

Figure 1: Vicinity map¹

Location: East of Dogs Head, Harpswell Sound, Harpswell, Lincoln County, Maine

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

Site Review by: Flora Drury and Cheyenne Adams

Report Preparation by: Flora Drury, Cheyenne Adams, and Marcy Nelson

Report Completed: August 30, 2021

¹All figures in this report were created in ArcMap version 10.6 using digitized NOAA Nautical Charts or geo-referenced aerial photographs provided by The Maine Office of GIS (*orthoCoastalCascoBay2018*).

Application Overview

The applicant is requesting 0.48 acres in Harpswell Sound for the suspended culture of American/eastern oysters (*C. virginica*). The applicant is proposing to culture oysters using floating ADPI plastic mesh bags (25" x 34" x 3.5").² Bags would be deployed along (4) 592 foot long strings.³ The applicant proposes to deploy up 197 ADPI bags per string, resulting in a total of 788 ADPI bags onsite at maximum capacity.⁴ Each string would be held in place using (7) 50 pound mushroom anchors. Pending the arrival of ice, ADPI bags and longlines would be submerged 3 feet below the surface of the water by hanging cinder blocks from each horizontal line.⁵ According to the application, the site would be accessed via skiff or lobster boat. Sorting and grading is proposed to be conducted by hand, with the use of the lobster boat's raw water hose.⁶

General Characteristics

On June 10, 2021, Maine Department of Marine Resources (MDMR) staff Flora Drury and Cheyenne Adams visited the proposed experimental aquaculture lease. MDMR staff arrived in the vicinity at approximately 12:00 pm; the tide was flooding.

The proposed lease occupies subtidal waters east of Dogs Head and west of a narrow peninsula near Lumbos Hole in Harpswell Sound, in the Town of Harpswell (Figure 1, Images 1-6). The adjacent shorelines are composed of ledge. The peninsula's uplands to the east host a mixed forest; houses are located to the northeast of the proposal. A mixed forest and residential structures were also observed on Dogs Head Island, to the west of the proposal.

² Application, page 13

³ Application, page 26

⁴ Application, page 26

⁵ Application, pages 8, 26 and 27

⁶ Application, page 6



Image 1: Facing east toward the eastern shoreline of Harpswell Sound from near the northern boundary (Boundary A-B) of the proposed lease site. Limited Purpose Aquaculture (LPA) license gear is shown in the foreground (June 10, 2021).



Image 2: Facing north from near the northern boundary (Boundary A-B) of the proposed lease site (June 10, 2021).



Image 3: Facing northwest toward Harpswell Sound from near the northern boundary (Boundary A-B) of the proposed lease site (June 10, 2021).



Image 4: Facing west toward the western shoreline of Harpswell Sound from near the northern boundary (Boundary A-B) of the proposed lease site (June 10, 2021).



Image 5: Facing southwest toward Dogs Head Island from near the northern boundary (Boundary A-B) of the proposed lease site (June 10, 2021).



Image 6: Facing south toward Long Cove from near the northern boundary (Boundary A-B) of the proposed lease site. LPA license gear is shown in the foreground (June 10, 2021).

Depth

MDMR staff measured depths at the corners of the proposed site at approximately 12:00 pm on June 10, 2021 using a transom-mounted depth sounder. The tide was high at 12:18 pm on this date (Table 1). At the time of MDMR's site assessment, corners of the proposed lease site ranged in depth from approximately 18.2 to 23.4 feet, increasing in depth from east to west. Correcting for tidal variation derives water depths approximately 8.32 feet lower (9.88 to 15.08 feet) at mean low water (MLW, 0.0 feet).

Table 1. Tide predictions at South Harpswell, Potts Harbor, Casco Bay, Maine (43.7383° N, 70.0233° W).⁷

Date	Time	Height (ft)
06/10/2021	6:05 AM	0.34 L
06/10/2021	12:18 PM	8.32 H
06/10/2021	6:02 PM	1.50 L

Bottom Characteristics

MDMR staff observed the bottom characteristics of the proposed lease site via drop-camera transect on June 10, 2021 (Figure 2). Bottom characteristics were categorized using the Coastal and Marine Ecological Classification Standard (CMECS), a national standard for describing features of the marine environment (Table 2). Sediment information was determined based on visual analysis of the video; no sediment samples were taken, or grain size analysis performed. The observed bottom of the proposed lease site is primarily composed of what appeared to be semi-firm mud (Image 7 & Figure 2).



Image 7: Mud bottom of proposed lease site (June 10, 2021).

⁷ <http://tbone.biol.sc.edu/tide/tideshow.cgi>

Water Quality

The proposed lease site is in an area currently classified as open/approved for the harvest of shellfish. However, the proposed lease is located in a high-risk biotoxin area. If approved, harvest from the lease during certain times of the year would require biotoxin testing approved by MDMR’s Bureau of Public Health via a memorandum of understanding (MOU).

Position and Distances to Shore

The coordinate geometry (COGO) report and measuring tools 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.

Coordinates (WGS84) – 0.48 acres (Figure 2)

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>	
A	43.797969° N	69.948240° W	then 35.01 feet at 102.06° True to
B	43.797950° N	69.948110° W	then 600.13 feet at 195.07° True to
C	43.796355° N	69.948676° W	then 35.07 feet at 282.65° True to
D	43.796375° N	69.948806° W	then 599.77 feet at 15.08° True to A.

Table 2: Approximate distances from the proposed lease to surrounding features (Figures 1 & 2). Measurements were made using digital orthophotography provided by the Maine office of GIS (*orthoCoastalCascoBay2018*) and NOAA Nautical Charts.

Feature	Distance
Corner A to nearest ledge (~MLW, orthoimagery)	~180 feet to the northwest
Corner B to nearest point, mainland shoreline (~MLW, orthoimagery)	~100 feet to the east
Corner B to dock to the north of the proposal	~1,220 feet to the northeast
Corner C to nearest point, mainland shoreline (~MLW, orthoimagery)	~80 feet to the east
Boundary B-C to nearest point, mainland shoreline (~MLW, orthoimagery)	~45 feet to the east
Corner D to nearest point, ledges to the east of Dogs Head (~MLW, orthoimagery)	~340 feet to the west

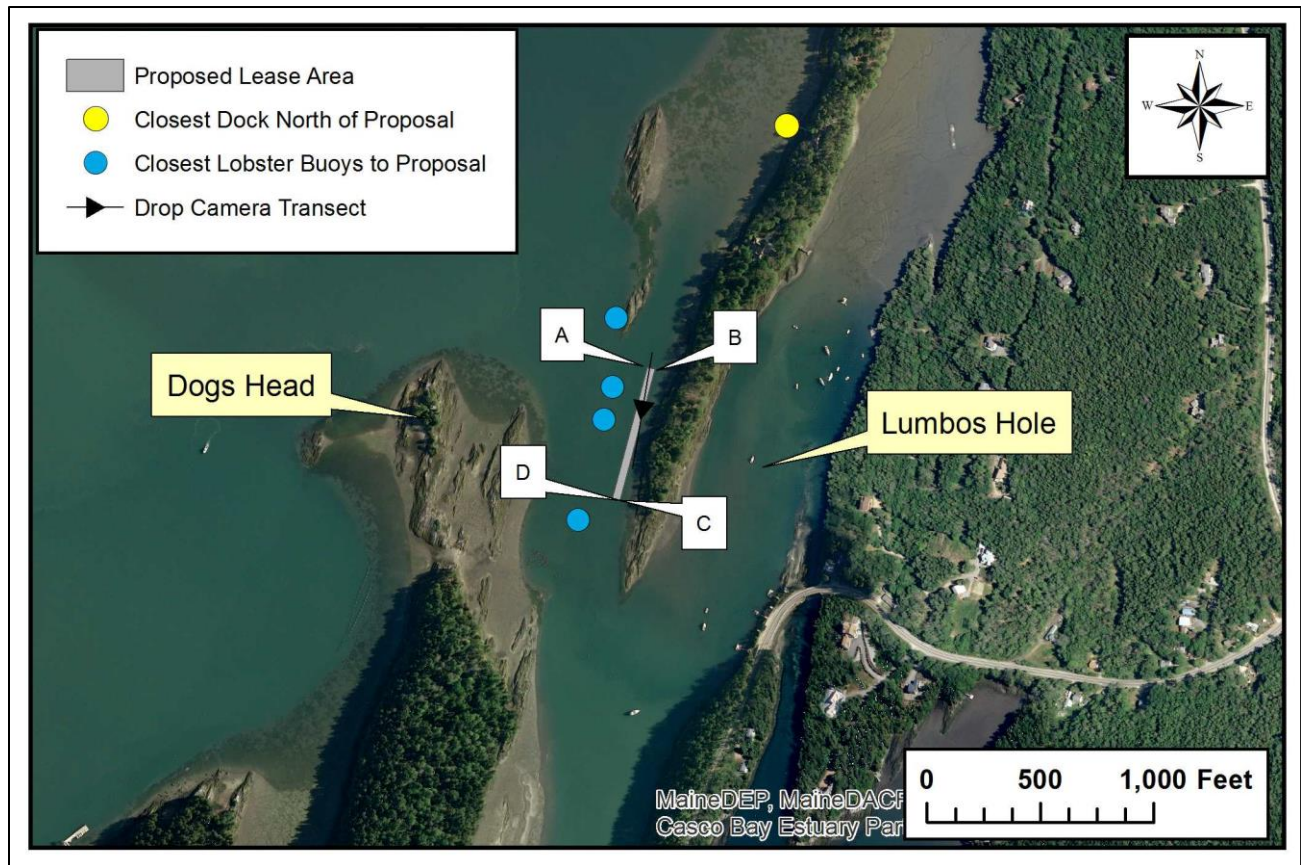


Figure 2: Proposed lease area, drop camera transect, and closest observed docks and lobster buoys to the proposed lease site on June 10, 2021.

The criteria MDMR uses to determine the suitability of an experimental aquaculture operation to a particular area (MDMR Regulations Chapter 2.64(11)(A)) are discussed, with respect to the proposal, below:

(1) Riparian Owners Ingress and Egress

The proposed lease is located east of Dogs Head, and parallel to a peninsula that runs down the eastern side of Harpswell Sound (Figure 1). At the closest point, the proposed lease is located approximately 45 feet from the aforementioned peninsula at mean low water. This distance would likely preclude larger vessels from navigating between the proposal and the shoreline, if granted. Although no docks were observed immediately adjacent to the proposal, docks were located along this peninsula to the north of the proposal. The closest of these docks was observed 1,220 feet to the north/northeast (Figure 2). A motorized vessel, along with a hand-powered vessel, were observed attached to this dock (Image 8). Given the shallow nature of the water to the north and west of this dock, it likely accessed from the south, especially at low water. The other docks located north of the proposal are surrounded in all directions by very shallow water (Figure 3). It is unclear from which direction these docks are primarily accessed. If all docks along this peninsula are accessed primarily from the south, some of the area in which vessels likely navigate to access these shorefront parcels would be occupied, as the proposal is located approximately 180 feet from a ledge that acts as a natural barrier to navigation in the area. If the size of the proposal was reduced by shifting the northern boundary approximately 100 feet to the south, approximately 250 feet

would remain available for navigation to shorefront access points. This distance would be similar to what is naturally available for navigation between the peninsula and the ledge to the west.

Docking facilities are also located elsewhere nearby the proposal. According to aerial photographs, Dogs Head hosts a single dock on the western side of the island. As the proposal is located east of Dogs Head, the proposed lease would not interfere with use of this access point. Additionally, during MDMR’s site visit on June 10, 2021, moorings and docks were observed on the northern tip of Orr’s Island⁸ and in Lumbos Hole. As the peninsula nearby which the proposal is located separates it from these docks and moorings, the proposed lease is unlikely to directly interfere with their use. However, the proposal’s potential impact on navigation to and from these docks and moorings is discussed in “Section (2) Navigation” of this report.

The Harpswell Harbormaster did not express concerns regarding the potential impact of the proposed activities on riparian ingress and egress.⁹

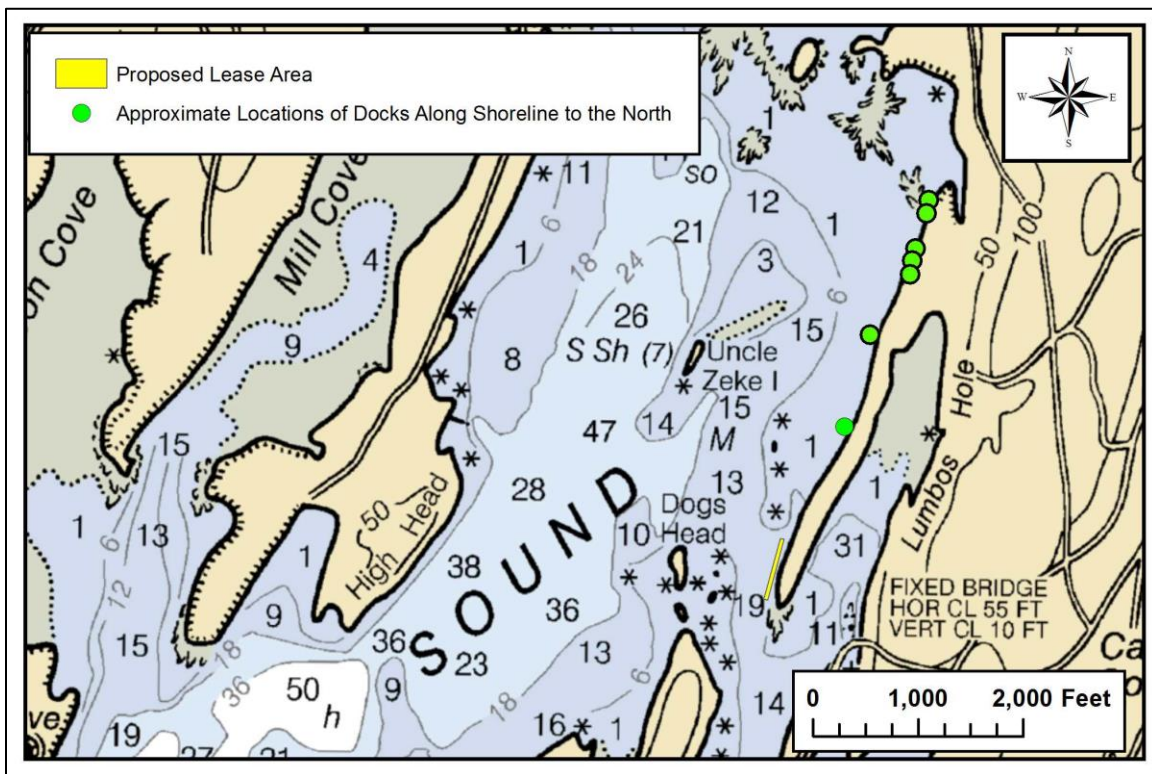


Figure 3: Approximate locations of docks to the north of the proposal.

⁸ According to the Harpswell Harbormaster, the docks on the northern tip of Orr’s Island are leased to individuals by the Town of Harpswell, who owns the parcel on which they are located.

⁹ Harbormaster Questionnaire. March 29, 2021.



Image 8: Closest dock located to the north of the proposal (June 10, 2021).

(2) Navigation

The majority of Harpswell Sound, which is used by both recreational and commercial mariners, is located to the west of the proposal. As the proposed lease area is separated from the main channel in Harpswell Sound by Dogs Head, Uncle Zeke Island, and several other ledges, it is unlikely to interfere with vessel traffic operating north-south in Harpswell Sound. The proposal is located to the east of Dogs Head and to the west of a narrow peninsula that frames part of Harpswell Sound's eastern shoreline. Vessels operating between Harpswell Sound and points to the east, such as Long Cove, Lumbos Hole, and/or Gun Point Cove would travel between the aforementioned peninsula, and Dogs Head. Given that Lumbos Hole and the northern tip of Orrs Island host moorings and docking facilities, Long Cove is a traditional storm anchorage¹⁰, and because there is a narrow channel between Orrs Island and Sebascodegan Island that connects Harpswell Sound to Gun Point Cove (and therefore other points to the east, such as Quahog Bay) the vicinity in which the proposed lease is located likely experiences regular navigational activity, especially in the summer months. The peninsula near which the proposed lease is located, and Dogs Head to the west, are separated by approximately 445 feet, at mean low water. As the proposal is located parallel to the peninsula, approximately 350 would remain for navigation between the lease boundaries and Dogs Head to the west, at mean low water, if the proposal were granted. This distance is likely adequate to accommodate navigational activity in the area. Furthermore, the Harpswell Harbormaster did not express concerns regarding the proposed activities' impact on navigation.¹¹

¹⁰ Harbormaster Questionnaire. March 29, 2021.

¹¹ Harbormaster Questionnaire. March 29, 2021.

It should be noted, however, that during the winter months the applicant proposes to submerge the deployed gear and longlines 3 feet below the surface of the water by hanging cinder blocks from the horizontal line.¹² Suspending longlines at this depth below the surface of the water would pose a risk of entanglement to vessels navigating in the area since they would not be easily seen from the surface. The proposal to hang cinder blocks from this longline could be especially hazardous for vessels with propellers. If the proposal is granted, it will be important that the gear is well-marked when deployed in the overwintering position.

(3) Fishing and Water-Related Uses

At the time of MDMR's site visit on June 10, 2021, approximately four lobster buoys were located nearby the proposal, with additional buoys located nearby the ledge to the north of the proposal, and in the main channel to the west (Figure 2). No buoys were observed within the proposed lease bounds during this visit. MDMR revisited the proposed lease area on August 19, 2021 to reassess lobstering activity. Although moderate lobstering activity was observed west of Dogs Head in Harpswell Sound on this date, no lobster buoys were observed in the immediate vicinity of, or within, the proposed lease area. It is possible that lobster fishing effort increases in the area at different times in the season.

Multiple floats, some of which were observed holding lobster fishing gear and/or punts and dinghies, were observed to the southeast of the proposal on June 10, 2021. According to the Harpswell Harbormaster, these docks are located on municipally-owned land, and are leased to commercial fishermen by the Town of Harpswell. The proposed lease is unlikely to impact the use of these floats, due to the fact that they are located over 700 feet away. However, the proposal's potential impact on navigation to and from these floats is discussed in "Section (2) Navigation" of this report.

No other commercial or recreational fishing was observed within or nearby the proposed lease site. Although not observed during either site visit, it is possible that recreational hook and line fishing occurs in the vicinity of the proposed lease.

(4) Other Aquaculture Uses

At the time of this report, there were 20 Limited Purpose Aquaculture (LPA) licenses and one aquaculture lease within 1 mile of the proposal (Figure 4). The closest aquaculture sites to the proposal are four LPA licenses located within the proposed lease boundaries. Two of these LPA licenses are held by Darcie Couture, the sole owner of Whiskey Stones LLC. The other two LPA licenses are held by Mark Davis¹³, with Darcie Couture listed as an assistant. According to the application, all four LPAs would be terminated if the proposal were to be granted.^{14,15} The closest aquaculture operation to the proposal held by an individual not associated with Whiskey Stones, LLC is standard lease HARP DH, which is located over 1,000 feet to the southwest.

¹² Application, pages 26 & 27

¹³ Mark Davis was notified on 1/28/21 of the lease application submitted by Whiskey Stones, LLC.

¹⁴ Application, page 8

¹⁵ F. Drury attempted to contact Mark Davis to confirm that his LPA licenses would be relinquished if this proposal were to be granted, but he did not return her call by the time this report was published.

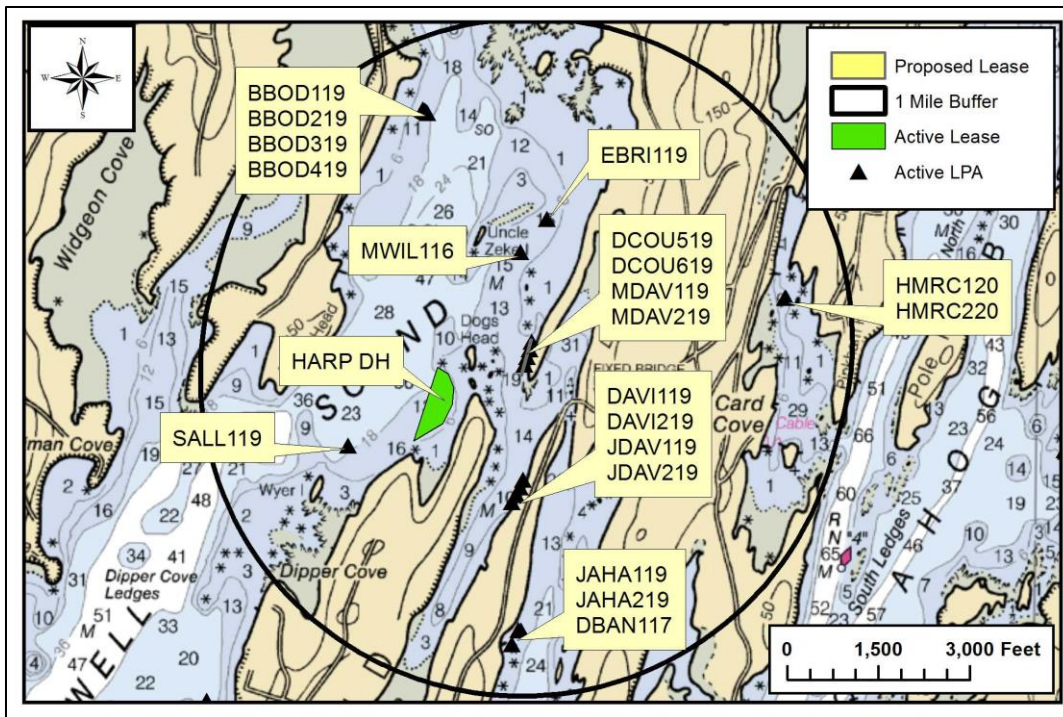


Figure 4: Active leases and Limited Purpose Aquaculture (LPA) licenses near the proposal.

(5) Existing System Support

Wildlife

During the site visit on June 10, 2021, MDMR observed eider ducks (*Somateria mollissima*), great blue herons (*Ardea herodias*), and double crested cormorants (*Phalacrocorax auritus*). Harbor seals (*Phoca vitulina*) were observed hauled out on a ledge located approximately 370 feet to the west of the proposal. This distance complies with the National Marine Fisheries Service (NMFS) viewing guidelines that recommend remaining a minimum of 50 yards (150 feet) from harbor seals.

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 proposed lease is located approximately 350 feet to the east of the nearest Tidal Wading Bird and Waterfowl Habitat, which is defined as Significant Wildlife Habitat by Maine’s Natural Resource Protection Act (Figure 5).

On January 29, 2021 a Wildlife Biologist at MDIF&W responded by email to a “Request for Agency Review and Comment”, stating “minimal impacts to wildlife are anticipated for this project”.

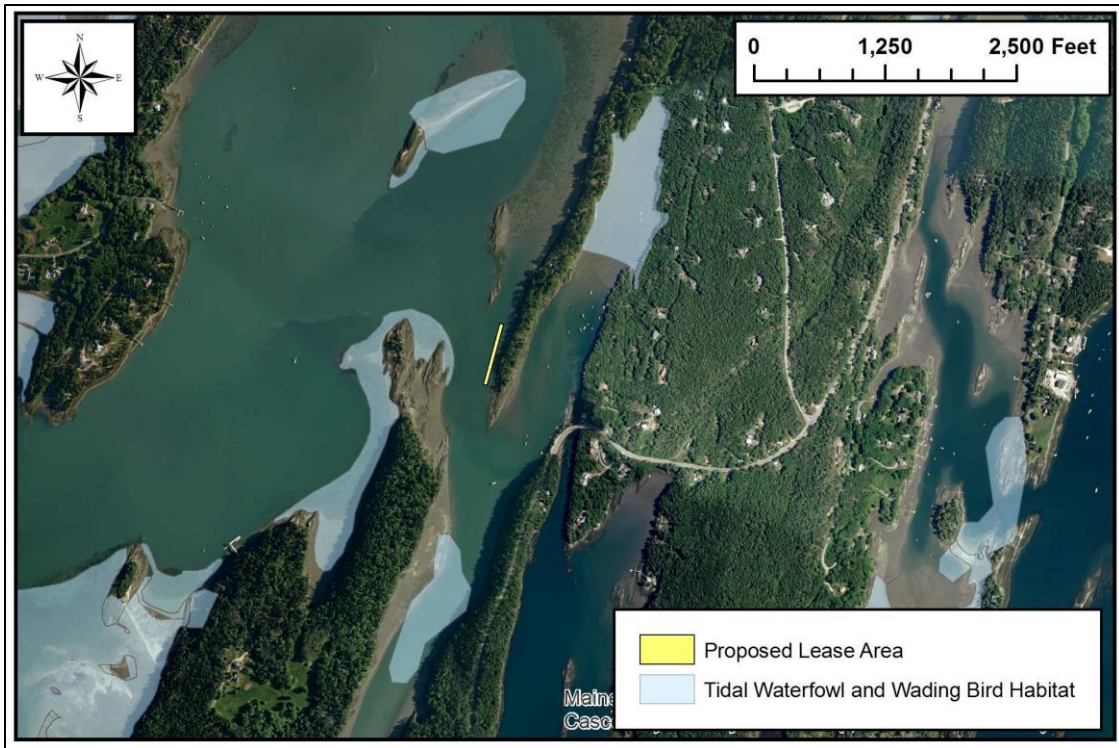


Figure 5: Tidal Wading Bird and Waterfowl Habitat¹⁶ near the proposed lease site.

Eelgrass

Historical eelgrass (*Zostera marina*) data collected in 2018 by The Maine Department of Environmental Protection in cooperation with the Casco Bay Estuary Partnership, indicate that the closest mapped eelgrass beds were located approximately 25 feet to the east of the proposed lease (Figure 6). Additionally, no eelgrass beds were observed during the underwater assessment conducted on June 10, 2021.

¹⁶ Data obtained from MDIWF maintained SDE Feature Class "GISVIEW.MEIFW.Twwh"

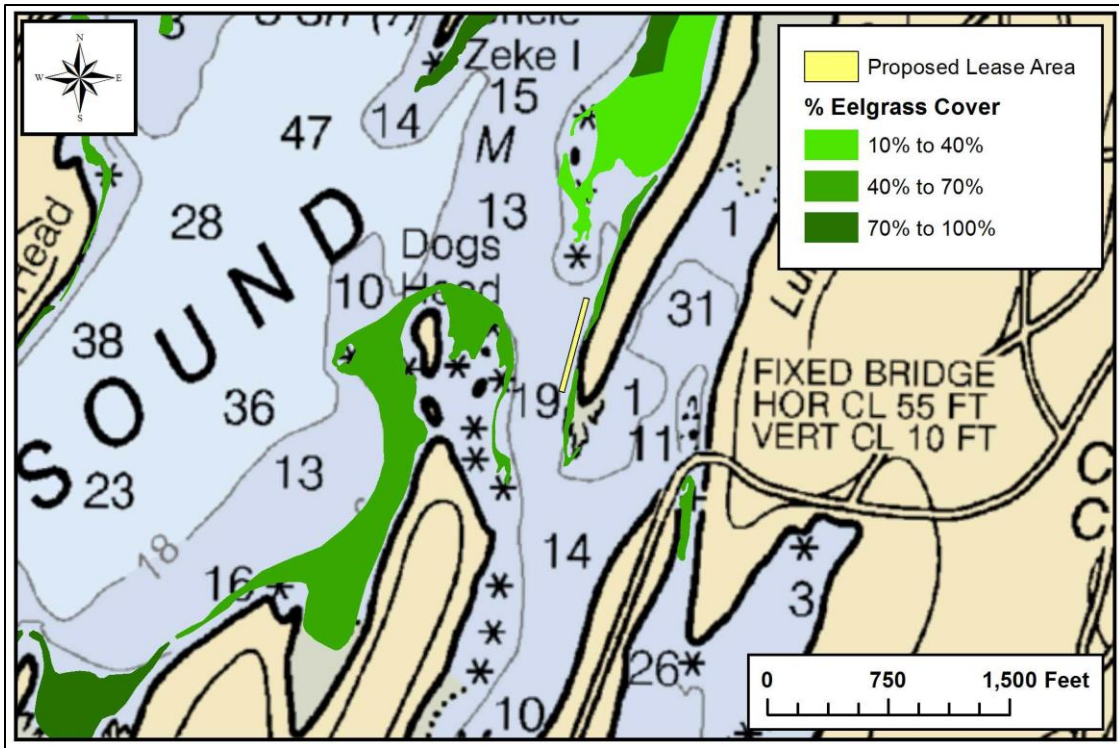


Figure 6: Historical eelgrass (*Z. marina*) in the vicinity of the proposed lease.¹⁷

Epibenthic Flora and Fauna

Benthic diatoms and detached marine algae were the predominant species type observed in MDMR’s underwater video transect of the proposed lease bottom (Image 9).



Image 9: Detached marine algae observed on the bottom of the proposed lease site (June 10, 2021).

¹⁷ Data obtained from MDEP maintained SDE Feature Class “GISVIEW.MDEP.Eelgrass2018”

(6) Source of Organisms to be Cultured

The application states that American/eastern oysters (*Crassostrea virginica*) would be sourced from Muscongus Bay Aquaculture, which is an MDMR approved source.

(7) Interference with Public Facilities

The proposed lease is located approximately 810 feet to the northwest of a municipally owned parcel given the title “Devil’s Back/Morgan’s Cove” (Figure 7). This parcel hosts public access trails, the use of which would not be impacted by the proposal. This parcel also hosts several docking facilities which are leased by the Town of Harpswell to individuals. Due to their distance from the proposal, use of the docks should not be directly impacted by the proposal. The proposal’s potential impact on navigation to and from these docks is discussed in “Section (2) Navigation” of this report.

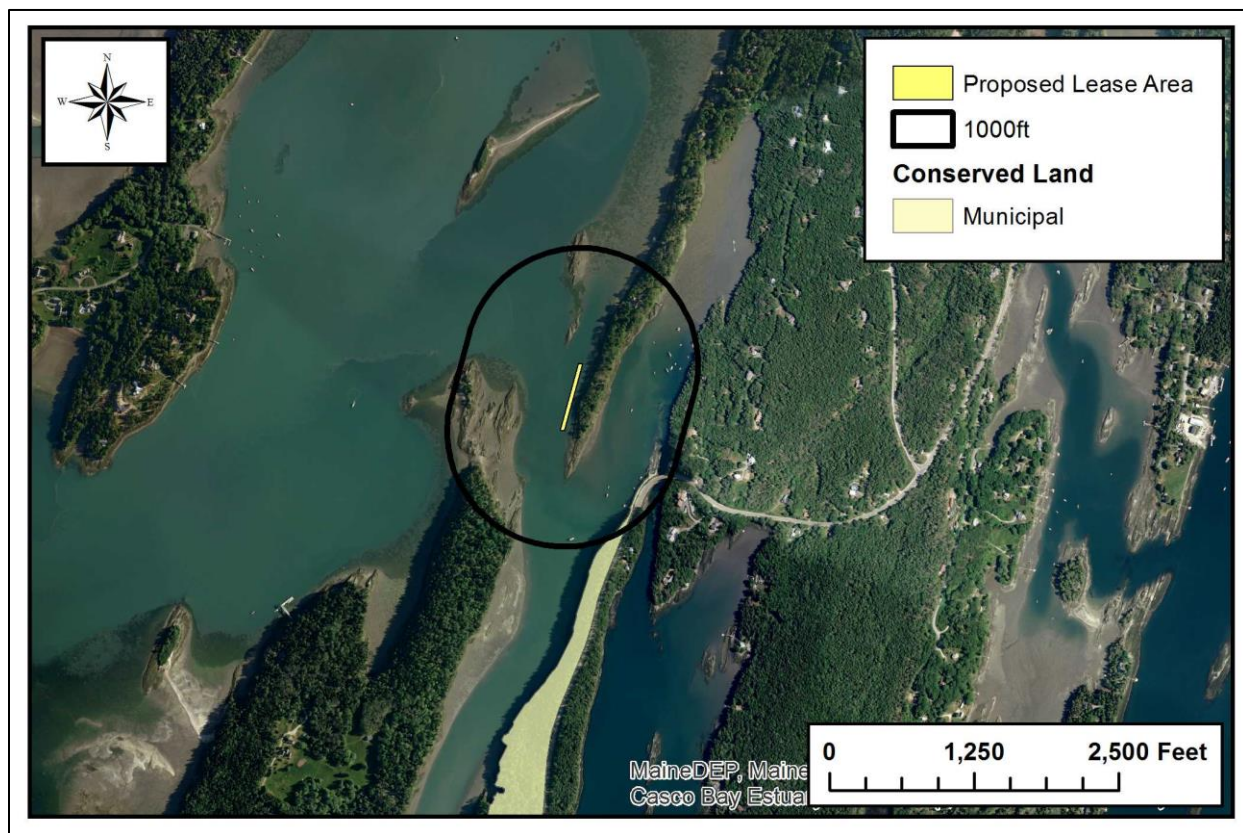


Figure 7: Conserved land and public facilities near the proposed lease site.¹⁸

¹⁸ Data obtained from SDE Feature Class sourced from The Maine Office of GIS “GISVIEW.MECONSLANDS.Conserved_Lands”