

Figure 1. Vicinity map.¹

Location: Ridley Cove, Casco Bay, Harpswell, Cumberland County, Maine

Purpose: Experimental lease for suspended culture of sugar kelp (*Saccharina latissima*), skinny kelp (*Saccharina angustissima*), winged kelp (*Alaria esculenta*), horsetail/fingered kelp (*Laminaria digitata*), shotgun kelp (*Agarum clathratum*)², dulse (*Palmaria palmata*), Irish moss (*Chondrus crispus*), and sea lettuce (*Ulva lactuca*).

Site Review: Geoffrey Shook and Katie Von Hohenleiten

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 Application lists the scientific name as *Agarum cribosum*, however the current accepted scientific name is *Agarum clathratum*.



Application Overview

The applicant, Terry Dutton, is requesting a 3.97-acre³ experimental lease north of Flash Island in Ridley Cove, within the town of Harpswell, for the suspended culture of marine algae. Aquaculture gear is intended to be on site seasonally from October 15 – June 15. Mooring blocks and required lease markers are intended to remain onsite year-round.⁴

General Characteristics

On June 26, 2024, Maine Department of Marine Resources (MDMR) scientists assessed the proposed lease site. MDMR scientists arrived on site at approximately 2:04 PM. The proposal is located in subtidal waters in Ridley Cove approximately 179.8 feet to the north of Flash Island at MLW. Ridley Cove consists of several islands, both inhabited and uninhabited, as well as West Cundy Point in Cundy’s Harbor located approximately 1,577.4 feet to the east (Figure 1). The surrounding shoreline consists of a rocky ledge coastline that leads to mixed forest uplands.

Depth

On June 26, 2024, MDMR scientists began collecting depths at the proposed site at approximately 2:05 PM. The tide was flooding with the next high tide predicted at 3:22 PM (Table 1). Depths were determined to be between 24.8-45.1 feet. Correcting for tidal variations derives depths at mean low water (MLW, 0.0 feet) to be between 16.5-36.8 feet.

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

Date	Time	Height (ft)
2024/06/26	2:36 AM	10.3 H
2024/06/26	9:02 AM	-0.6 L
2024/06/26	3:22 PM	9.2 H
2024/06/26	9:17 PM	0.6 L

Bottom Characteristics

MDMR scientists observed the bottom characteristics in the vicinity of the proposed lease site via a remotely operated vehicle (ROV). 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 lease site is primarily composed of mud.

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

³ Applicant originally requested 3.99 acres. MDMR measurements indicate the area is 3.97 acres.

⁴ Application pages 9, 17

⁵ <https://www.usharbors.com/harbor/maine/cundys-harbor-me/tides/?tide=2024-06#monthly-tide-chart>



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) – 3.97 Acres

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>	
NW	43.77801°	-69.90957°	then 163.5 feet at 105° True to
NE	43.77790°	-69.90897°	then 1,057.8 feet at 194° True to
SE	43.77509°	-69.90997°	then 163.5 feet at 285° True to
SW	43.77520°	-69.91057°	then 1,057.8 feet at 114° True to NW

Table 3. Approximate distances from proposal corners to surrounding features (Figure 3).

Feature	Distance
NW corner to Yarmouth Island closest point MLW	~154.1 feet to the west-northwest
NE corner to George Island closet point MLW	~3,111.7 feet to the north
SE corner to West Cundy Point closest point MLW	~1,577.4 feet to the east
SE corner to Jenny Island closest point MLW	~3,148.5 feet to the south
SW corner to Flash Island closest point MLW	~179.8 feet to the south

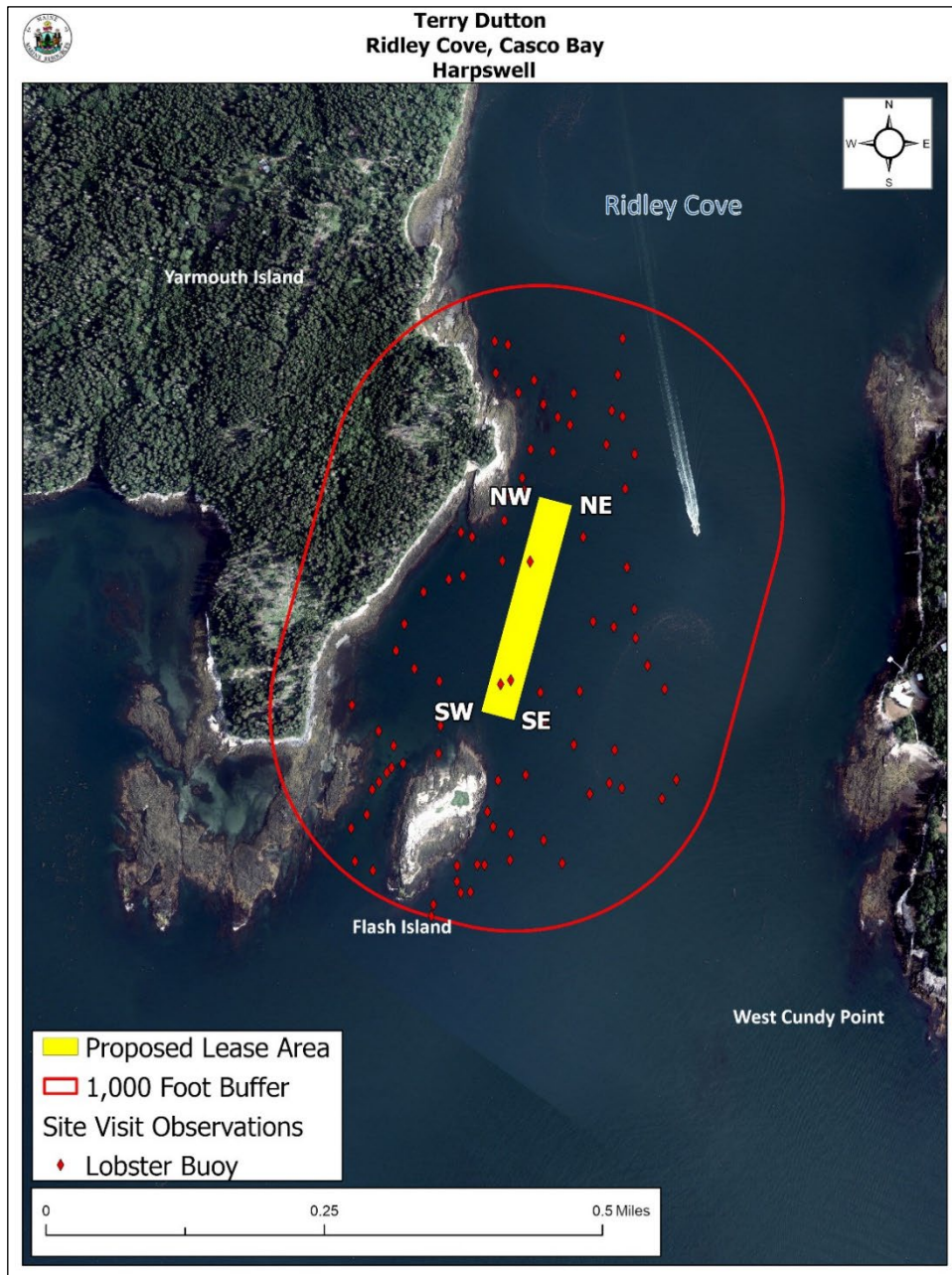


Figure 2. Proposed lease area with site visit observations.

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 MDMR's site assessment, scientists did not observe any piers, docks or residential properties within 1,000 feet of the proposal. Aerial imagery⁶ indicates there are residential properties and piers on the western shore of West Cundy point over 1,600 feet to the east. Imagery also indicates that there are residential properties with piers on the northern end of Yarmouth Island, Bush Island, and George Island over 3,000 feet to the north (Figure 5).

In a completed Harbormaster Questionnaire submitted to MDMR on July 13, 2023, it was indicated that there are not any residences near the boundaries of the proposed lease.

(2) Navigation

The proposal is located in subtidal waters approximately 179.8 feet to the north of Flash Island at MLW. There is approximately 1,577.4 feet of navigable water at MLW between the proposed lease area and the West Cundy Point shoreline to the east. There is approximately 154.1 feet of navigable water at MLW between the proposed lease and the Yarmouth Island shoreline to the west. There is also a navigable waterway to the north of Yarmouth and Bush Islands that provides additional access into Ridley Cove (Figure 3).

During MDMR's site assessment, scientists observed a sailboat under sail transiting to the southeast and through the proposal, as well as a sailboat under power transiting to the north of the proposal, and a sailboat under power to the east of the proposal transiting north. MDMR scientists also observed a power boat transiting to the east of the proposal.

The Harbormaster Questionnaire indicated that commercial vessels exit Ridley Cove from the Hen Island area.⁷ In a follow-up letter to MDMR on August 15, 2023, the Harbormaster indicated that commercial fishing boats transit the inlet between Flash Island and Yarmouth Island during the winter months and if aquaculture gear blocks this inlet, it could interfere with the ability to transit through the area.

⁶ Maine Orthoimagery Coastal Casco Bay 2022

⁷ Hen Island is approximately 2,900 feet northeast of the proposal at MLW (Figure 3).

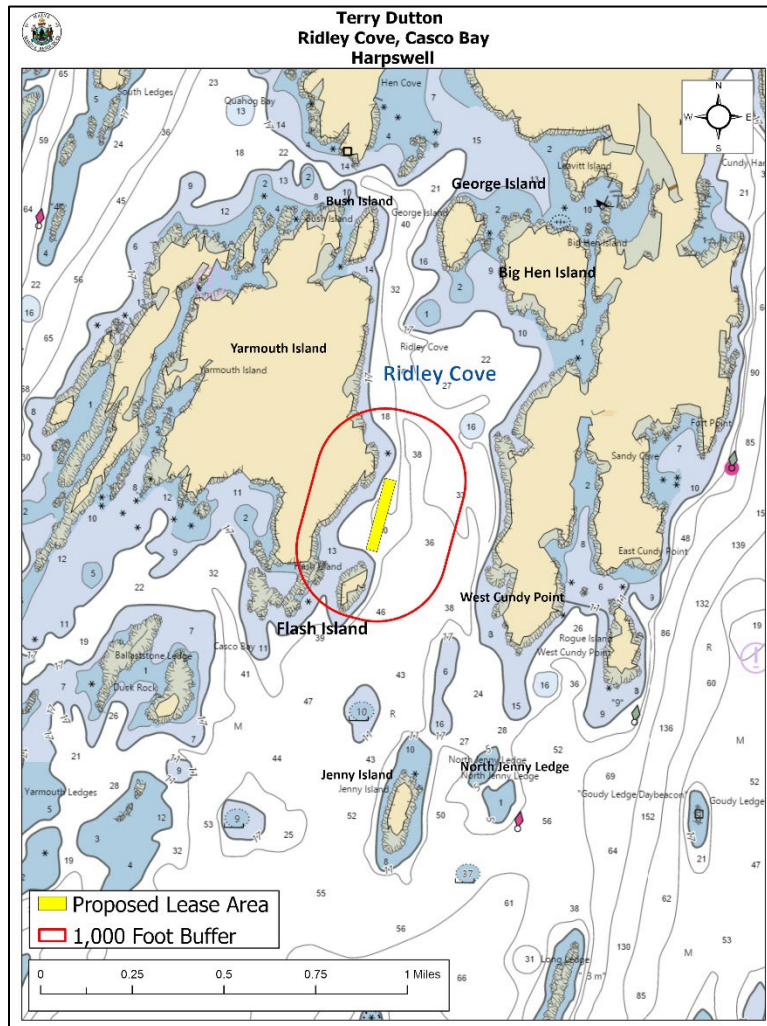


Figure 3. Charted navigational channels in the vicinity of the proposed lease area.

(3) Fishing and Other Uses

During MDMR's site assessment, scientists observed moderate to heavy lobstering activity in the vicinity of the proposal. MDMR scientists mapped 84 lobster buoys within 1,000 feet of the proposal. Three of the 84 mapped buoys were located within the boundaries of the proposal (Figure 2).

(4) Other Aquaculture Uses

There is no active aquaculture activity within 1,000 feet of the proposal. The nearest aquaculture sites to the proposal are two Limited Purpose Aquaculture (LPA) sites (HUNT621, HUNT521) located approximately 1.1 miles to the north (Figure 4).

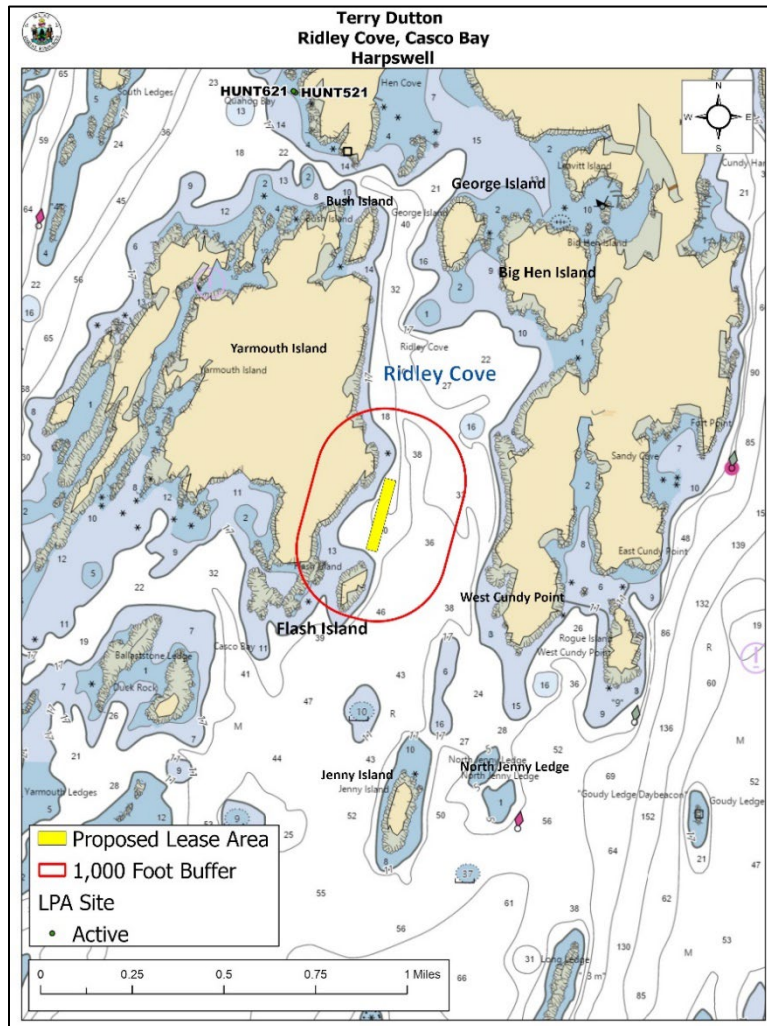


Figure 4. Aquaculture leases and LPA licenses in the vicinity of the proposed lease area.

(5) Existing System Support

Epibenthic Flora and Fauna

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

Table 4. Species observed on underwater video footage.

Species Observed	Abundance
Sheet algal bed	Abundant
Sand shrimp (<i>Crangon septemspinosa</i>)	Occasional
Rock crab (<i>Cancer irroratus</i>)	Rare



Eelgrass (*Zostera marina*)

Records of eelgrass collected in 2022⁸ indicate that there is mapped eelgrass within 1,000 feet of the proposal. The nearest mapped eelgrass is located approximately 219.1 feet to the southeast of the proposal (Figure 5). During MDMR’s site assessment, scientists did not observe any eelgrass in the vicinity of the proposal.

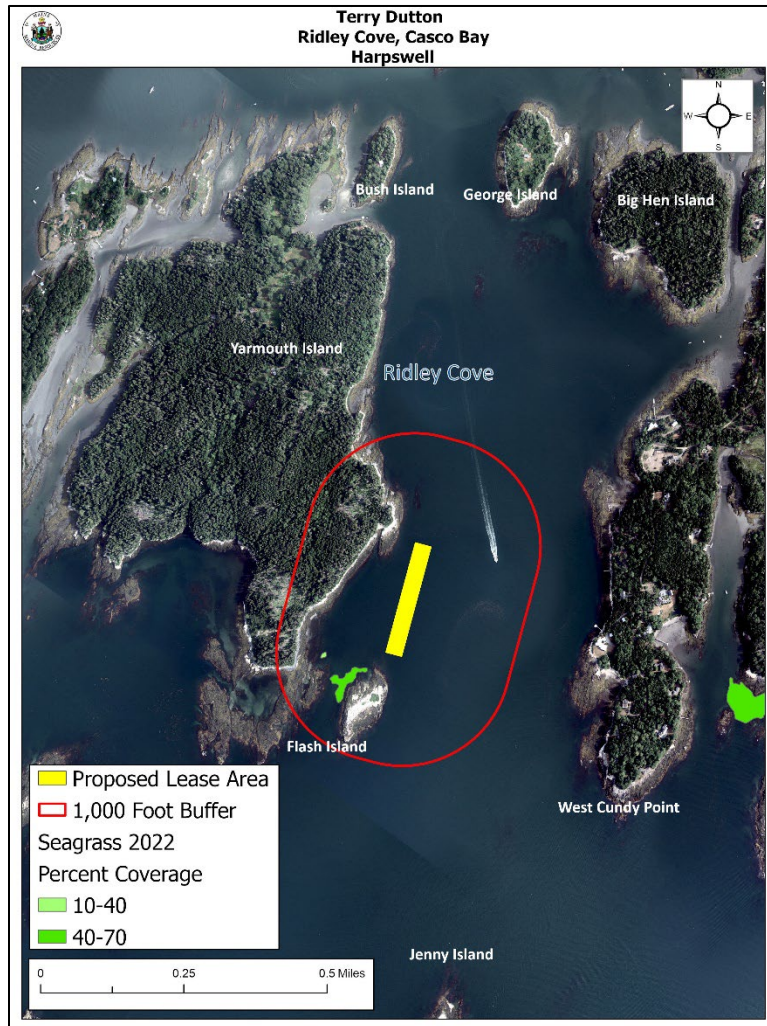


Figure 5. Mapped eelgrass in the vicinity of the proposed lease area.

⁸ Data obtained from The Maine Office of GIS “GISVIEW.MEDEP.Seagrass2022”. Widgeon grass was observed only in the New Meadows River area off Old Brunswick Road near shore. 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.



Department of Marine Resources Site Report

Terry Dutton
Ridley Cove, Casco Bay
Harpswell

Wildlife

According to Geographic Information System (GIS) data maintained by the Maine Department of Inland Fisheries and Wildlife (MDIFW) and available through the Maine Office of GIS (MEGIS), the proposed lease is not within 1,000 feet of Tidal Waterfowl and Wading Bird Habitat (TWWH). The nearest TWWH is located approximately 2,703.0 feet to the northeast. There is also mapped roseate tern (*Sterna dougallii*) essential habitat approximately 1,766.3 feet to the south (Figure 6). The nearest bald eagle (*Haliaeetus leucocephalus*) nest is mapped approximately 1.6 miles to the west-northwest of the proposal.

Flash Island, located approximately 179.8 feet south of the proposal at MLW, is conserved land owned by MDIFW and is a preserve for sea bird habitat. The island is seasonally accessible to the public between August 16 – March 14. It is recommended to not land on the island during nesting season between March 15 – August 15.⁹

On August 8, 2023, a Resource Biologist with MDIFW responded by email to a “Request for Agency Review and Comment”, stating that minimal impacts are anticipated.

During MDMR’s site assessment, scientists observed double-crested cormorants (*Nannopterum auritum*), common terns (*Sterna hirundo*), osprey (*Pandion haliaetus*), and a bald eagle (*Haliaeetus leucocephalus*) in the vicinity of the proposal.

⁹ <https://www.harpwell.maine.gov/index.asp?SEC=4617FF2E-3B38-4A4D-9B1A-74540A7FCC93>

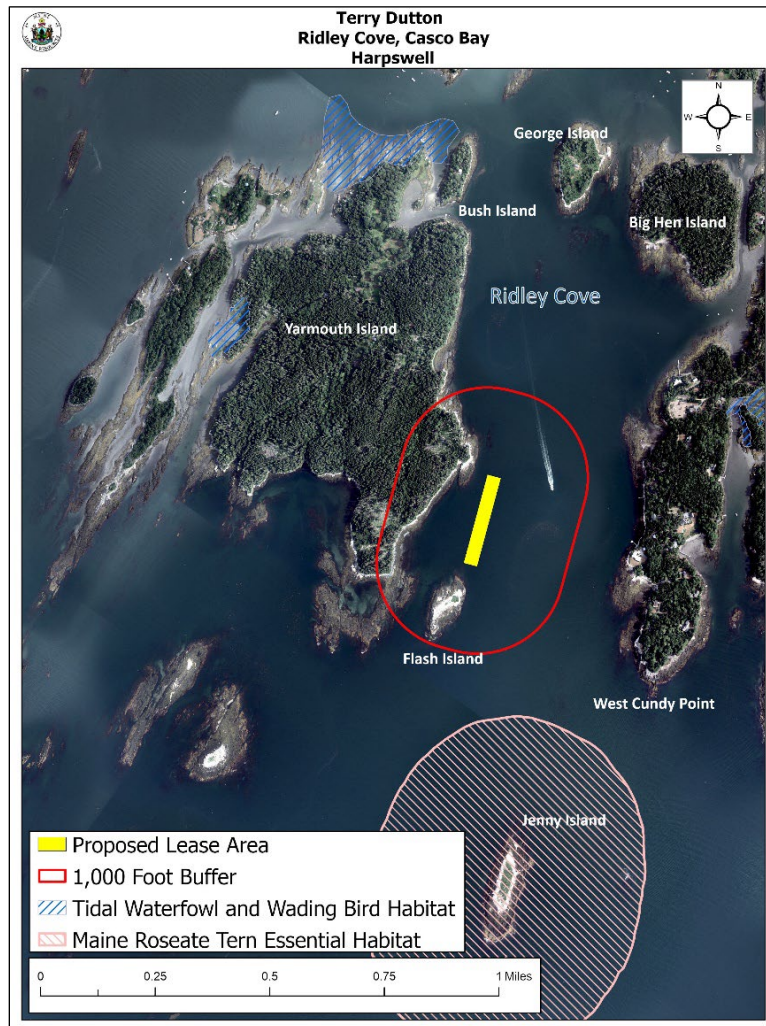


Figure 6. Mapped TWWH and Roseate Tern Essential Habitat in the vicinity of the proposed lease area.¹⁰

(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 located within an area that is currently classified as Open/Approved by the MDMR Bureau of Public Health and Aquaculture.

¹⁰ Data obtained from USFWS “Bald_Eagle_Nests_-_Maine_2023” and MDIFW maintained SDE Feature Class “GISVIEW.MEIFW.Twwh”