor, across from the proposal, is developed with seemingly residential buildings (Images 6 & 7).



Image 1: Facing north toward the applicants’ existing aquaculture gear from the middle of the proposed eastern boundary (June 24, 2021).

² Application requested 1.6 acres. DMR calculations, based on the coordinates provided in the application, indicate the area is 1.66 acres.

³ Application page 1-2

⁴ Application, page 13

⁵ Application, page 28



Image 2: Facing northeast toward the eastern shore of Burnt Coat Harbor from the middle of the proposed eastern boundary (June 24, 2021).



Image 3: Facing east toward the eastern shore of Burnt Coat Harbor from the middle of the proposed eastern boundary (June 24, 2021).



Image 4: Facing southeast toward the eastern shore of Burnt Coat Harbor from the middle of the proposed eastern boundary (June 24, 2021).



Image 5: Facing south toward the applicants' existing aquaculture gear and Burnt Coat Harbor mooring field from the middle of the proposed eastern boundary (June 24, 2021).



Image 6: Facing west toward the applicants' existing aquaculture gear and the western shore of Burnt Coat Harbor from the middle of the proposed eastern boundary (June 24,2021).



Image 7: Facing northwest toward the applicants' existing aquaculture gear and the head of Burnt Coat Harbor from the middle of the proposed eastern boundary (June 24,2021).

Depth

At the time of MDMR's site assessment on June 24, 2021, depths at the corners of the proposed lease site ranged from 11.6 feet to 17.5 feet, as measured with a transom-mounted depth sounder. The site slopes deeper on the western boundary, farther from shore. MDMR staff observed the depths of the proposed lease site at approximately 11:50 am. High tide, with a height of 10.16 feet above mean low water (MLW, 0.0 feet), was predicted to have occurred at 10:58 am. Correcting for tidal variation derives water depths at the corners to be approximately 0.4 feet higher at the nearest high water (12.0 feet to 17.9 feet) and therefore between 1.84 and 7.74 feet deep at MLW.

Table 1: Tide predictions at Burnt Coat Harbor, Swan's Island, Maine (44.1450° N, 68.4500° W)⁶

Date	Time	Height (ft.)
6/24/2021	4:54 AM	-1.4 L
6/24/2021	10:58 AM	10.16 H
6/24/2021	5:05 PM	-0.22 L

Bottom of Proposed Lease Site

MDMR staff observed the bottom characteristics of the proposed lease site via drop camera on June 24, 2021. Bottom characteristics were categorized using the Coastal and Marine Ecological Classification Standard (CMECS), a national standard for describing features of the marine environment. Sediment information was determined based on visual analysis; no sediment samples were taken or grain size analysis performed. The bottom of the proposed lease site is composed of soft mud with very occasional shell rubble (Image 8).

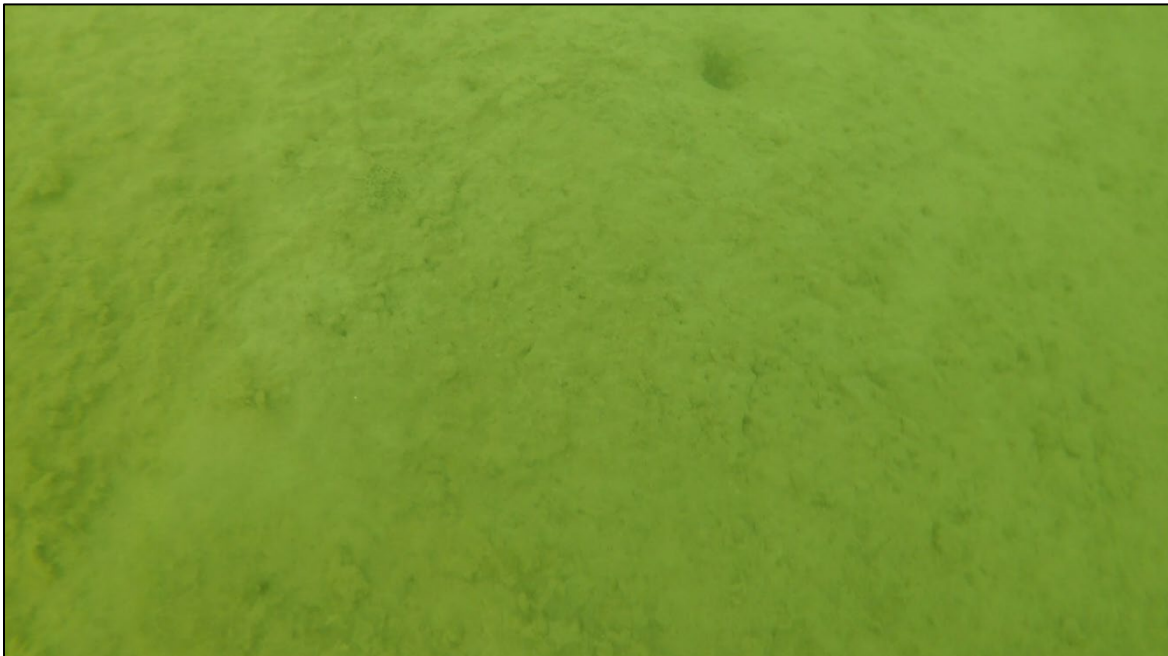


Image 8: Soft mud sediment on the bottom of the proposed lease site (June 24, 2021).

⁶ <http://tbone.biol.sc.edu/tide/tideshow.cgi>

Position and Distances to Shore

The measuring tool and coordinate geometry (COGO) report tool in ArcMap 10.6 were used to verify the distances and bearings between proposed lease corners. Distances to shore were determined using the measuring tool in ArcMap 10.6, digital orthophotography provided by the Maine Office of GIS, and the application coordinates.

WGS84 Coordinates – 1.66 acres (Figure 2)

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>	
NW	44° 08' 55.65" N	68° 26' 42.51" W	then 231.01 feet at 85.36° True to
NE	44° 08' 55.82" N	68° 26' 39.35" W	then 343.28 feet at 179.48° True to
SE	44° 08' 52.43" N	68° 26' 39.34" W	then 194.12 feet at 266.92° True to
SW	44° 08' 52.34" N	68° 26' 42.00" W	then 337.32 feet at 353.27° True to NW.

Table 2: Approximate distances from proposed lease to surrounding features (Figures 1 & 2). Measurements were made using digital orthophotography provided by the Maine Office of GIS (*orthoCoastalDownEastCoast2008*).

Feature	<u>Distance</u>
NE Corner to Swan's Island shoreline, nearest point (~MLW)	~60 feet to the east
NE Corner to nearest observed dock	~255 feet to the northeast
SE Corner to Swan's Island shoreline, nearest point (~MLW)	~70 feet to the southeast
SW Corner to the "Stake" obstruction (NOAA Chart)	≥20 feet to the west
SW Corner to the nearest observed mooring	~165 feet to the southwest
NW-SW Boundary to the nearest observed mooring	~120 feet to the west
NW Corner to the nearest observed lobster buoy	~130 feet to the northwest
Western Boundary to western shore of Burnt Coat Harbor, nearest point (MLW)	~730 feet to west

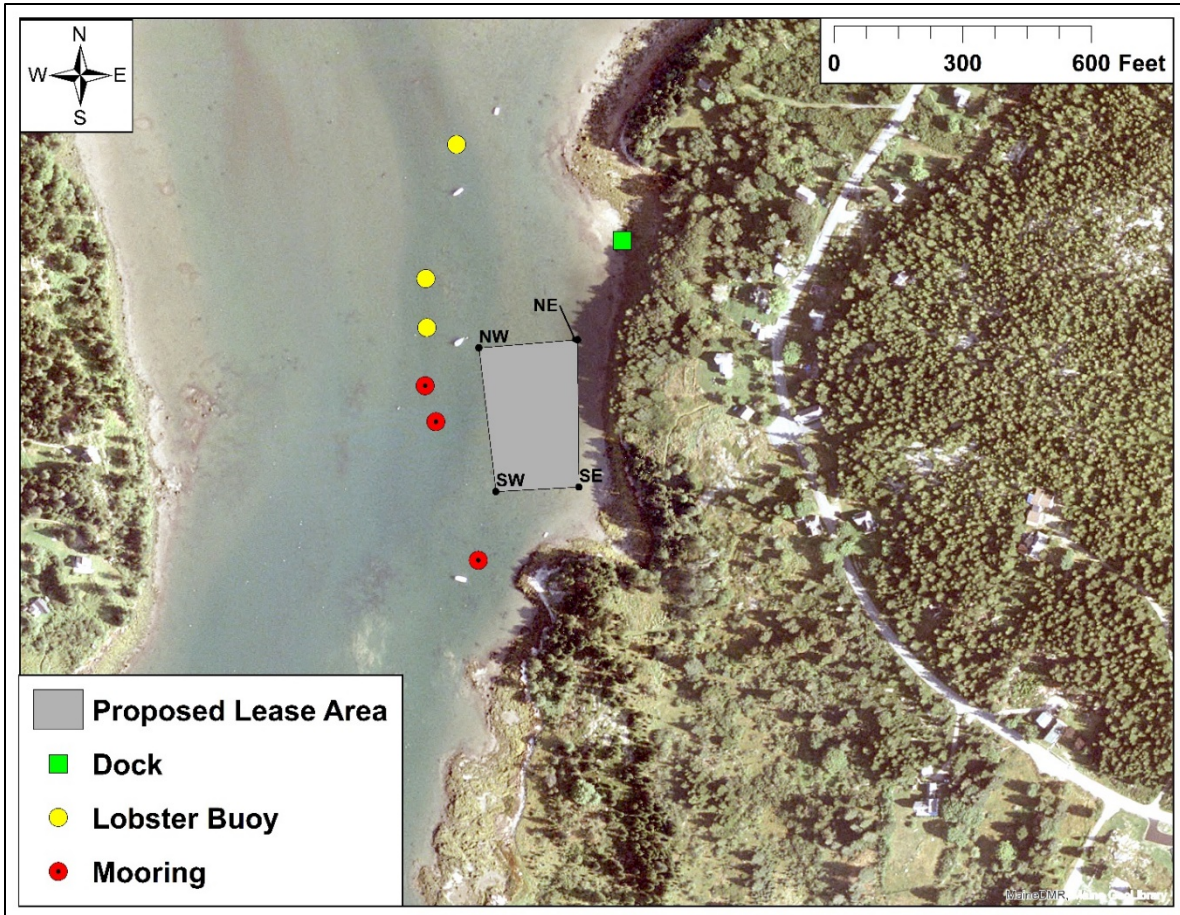


Figure 2: Proposed lease area and nearest docks, moorings and lobster buoys observed by MDMR staff on June 24, 2021.

The criteria MDMR uses to determine the suitability of an experimental aquaculture operation to a particular area (MDMR Regulations Chapter 2.64(7)(A)) are discussed, with respect to the proposal, below:

(1) Riparian Owners Ingress and Egress

The proposed lease is located near the eastern shore of upper Burnt Coat Harbor, Swan’s Island (Figure 1). The shoreline exhibits moderate residential development, with the nearest dock observed approximately 255 feet to the northeast of the proposal, near what appeared to be a boat house (Image 9). A residential building was observed on the shoreline to the north of the nearest dock, and approximately 2 additional structures were observed farther from the shoreline on higher elevation uplands to the east of the proposal, one of which appears to be marked as “Minturn Tower” on NOAA Nautical Charts. Additional residential buildings were noted along the shoreline of the cove to the north of the proposal, and along the western shore of Burnt Coat Harbor. Three moorings were observed near the western and southern boundaries of the proposal during MDMR’s site assessment on June 24, 2021, the nearest of which was 120 feet to the west. One inflatable raft and multiple hauled-out floats were observed on the shoreline to the south of the proposal near a stone wharf, an area that appears to be referred to as Adams Point by locals (Figure 3).



Image 9: Nearest dock to the proposed lease area and associated boat house (June 24, 2021).

During the comment period for this proposal, several comments were received from riparian landowners regarding their use of the proposed lease area to access their shorelines. Concerns that the proposed operations would interfere with transit to moorings from shore, transport of floats for winter storage, and moored boat swing, all of which were stated to occur within the proposed lease boundaries, were detailed in the comments received. One comment was received from an individual who was included in the Riparian Landowner List in the application,⁷ but does not meet the definition of a Riparian Landowner per MDMR Regulations 2.05(1)(C). Therefore, the substance of this comment is addressed in Section 2: Navigation.

⁷ Application, page 16 (Map 7, Lot 8)

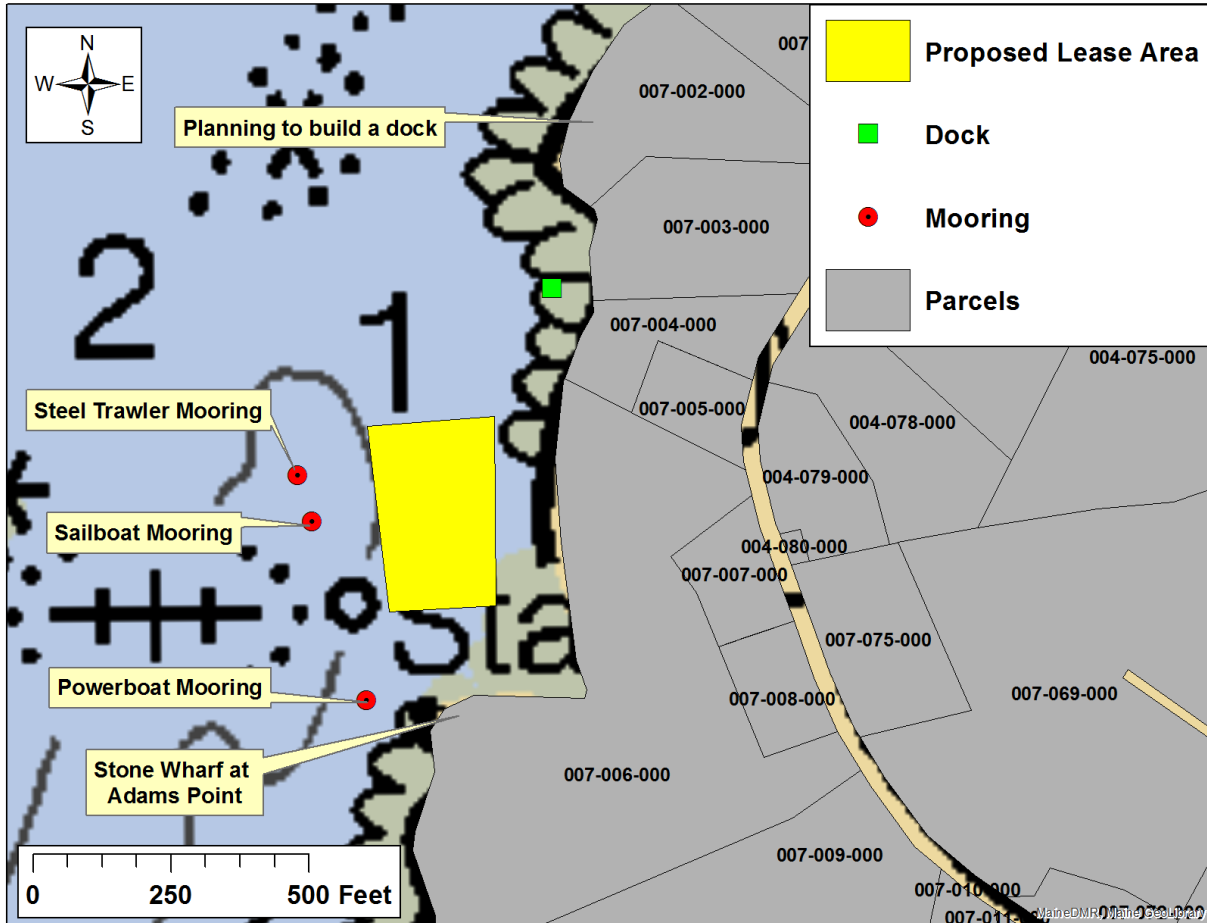


Figure 3: Presumed riparian access points and parcels/lots.

Lots 3 and 4⁸

The riparian owner of Lots 3 and 4 on Map 7 own the observed dock (Image 9) and one of the observed moorings to the west of the proposal (Figure 3). Their comment⁹ also indicates that they use the stone wharf at Adams Point (Figure 3). According to their comment, the mooring is used for a liveaboard 54’ steel trawler from late May to early October, which they access daily by means of a 12’ aluminum skiff from either their dock or Adams Point. The most direct route from either the riparian’s dock or Adams Point marginally overlaps with the proposed lease area but changing course slightly to avoid the proposed aquaculture gear appears possible.

According to NOAA Nautical Charts, the trawler is moored in approximately 11 feet water at mean low water. The riparians indicate the mooring tackle consists of 3’ of chain and 40’ of mooring line, and the total swing when the skiff is tethered to the trawler with an 8’ painter is 144’. MDMR calculations, based on the measurements provided in the comment, indicate the total swing would be approximately 115’ at mean low water, which includes the mooring chain but does not account for pendant length since this information was not provided in the comment. It is unclear which

⁸ Tax map shown in the application, page 19

⁹ Email from J. and G. Crowley dated 6/23/2021

mooring depicted in Figures 2 and 3 is used for the steel trawler, but information in the comments suggest it is likely the most northern of the three moorings observed during MDMR's site assessment, which was approximately 135 feet to the west of the proposal. It is unknown what effect the local tide and weather conditions may have had on the precise location of the mooring ball at the time of MDMR's site assessment when GPS coordinates were collected (the swing of the mooring ball alone is calculated to be approximately 42 feet). Furthermore, the accuracy of GPS coordinates collected is typically 20 feet or less, but can be as high as 33 feet.¹⁰ Therefore, it appears to be possible that the steel trawler would swing into the bounds of proposed lease area, if it were to be granted.

In their comment, the owner of Lots 3 and 4 state that the trawler accesses their dock every 2-3 weeks, which requires taking a deep-water route through the proposed lease area. While the exact location of a deep-water route cannot be confirmed by MDMR from NOAA Nautical Charts or aerial imagery, MDMR staff did observe numerous rocks and potential natural navigational hazards on the approach to this dock during the site assessment on June 24, 2021. If a specific deep-water route to the dock does intersect with the proposed lease area, the use of this mooring, vessel, and dock could be impacted by the proposed operations. The trawler was not observed at the time of the site assessment.

Finally, the comment indicates that the riparian owners' floats are stored at Adams Point during the winter months, and the most direct route from the pier to the storage location transits through the proposed lease. Floats were observed stored on Adams Point during MDMR's site visit. While it may be possible for the individuals installing/hauling out the float to avoid the proposed lease area by altering their traditional course, this could add time and/or expense to the process of float haul-out and installation each year. The applicants propose to sink gear to the bottom during winter months, which may allow for transport of the floats over the bottom gear at higher tidal stages, but the application does not specify exact months that gear will be sunken.¹¹ Additionally, the applicants are requesting exclusive use of the proposed lease area, which, if granted, may prevent this type of activity within the lease footprint.¹² It should be noted that the applicants currently maintain 4 Limited Purpose Aquaculture (LPA) licenses within the proposed lease boundaries. It is unknown to what extent these LPAs do or do not currently affect winter storage of floats, but the proposal would encompass a larger footprint than the existing LPAs.

Lot 2¹³

A comment was also received regarding riparian access to Lot 2 on Map 7.¹⁴ This comment indicates that, although there is currently no infrastructure on this lot for shore access, the riparian landowners have plans to construct a dock (Figure 3).¹⁵ The distance from the proposed NE corner to the nearest point of Lot 2 is approximately 415 feet to the northeast. Considering this distance, and assuming a direct route of travel to the deeper-water channel to the west of the proposal, it is

¹⁰ On-water experience and Garmin GPSMAP 78SC Owner's Manual: https://static.garmin.com/pumac/GPSMAP_78_OM_EN.pdf

¹¹ Application, page 5

¹² Application, page 8

¹³ Tax Map shown in application, page 19

¹⁴ The individual who submitted the comment is not the name listed as the parcel owner on the Riparian Landowner List in the application (page 15), which was certified by the town clerk on 3/19/2021.

¹⁵ Email from K. McNamara dated 6/26/2021

unlikely the presence of surface gear on the proposed lease area would interfere with construction or use of any future docks associated with this lot.

Lot 6

Lot 6 on Map 7 includes the point of land referred to by locals as Adams Point, southeast of the proposal. According to the comment submitted by the owner of this parcel, they appear to own two moorings that are used regularly from early July through late September: the mooring ~165 feet to the south of the proposed lease area anchors a powerboat, and the mooring ~120 feet to the west of the proposal anchors a sailboat.¹⁶ Both moorings were observed to be present but empty during MDMR's site assessment on June 24, 2021 (Figure 3). The comment does not specify the length of either vessel on these moorings. However, due to the proximity of the northernmost of these two moorings to the western boundary of the proposal, and the type of vessel moored there, it is possible that the proximity to the proposed aquaculture gear would hinder access to this mooring. Impacts to the use of this mooring are likely to be exaggerated during inclement weather conditions and/or if the vessel is under sail. Anchoring a powerboat at the mooring to the south of the proposal is unlikely to be impacted by the proposed aquaculture gear, as it is closer to the rocky shoreline to the east than it is to the proposal. The launching of rowboats and kayaks from the shoreline of this parcel is unlikely to be impeded by the proposed operation.

(2) Navigation

The proposed lease is located in shallow waters to the east of the end of a deep-water channel in upper Burnt Coat Harbor. It is therefore unlikely that heavy navigation use of the proposed area occurs, beyond riparian landowners (See Section 1: Riparian Ingress and Egress) and recreational mariners. South and southwest of the proposal is a busy harbor with a mooring field, lobster buying station(s), docks/piers, and both commercial and recreational vessel traffic (Image 10). The proposed lease, if it were to be granted, is unlikely to interfere with traditional vessel flow in greater Burnt Coat Harbor.

However, multiple comments submitted to MDMR during the comment period for this proposal indicate that the requested lease area is regularly used by pleasure craft and recreational mariners due to the calm and protector nature of this part of the harbor.¹⁷ During MDMR's site assessment on June 24, 2021, two kayakers were observed paddling in a northerly direction near the western boundary of the proposal. The applicants are requesting exclusive use of the area, which may prevent recreational boating within the lease footprint, if it were granted.¹⁸

In particular, one comment indicated that they transit through the proposed lease area from Adams Point to access their mooring in the harbor.¹⁹ The precise location of their mooring is not specified in the comment, but access to and from Adams Point is unlikely to be severely hindered if the proposed lease, which is ~185 feet to the north at the nearest point, were granted (Figure 3). Most navigation to Adams Point is expected to occur in an E-W direction to access the deep-water channel to the west, or to and from points south, thereby avoiding the need to

¹⁶ Email from T. Adams dated 6/24/2021

¹⁷ Emails from J. and G. Crowley (6/23/2021), K. McNamara (6/26/2021), A. Conte (6/26/2021), and T. Adams (6/24/2021)

¹⁸ Application, page 8

¹⁹ Email from A. Conte (6/26/2021)

transit through the proposal, which is located to the north. An exception to this is the transport of floats for winter storage from the dock to the north to Adams Point, which is addressed in Section 1: Riparian Ingress and Egress.



Image 10: Shoreline development and mooring field southwest of the proposal (June 24, 2021).

(3) Fishing and Water-Related Uses

At the time of MDMR’s site assessment on June 24, 2021, moderate lobstering activity was observed to the northwest of the proposal. The lobster buoys observed nearest the proposal are included in Figure 2. As the lobster fishery in Maine follows the annual migration and molt cycle of lobsters (*Homarus americanus*), fishing effort could be more prevalent in the area or in closer proximity to the proposal during the late summer and/or fall. Although some signs of clams (castings and holes in the sediment) were observed in the deeper/western half of the proposal during the underwater assessment conducted on June 24, 2021, an MDMR Area Biologist submitted a comment for this proposal on November 30, 2021 stating that the proposal is located “not in a good clamming location.”²⁰

Multiple comments received by MDMR during the comment period for this proposal indicate that the general vicinity of the proposal experiences other water-related uses (for recreational boating,

²⁰ Email from D. Nault dated 11/30/2021

see Section 2: Navigation). These uses include waterskiing, wakeboarding, tubing, and swimming. Some of these activities, such as swimming, are unlikely to be prevented by the proposed lease, if it were granted. While activities such as waterskiing and tubing that may be occurring within the proposed lease area could likely shift to the west and not be entirely hindered, the presence of the proposal may displace some amount of existing uses in this part of the harbor.

(4) Other Aquaculture Uses

There are 16 Limited Purpose Aquaculture (LPA) licenses and one lease within one mile of the proposal (Figure 4). Four LPA licenses are held by the applicants and are located within the proposed lease boundaries.²¹ According to the application, these would be relinquished if the lease is granted.²² The nearest aquaculture site not held by an applicant is approximately 1,850 feet to the north of the proposal and is approved for the suspended culture of shellfish.

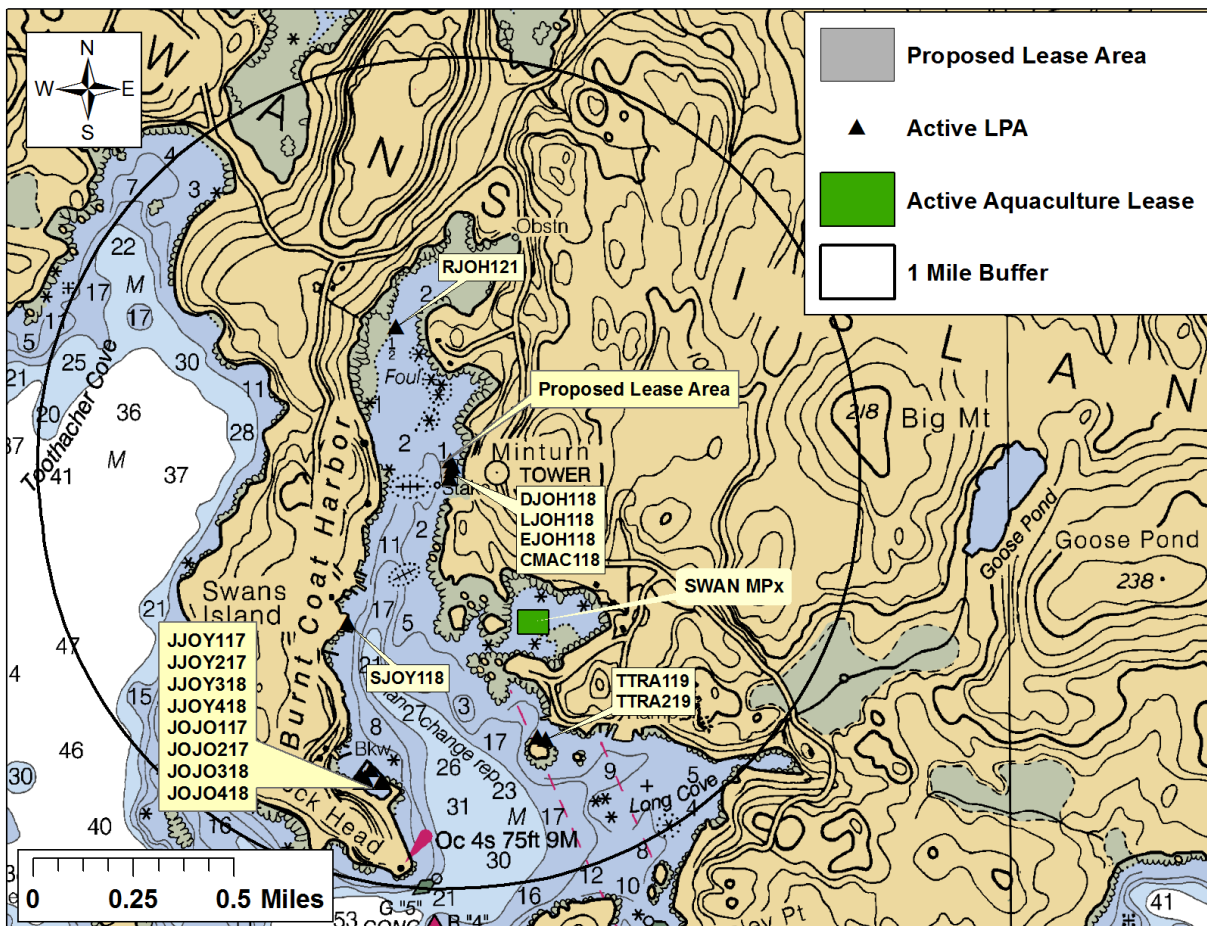


Figure 4: Aquaculture activity near the proposed lease area.

²¹ LPA licenses: CMAC118, DJOH118, EJOH118, and LJOH118

²² Application, page 8

(5) Existing System Support

Wildlife

According to GIS (Geographic Information System) data maintained by the Maine Department of Inland Fisheries and Wildlife (MDIF&W) and available through the Maine Office of GIS, the proposal is located entirely in Tidal Waterfowl and Wading Bird Habitat (Figure 5). This habitat type is defined under Maine's Natural Resources Protection Act (NRPA) as Significant Wildlife Habitat. Several bird species were observed during MDMR's site assessment conducted on June 24, 2021, including double-crested cormorants (*Phalacrocorax auritus*), various gulls (*Larus sp.*) and crows (*Corvus sp.*).

A comment submitted by an MDIF&W Wildlife Biologist on June 7, 2021 states:

“We . . . recommend that barges or boats not be allowed to ground out on reefs, aquatic beds, or mudflats. We recommend minimizing the float size and project footprint to the extent practicable to minimize impacts to waterfowl and wading bird populations.”

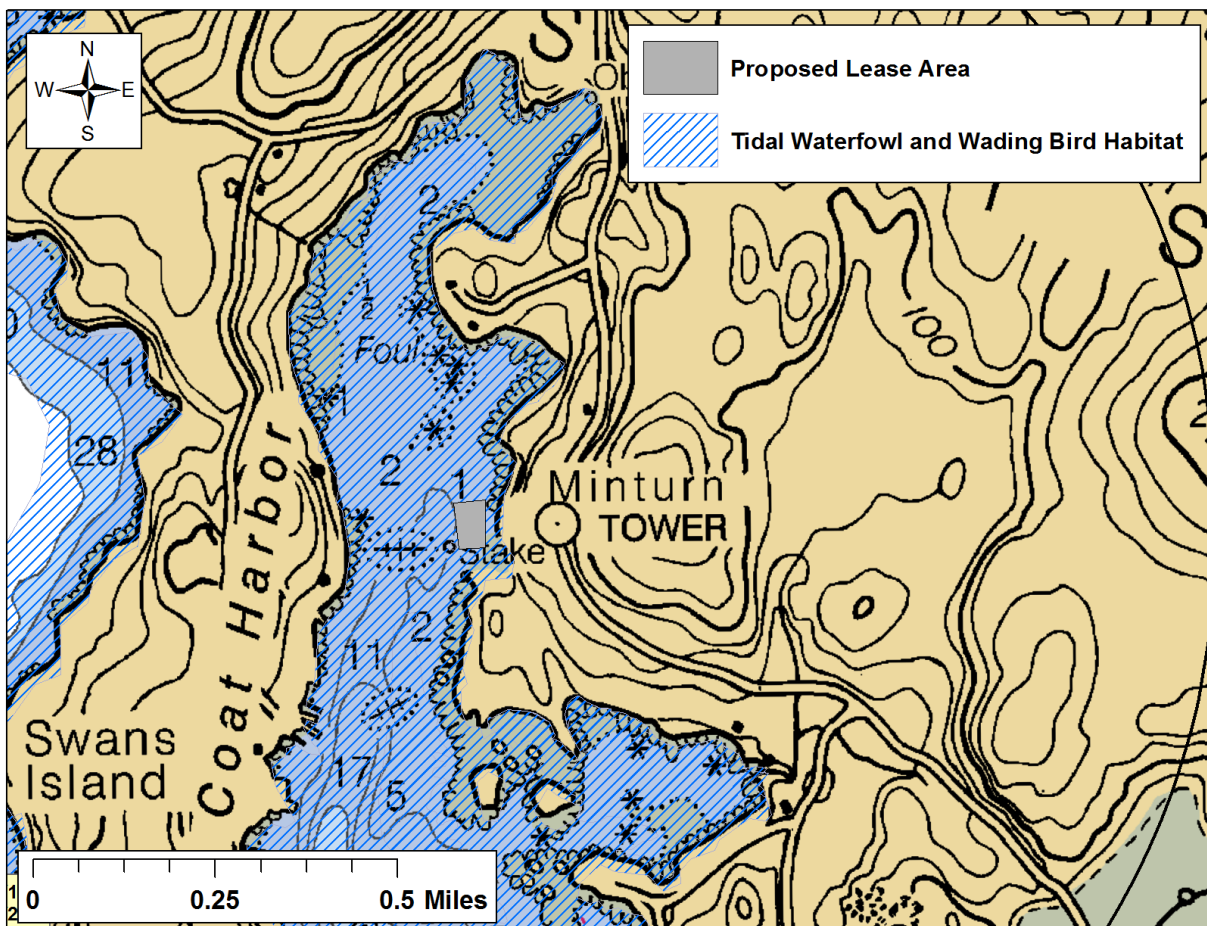


Figure 5: Tidal Wading Bird and Waterfowl Habitat²³ in the vicinity of the proposed lease site.

²³ Data obtained from MDIWF maintained SDE Feature Class "GISVIEW.MEIFW.Twwh"

Eelgrass

Historical eelgrass (*Zostera marina*) data collected by MDMR indicate that, in 2008, the closest observed eelgrass bed was located approximately 280 feet to the southwest of the proposal (Figure 6). No eelgrass was observed during the underwater video transect conducted on June 24, 2021.

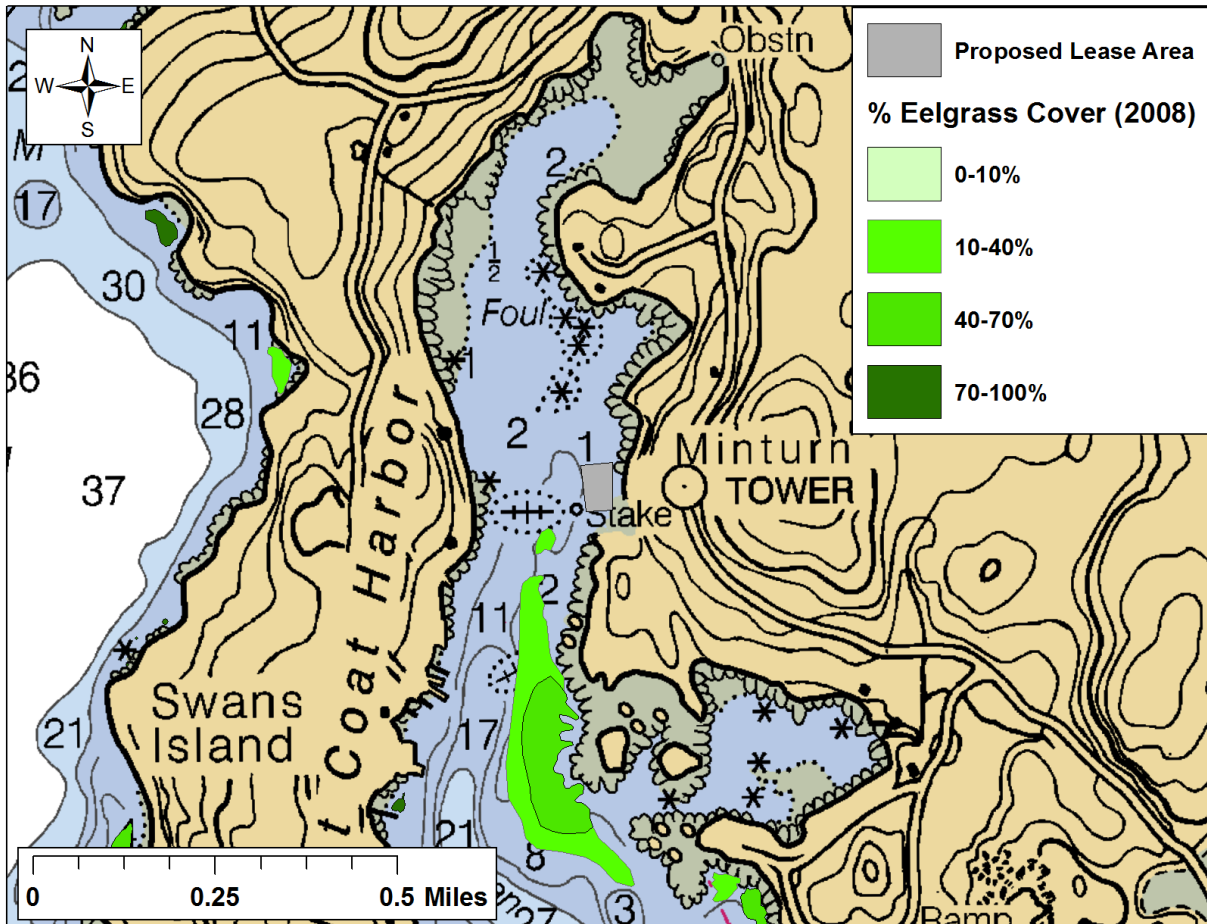


Figure 6: Historical eelgrass (*Z. marina*) in vicinity of proposed lease.²⁴

Epibenthic Flora and Fauna

On June 24, 2021, MDMR conducted a drop-camera transect through the proposed lease area to assess the epibenthic ecology (Figure 7). The most abundant species observed was mud shrimp (*Crangon sp.*). Clam siphons/holes and deposits were observed near the deeper western boundary of the proposal, and burrows in the mud were observed throughout the proposal.

²⁴ Data obtained from Maine Office of GIS (Eelgrass2010).

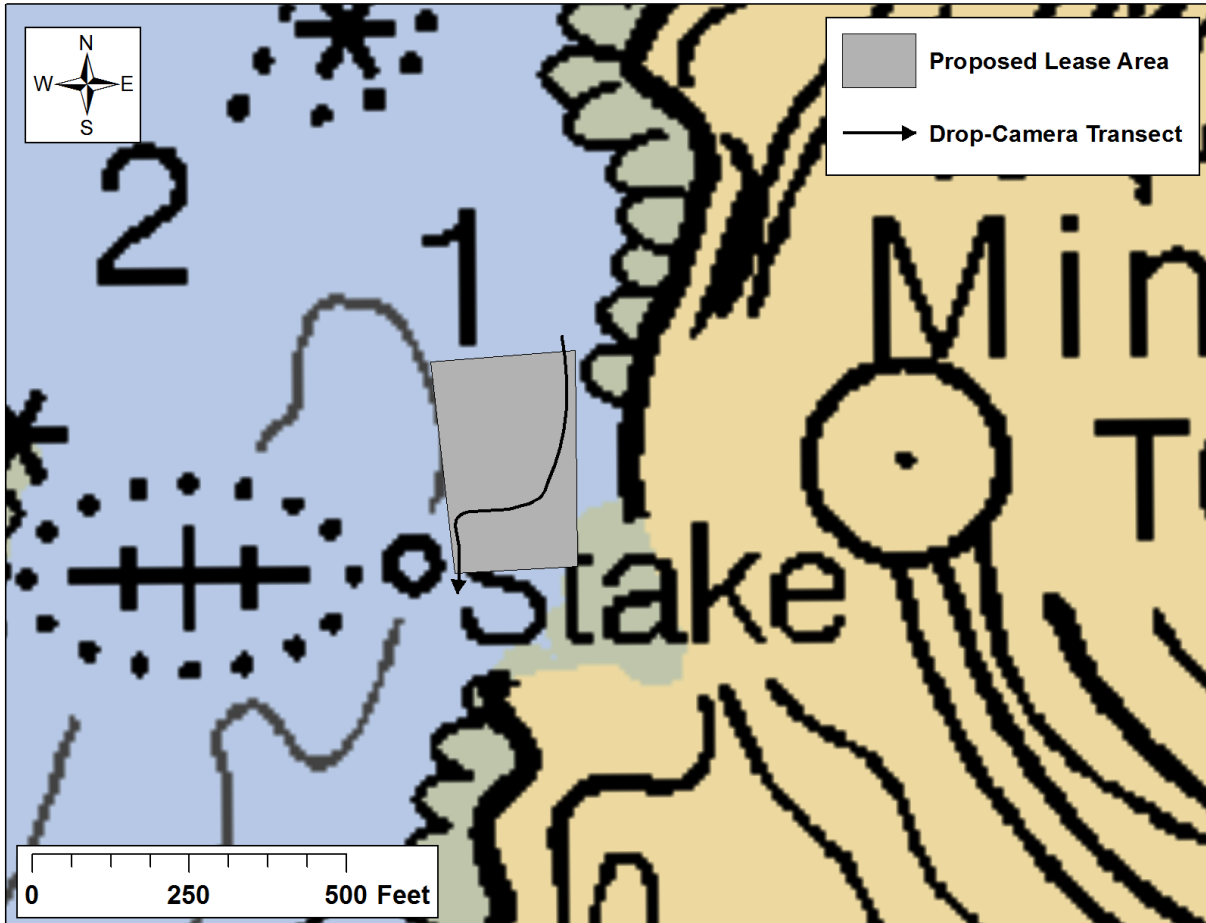


Figure 7: Drop-camera transect conducted on June 24, 2021.

(6) Source of Organisms to be Cultured

The applicants list Muscongus Bay Aquaculture in Bremen, Maine, as the proposed source of American/eastern oysters. This source is approved by MDMR.

(7) Interference with Public Facilities

There are no beaches, parks, or docking facilities owned by federal, state, or municipal government within 1,000 feet of the proposed lease site.