

Figure 1. Vicinity map.¹

Location: Southeast 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*), nori/laver (*Porphyra spp*) and sea lettuce (*Ulva lactuca*).

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Report Preparation: Geoffrey Shook and Meryl Grady

¹ Unless otherwise noted, all figures in this report were created in ArcGIS Pro version 3.3 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, Muscongus Bay Kelp, is requesting a 3.96³-acre experimental lease southeast 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 November 1-June 15. Between June 16 – October 31, longlines, crosslines, depth control devices and associated buoys and weights, and mooring buoys would be removed. Mooring blocks and state-required lease markers would remain on site year-round with mooring 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 11:03 AM. The proposal is located in subtidal waters in Muscongus Bay approximately 760 feet southeast 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 cobble and boulder shorelines with mixed forests uplands. MDMR scientists also observed evidence of shoreline erosion in the area.

Depth

On September 12, 2024, MDMR scientists began collecting depths at the proposed site at approximately 11:05 AM. The tide was ebbing with the next low tide predicted at 11:59 AM (Table 1). Depths were determined to be between 38.0-51.6 feet. Correcting for tidal variations derives depths at mean low water (MLW, 0.0 feet) to be between 35.7-49.3 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 sandy mud and shell rubble.

³ Applicant originally requested 4.0 acres. MDMR calculations indicate the area is 3.96 acres.

⁴ Application pages 7, 17-18

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	Sandy Mud
Biogenic Substrate	Shell Substrate	Shell Rubble	NA

Position and Distances to Shore

The geodesic measuring tool in ArcGIS Pro 3.3 was used to verify the distances and bearings between proposed lease corners. Distances to shore were determined using the measuring tool in ArcGIS Pro 3.3, 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) – 3.96 Acres

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>	
NW	43.90741°	-69.43622°	then 161 feet at 118° True to
NE	43.90719°	-69.43569°	then 1,062 feet at 209° True to
SE	43.90464°	-69.43764°	then 163 feet at 300° True to
SW	43.90486°	-69.43818°	then 1,063 feet at 029° True to NW

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

Feature	Distance
NE corner to Polins Ledges at MLW	~1,876' to the east
SE corner to Polins Ledges at MLW	~2,494' to the northeast
NE corner to Ross Island at MLW	~2,395' to the southeast
SE corner to Ross Island at MLW	~1,756' to the southeast
NW corner to Louds Island at MLW	~760' to the northwest
SW corner to Louds Island at MLW	~1,432' to the north
NE corner to Marsh Island at MLW	~2,633' to the northeast
NW corner to Marsh Island at MLW	~2,696' to the northeast
NW corner to Bar Island at MLW	~846' to the west
SW corner to Bar Island at MLW	~369' to the west



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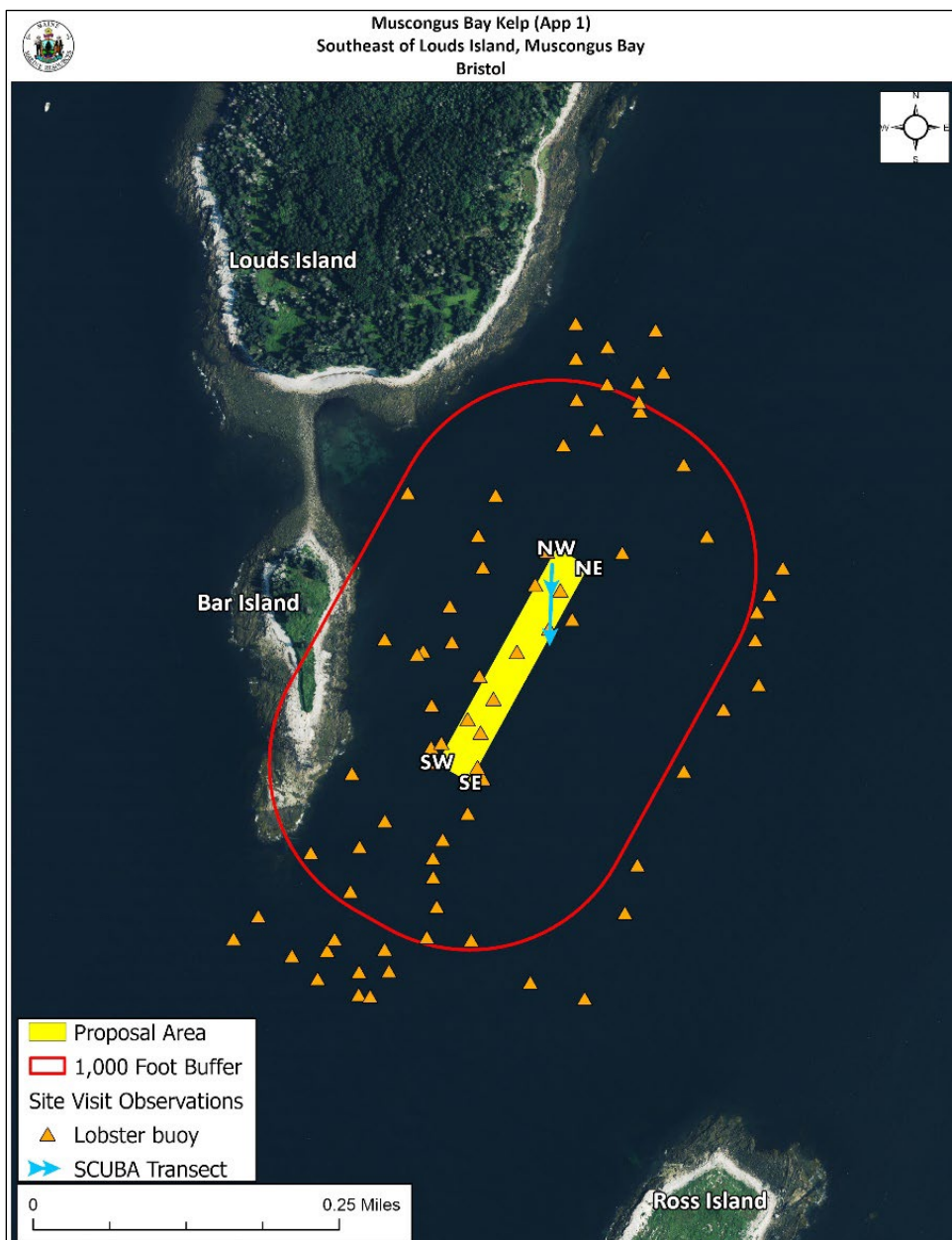


Figure 2. Proposed lease area with site visit observations.

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:



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(1) Riparian Ingress and Egress

During the site visit, MDMR did not observe any docks, houses, or moorings within the vicinity of the proposal. The southern end of Louds Island, as well as Bar Island, are part of a nature preserve and are not inhabited. ⁶ Aerial imagery⁷ indicates the nearest residential pier and dock is located on the western shore of Marsh Island approximately 3,855 feet northeast of the proposal.

A Harbormaster Questionnaire was sent to the Town of Bristol. MDMR did not receive a response.

(2) Navigation

The proposal is located in subtidal, navigable waters approximately 760 feet southeast of Louds Island and approximately 369 feet east of Bar Island at MLW. There is approximately 1,876 feet of navigable water between the proposal area and Polins Ledges to the east. The proposal is outside of any marked navigational channels. Although there is a navigable channel between Louds and Marsh Islands, the primary marked navigational channels that provide access to upper Muscongus Bay and the Medomak River are located west of Louds Island and east of Marsh Island (Figure 3).

During MDMR's site visit, scientists observed two lobster boats transiting to the south in the vicinity of the proposal.

⁶ <https://www.mcht.org/preserve/elizabeth-noyes-preserve/>

⁷ Maine Orthoimagery Coastal Midcoast 2023

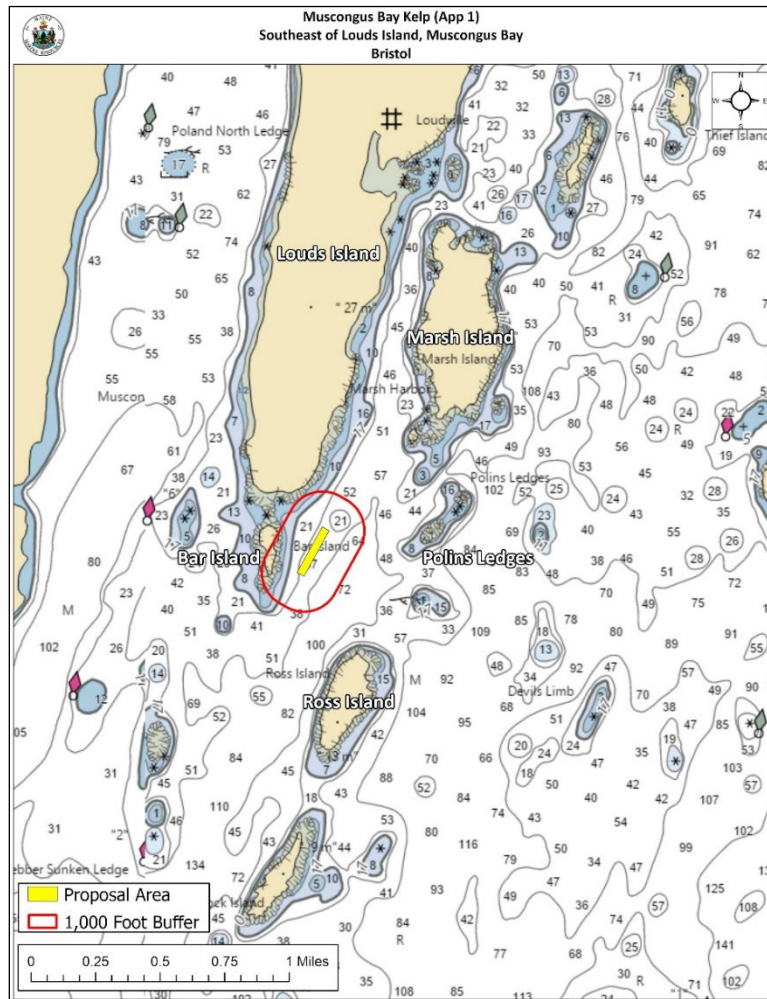


Figure 3. Navigational channels in the vicinity of the proposed lease area.

(3) Fishing and Other Uses

During MDMR's site visit, scientists observed 74 lobster buoys in the vicinity of the proposal, of which seven were located within the proposal boundaries (Figure 2). MDMR scientists also observed a lobster boat working approximately 0.5 miles east of the proposal.

The southern end of Louds Island as well as Bar Island, located approximately 760 feet northwest of the proposal and approximately 369 feet west of the proposal, respectively, are owned by the Maine Coast Heritage Trust and open to the public for day use. Access is by boat only and visitors are instructed to land on the beach at the southern tip of Louds Island or anchor directly east of the ledge that extends between Louds and Bar Islands (Figure 3).⁸

⁸ <https://www.mcht.org/preserve/elizabeth-noyes-preserve/>



(4) Other Aquaculture Uses

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

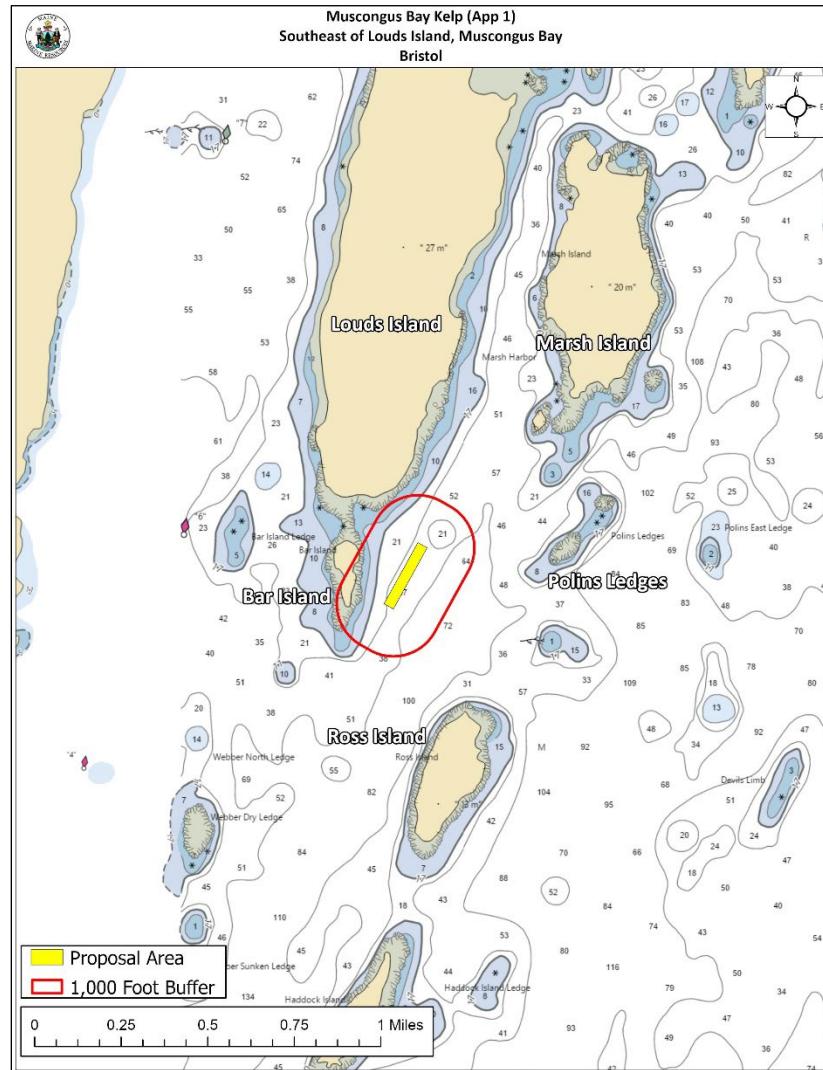


Figure 4. Aquaculture leases and LPA licenses in the vicinity of the proposed lease area.



(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.

Table 4. Species observed on underwater video footage.

Species Observed	Abundance
American lobster (<i>Homarus americanus</i>)	Abundant
Green algae (<i>Cladophora</i>)	Common
Irish moss (<i>Chondrus crispus</i>)	Common
Shotgun kelp (<i>Agarum clathratum</i>)	Common
Sugar kelp (<i>Saccharina latissima</i>)	Occasional
Hermit crab (<i>Paguroidea</i>)	Occasional
Atlantic surf clam (<i>Spisula solidissima</i>)	Occasional
Horse mussel (<i>Modiolus modiolus</i>)	Occasional
Cancer crab (<i>Cancer</i> spp.)	Rare
Tunicate (<i>Didemnum vexillum</i>)	Rare
Sponge (<i>Porifera</i> sp.)	Rare
Eelgrass (<i>Zostera marina</i>)	Rare
Atlantic sea scallop (<i>Placopecten magellanicus</i>)	Rare

Eelgrass (*Zostera marina*)

Records of eelgrass collected by the Maine Department of Environmental Protection (MDEP) in 2023⁹ indicate there is no eelgrass mapped in the vicinity of the proposal. The nearest mapped eelgrass is approximately 1,712 feet north of the proposal (Figure 5).

During MDMR's site visit, eelgrass was observed floating on the surface of the water in the vicinity of the proposal. Two blades of unattached eelgrass were observed drifting on the bottom on underwater video footage.

⁹ Data obtained from The Maine Office of GIS "GISVIEW.MEDEP.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.

Wildlife

During MDMR's site visit, scientists observed a loon (*Gavia immer*), osprey (*Pandion haliaetus*), herring gull (*Larus argentatus*), double crested cormorant (*Nannopterum auritum*), and harbor porpoise (*Phocoena phocoena*) 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.

According to Geographic Information System (GIS) data maintained by MDIFW and available through the Maine Office of GIS (MEGIS), there is one mapped habitat type within 1,000 feet of the lease



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proposal. The proposal is near Tidal Waterfowl and Wading Bird Habitat (TWWH), which is a type of Significant Wildlife Habitat designated and regulated by MDIFW.¹⁰ Based on data maintained by MDIFW, the nearest mapped TWWH is located approximately 108 feet west 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 2.1 miles north of the proposal.

MDIFW was provided with the opportunity to comment on this proposal. On May 29, 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



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

¹⁰ <https://www.maine.gov/ifw/programs-resources/environmental-review/significant.html>

¹¹ Email correspondence between MDIFW and MDMR

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



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(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