Pacific Fishery Management Council
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Dorothy M. Lowman, Chair| Donald O. McIsaac, Executive Director

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Dr. Charles Lester, Executive Director
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dr. Daniel Swenson
Corps of Engineers
Los Angeles District
P.O. Box 532711
Los Angeles, CA 90053-2325

Dear Dr. Lester and Dr. Swenson,

Please accept the comments below from the Pacific Fishery Management Council (Council) regarding potential aquaculture/mariculture projects. Although the KZO Sea Farms Mariculture Project comment period has passed, we see this project as a template to inform you of our concerns regarding aquaculture and mariculture projects in general. The Council's meeting schedule does not always allow us to comment during your comment periods.

As you may know, the Council is one of eight Regional Fishery Management Councils established by the Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 1976, and recommends management actions for Federal fisheries off Washington, Oregon, and California.

The MSA includes provisions to identify, conserve, and enhance essential fish habitat (EFH) for species managed under a Council fishery management plan. The MSA requires the Council to identify and describe EFH and recommends designating "habitat areas of particular concern" (HAPC) for its managed species. EFH is the habitat necessary for every life stage of federally-managed species, which is designated using the best available scientific information; HAPCs are considered high-priority areas for conservation, management, or research because they are rare, sensitive, stressed by development, or important to ecosystem function. Each Council is authorized under the MSA to comment on any Federal or state activity that may affect the habitat, including EFH, of a fishery resource under its authority.

The Council is concerned that the KZO Sea Farms project has the potential to alter marine habitat in the vicinity of the sea farm. For example, moored shellfish farms have been shown to reduce current speeds; currents within sea farm structures can be as little as 25 percent of

the outside flow (Stevens et al. 2008). The project also has the potential to alter circulation patterns and disrupt stratification in and around the project.

Specific Essential Fish Habitat Concerns

The Council is concerned with aspects of the KZO Sea Farms project that may affect EFH for some of its managed species. The project is proposed as a 100-acre shellfish mariculture farm to be located approximately 8.5 miles offshore of Long Beach, California near the Edith Platform. As proposed, the project configuration would include 45 lines measuring 500 feet in length, spaced 100 feet apart, anchored on both ends at depths of 110 and 150 feet, and hovering approximately 20 to 30 feet below the surface. Anchors will be attached using helical screws and embedded in the seafloor. The lines will support 60 lantern nets used to grow Pacific oysters (*Crassostrea gigas*) and Mediterranean mussels (*Mytilus galloprovinciallis*) on 1,800 feet of looped fuzzy rope that is supported by the lines. In addition to EFH concerns, this large-scale web-like configuration has the potential for attracting and entangling several forms of wild marine life, and displacing other uses of the area.

An analysis of the potential impacts of project design should occur prior to project designation and buildout for any mariculture project. Further, all proposed projects should provide data on the seasonal abundance and known breeding and feeding areas used by Federally-managed species, as well as the location of designated EFH Conservation Areas in the vicinity of the project. Adverse impacts to these special EFH areas should be avoided to the greatest extent practicable. The Council is aware that the KZO Sea Farms project proponents consulted the National Marine Fisheries Service on EFH for this project, and urges such consultations for any future similar projects.

Monitoring

In its Consistency Certification, the California Coastal Commission has noted that a well-developed monitoring plan is a necessary component of any mariculture project. Since the project is a relatively new ocean use in the California Current Ecosystem, the Council strongly agrees with this conclusion. The Council recommends a robust monitoring plan that begins with the collection of baseline information on existing ocean conditions, species abundance, and seafloor characteristics at both the proposed project site and a comparable control site not affected by the project or influenced by the project's footprint. In addition, the monitoring plan should include, but not be limited to, evaluating impacts to fisheries, living marine resources, seafloor habitat, and water quality, plankton distribution, and changes to physical ocean conditions such as currents and sediment deposition. To account for the natural variation in the environment, baseline information should be gathered over multiple seasons. Monitoring would occur during and after project construction, and throughout the duration of the project, in both the project area and the control site. The project should also monitor the effects of sedimentation and oxygenation from mussel and oyster culture on the

seafloor and the potential for changes in nutrient distribution in the surrounding area (Wilding 2012).

The Council encourages the inclusion of these components prior to the Coastal Commission's final approval of the monitoring plan for the KZO sea farm and future projects.

Invasive Species

The Council is concerned about the introduction of invasive species resulting from sea farm operations. Of particular concern is the likelihood that invasive species will ride along with brood stock during shipment or on vessels transiting in the vicinity. In addition, the physical structure of the sea farm will create artificial substrate upon which non-native species could colonize. Non-native species can be detrimental to native species and can alter habitat. The Council recommends a monitoring program specific to the assessment and control of invasive species and supports the Hazard Analysis and Critical Control Point (HAACP) plan required by the Coastal Commission for the KZO sea farm. The HAACP is appropriate for any future sea farms as well.

Decommissioning

A decommissioning plan should include provisions for removing all structures associated with the sea farm. A bond or other mechanism for financial security for this phase should be a requirement in the event of default or bankruptcy.

Financial Responsibility

The Council recommends requiring fiscal mechanisms to ensure removal of lost or damaged equipment, as well as site remediation that will survive bankruptcies, corporate name changes, etc. In addition, a mechanism should be required to hold fishermen harmless from liability in the event of accidental contact with the project structure, and a mitigation plan for lost and damaged fishing gear as a result of the project.

Marine Spatial Planning

Using marine spatial planning tools, KZO Sea Farms should identify important ocean use areas near the project, such as commercial, recreational, and tribal fishing grounds; marine sanctuaries and marine protected areas; recreational areas; navigational channels; oil and mineral extraction areas; military training areas; and approved dredge material disposal sites. To avoid these areas to the greatest extent possible, the project should meet with all stakeholders who have interests in the area. The Council recommends that future mariculture interests be considered in the broader context of responsible marine spatial planning, prior to specific project proposals.

Thank you for considering our comments. The Council looks forward to future opportunities to comment on the KZO Sea Farms Mariculture Project and on this emerging use of our shared ocean. Please feel free to contact us with any questions.

Sincerely,

D. O. McIsaac, Ph.D.
Executive Director

JDG:kam

Cc: Council Members
Habitat Committee Members
Ms. Jennifer Gilden

Citations

Stevens, C., D. Plew, N. Hartstein, and D. Fredriksson. 2008. The Physics of Open-Water Shellfish Aquaculture. Aquacultural Engineering, 38(3):145-160.

Wilding, T.A. 2012. Changes in Sedimentary Redox Associated with Mussel (*Mytilus edulis L.*) Farms on the West Coast of Scotland. PLoS ONE 7(9):e45159. doi:10.1371/journal.pone.0045159