

Figure 1. Vicinity map.¹

Location: East of Louds Island, Muscongus Bay, Bristol, Lincoln County, Maine

Purpose: Experimental lease for suspended culture of sugar kelp (*Saccharina latissima*), skinny kelp (*Saccharina angustissima*), winged kelp (*Alaria esculenta*), horsetail kelp (*Laminaria digitata*), shotgun kelp (*Agarum clathratum*), Irish moss (*Chondrus crispus*), dulse (*Palmaria palmata*), and sea lettuce (*Ulva lactuca*).

Site Review: Geoffrey Shook, Katie Von Hohenleiten, and Heidi Bray²

Report Preparation: Geoffrey Shook and Meryl Grady

¹ Unless otherwise noted, all figures in this report were created in ArcGIS Pro version 2.9 using digitized NOAA Nautical Charts or geo-referenced aerial photographs provided by The Maine Office of GIS.

² Dive support



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Application Overview

The applicant, JDL Fisheries LLC, is requesting a 3.98³-acre experimental lease east of Louds Island, in Muscongus Bay, within the town of Bristol for the suspended culture of marine algae. The applicant intends for the site to be active seasonally from October 15 - May 31. Between June 1 – October 14, required lease markers, mooring blocks, mooring lines, and chains will remain on site with lines and chains sunk to the seafloor.⁴

General Characteristics

On September 12, 2024, Maine Department of Marine Resources (MDMR) scientists visited the proposed lease site. MDMR scientists arrived on site at approximately 1:06 PM. The proposal is located in subtidal waters in Muscongus Bay approximately 380.5 feet east of Louds Island at mean low water (MLW) (Figure 1). The area in the vicinity of the proposal was observed to consist of islands containing rock ledge and boulder shorelines with patchy beaches. Uplands were observed to be mixed forests with patchy residential yards.

Depth

On September 12, 2024, MDMR scientists began collecting depths at the proposed site at approximately 1:09 PM. The tide was flooding with the next high tide predicted at 6:14 PM (Table 1). Depths were determined to be between 30.5-44.1 feet. Correcting for tidal variations derives depths at mean low water (MLW, 0.0 feet) to be between 27.9-41.5 feet.

Table 1. Predicted tidal heights in Muscongus Harbor, Maine.⁵

Date	Time	Height (ft)
2024/09/12	6:02 AM	7.5 H
2024/09/12	11:59 AM	2.0 L
2024/09/12	6:14 PM	8.9 H
2024/09/12	NA	NA

Bottom Characteristics

MDMR scientists observed the bottom characteristics of the proposed lease site via SCUBA. 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. The bottom of the proposed lease site is primarily composed of mud with a sheet algal bed overlay.

³ Applicant originally requested 4.0 acres. MDMR calculations indicate that the area is 3.98 acres.

⁴ Application pages 5,11

⁵ <https://www.usharbors.com/harbor/maine/muscongus-harbor-me/tides/?tide=2024-09#monthly-tide-chart>



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Table 2. Bottom characteristics of the proposed site.

Substrate Origin	Substrate Class	Substrate Subclass	Substrate Group
Geologic Substrate	Unconsolidated Mineral Substrate	Fine Unconsolidated Substrate	Mud
Benthic/Attached Biota	Aquatic Vegetation Bed	Benthic Macroalgae	Sheet Algal Bed

Position and Distances to Shore

The geodesic measuring tool in ArcGIS Pro 2.9 was used to verify the distances and bearings between proposed lease corners. Distances to shore were determined using the measuring tool in ArcGIS Pro 2.9, a nautical chart provided by the National Oceanic and Atmospheric Administration (NOAA), and the application coordinates (Table 3, Figures 2 and 3).

Application Coordinates (WGS84) – 3.98 Acres

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>	
NW	43.93314°	-69.42284°	then 163.6 feet at 109° True to
NE	43.93298°	-69.42226°	then 1,058.8 feet at 200° True to
SE	43.93026°	-69.42367°	then 164.9 feet at 294° True to
SW	43.93043°	-69.42425°	then 1,055.4 feet at 020° True to NW

Table 3. Approximate distances from proposal to surrounding features (Figures 2 and 3).

Feature	Distance
NE corner to Thief Island at MLW	~3,419.5' to the east
SE corner to Thief Island at MLW	~3,703.1' to the east
NW corner to Louds Island at MLW	~380.5' to the west
SW corner to Louds Island at MLW	~429.8' to the west
NE corner to red navigation buoy "6"	~8,080.5' to the east
SE corner to green navigation buoy "5"	~4,902.4' to the southeast
NE corner to Killick Stone Island at MLW	~1,966.4' to the southeast
SE corner to Killick Stone Island at MLW	~1,729.8' to the southeast
SE corner to Marsh Island at MLW	~2,241.2' to the south
SW corner to Marsh Island at MLW	~2,222.6' to the south

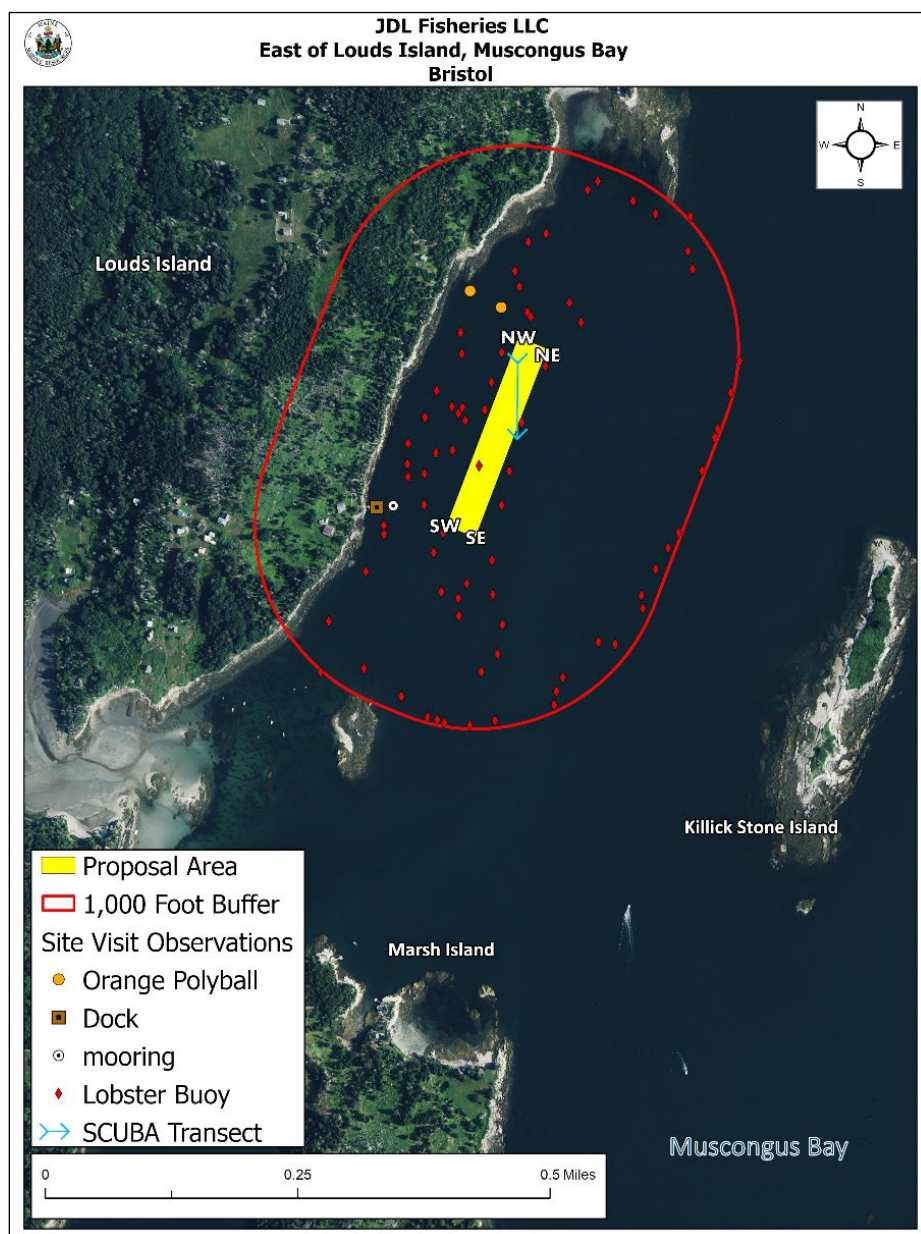


Figure 2. Proposed lease area with site visit observations.

Pursuant to statute and regulation, aquaculture leases are evaluated in consideration of applicable decision criteria. The site report documents MDMR's observations of the area and other information, in consideration of those criteria, as noted below:

(1) Riparian Ingress and Egress

During the site visit, MDMR scientists observed a pier with a dock that had two 18-foot powerboats tied to it, and a mooring with an eight-foot dinghy attached. Both the dock and the mooring were associated with a residential property within the vicinity of the proposal. The dock and mooring were located approximately 392.7 feet and 296.7 feet west of the proposal,



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respectively. Scientists also observed a small mooring field located approximately 1,122 feet southwest of the proposal (Figure 2). Aerial imagery⁶ indicates there is also a residential property without a pier or dock located approximately 627.3 feet northwest of the proposal.

On September 16, 2024, MDMDR received a completed Harbormaster Questionnaire. The questionnaire indicated that the proposal would not cause problems for riparian access.

(2) Navigation

The proposal is located in subtidal, navigable waters approximately 380.5 feet east of Louds Island at MLW. The proposal is within an open lagoon created by the surrounding islands with approximately 1,729.8 feet of navigable water between the proposal and Killick Stone Island to the east. The proposal is approximately 4,902.4 feet west of the marked navigation channel that provides access to upper Muscongus Bay and the Medomak River (Figure 3). During MDMDR's site visit, scientists observed a lobster boat east of the site transiting to the north.

The Harbormaster Questionnaire indicated that navigation in the area would not be affected.

⁶ Maine Orthoimagery Coastal Midcoast 2023

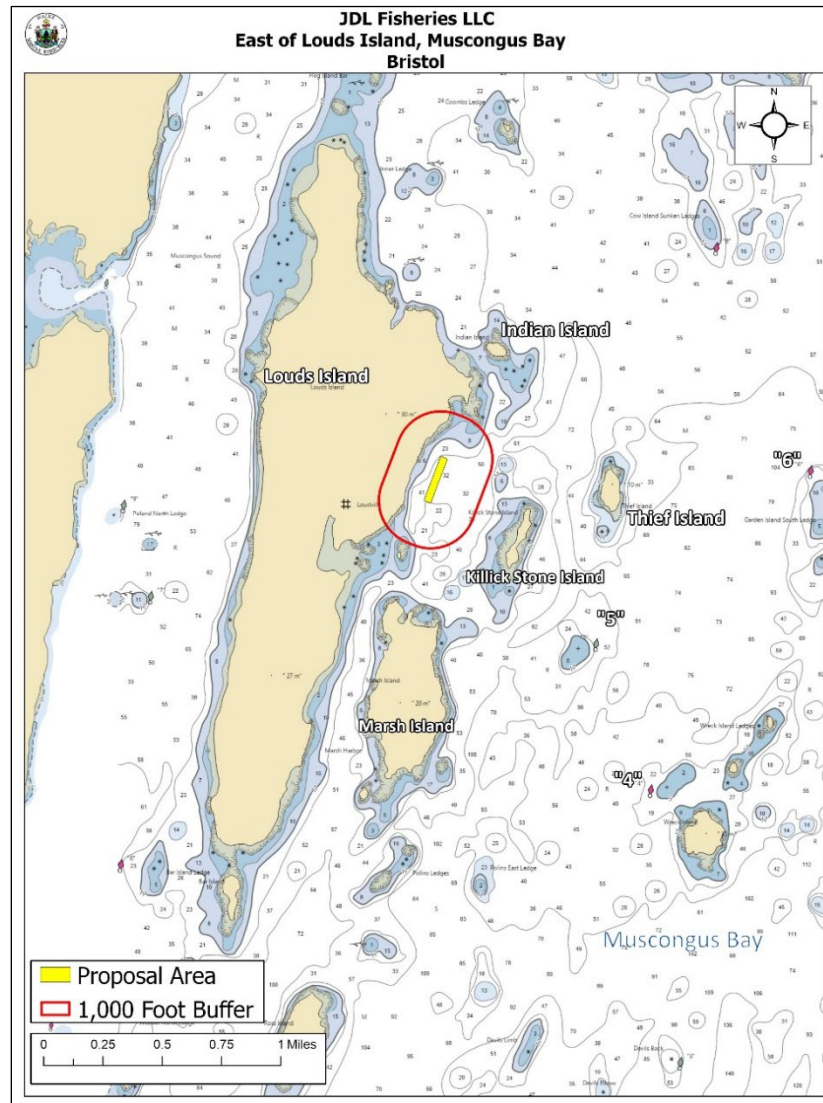


Figure 3. Navigational channels in the vicinity of the proposed lease area.

(3) Fishing and Other Uses

During MDMR's site visit, scientists observed 73 lobster buoys within 1,000 feet of the proposal, with the closest buoy located within the proposal boundaries. Scientists also observed two orange buoys located approximately 178.7 and 349.4 feet northwest of the proposal (Figure 2). MDMR scientists did not determine the purpose or use of the buoys.

The Harbormaster Questionnaire indicated there is very little commercial and recreational fishing within the area of the proposed lease.



(4) Other Aquaculture Uses

There are not any active aquaculture leases or limited purpose aquaculture (LPA) sites within 1,000 feet of the proposed lease site (Figure 4).

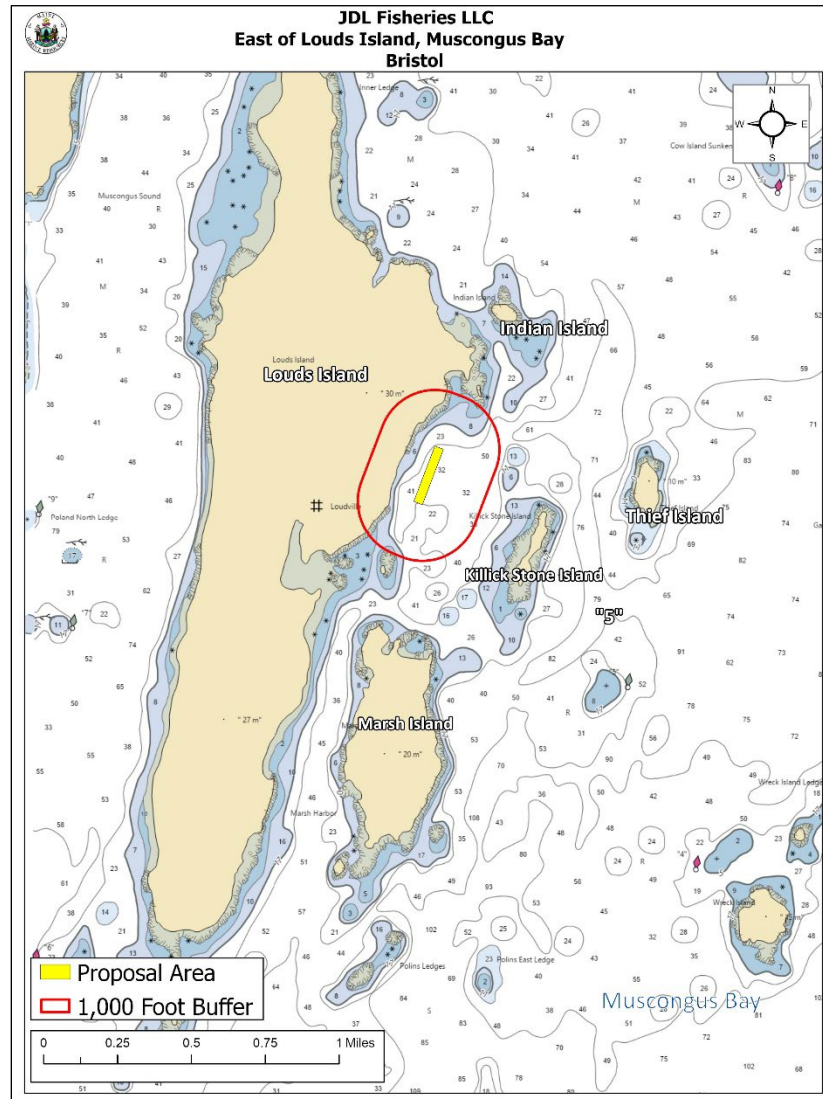


Figure 4. Aquaculture leases and LPA licenses in the vicinity of the proposed lease area.

(5) Existing System Support

Epibenthic Flora and Fauna

MDMR scientists utilized SCUBA to assess the epibenthic ecology of the proposed lease. The relative abundance of epibenthic flora and fauna observed in the video footage is described below in Table 4.



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Table 4. Species observed on underwater video footage.

Species Observed	Abundance
Mysid shrimp (<i>Mysis</i> spp.)	Abundant
Sand shrimp (<i>Crangon septemspinosa</i>)	Common
Northern cerianthid (<i>Pachycerianthus borealis</i>)	Common
Wine glass hydroid (<i>Obelia</i> sp.)	Occasional
Sugar kelp (<i>Saccharina latissima</i>)	Occasional
Eelgrass (<i>Zostera marina</i>)	Occasional
Cancer crab (<i>Cancer</i> sp.)	Rare
American lobster (<i>Homarus americanus</i>)	Rare

Eelgrass (*Zostera marina*)

Records of eelgrass collected by the Maine Department of Environmental Protection (MDEP) in 2023⁷ indicate mapped eelgrass presence within 1,000 feet of the proposal. The nearest mapped eelgrass is approximately 328.1 feet northwest of the proposal (Figure 5).

During MDMR's site visit, eelgrass was observed attached to the seafloor within the boundaries of the proposal. Scientists observed approximately six individual blades of eelgrass on underwater footage that appeared to be rooted to the seafloor (Figure 5). Observed eelgrass was very sparse in density (Images 1 and 2). Water depth in the general area is 27.9 to 41.5 feet at MLW.

Eelgrass is typically found in shallower water depths in subtidal to low intertidal areas to allow for adequate light penetration. MDMR expects seasonal regrowth of eelgrass to occur in April/May and seasonal senescence of eelgrass to occur in October/November. The applicant is proposing to seasonally culture marine algae on longlines from October 15 to May 31. Mooring lines and chains are intended to be sunk to the bottom on site from June 1 to October 14.

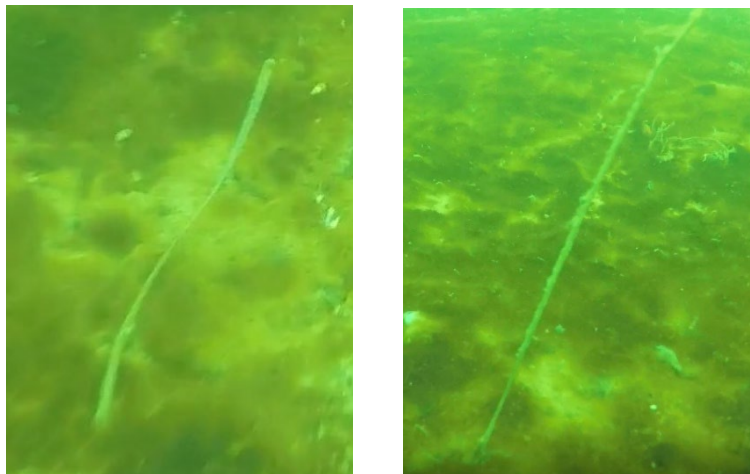


Image 1. Image 2. Very sparse eelgrass observed within the boundaries of the proposal.

⁷ Data obtained from The Maine Office of GIS "GISVIEW.MESEP.Seagrass2023". Widgeon grass was observed only in a tributary to the Great Salt Bay, upstream of a culvert that likely restricts tidal flow. Eelgrass was the dominant vascular species in all other locations. This is the most current record of mapped eelgrass within the vicinity of the proposal.

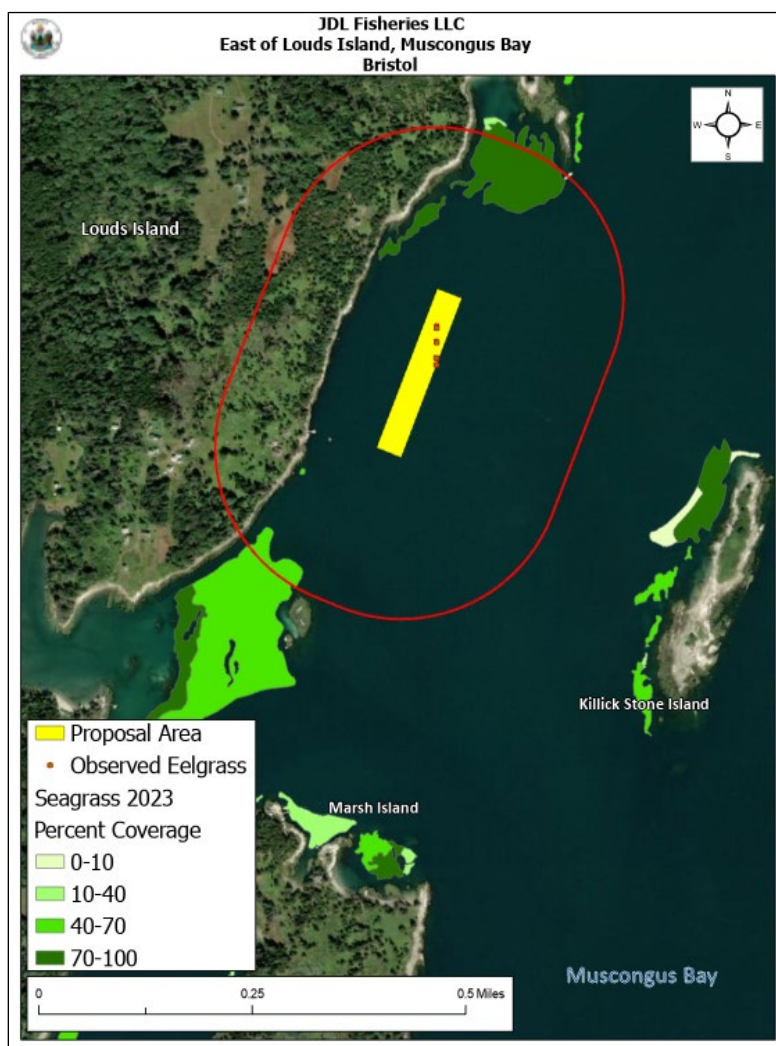


Figure 5. Mapped eelgrass (*Z. marina*) in the vicinity of the proposed lease area.⁸

Wildlife

During MDMR's site visit, scientists observed a loon (*Gavia immer*), osprey (*Pandion haliaetus*), double crested cormorants (*Nannopterum auritum*), and a bald eagle (*Haliaeetus leucocephalus*) in the general vicinity of the proposal.

The Maine Department of Inland Fisheries and Wildlife (MDIFW) has jurisdiction over inland fisheries and wildlife resources of the state. MDIFW also has the authority to conserve wildlife populations and their ecosystems through applicable state laws and rules. MDMR provides MDIFW with notice and the opportunity to comment on all complete lease applications. In addition, the site report also includes MDIFW designated and mapped habitat types that are within 1,000 feet of the lease proposal, if applicable.

⁸ Aerial Imagery from ESRI Firefly World Imagery



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According to Geographic Information System (GIS) data maintained by MDIFW and available through the Maine Office of GIS (MEGIS), there are two mapped habitat types within 1,000 feet of the lease proposal. The proposal is near Tidal Waterfowl and Wading Bird Habitat (TWWH), which is a type of Significant Wildlife Habitat, and Roseate Tern Essential Habitat. Both habitats are designated and regulated by MDIFW.^{9,10} Based on data maintained by MDIFW, the nearest mapped TWWH is located approximately 591.5 feet southwest of the proposal. The nearest mapped roseate tern habitat is 485.6 feet east of the proposal (Figure 6).

Though bald eagles are no longer listed on Maine's Endangered and Threatened Species List, the United States Fish and Wildlife Service (USFWS) may also have jurisdiction over the management and conservation of the species based on applicable law and rule. Data collected by USFWS in 2023 by aerial nest survey shows the nearest mapped bald eagle nesting site to be approximately 1,219.7 feet northwest of the proposal (Figure 6).

MDIFW was provided with the opportunity to comment on this proposal. On May 15, 2024, a Resource Biologist with MDIFW responded by email to a "Request for Agency Review and Comment" stating that minimal impacts to wildlife are anticipated for this project.¹¹

⁹ <https://www.maine.gov/ifw/programs-resources/environmental-review/significant.html>

¹⁰ <https://www.maine.gov/ifw/fish-wildlife/wildlife/endangered-threatened-species/essential-wildlife-habitat/index.html>

¹¹ Email correspondence between MDIFW and MDMR

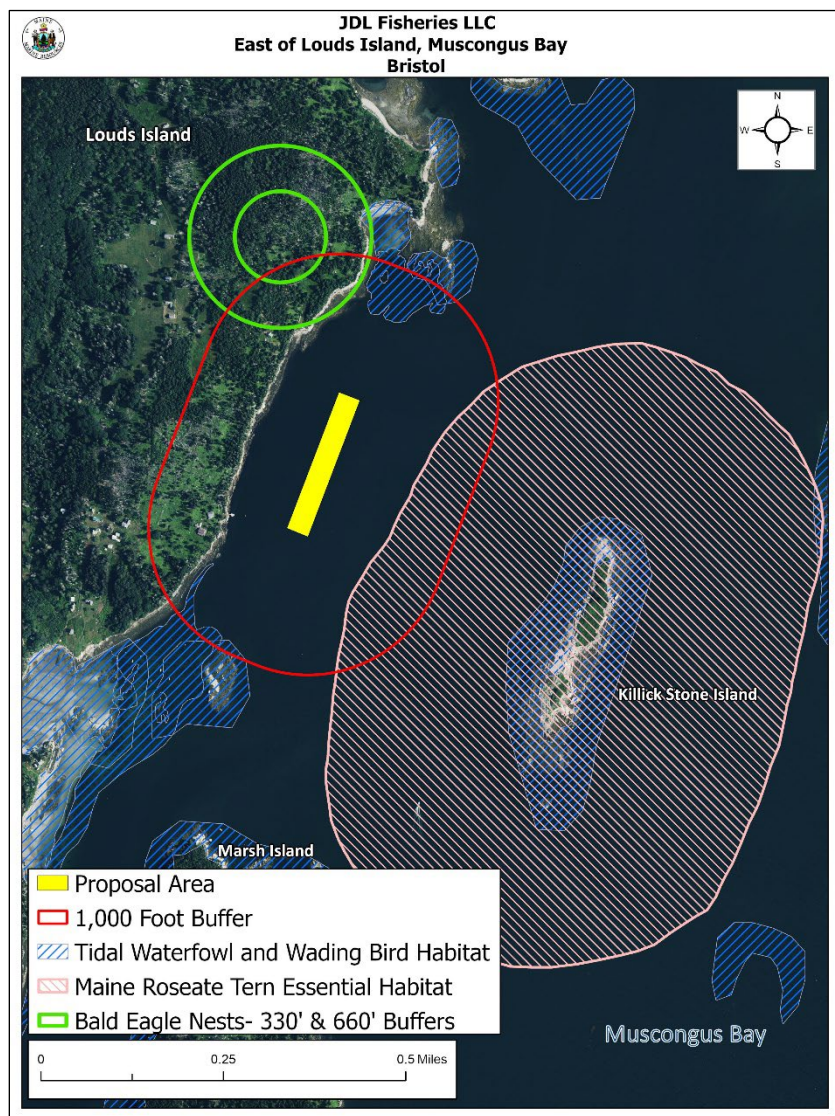


Figure 6. Mapped habitats in the vicinity of the proposed lease area.¹²

(6) Interference with Public Facilities

The proposed lease is not within 1,000 feet of any beach, park, or docking facility owned by federal, state, or municipal governments.

(7) Water Quality

The proposed lease is currently located within an area classified as Approved by the MDMR Bureau of Public Health and Aquaculture.

¹² Data obtained from USFWS "Bald_Eagle_Nests_-_Maine_2023" and MDIFW "EHRTERN", "EHPLVTRN", "GISVIEW.MEIFW.Twwh", "ShorebirdAreas", and "SNI".