

STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
Experimental Aquaculture Lease Application
Suspended culture of kelp, southwest of Jewell I., Casco Bay

Ocean Approved, LLC
Lease CAS-JEWL
Docket # 2011-20E
January 23, 2012

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION

Ocean Approved, LLC, a Maine limited-liability corporation, applied to the Department of Marine Resources (“DMR”) for a 3-year experimental aquaculture lease on 3.03 acres located in the coastal waters of the State of Maine, southwest of Jewell Island in Casco Bay in the City of Portland in Cumberland County, for the purpose of cultivating sugar kelp, (*Saccharina latissima*), horsetail kelp (*Laminaria digitata*), and winged kelp (*Alaria esculenta*), using suspended culture techniques. DMR accepted the application as complete on August 26, 2011. There were no intervenors in this case. Because five or more requests for a hearing on this experimental lease were received during the advertised comment period, all from residents of Cliff Island, the nearest inhabited island to the proposed lease site, a public hearing on this application was held on Cliff Island (also located in the City of Portland) on December 21, 2011.

1. THE PROCEEDINGS

Notices of the hearing and copies of the application and DMR site report were sent to numerous state and federal agencies for their review, as well as to a number of educational institutions, aquaculture and environmental organizations, the City of Portland Harbormaster, members of the Legislature, representatives of the press, riparian landowners, and other private individuals. Notice of the hearing was published in the *Portland Press Herald* on November 18 and December 9, 2011 and in the *Commercial Fisheries News* December, 2011 edition.

At the hearing, Tollef Olson and Paul Dobbins described the proposed project on behalf of the applicant. Jon Lewis, the DMR Aquaculture Environmental Coordinator, presented his site report. Robert O’Reilly, Tom O’Reilly, Eric Anderson, and Diane O’Reilly, all members of the public, testified to their concerns and questions about the project. Each witness was sworn and subject to questioning by the Department, the applicant, and members of the public. The hearing was recorded by DMR. The hearing officer was Diantha Robinson. The evidentiary record before the Department regarding this lease application includes four exhibits introduced at the hearing

(see exhibit list below), three written comments submitted at the hearing¹, and the record of testimony at the hearing itself. The evidence from all of these sources is summarized below.²

LIST OF EXHIBITS³

1. Case file, # 2011-20E
2. Application, signed and dated July 1, 2011
3. DMR site report, dated November 2, 2011
4. Document, "Hearing Presentation and Existing Use Evidence" consisting of paper copies of applicant's PowerPoint slides presented at the hearing.

2. DESCRIPTION OF THE PROJECT

Proposed Operations

Mr. Olson testified that while there is a significant worldwide kelp-growing industry and a valuable international market for kelp, the United States has only one kelp farm, which he started in Casco Bay in 2009, off Little Chebeague Island. He said that his company hopes to develop standard methods for growing kelp in Maine on a yearly cycle that would complement that of the lobster industry, growing a crop for harvest between fall and spring. Mr. Olson said that he hopes kelp aquaculture will become an attractive supplemental fishery for lobstermen in the seasons when they are not actively lobstering. (Olson, testimony)

Mr. Dobbins testified that the purpose of the experimental lease is to "determine the optimum growth environment" for the three species of kelp his company proposes to grow, all of which are native to Casco Bay. Using a grant from the National Oceanic and Atmospheric Administration (NOAA), Ocean Approved has developed the nursery technology to produce kelp seed to be grown out on its lease sites. This proposed lease and a companion lease proposed for the waters west of Chebeague Island in Casco Bay (Docket # 2011-19E), are intended by the Company to be used to experiment and determine the type of site and methods most suitable for cultivating each of the three kelp species (Dobbins, testimony).

Mr. Dobbins testified that this experiment is commercial in nature. Once the experiments are completed, the company plans to publish a "how to" manual describing the results of both the nursery and grow-out research "to encourage the development of kelp cultivation in the U.S." (Exhibit 4, p. 2). Mr. Dobbins noted that more kelp growers will be

¹ The written comments are accorded appropriate weight, given their status as unsworn statements not subject to questioning.

² The reference (Smith/Jones) means testimony of Smith, being questioned by Jones.

³ Exhibits 1, 2, and 3 are cited below as: Case file – "CF"; Application – "App"; site report – "SR". Other exhibits are cited by number.

needed to develop a viable kelp industry in Maine with the support systems and market that such an industry requires (Dobbins, testimony).

The proposed operation, as shown on pages 18 and 19 of the application, consists of nine 1,050-ft. growout lines strung horizontally ten feet apart at a depth of seven feet below the surface, which the applicants have determined is the optimum depth for growing kelp. Mooring balls at the ends of each line will be connected by 3/8-inch mooring chain to 1,500-lb moorings. Weighted buoys will be attached to each line at 100-ft. intervals to maintain the lines at the optimum depth as the kelp grows.

According to the application, the long lines will be seeded during late spring and fall. Kelp grows best in winter, with low light and cooler temperatures, Mr. Dobbins testified. He noted that more nitrogen is available in colder waters and that kelp, an ancient plant species, is adapted to growing at a time of year when it has little competition from other marine species. He has recorded growth of kelp of 2.5 inches in a single day in February (Dobbins, testimony). The rate of growth will be monitored and the "wet weight yield per meter of long line" will be calculated when the kelp is harvested. "Data from spring and fall plantings will be compared over a 3 year period with data from other sites" (App 5).

Seeding the long lines is expected to take no more than two days each planting season (spring, fall, and winter), using small skiffs. The application describes other site activities as follows:

"Harvest is quick and efficient, and takes place in late fall and spring. It consists of bringing the long line onto the boat and removing the kelp with a small knife as the boat moves down the line. Husbandry for the site will include weekly or bi monthly trips to the site (season dependent) for plant sampling, data capture, and structure inspection/maintenance" (App 7).

Other details of the proposed operation are described in the sections below.

Site Characteristics

The proposed lease site is a rectangular tract measuring 120 ft. by 1100 ft. located southwest of Jewell Island, one of the outermost islands in Casco Bay. Water depths at the site range from approximately 21.5 ft. to 23.5 ft. at mean low water; the mean tidal range is 9.1 ft. (SR3).

Mr. Dobbins testified that the Jewell Island site is a "high-energy environment" with conditions in which horsetail and winged kelp thrive. One purpose of experimenting in this location is to compare the growth of these kelps in exposed, open-ocean conditions with growth in the more sheltered waters of the proposed Chebeague Island site. The Jewell Island site receives the full brunt of swells from the open Atlantic, which the applicants suspect may create difficult conditions for those working at the site in winter (Dobbins, testimony).

The proposed site lies parallel to and approximately 90 ft. west of the southwest shore of Jewell Island; Mr. Lewis testified that there is room for smaller vessels to navigate between the east boundary of the lease and the shore of Jewell Island (Lewis, testimony). He noted that the north boundary of the site lies 200 ft. south of the shoal waters around Indian Rock. The site report describes the site location as follows:

The proposed lease is bounded to the east by Jewell Island and to the north by Indian Rock - a protrusion of Jewell Island (Figure 1). To the south lies shoal water created by fingers of rock extending from the southern shore of Jewell Island (SR3).

At the hearing, Mr. Lewis noted that the coordinates listed in the application as describing the site were inaccurate and that he had recalculated them, using the proposed northeast corner of the site as the starting point and describing a site of the dimensions proposed by the applicant in the same location and orientation (Lewis, testimony). Mr. Dobbins agreed that the coordinates listed in the site report accurately describe the site for which they intended to apply. He noted that the 3.03 acre size of the site equals one hectare, which is the common unit of area measurement for kelp sites around the world; thus, data from the experiments at the proposed site can be compared with data from other such sites (Dobbins, testimony).

Mr. Dobbins described the DMR water quality classification of the site and surrounding area as “unrestricted”, meaning that the area is currently open to shellfish harvesting without any limitations caused by bacterial pollution. Although kelp is not a filter-feeding organism like shellfish, Mr. Dobbins said, it is important to Ocean Approved that the company be able to advise consumers that their products come from unpolluted waters. Kelp is a bioaccumulator of heavy metals, Mr. Dobbins noted, and the company wants to be able to say it is grown in unrestricted waters (Dobbins, testimony).

3. STATUTORY CRITERIA & FINDINGS OF FACT

Approval of experimental aquaculture leases is governed by 12 M.R.S.A. §6072-A. This statute provides that a lease may be granted by the Commissioner of DMR upon determining that the project will not unreasonably interfere with the ingress and egress of riparian owners; with navigation; with fishing or other uses of the area, taking into consideration the number and density of aquaculture leases in an area; with the ability of the lease site and surrounding areas to support existing ecologically significant flora and fauna; or with the public use or enjoyment within 1,000 feet of beaches, parks, or docking facilities owned by municipal, state, or federal governments. The Commissioner must also determine that the applicant has demonstrated that there is an available source of organisms to be cultured for the lease site.

A. Riparian Access

Jewell Island is an undeveloped, uninhabited island owned by the State of Maine and overseen by the Department of Conservation, Bureau of Parks and Lands. The Bureau advised the Department that it has no objections to the proposed lease (CF, email from Dan Prichard to Sylvia Brann, 8-30-11).

The application describes the island as a state park accessible only by boat and notes that a small beach just north of Indian Rock is an access point for campers using the island. The application also states that “The proposed site is approximately 4,200 feet from the entrance to Cocktail Cove; the anchorage for the island’s visitors and is not in an area transited by recreational boaters” (App 6).

The site report observes that:

Island shorefront adjacent to the lease site is rocky and generally unwelcoming to landing. A vessel of the type likely to land on Jewell Island could transit thorough or around the proposed lease. No moorings or docks exist in the area (SR 4).

From this evidence, it appears that access to and from the shore of Jewell Island is gained at locations far to the north of the lease site and separated from it by Indian Rock. Such access will not be impeded by the proposed aquaculture lease site. To the extent that access may be gained along the shore of Jewell Island that lies parallel to the proposed lease site, the ninety feet of water between the east boundary of the lease site and the island shore are more than adequate for access by the type of vessel noted in the site report as likely to land on the island.

Therefore, I find that the aquaculture activities proposed for this site will not unreasonably interfere with the ingress and egress of any riparian owner.

B. Navigation

The site report states:

The proposed lease area is located along the western shore on Jewell Island and tucked between intertidal ledges to the north and breaking shoal waters to the south. Most all vessels transiting the area would travel through the 2,200-foot wide channel to the west. The ledges and shoal waters to the north and south would make navigation th[r]ough the lease site very unlikely except for access to the rocky coastline of Jewell Island (Figure 2). Vessels seeking this access could travel through the lease site or perhaps around it to the north (SR5).

As noted above, Mr. Lewis testified that there is adequate room for smaller vessels to navigate between the shore of Jewell Island and the proposed lease site (Lewis, testimony).

Mr. Dobbins testified that it would be possible to navigate over the submerged kelp lines in “lesser draft boats” drawing 5 ft. or less. He noted that he and Mr. Olson had installed a small site similar to the proposed site in waters off Boothbay, Maine in 2010, under a special license

from the Department, in order to test the ability of kelp to take up excess amounts of nitrogen and phosphorus occurring in the water as a result of outflow from a sewage treatment plant. He said he crossed that site with a lobster boat often with no problem (Dobbins, testimony).

Based on this evidence, it appears that navigation in the main channel to the west will be unaffected by the proposed lease site, that there is adequate navigable water between the east side of the site and Jewell Island, that shoals to the north and south of the proposed lease site limit navigation in any event, and that shallow draft vessels could cross the proposed aquaculture gear unimpeded. The proposed lease will not significantly impede navigation in the area.

Therefore, I find that the aquaculture activities proposed for this site will not unreasonably interfere with navigation.

C. Fishing & Other Uses

The site report describes fishing in the area as follows:

On October 3, 2011, ten lobster buoys were observed in the vicinity of the proposed lease. Six of the buoys were observed within the proposed boundaries of the lease. The remaining buoys were located in the cove to the north or between the eastern lease boundary and the shoreline.

A Harbormaster Questionnaire, requesting information about fishing, navigation, and other uses of the area, was mailed to the City of Portland on August 29, 2011. At the time of this writing [Nov. 2, 2011] no response had been received.

Recreational hook and line fishing may also occur in the near shore areas adjacent to the proposed lease (SR 5).

Mr. Dobbins testified that the narrow design of the site and its location tucked up near the shore are intended to minimize any interference with commercial lobster fishing. He presented his observations of the number of lobster buoys on and around the site on various dates between June and November, 2011, including the following:

June 11 – 2 toggles and 2 double buoys on site, 1 buoy outside the west boundary

June 19: 4 buoys on the edges of the site

July 7 – 5 buoys on the site, 4 buoys nearby

Oct. 3 – 6 buoys on the site, 4 buoys nearby; this was the date of the DMR site visit;

October is a “big lobstering month”, according to Mr. Dobbins.

Oct. 20 – 2 buoys on the site, “moderate fishing past the dropoff offshore of the site”

Nov. 16 – 1 buoy on the site, 2 buoys off the west boundary

Eric Anderson, a Cliff Island lobsterman and representative to Lobster Zone 4 since 1996, testified that while he was pleased that fishermen can work close to the proposed kelp lease, he

believes that there will be “some adverse economic effects from lack of access to the area”. He said that Mr. Dobbins’s observations were not an accurate representation of the use of the site by lobstermen, that few fishermen are active in that area in June, and that “it would have been nice to see” data for July and August (Anderson, testimony).

In answer to a question from Rachel Robinov, Mr. Dobbins said that the kelp lines would initially be deployed on the site year-round. As the applicants learn more about kelp culture, they expect to use the site cyclically, which would enable them to remove the lines during the summer, freeing the space for potential lobster fishing.

Exclusive use. The application states, “We request that fishing both lobster and dragging be restricted from the site to minimize the risk of gear entanglement” (App 6). In answer to a question from Mac McKone, Mr. Dobbins testified that lobstermen could set traps in the waters surrounding the proposed lease site, but that lobster gear set within the site would tangle in the kelp lines and so could not be accommodated. He indicated that the site would be well marked so that lobstermen would know where they could and could not deploy gear.

Other aquaculture leases. The three existing aquaculture leases in the vicinity are all located more than three miles from the proposed site at Jewell Island (SR 5). The site report states that “The proposed activities will not interfere with existing aquaculture operations in the region” (SR 5).

It is clear that the deployment of the kelp gear on the site will mean that dragging and lobstering will be excluded from that 3.03-acre area. Mr. Olson, a diver and former commercial lobsterman himself, testified that he has “swum around all the Casco Bay islands” and that he and Mr. Dobbins were careful in selecting this site. Mr. Dobbins emphasized the narrow design of the site and the fact that it is tucked up against the shore. Should the experiment succeed and a longer-term standard lease eventually be proposed for this area, removal of the kelp lines during the summer would reduce the potential for conflict between the aquaculture project and the lobster fishery.

It appears from this evidence that the site has been carefully chosen and the lease layout designed to minimize interference with commercial fishing, including lobstering. The evidence shows that lobstering activity within the proposed lease boundaries is very sparse, even during the more active lobstering season in October. Based on this evidence, it appears that the proposed lease site will not interfere with lobstering or other forms of fishing to any significant extent.

The lease boundaries must be marked in accordance with DMR Rule 2.80⁴

⁴**2.80 Marking Procedures for Aquaculture Leases**

1. When required by the Commissioner in the lease, aquaculture leases shall be marked with a floating device, such as a buoy, which displays the lease identifier assigned by the Department and the words SEA FARM in letters of at least 2 inches in height in colors contrasting to the background color of the device. The marked floating device shall be readily distinguishable from interior buoys and aquaculture gear.

Therefore, considering the number and density of aquaculture leases in the area, I find that the aquaculture activities proposed for this site will not unreasonably interfere with fishing or other uses of the area. Dragging, lobstering, and recreational fishing will be prohibited within the lease boundaries. The lease site must be marked in accordance with DMR Rule 2.80.

D. Flora & Fauna

The Department's site visit was conducted on October 3, 2011. The Department does not normally conduct SCUBA dives or videotape the sea bottom on experimental lease sites. The site report notes that available records show no documented eel grass (*Zostera marina*) beds within the proposed lease boundaries. Eel grass beds were identified prior to 2005 as existing around Indian Rock, over 200 feet north of the proposed lease site. The site report observes that "Kelp will be suspended in the water column and harvested by hand; minimizing the potential for sediment resuspension and light reduction at the neighboring [eel grass] beds" (SR6).

The site report also notes that the Maine Dept. of Inland Fisheries & Wildlife advised DMR biologists that it has "no wildlife concerns" in the area where the lease is proposed. Inner Green Island, a "significant Seabird Nesting Island", according to MDIF&W, is three-quarters of a mile south of the lease site, and "no impact is expected" (SR6).

Mr. Lewis asked if the applicants expect the kelp to reproduce while growing on the lease site. Mr. Dobbins replied that, while he has seen *Saccharina latissima* produce spore tissue within 60 days at the existing kelp farm at Little Chebeague Island (lease CAS LCI), it did not actually release spores, possibly because it was immature. He said that Ocean Approved does not yet have enough experience with kelp culture to predict whether the cultured plants can reproduce, but since they are native to Casco Bay, reproduction should not be a problem if it does occur. He said that he and Mr. Olson have harvested wild kelp as a source for their food-supply business, but that they are concerned that widespread wild harvesting could deplete the wild kelp beds, which is one reason why they are proposing to farm kelp on a lease site, instead (Dobbins/Lewis).

The evidence shows that the proposed lease site will not affect the eel grass beds to the north, will not affect wildlife in the vicinity, and will not introduce species to the area that could

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2. The marked floating devices shall be displayed at each corner of the lease area that is occupied or at the outermost corners. In cases where the boundary line exceeds 100 yards, additional devices shall be displayed so as to clearly show the boundary line of the lease. In situations where the topography or distance of the lease boundary interrupts the line of sight from one marker to the next, additional marked floating devices shall be displayed so as to maintain a continuous line of sight.
 3. When such marking requirements are unnecessary or impractical in certain lease locations, such as upwellers located within marina slips, the Commissioner may set forth alternative marking requirements in an individual lease.
 4. Lease sites must be marked in accordance with the United State's Coast Guard's Aids to Private Navigation standards and requirements.

be problematic. Based on this evidence, it appears that the proposed kelp farm will not interfere with other marine life in the vicinity.

Therefore, I find that the aquaculture activities proposed for this site will not unreasonably interfere with the ability of the lease site and surrounding areas to support existing ecologically significant flora and fauna.

E. Public Use & Enjoyment

Jewell Island, owned by the State of Maine, is not a formal state park, but it is apparently used as a destination by boaters and possibly campers. The site report notes:

A popular anchorage among recreational boaters and visitors to Jewell Island is located to the north of the proposed lease area. This cove ("Cocktail Cove") is formed by a smaller peninsula that juts from the northwestern shore of Jewell Island. The proposed lease area is more than 4,000 feet to the south of the entrance to this cove (Figure 1). To the north of Indian Rock is a beach accessible by small boat (Figure 2); the proposed activities are more than 1,000 feet from this beach and separated by Indian Rock. The shoreline of Jewell Island, immediately adjacent to the proposed activities, consists of a rocky intertidal leading to steeply sloped and undeveloped uplands. Primary access to the island is likely to occur at the afore-mentioned anchorage or beach and on the eastern side of the island where the "Punchbowl" is located (Figure 1).

Thus, the portion of Jewell Island within 1,000 feet of the proposed lease site appears to be an area that is not used for public access to the island. The Cocktail Cove anchorage is 4,000 ft. to the north of the proposed lease, and the beach north of Indian Rock is more than 1,000 ft. north of the site. This evidence supports the conclusion that the proposed lease site will not interfere with public use of or access to Jewell Island.

Therefore, I find that the aquaculture activities proposed for this site will not unreasonably interfere with the public use or enjoyment within 1,000 feet of beaches, parks, or docking facilities owned by municipal, state, or federal governments.

F. Source of Organisms

Mr. Dobbins testified that Ocean Approved has developed a method for producing kelp spores in a nursery to be grown out on the lease site. He described the nursery process and showed a spool of nylon line with kelp spores growing on it and explained how it would be deployed at the lease site. All stock is native to Casco Bay (Dobbins, testimony).

Therefore, I find that the applicant has demonstrated that there is an available source of sugar kelp, (*Saccharina latissima*), horsetail kelp (*Laminaria digitata*), and winged kelp (*Alaria esculenta*) to be cultured for the lease site.

4. CONCLUSIONS OF LAW

Based on the above findings, I conclude that:

1. The aquaculture activities proposed for this site will not unreasonably interfere with the ingress and egress of any riparian owner.
2. The aquaculture activities proposed for this site will not unreasonably interfere with navigation. The lease site shall be marked in accordance with U. S. Coast Guard requirements.
3. The aquaculture activities proposed for this site will not unreasonably interfere with fishing or other uses of the area, taking into consideration the number and density of aquaculture leases in the area. Dragging, lobstering, and recreational fishing will be prohibited within the lease boundaries. The lease boundaries must be marked in accordance with DMR Rule 2.80.
4. The aquaculture activities proposed for this site will not unreasonably interfere with the ability of the lease site and surrounding areas to support existing ecologically significant flora and fauna.
5. The aquaculture activities proposed for this site will not unreasonably interfere with the public use or enjoyment within 1,000 feet of beaches, parks, or docking facilities owned by municipal, state, or federal governments.
6. The applicant has demonstrated that there is an available source of sugar kelp, (*Saccharina latissima*), horsetail kelp (*Laminaria digitata*), and winged kelp (*Alaria esculenta*) to be cultured for the lease site.

Accordingly, the evidence in the record supports the conclusion that the proposed aquaculture activities meet the requirements for the granting of an aquaculture lease set forth in 12 M.R.S.A. §6072-A.

5. DECISION

Based on the foregoing, the Commissioner grants the requested experimental lease of 3.03 acres to Ocean Approved, LLC for three years, the term of the lease to begin within twelve months of the date of this decision, on a date chosen by the applicant; however, no aquaculture rights shall accrue in the lease area until the lease is fully executed.⁵

This lease is granted to the applicant for the purpose of cultivating sugar kelp, (*Saccharina latissima*), horsetail kelp (*Laminaria digitata*), and winged kelp (*Alaria esculenta*) using suspended culture techniques. The applicant shall pay the State of Maine rent in the amount of \$100.00 per acre per year.

As this is an experimental lease with more than 400 sq. ft. of structures and no discharge, the applicant shall post a bond or establish an escrow account pursuant to DMR Rule 2.64 (10) (D) in the amount of \$ 5,000.00, conditioned upon performance of the obligations contained in the aquaculture lease documents and all applicable statutes and regulations.

⁵ DMR Rule 2.64 (14) provides:

“The term of the lease shall begin within 12 months of the Commissioner’s decision, on a date chosen by the applicant. No aquaculture rights shall accrue in the lease area until the lease term begins and the lease is signed.”

6. CONDITIONS TO BE IMPOSED ON LEASE

The Commissioner may establish conditions that govern the use of the lease area and impose limitations on aquaculture activities, pursuant to 12 MRSA §6072-A (15)⁶. Conditions are designed to encourage the greatest multiple compatible uses of the lease area, while preserving the exclusive rights of the lessee to the extent necessary to carry out the purposes of the lease.

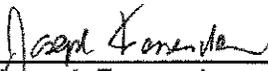
The following conditions shall be incorporated into the lease:

1. The lease site must be marked in accordance with both U.S. Coast Guard requirements and DMR Rule 2.80.
2. Dragging, lobstering, and recreational fishing will be prohibited within the lease boundaries.

7. REVOCATION OF LEASE

The Commissioner may commence revocation procedures upon determining pursuant to 12 MRSA §6072-A (22) and DMR Rule Chapter 2.64 (13) that no substantial research has been conducted on the site within the preceding year, that research has been conducted in a manner injurious to the environment or to marine organisms, or that any conditions of the lease or any applicable laws or regulations have been violated.

Dated: 1-23-2012



Joseph Fessenden
Acting Deputy Commissioner
Department of Marine Resources

⁶ 12 MRSA §6072-A (15) provides that:

“The commissioner may establish conditions that govern the use of the leased area and limitations on the aquaculture activities. These conditions must encourage the greatest multiple, compatible uses of the leased area, but must also address the ability of the lease site and surrounding area to support ecologically significant flora and fauna and preserve the exclusive rights of the lessee to the extent necessary to carry out the lease purpose. The commissioner may grant the lease on a conditional basis until the lessee has acquired all the necessary federal, state and local permits.”