March 20, 2015

Dorothy Lowman, Chair
Pacific Fishery Management Council
1100 NE Ambassador Place, Suite 101
Portland, OR 97220

Re: Agenda Item C.1.c. Current Habitat Issues: Public Comment

Dear Chair Lowman and Council Members,

On behalf of Audubon California, Earthjustice, Oceana, and the Redwood Region Audubon Society, and our collective members, we are writing to let the Council know we support action this month on the part of the Habitat Committee to review two proposed projects that would substantially expand the footprint of oyster aquaculture in Humboldt Bay, California. We are also respectfully providing the Council with our two comment letters (attached herein) reviewing the separate yet related projects.

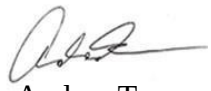
The proposed expansion consisting primarily of culch-on-longline oyster mariculture would include approximately 1150 acres of intertidal habitat, including at least 925 acres of eelgrass *(Zostera marina)* designated as Essential Fish Habitat under the Fishery Management Plan for the Pacific Coast Groundfish Fishery. Regulations implementing essential fish habitat (EFH) designations for this fishery include Humboldt Bay as a Habitat Area of Particular Concern (HAPC) for Estuaries and for Sea Grass. The California Department of Fish and Wildlife has identified the project area as core spawning habitat for Pacific herring, an Ecosystem Component Species in the Coastal Pelagic Species Fishery Management Plan, and the third most important spawning site for Pacific herring in the state. Humboldt Bay is also within EFH for Coastal Pelagic Species.

We appreciate the attention of the Habitat Committee to this important issue and look forward to full Council review of the serious adverse impacts that these proposed projects would have on Essential Fish Habitat and Pacific herring spawning habitat. We also ask that the Council follow up on its review by providing comments to the Harbor District outlining concerns identified by the Habitat Committee and the rest of the Council.

Thank you for your time and consideration.

Sincerely,

Anna Weinstein
Seabird and Marine Program Director
Audubon California



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March 12, 2014

Mr. Jack Crider
Executive Director
Humboldt Bay Harbor, Recreation and Conservation District
P.O. Box 1030
Eureka, CA 95502-1030

Dear Director Crider and Commissioners:

On behalf of our members, we submit the following comments on the Draft Environmental Impact Report (DEIR) for the Humboldt Bay Mariculture Pre-Permitting Project. While we recognize that shellfish aquaculture, when properly sited and scaled, can be carried out sustainably, this Project would have significant, adverse effect on numerous habitats and species in Humboldt Bay. Furthermore, the Project is only one of two large projects currently undergoing California Environmental Quality Act (CEQA) review that would together expand the existing, substantial footprint of aquaculture in the North Bay from approximately 400 acres to approximately 1549 acres. The District's proposed project would occupy an additional 527 acres while the project proposed by Coast Seafoods[1] would occupy 622 acres, representing an approximate four-fold increase in sensitive intertidal areas converted to mariculture use (Figure 2).

The DEIR fails in numerous ways to analyze and offer adequate mitigation for the significant individual and cumulative impacts that this Project would have on the environment, including sensitive species, habitats, and species protected under the federal and state Endangered Species Acts (ESA). Mitigation measures would fall far short of protecting these resources, and the DEIR

[1] Initial Study: Coast Seafoods Company, Humboldt Bay Shellfish Culture Permit Renewal and Expansion Project. 2015.

fails to describe cumulative impacts from both projects. As such, the DEIR fails to satisfy CEQA requirements. For these reasons, we strongly oppose this project as currently proposed.

Given the sensitive nature of the habitats in Humboldt Bay and their critical importance to birds, fish, other wildlife, and recreational and fishing communities, any substantial expansion of mariculture operations would have significant, unavoidable impacts to the environment and associated uses. The importance of these resources underscores the need for a thorough CEQA review and also for careful planning for their future use and conservation. We therefore urge the Harbor District to adopt a marine spatial planning framework to manage continued aquaculture operations in Humboldt Bay, as well as any proposed expansion of such operations. That framework should set forth clear criteria for all existing and proposed aquaculture operations, including conservation and restoration of fish, wildlife and ecosystem services provided to the people of California by the natural resources of Humboldt Bay. The framework should also identify and evaluate sensitive habitat areas and species that use the Bay, their conservation needs and vulnerabilities, and promote further research on the effects of aquaculture on these species and habitats (the need for which is called out numerous times in the DEIR itself). The criteria should be developed and applied by the lead, responsible and trustee agencies and include full public input. Such a process should ensure that plans for continued aquaculture and any proposed expansions in Humboldt Bay are detailed and transparent, and individual and cumulative impacts are evaluated in the context of their overall significance, including longer term climate change effects. Such an approach would be consistent with the framework already set forth in the Humboldt Bay Management Plan.[2]

In addition, we support the California Coastal Commission's suggestion, that the Harbor District convene a Joint Review Panel of responsible agencies to review both the Coast Seafoods and Harbor District proposed projects.[3] These projects are large, controversial, and complex; they require multiple state and federal permits and associated environmental review processes. Some agencies have already identified numerous insufficiencies in the projects' current CEQA documents. With respect to the Harbor District DEIR, we agree that it is wholly insufficient to support going forward with this project. These deficiencies are explained below.

Legal Background: California Environmental Quality Act

CEQA is intended to provide for the protection and enhancement of the state's environment and to "ensure that the long-term protection of the environment, consistent with the provision of a decent home and suitable living environment for every Californian, shall be the guiding criterion in public decisions."[4] CEQA accomplishes these goals in part by ensuring that proposed projects are authorized only after their environmental impacts are thoroughly analyzed in an EIR, the

[2] Humboldt Bay Harbor, Recreation, and Conservation District, Humboldt Bay Management Plan (May 2007).
[3] California Coastal Commission. 2015. Letter to Humboldt Bay Harbor, Recreation and Conservation District on the Initial Study: Coast Seafoods Company, Humboldt Bay Shellfish Culture Permit Renewal and Expansion Project. February.
[4] Pub. Res. C. § 21001(a)-(d).

public has full opportunity to inform that analysis, and necessary mitigation measures have been adopted.

A. Analysis of Significant Impacts

CEQA requires that an "EIR must demonstrate that the significant environmental impacts of the proposed project were adequately investigated and discussed and it must permit the significant effects to be considered in the full environmental context."[5] CEQA defines "significant effect on the environment" as "a substantial, or potentially substantial, adverse change in the environment."[6] In addition, an EIR "must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published…or…at the time the environmental analysis is commenced, from both a local and regional perspective."[7]

Notably, CEQA requires analysis of effects on "ecosystems," the boundaries of which are not defined by state lines.[8] Therefore, the EIR must analyze environmental effects occurring both within California and outside of it. Indeed, as CEQA is "to be interpreted in such manner as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language" the Project's impacts must be analyzed in terms not only of their effects around Humboldt Bay, but throughout the Pacific Flyway and California Current Large Marine Ecosystem.[9] This is particularly important for this project given that many of the species it affects are highly migratory and commercially important.

The EIR's conclusions regarding the project impacts must be based on a full analysis of relevant factors and the best available information. A conclusion regarding the significance of an environmental impact that is not based on an analysis of the relevant facts fails to fulfill CEQA's informational goal.[10] Furthermore, CEQA requires an agency to "use its best efforts to find out and disclose all that it reasonably can."[11]

As detailed below, the DEIR's analysis of significant impacts is grossly inadequate in that it relies on unsubstantiated conclusions and uncertain, insufficient mitigation measures, lacks scientific basis, and conflicts with local, state, and federal policies and laws related to resource protection.

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[5] CEQA Guidelines, § 15125(c), (emphasis added).
[6] Pub. Res. C. § 21068.
[7] CEQA Guideline § 15125(a)
[8] CEQA Guidelines § 15358(a)(2).
[9] *Laurel Height Improvement Ass'n v. Regents of University of California*, 47 Cal.3d 376, 404 (1988).
[10] *Stanislaus Natural Heritage Project*, 48 Cal.App.4th at 182; *Citizens of Goleta Valley v. Board of Supervisors of Cty of Santa Barbara*, (Cal. 1990) 52 Cal.3d 553, 568.
[11] Guidelines § 15144; *see also* Guidelines § 15151 (an EIR must disclose what is "reasonably feasible").

B. Analysis of Cumulative Impacts

CEQA requires that an EIR address cumulative impacts "when the project's incremental effect is cumulatively considerable."[12] The EIR must therefore identify all existing and likely future projects that contribute to the same cumulative impacts as the proposed project. Cumulative impacts are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts."[13]

The cumulative impact analysis must address the severity of the impacts and their likelihood of occurring. An adequate discussion of significant cumulative impacts must include, among other things, a "summary of the expected environmental effects to be produced by those projects with specific reference to additional information stating where that information is available . . . ."[14] In other words, in deciding whether to approve a project, decision makers need to know what the expected impacts will be on the ground as a result of all of the projects identified as contributing to cumulative impacts.

C. Analysis of Alternatives

The analysis of alternatives to the proposed project lies at "[t]he core of an EIR."[15] In this analysis, the EIR must consider a reasonable range of alternatives that would avoid or substantially lessen this impact while feasibly attaining most of the Project's basic objectives.[16] A "reasonable range" of alternatives includes alternative locations for project as well as alternatives to the project.[17] In addition, the EIR must analyze a "no project" alternative.[18] If the EIR refuses to consider a reasonable range of alternatives or fails to support its analysis with substantial evidence, the purposes of CEQA are subverted and the EIR is legally inadequate.[19] If a feasible alternative exists that will meet the project's objectives while reducing or avoiding its significant environmental impacts, the project may not be approved.[20]

As explained below, the range of alternatives consider in the Harbor District DEIR does not meet CEQA's requirement to avoid or substantially lessen the project's impacts. Nor does the DEIR explain the rationale for selecting the alternatives that it does consider or offer substantial evidence that any of the alternatives other than the "No Project" alternative meet CEQA requirements.

D. Mitigation Measures

[12] CEQA Guidelines § 15130; *see also* CEQA Guidelines § 15355.
[13] CEQA Guidelines § 15355.
[14] CEQA Guidelines, § 15130(b)(4).
[15] *Citizens of Goleta Valley*, 52 Cal. 3d at 564; *see also* Pub. Res. Code § 21002.1(a) ("The purpose of an environmental impact report is . . . . to identify alternatives to the project . . . .").
[16] *See* § 21100(b)(4); CEQA Guidelines § 15126.6(a).
[17] CEQA Guidelines, § 15126.6(a).
[18] CEQA Guidelines, § 15126.6(e).
[19] *San Joaquin Raptor*, 27 Cal. App. 4th at 735-38; *Kings County Farm Bureau*, 221 Cal. App. 3d at 736-37.
[20] Pub. Res. Code § 21002.

CEQA's core substantive component requires that any public agency, including the Harbor District, "*shall* mitigate or avoid the significant effects . . . of projects that it carries out or approves *whenever* it is feasible to do so."[21] CEQA requires agencies must adopt environmentally superior alternatives or feasible mitigation measures to substantially decrease or avoid otherwise significant adverse environmental impacts of the proposed project.[22] To enable that decision making process, the EIR must set forth mitigation measures that can be adopted at the findings stage of the planning process. Those measures should be capable of: (a) "[a]voiding the impact altogether by not taking a certain action or parts of an action"; (b) "[m]inimizing impacts by limiting the degree or magnitude of the action and its implementation"; (c) "[r]ectifying the impact by repairing, rehabilitating, or restoring the impacted environment"; or (d) "[r]educing or eliminating the impact over time by preservation and maintenance operations during the life of the action."[23] The EIR must also include evidence of each mitigation measure's efficacy.[24]

In addition, agencies may review a project proponent's prior shortcomings in analyzing the adequacy of proposed mitigation measures. The Supreme Court has stated that "[b]ecause an EIR cannot be meaningfully considered in a vacuum devoid of reality, a project proponent's prior environmental record is properly a subject of close consideration in determining the sufficiency of the proponent's promises in an EIR."[25]

In addition to CEQA's mitigation requirements, the California Endangered Species Act (CESA) requires full mitigation of impacts to state-listed species.[26] In particular, any permit issued to authorize incidental take of such species by the project must provide mitigation for all impacts on the species resulting from project, meaning that mitigation must address habitat loss as well as direct take.

The mitigation measures proposed in the DEIR are unsupported by evidence or analysis, and do not begin to meet CEQA's requirement to avoid impacts in the first instance, and otherwise minimize, rectify, or eliminate the impacts over time.

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As detailed below, we strongly disagree with many of the assertions and determinations made in the DEIR. The DEIR asserts that the project with mitigation incorporated would have less than significant impacts on special status species, riparian habitats and sensitive natural communities, wildlife corridors or nursery sites, and federally protected wetlands. It also asserts that the project

[21] Pub. Res. Code § 21002.1(b) (emphasis added).
[22] Pub. Res. Code §§ 21002, 21081(a); CEQA Guidelines, §§ 15002(a)(3), 15021(a)(2), 15091(a)(1).
[23] CEQA Guidelines § 15370.
[24] *See Save Our Peninsula Committee v. Monterey County Board of Supervisors* (2001) 87 Cal. App. 4th 99, 130.
[25] *Laurel Heights Improvement Assoc. of San Francisco v. Regents of the University of California*, 47 Cal.3d 376, 420 (Cal. 1988).
[26] Pub. Res. C. § 2081(b)-(c).

would not conflict with local policies and ordinances protecting biological resources, or with approved local, state or regional habitat conservation plans. These assertions are not consistent with the best available science or the laws and policies protecting the natural resources at issue. As described below, the DEIR falls far short of CEQA procedural and substantive requirements. The Project may not be permitted to move forward based on such patently inadequate analysis and mitigation.

The DEIR Fails to Provide a Complete and Accurate Project Description

The DEIR's project description fails to specify which methods of aquaculture will be used at Sites 1-4 (Figures 2-10), even though different methods result in different types and degrees of impacts to the resources at issue. The DEIR admits that this omission renders it impossible to predict impacts on certain resources, such as the effect of disturbance on waterfowl. For example, the DEIR notes that "aquaculturists will routinely visit leased sites for installation, inspections, planting and harvesting, product grading, and other activities associated with aquaculture practices. The number of visitations to each site will depend on the types of aquaculture operations that are occurring" which can range from daily to monthly visits. As noted below, brant are highly susceptible to disturbance and other waterfowl and shorebirds are susceptible to disturbance. Notwithstanding that it offers no scientific basis for its conclusion, the DEIR simply dismisses disturbance to waterbirds as less than significant without mitigation. Both the DEIR's failure to fully describe the project and its failure to offer a reasoned basis for its conclusions violate CEQA.

Without a complete and accurate project description, an agency and the public cannot be assured that all of a project's environmental impacts have been revealed and mitigated. "An accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR."[27] A complete project description is indispensable because "[a] curtailed or distorted project description may stultify the objectives of the reporting process."[28] The DEIR's failure to provide a full and accurate project description impedes any accurate analysis of impacts and undercuts the validity of the entire document under CEQA.

The Project Would Have Significant Impacts on Eelgrass (*Zostera marina*) and Fails to Comply with Existing Local, State, and Federal Policies for Protection of Eelgrass

The Harbor District Project would expand aquaculture operations in 483 acres of intertidal habitats, with 48 acres in dense eelgrass (defined as >84% cover) and 306 acres in patchy eelgrass (defined as 10%-84% cover). For the following reasons, we strongly disagree with the DEIRs conclusion that with implementation of mitigation measures BIO 3-5 impacts to eelgrass will be less than significant. Aquaculture expansion into 48 acres of dense eelgrass is in itself a significant impact. The DEIR lacks detail on how avoidance of eelgrass by boats will be monitored or reviewed. In addition, the DEIR proposes a one-meter buffer (BIO-4) between

[27] *County of Inyo v. City of Los Angeles* (1977) 71 Cal. App. 3d 185 192-93.
[28] *Id.* at 199; *see also San Joaquin Raptor/Wildlife Center v. Stanislaus County*, 27 Cal.App.4th 713, 730 (1994) ("An accurate project description is necessary for an intelligent evaluation of the potential environmental effects of a proposed activity.")

aquaculture gear placement and eelgrass. Expanding aquaculture into dense eelgrass with a one-meter buffer between eelgrass and aquaculture equipment does not comply with state and federal spacing requirements, which were carefully developed and promulgated to protect eelgrass.

Specifically, the California Code of Regulations California regulations prohibit cutting or disturbing eel grass,[29] and aquaculture leases produced by the Department of Fish and Wildlife (DFW) include explicit language in lease agreements that eelgrass "may not be cut or disturbed."[30] DFW further requires a 10-foot buffer between the eelgrass and the aquaculture gear.[31]

The Department's regulations for protecting eelgrass are underscored by the California Eelgrass Mitigation Policy (CEMP), developed and promulgated by the National Marine Fisheries Service (NMFS). The primary directive of the CEMP is to preserve existing eelgrass extent and function by avoiding development in eelgrass:

> It is NMFS' policy to recommend no net loss of eelgrass habitat function in California. For all of California, compensatory mitigation should be recommended for the loss of existing eelgrass habitat function, but only after avoidance and minimization of effects to eelgrass have been pursued to the maximum extent practicable.

The CEMP further notes that "while improvements in eelgrass management have occurred overall, the importance of eelgrass both ecologically and economically, coupled with ongoing human pressure and potentially increasing degradation and losses associated with climate change, highlight the need to protect, maintain, and where feasible, enhance eelgrass habitat."[32]

Notably, in order to accommodate fluctuations in eelgrass growth, the CEMP defines eelgrass habitat as "areas of vegetated eelgrass cover (any eelgrass within 1 m^2 quadrat and within 1 m of another shoot) bounded by a 5 m wide perimeter of unvegetated area." The DEIR ignores this definition of eelgrass habitat and, in doing so, significantly underestimates the area of eelgrass habitat affected by both the Harbor District and the Coast Seafoods projects.

In fact, the DEIR does not even comply with the Harbor District's own Humboldt Bay Management Plan. That Plan adopts the mitigation priority set forth in CEQA, which requires that project proponents first avoid impacts altogether, then proceed to minimize those impacts.[33]

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[29] 14 C.C.R. §30.10.
[30] DFW. 1985. Lease agreement between Cove Mussel Company and DFW. Sacramento, CA. Provided by K. Ramey, DFW.
[31] Ramey, K. CDFW. Pers. Comm. 2015.
[32] NOAA Fisheries. West Coast Region. 2014. California Eelgrass Mitigation Policy and Implementing Guidelines http://www.westcoast.fisheries.noaa.gov/publications/habitat/california_eelgrass_mitigation/Final%20CEMP%20October%202014/cemp_oct_2014_final.pdf
[33] Humboldt Bay Harbor, Recreation, and Conservation District, Humboldt Bay Management Plan (May 2007), p. 209.

Moreover, the Plan assumes a minimum 100-foot buffer between projects and aquatic habitat areas adjacent to them.[34]

Unfortunately, the Harbor District has not chosen to avoid impacts to eelgrass: the DEIR proposes to expand aquaculture into 48 acres of dense eelgrass and fails to account for the 5 meter perimeter of unvegetated areas around all areas covered by eelgrass. The small buffers the DEIR does propose are wholly inadequate to prevent degradation of eelgrass habitat.[35]

Finally, much of the proposed project area is comprised of intertidal mudflats characterized by "leopard skin" pattern of eelgrass distribution, where eelgrass occurs in depressions that retain water during low tide.[36] Implementing small buffers of one to five meters around eelgrass would create a patchwork of aquaculture sites that would likely require frequent movement around eelgrass areas, exposing the sites to unavoidable impacts such as trampling, boat propeller damage, and marine debris.[37] The Coastal Commission notes that "the environment often presents challenges to these structures and materials due to unanticipated degradation, movement, burial, loss and discharge, potentially resulting in the creation and release of marine debris. If it remains uncollected, such debris may pose a threat to marine habitats and wildlife." Therefore, due to the effects of routine maintenance activities as well as the likelihood of marine debris impacts, we believe that aquaculture activities are incompatible with resource protection within patchy (<84% cover) eelgrass habitat.

The Project Would Have Significant Effects on a Habitat Area of Particular Concern

Federal fisheries management regulations protect eelgrass habitat due to its vital role in supporting commercially targeted fish populations. The Fishery Management Plan for the Pacific Coast Groundfish Fishery and regulations implementing essential fish habitat (EFH) designations for this fishery include Humboldt Bay as a Habitat Area of Particular Concern (HAPC) for Estuaries and for Sea Grass.[38] An HAPC is an area within designated EFH that is "rare, particularly susceptible to human-induced degradation, especially ecologically important, and/or located in an environmentally stressed area. HAPC designations are used to provide additional focus for conservation efforts."[39] In designating sea grass habitat as an HAPC, fishery managers noted that such habitats are of ecological importance and sensitive to human-induced

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[34] *Id.* at 210.
[35] *See also* 40 C.F.R §§ 230.1, 230.43 (EPA Clean Water Act Section 404(b)(1) Guidelines, explaining that degradation of "special aquatic sites" such as eelgrass "is considered to be among the most severe environmental impacts covered by these Guidelines").
[36] Schlosser, S., and A. Eicher. 2012. The Humboldt Bay and Eel River Estuary Benthic Habitat Project. California Sea Grant Publication T-075.
[37] Tallis, H., J. Ruesink, B. Dumbauld, S. Hacker, L. Wisehart. 2009. Oysters and aquaculture practices affect eelgrass density and productivity in a Pacific Northwest Estuary. Journal of Shellfish Research 28(2): 251-261.
[38] Pacific Coast Groundfish Fishery Management Plan. Essential Fish Habitat Designation and Minimization of Adverse Impacts Final Environmental Impact Statement Prepared by National Marine Fisheries Service Northwest Region; 50 C.F.R. §§ 660.395, 660.399.
[39] NOAA Fisheries. 2015. Habitat Areas of Particular Concern.
http://www.westcoast.fisheries.noaa.gov/habitat/habitat_types/HAPC.html

environmental degradation. The Pacific Fishery Management Council (Council) notes that "designating HAPCs allows managers to focus their attention on conservation priorities during review of proposals, gives those habitats extra management protection, and gives the fish species with HAPCs an extra buffer against adverse impacts."[40]

Under the federal Magnuson-Stevens Fishery Conservation and Management Act, the Council shall make recommendations to NMFS and relevant state agencies concerning activities (like this Project) that the Council determines are likely to adversely affect the habitat of anadromous fish.[41] In addition, upon receiving informing that an action authorized, funded, or undertaken by a state agency would adversely affect EFH, NMFS must recommend measures to conserve that habitat.[42]

Loss of Eelgrass Habitat Is a Significant Environmental Effect and Allowing Such Loss Is Incompatible with Applicable Law and Policy

Humboldt Bay contains approximately 5,646 acres of eelgrass, which represents between 45-53% of the state's total eelgrass.[43] Eelgrass is the dominant macrophyte of the shallow subtidal and lower intertidal zones. Eelgrass is one of the rarest yet most productive habitats in California. Collectively, just five bays—Humboldt, San Francisco, San Diego, Mission, and Tomales—support more than 80% of the known eelgrass in the state. The uneven distribution of eelgrass resources increases the risk to this habitat and contributes to its dynamic nature. Further, the narrow depth range within which eelgrass can occur further places this habitat at risk in the face of global climate change and projected sea-level rise.

Because eelgrass is highly productive, it is considered to be a foundation or habitat-forming plant species. Eelgrass contributes to ecosystem functions at multiple levels: as a primary and secondary producer, habitat structuring element, substrate for epiphytes and epifauna, and a sediment stabilizer and nutrient cycling facilitator. Eelgrass provides important foraging areas and shelter to young fish and invertebrates, food for migratory waterfowl and sea turtles, and spawning surfaces for invertebrates and fish, such as Pacific herring. Indeed, eelgrass is an essential refuge, foraging, and spawning habitat for many marine species, including such economically valuable species as Pacific salmon, Pacific herring, and Dungeness crab.[44] Dungeness crab adults are found in subtidal or intertidal areas on sand, mud, or associated with eelgrass beds. Bare habitats are infrequently used by juveniles, most likely due to a lack of refuge from predation and decreased food abundance. Vegetated, intertidal estuaries appear to be important nursery habitats for young crabs.[45] Eelgrass also is a source of organic carbon in

[40] Pacific Fishery Management Council. 2014. Backgrounder: Essential Fish Habitat.
[41] 16 U.S.C. § 1855(b)(3)(B).
[42] 16 U.S.C. § 1855(b)(4)(B).
[43]Schlosser, S., and A. Eicher. 2012. The Humboldt Bay and Eel River Estuary Benthic Habitat Project. California Sea Grant Publication T-075.
[44] Plummer,M. et al. 2013. The Role of Eelgrass in Marine Community Interactions and Ecosystem Services: Results from Ecosystem-Scale Food Web Models Ecosystems Volume 16, Issue 2, pp 237-251
[45] University of Washington. 2015. Encyclopedia of Puget Sound: Dungeness Crab.

estuarine and nearshore marine food webs, thus contributing to productivity beyond the eelgrass beds themselves. In addition, eelgrass has the capacity to sequester carbon in the underlying sediments and may help offset carbon emissions.[46]

The Project Would Have Significant Impacts on Pacific Herring and Commercially Important Fish and Crabs

Humboldt Bay is the third largest spawning site for herring in California. The Department of Fish and Wildlife has mapped persistent spawning habitat for herring in Humboldt Bay (Figure 2). Due to the foundational importance of herring as prey for salmon and wildlife, a primary goal of the DFW's herring commercial fishery program is to "safeguard herring as an important forage species for all living resources of marine and estuarine ecosystems that utilize herring as a food source."[47] The DEIR states that the project would have a less than significant impact on spawning herring through the mitigation measures BIO 3-5 (eelgrass avoidance by boats; eelgrass avoidance by culture equipment; avoidance of shell deposition) and BIO 7 (spawning herring avoidance and egg deposition on aquaculture equipment). We strongly disagree with this assertion. For the reasons described below, these mitigation measures do not reduce impacts to a less than significant level.

Conserving Pacific herring is a particularly high priority in light of herring's role as prey for salmonids and therefore supporting a direct commercial fishery.[48,49] Adverse impacts to herring have a significant potential to adversely impact salmonids. Adverse impacts to salmon are particularly significant in light of their imperiled status. Chinook salmon, coho salmon, and steelhead are protected under both the California and federal endangered species acts. In addition to relying on the herring spawned in Humboldt Bay as a critical food source, these species rely on Humboldt Bay itself as part of their habitat. In fact, Humboldt Bay is included in designated critical habitat for Chinook salmon, coho salmon, and steelhead under the federal ESA. Herring and their roe also are key prey for Dungeness crab, brant and other wildlife including a variety of Pacific Flyway shorebirds and waterbirds. Any level of adverse impact to herring spawning success is therefore unacceptable.

The proposed Project area includes known herring spawning areas, as shown in Figure 2. The best available scientific information, combined with the key importance of herring as prey for salmon and the whole marine ecosystem, shows that every spawning area for this key forage species is essential. Within spawning habitat, numerous factors, such as environmental variables and fish abundance, influence the locations where spawning occurs in a given year, and this

[46] Simenstad, C. A., and R. C. Wissmar. 1985. Delta carbon-13 evidence of the origins and fates of organic carbon in estuarine and nearshore food webs. Marine Ecology Progress Series 22:141-152.
[47] DFW. 2015. Pacific herring commercial fishing regulations: Final Supplemental Environmental Document.
[48] Brodeur, R.D. 1990. A synthesis of the food habits and feeding ecology of salmonids in marine waters of the North Pacific. (INPFC Doc.) FRI-UW-9016. Fish. Res. Inst., Univ.
Washington, Seattle. 38 pp.
[49] Merkel, T. 1957. Food habits of the king salmon, Oncorhyncus tshawytscha, inh the vicinity of San Francisco, CA. CDFG 43:249-270.

spatial diversity of spawning locations promotes population resiliency and may enable the population to spawn in years with varying environmental conditions: According to Fisheries and Oceans Canada, the federal agency responsible for managing the west coast's most numerous herring spawning areas, "The locations that support large and repetitive spawnings deserve the most attention and consideration from possible environmental impacts."[50]

As noted above, both the CEMP and the Humboldt Bay Management Plan emphasize avoidance of impacts to eelgrass habitat, including a 5-meter unvegetated perimeter around eelgrass stands. This indicates that aquaculture equipment must be spaced at least 5 meters from the area's eelgrass in order to protect the function of eelgrass habitat.

The statement that herring can "successfully reproduce with eggs deposited on shellfish culture equipment" is not only unsubstantiated but is contradicted by the best available science. While herring will to some extent spawn on hard natural and artificial substrates, such as unsilted gravel and pilings,[51,52,53,54] artificial surfaces do not provide the same quality spawning habitat as eelgrass. Indeed, a study in Puget Sound found that "[t]he local disappearance of some eelgrass meadows has led to the cessation of herring spawning activity in particular areas."[55]

The Project is also likely to disturb holding and spawning herring through routine maintenance operations. The Washington Department of Fish and Wildlife notes that "[c]onservation of herring spawning habitat, and *minimizing disturbance in the prespawning holding areas* (emphasis added) is key to the preservation of the herring stocks inside Puget Sound."[56] The same principles apply in Humboldt Bay.

The project's likely significant adverse impacts on herring are all the more serious in light of the reduced abundance of Pacific herring stock abundances on the West Coast, [57] including in Humboldt Bay. From 1974 to 2007, herring biomass estimates for Humboldt Bay averaged just under 400 tons. Herring returns weakened dramatically between 2000 and 2007—the last year

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[50] Hay. D. 2013.Herring spawning areas of British Columbia: a review, geographic analysis, and classification. Fisheries and Oceans Canada. Internal Report.
[51] Shelton. A., T. Francis, G. Williams, B. Feist, K. Stick and P. Levin. 2014. Habitat limitation and spatial variation in Paciific herring egg survival. Mar Ecol Prog Ser vol. 514: 231-245
[52]Haegele, Schweigert, J. 2011. Distribution and Characteristics of Herring Spawning Grounds and Description of Spawning Behavior. Canadian Journal of Fisheries and Aquatic Sciences, 1985, 42(S1): s39-s55, 10.1139/f85-261 Canadian Journal of Fisheries and Aquatic Sciences, 1985, 42(S1): s39-s55, 10.1139/f85-261
[53] DFW. 2014. Pacific herring commercial fishing regulations: Final Supplemental Environmental Document.
[54] Shelton. A., T. Francis, G. Williams, B. Feist, K. Stick and P. Levin. 2014. Habitat limitation and spatial variation in Pacific herring egg survival. Mar Ecol Prog Ser vol. 514: 231-245
[55] Gaeckle, J. L., P.Dowty, H. Berry, and L. Ferrier. 2009. Puget Sound Submerged Vegetation Monitoring Project: 2008 Monitoring Report, Nearshore Habitat Program. Washington State Department of Natural Resources, Olympia, WA
[56] Washington State Department of Fish and Wildlife. Pacific Herring Information Summary. http://wdfw.wa.gov/conservation/fisheries/PacificHerringInformation_121911.pdf
[57] McKechnie, I. et al. 2014. Archaeological data provide alternative hypotheses on Pacific herring (Clupea pallasii) distribution, abundance, and variability. Proceedings of the National Academy of Sciences. E807–E816.

spawning biomass was assessed in Humboldt Bay—when biomass had fallen to 7 tons.[58] According to preliminary analyses from the Farallon Institute for Advanced Ecosystem Research, there has been a statistically significant negative linear trend in herring spawning biomass in Humboldt Bay from 1974-2007.[59]

The Importance of Pacific Herring to Wildlife

Recent analyses of predator diets in the California Current System (British Columbia through Baja California) highlight the importance of herring to predators. For 32 predators evaluated in this region, Pacific herring ranks as the fourth most significant prey species out of a total of 27 prey species. [60]

Herring and their roe provide a persistent, energy-rich, and aggregated food source for a wide suite of bird species. Herring aggregate to spawn in the late winter and spring, and their eggs are highly available, energetically rich, and high in lipids. Spawning locations are localized and herring eggs are abundantly available for several weeks. Herring roe are eaten by dozens of bird species, including brant, American wigeon, lesser and greater scaup, harlequin duck, surf scoter, greater white-fronted goose, common goldeneye, black scoter, white-winged scoter, redhead, canvasback, bufflehead, ring-billed gull, glaucous-winged gull, Bonaparte's gull, western gull, and mew gull.[61] Adult herring are consumed by numerous marine birds including Brandt's and double-crested cormorants, brown pelicans, western grebes, terns, gulls, shearwaters, cormorants, common murre, auklets, tufted puffins, marbled murrelet, and brown pelican.[62,63]

Pacific sea ducks are more dependent on herring than other avian taxa. Harlequin ducks aggregate in British Columbia when feeding on herring roe,[64] and long-tailed ducks [65]seek out and preferentially feed on herring roe. Scoters in particular are highly dependent on herring roe for overwinter survival and breeding success. Scoters alter their movement and habitat use patterns in spring to take advantage of ephemeral and energy-rich herring roe, suggesting that

[58] DFW. 2007. Pacific herring commercial fishing regulations: Final Supplemental Environmental Document.
[59] Weinstein, A., Thompson, S.A., Krieger, K., Sydeman, W. Trends in spawning biomass of Pacific herring, *Clupea pallassii*, British Columbia through California. In prep.
[60] Ainley, D., P. Adams, and J. Jahncke. 2014. Towards ecosystem based-fishery management in the California Current System – Predators and the preyscape: a workshop. Unpublished report to the National Fish and Wildlife Foundation. Point Blue Conservation Science. Petaluma, CA.
[61] Bayer, R. 1980. Birds feeding on herring eggs at the Yaquina River Estuary, Oregon. Condor 82 (193-198).
[62] Elliott, M. R. Hurt and W. Sydeman. Breeding Biology and Status of the California Least Tern *Sterna antillarum browni* at Alameda Point, San Francisco Bay, California. Waterbirds. 30 (3).
[63] DFW. 1998. Final Environmental Document, Pacific Herring Commercial Fishing Regulations. 1998.
[64] Rodway, M, Heidi M. Regehr, John Ashley, Peter V. Clarkson,
R. Ian Goudie, Douglas E. Hay, Cyndi M. Smith, and Kenneth G. Wright. Aggregative response of Harlequin ducks to herring spawning in the Strait of Georgia, British Columbia. Can. J. Zool. 81: 504–514 (2003)
[65] Zydelis, R. and D. Ruskuyete 2005. Winter foraging of long-tailed ducks exploiting different benthic communities in the Baltic Sea. Wilson Bulletin 117(2):133–141, 2005

this food resource is of particular importance to these species.[66,67] The Pacific population of surf scoters have declined by 50-60% in the last 50 years,[68] while greater and lesser scaup, two other diving ducks that depend on herring roe, have declined by 15%.[69] Wintering piscivorous marine birds in Puget Sound have declined over decadal scales, likely reflecting a decline in herring, sand lance and smelt.[70] These decreases in herring spawning aggregations throughout the birds' ranges make the remaining spawning sites, like in Humboldt Bay, all the more significant and in need of protection.

In sum, the project would likely have unavoidable significant impacts on herring by reducing the areal extent of dense eelgrass, a preferred spawning substrate, in the core spawning area and by disrupting and disturbing herring as they hold in pre-spawning areas and spawn. Based on available information, we strongly disagree that the proposed project will avoid significant impacts to herring spawning habitat and urge the Harbor District to ensure that any current or future proposal to expand aquaculture entirely avoid herring spawning habitat.

The Project Would Have Significant Impacts on Pacific Flyway Waterfowl and Shorebirds

The DEIR states that the Project will have less than significant impacts without mitigation on brant, other waterfowl and shorebirds. The DEIR asserts that the South Bay is more important for brant than the North Bay; that the eelgrass beds in the North Bay are less important as feeding, loafing and gritting areas; and that loss of habitat due to disturbance and direct habitat modification from the Project will not significantly impact habitat availability. These statements are speculative and unsubstantiated.

The Project would vastly expand aquaculture operations in key foraging and resting habitats for shorebirds, brant and other waterfowl, and key foraging, resting, gritting and loafing areas for brant. Humboldt Bay has been designated by the National Audubon Society and BirdLife International as an Important Bird Area of national and global significance due to its importance to brant, other waterfowl, and shorebirds. Humboldt Bay's tidelands provide critical foraging habitat for waterbirds, especially during winter and migration periods. All four of the proposed intertidal culture sites are important for birds: for example "Intertidal 2" is considered by local birders and hunters to be a *de facto* refuge for waterbirds as it is characterized by high quality habitats and low levels of disturbance.[71,72] Subtidal areas are also important. Bird watching is

[66] Lok, E. et al. 2012. Spatiotemporal associations between Pacific herring spawn and surf scoter spring migration: evaluating a "silver wave" hypothesis. Marine Ecology Progress Series 457:139-150.
[67] Lok, E., M. Kirk, D. Esler and W. Boyd. 2008. Movements of pre-migratory surf and shite-winged scoters in response to Pacific herring spawn. Waterbirds 31(3) : 385-393.
[68] Trost, R. E. 2002. Pacific flyway 2001-2002 fall and winter waterfowl survey report. in U.S. Fish and Wildlife Service Office of Migratory Management, Portland, Oregon.
[69] Afton, A. D., and M. G. Anderson. 2001. Declining scaup populations: A retrospective analysis of long-term population and harvest survey data. Journal of Wildlife Management 65:781-796.
[70] Vilchis, I. et al. 2015. Assessing ecological correlates of marine bird declines to inform marine conservation. Conservation Biology Volume 29, Issue 1,
[71] Rosenberg, Steve. Personal Communication. March.
[72] Ogan, Chet. Personal Communication. March.

important to the economy and culture of the region, highlighted by the annual week-long Godwit Days festival.

A. The Project Would Have Significant Impacts on Brant

Humboldt Bay is the most important spring staging area for brant in California, and one of the most important in the entire Pacific Flyway. Notably, these eelgrass beds host more than 60% of the total brant population each year.[73] An estimated 80,000 birds use the bay each year. In recent years, brant are thought to be increasingly found in the relatively quiet eastern section of the North Bay, the location of Intertidal 2, due to disturbance in the South Bay.[74]

Mitigation Measure BIO-1: Educational Meetings, does not represent a substantive mitigation measure for these impacts. We support the written and oral statements of California Waterfowl Association and Ducks Unlimited[75] that any expansion into areas important for brant would likely cause unacceptable impacts, in particular, regarding Intertidal Culture Site 2, totaling 364 acres of dense eelgrass, patchy "leopard skin" eelgrass and mudflat. Furthermore, existing mariculture activities likely already have a significant ongoing impact on brant and associated recreational hunting opportunities, which are a key part of the culture and economy of the Eureka/Arcata region. The California Waterfowl Association described legal precedent for protecting rights and privileges of waterfowl hunting in Humboldt Bay.[76] Those impacts need be evaluated in a cumulative impacts framework.

Humboldt Bay's eelgrass beds provide overwintering brant with the bulk of their diet. Both the quantity and quality of Humboldt Bay's eelgrass are important for brant breeding success.[77] Brant do not use upland habitat for foraging. Human activities which have the greatest potential for physically degrading migration and wintering habitats include aquaculture.[78] After decades of low numbers, the Pacific population of brant has only recently increased above the continental management objective of 150,000 birds.[79] The brant's special dependence on eelgrass makes it particularly vulnerable to forced changes in their environment.[80] Availability and abundance of

[73] California Department of Fish and Wildlife. 2008. Status of the Fisheries. file:///C:/Users/aweinstein/Downloads/status2008eelgrass%20(1).pdf)
[74] Rosenberg, Steve. Personal Communication. March.
[75] Ducks Unlimited. 2015. Letter to Humboldt Bay Harbor, Recreation and Conservation District on the Initial Study: Coast Seafoods Company, Humboldt Bay Shellfish Culture Permit Renewal and Expansion Project. February.
[76] California Waterfowl Association. 2015. Letter submitted to the Humboldt Harbor, Recreation and Conservation District Initial Study: Coast Seafoods Company, Humboldt Bay Shellfish Culture Permit Renewal and Expansion Project. February.
[77] Schlosser, S., and A. Eicher. 2012. The Humboldt Bay and Eel River Estuary Benthic Habitat Project. California Sea Grant Publication T-075.
[78] Pacific Flyway Council. 2002. Pacific Flyway management plan for Pacific brant. Portland, Oregon: Pacific Flyway Study Committee, U.S. Fish and Wildlife Service.
[79] Olson, S.M. 2014. 2014 Pacific Flyway Data Book. Unpubl. Rept. USFWS Div of Migr. Bird Mgmt. Portland, OR
[80] Lavelle, Marianne. 2014. Good for the gander? As Alaska warms, a goose forgoes a 3,300-mile migration. Environmental Health News. October 30, 2014.

eelgrass is a major factor affecting distribution and abundance of brant during winter[81] and spring staging.[82, 83]

The DEIR states that "areas under and between aquaculture will continue to be available for foraging brant, but the extent this species will continue to forage in areas with culture and associated human disturbance is unknown." There is no evidence that brant would adapt to this type of disturbance. Brant's response to stimuli ranges from brief alert behaviors to immediate departure from a site. Excessive disturbances that interrupt foraging time are a concern because they can prevent birds from obtaining necessary resources for migration and egg-laying and thus lower reproductive performance.[84] Brant change their seasonal use patterns due to disturbance. In Washington, oyster farming activities were correlated with reductions in eelgrass abundance and in turn, significant decreases in brant use-days.[85] The proposed expansion would only further undermine the guidelines of the Pacific Brant Management Plan by removing areas of prime high-quality habitat for brant.

B. The Project Would Have Significant Impacts to Pacific Flyway Shorebirds

The project would likely have significant impacts on shorebirds through loss of or damage to mudflat and eelgrass habitats and through increased disturbance. Although there is no doubt that the responses of shorebirds to habitat loss and degradation and human disturbance vary in degree depending on the species, season and particular circumstances, there is no support for DEIR's assertions that that "some species (and possibly most species) may be unaffected by the Project or could benefit from increased prey abundance under aquaculture beds, while others may tend to avoid aquaculture beds." In a state in which 70% of its intertidal wetlands were altered by 1979,[86] there are fewer and fewer alternative stopover or wintering sites. Moreover, a study of a reclaimed estuary in England indicated that numbers of shorebirds generally declined relative to national population trends and the percentage decreases in numbers were greater than, or equal to, the percentage reduction in total feeding area.[87]

Removing or degrading eelgrass would impact many bird species that prey on fauna associated with eelgrass beds. Shorebird species that forage in Humboldt Bay eelgrass beds include black-bellied plover, semipalmated plover, marbled godwit, black turnstone, long-billed curlew, dunlin,

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[81] Lindberg, M.S., D.H. Ward, T.L. Tibbitts, and J. Roser. 2007. Winter movement dynamics of black brant. Journal of Wildlife Management 71: 534-540.
[82] Wilson, U.W., and J.R. Atkinson. 1995. Black brant and spring-staging use at two Washington coastal areas in relation to eelgrass abundance. Condor 97: 91-98.
[83] Moore, J.E., M.A. Colwell, R.L. Mathis, and J.M. Black. 2004. Staging of Pacific flyway brant in relation to eelgrass abundance and site isolation, with special considerations of Humboldt Bay, California. Biological Conservation 115: 475-486.
[84] Pacific Flyway Council. 2002. Pacific Flyway management plan for Pacific brant. Portland, Oregon: Pacific Flyway Study Committee, U.S. Fish and Wildlife Service.
[85] Wilson, U.W., and J.R. Atkinson. 1995. Black brant and spring-staging use at two Washington coastal areas in relation to eelgrass abundance. Condor 97: 91-98.
[86] Speth, J. 1979. Conservation and management of coastal wetlands in California. Stud. Avian Biol. 2:151-155.
[87] Burger, J. 1981. The effect of human activity on birds at a coastal bay. Biol. Conservation. 21:231-241.

whimbrel, willet, long-billed and short-billed dowitchers, sanderling, and lesser and greater yellowlegs. Waterfowl, including pintail, mallard, and green-winged and cinnamon teal feed on eelgrass seeds and infaunal bivalves.[88] Although long-billed curlews may avoid the most dense stands of eelgrass in Humboldt Bay, 200-300 curlews—representing about 1% of the entire world population—were found there in intertidal habitats and adjacent pastures on 6 surveys over a 2-year period. The areas they occurred included the project area.[89]

The Western Hemisphere Shorebird Reserve Network (WHSRN) recognizes Humboldt Bay as a "Site of International Importance" for shorebirds. During winter months, it is the second most important coastal site for shorebirds along the U.S. Pacific Coast (next to San Francisco Bay), supporting 7.7 percent of all wintering shorebirds. This includes 19.9% of all wintering marbled godwits; 15.9% of all wintering western sandpipers; 12.7% of all wintering least sandpipers; 10.7% of all wintering willets; and 8.9% of all wintering dunlin. Overall, 46 shorebird species have been recorded at the site including 30 that are regularly encountered. Highest numbers of shorebirds occur in the Humboldt Bay in the spring (April) with a high count of 83,647 birds (>23,000 dunlin, 6,900 marbled godwit, 7,300 western sandpipers.)[90]

The high rate of disturbance caused by workers attending the mariculture areas would negatively impact birds and other wildlife through the energetic costs of flushing and loss of time in key foraging habitat. The notion as expressed in the DEIRs that "many birds will become habituated to human disturbance and only flush to nearby sites (and quickly returning after the activity is complete)" is speculative. This is especially true in migration when turnover times in migrating shorebirds are often rapid and there is little time for habituation during a phase of heightened energy demand for the migrants.[91] In one study on the effects of human activity on shore and water birds at a coastal wildlife refuge, birds were absent or disturbed 80% of the time in the presence of "men working."[92]

According to the DEIR, 435 acres of the expansion area (9% of Arcata Bay mudflats) represents "potentially suitable foraging habitat for shorebirds." The DEIR admits that farmworkers may disturb wildlife across their foraging habitat. During harvest periods, visits will be weekly while deployment or removal of lines "would be more intensive but less frequent, on the order of two to three weeks of daily visits at the beginning or end of the growing season." This level of disturbance would directly undermine state and federal guidance on protecting Pacific Flyway shorebirds. In addition, the overall project conflicts with guidance in the 2003 Southern Pacific

[88] Schlosser, S., and A. Eicher. 2012. The Humboldt Bay and Eel River Estuary Benthic Habitat Project. California Sea Grant Publication T-075.
[89] Mathis, R.L., M. A. Colwell, L.W. Leeman and T.S. Leeman. 2006. Long-billed curlews in intertidal habitats: scale-dependent patterns. Western Birds 37:156–168.
[90] Colwell, M.A. 1994. Shorebirds of Humboldt Bay, California: abundance estimates and conservation implications. Western Birds 25:137-146.
[91] Myers, J.P. et al. 1987. Conservation Strategy for Migratory Species. American Scientist 75:19-26.
[92] Burger, J. 1981. The effect of human activity on birds at a coastal bay. Biol. Conserv. 21:231-241.

Shorebird Conservation Plan, which sets forth priority conservation actions for this wetland that include "Prohibit[ing] further alteration of tidal flats for oyster culture."[93]

The Project May Adversely Affect Threatened and Endangered Species

The proposed project area falls within known habitat for a number of species protected under the federal and state endangered species acts. Humboldt Bay is inhabited by multiple species listed as threatened under the federal ESA, including the Chinook salmon, coho salmon, steelhead, green sturgeon, Pacific eulachon, western snowy plover, and marbeled murrelet. In addition, the state-listed longfin smelt occurs here. The DEIR does not adequately analyze the project's individual and cumulative effects on these species, and instead, without substantiation, dismisses those effects as less than significant. For example, the DEIR dismisses impacts to salmon despite acknowledging that salmon, which use this area as a migratory pathway, avoid swimming under floating structures such as those the project proposes to use. The DEIR also acknowledges that the addition of vast new stretches of oyster beds will likely reduce the overall abundance of planktonic food and organic matter, which many small fish rely on as a food source. The reduction of planktonic food sources could directly affect smaller fish species and invertebrates, as well as listed species that eat those small fish and invertebrates. These impacts must be fully analyzed through CESA and ESA consultation with the DFW, NMFS, and FWS.

The DEIR's Analysis of Cumulative Impacts Is Entirely Insufficient, Particularly in Light of the Significant Adverse Effects that Would Result from the Proposed Expansion of Coast Seafoods' Operations in Humboldt Bay

The DEIR's cumulative impact analysis fails the most basic requirements of CEQA. The Harbor District and Coast Seafoods projects combined would nearly quadruple the footprint of aquaculture in Arcata Bay, degrade about 8% of all remaining eelgrass habitat in California, disturb feeding shorebirds in about 9% of Arcata Bay mudflats, affect essential fish habitat for commercially important groundfish, and adversely affect key forage species and species protected under the ESA and CESA, including salmonid species that support commercial fisheries. Yet the DEIR simply waves away these impacts on the unsubstantiated assertion that the impacts of each project will be mitigated to a less than significant level, and thus both projects together will have less than a significant impact. The DEIR's conclusions are not supported by any scientific analysis or evidence and, as such, they violate CEQA.

In its cumulative impact analysis and elsewhere, the DEIR fails to provide sufficient information about the severity and likelihood of project impacts. Where impacts are not certain, the DEIR simply assumes that they will be less than significant or made less than significant by likely mitigation measures. In some cases, the DEIR suggests that some monitoring and further study of impacts will take place. CEQA requires more. An agency cannot simply release a draft report "that hedges on important environmental issues while deferring a more detailed analysis to the

[93] Hickey, C., Shuford, W. D., Page, G. W., & Warnock, S. 2003. The southern Pacific shorebird conservation plan: a strategy for supporting California's central valley and coastal shorebird populations. PRBO Conservation Science.

final [EIR] that is insulated from public review."[94] Rather, CEQA requires that the agency gather and analyze the information necessary to produce an informed determination on environmental impacts.

In addition, the public must be given an opportunity to review that supplemental analysis. CEQA requires preparation and recirculation of a supplemental draft "[w]hen significant new information is added to an environmental impact report" after public review and comment on the earlier draft EIR.[95] The opportunity for meaningful public review of significant new information is essential "to test, assess, and evaluate the data and make an informed judgment as to the validity of the conclusions to be drawn therefrom."[96]

The DEIR's assertions that the cumulative effects of the Harbor District's and Coast Seafood's proposed expansions, added to existing operations, are less than significant are also undermined by the history of Coast Seafoods' operations and CEQA review. In 2007, the Harbor District reviewed Coast Seafoods' existing operations and determined that scaling back Coast Seafoods' then *existing* operational footprint from 500 acres to 300 acres was a primary mitigation measure necessary to offset the overall project's adverse effects and obtain a Mitigated Negative Declaration.[97] Neither the Harbor District DEIR nor Coast Seafoods' Initial Study offers any explanation of how the current proposed expansion of operations into – and beyond – areas that were required to be set aside for mitigation just a few years ago can now be considered a less than significant impact.

Indeed, CEQA prohibits an agency from deleting an earlier adopted mitigation measure without showing that the measure is now infeasible. The agency "must state a legitimate reason for deleting an earlier–adopted mitigation measure, and must support that statement of reason with substantial evidence."[98] The DEIR offers no legitimate reason, much less substantial evidence, to show that maintaining the previous mitigation measure of constraining the footprint of aquaculture operations is no longer feasible.

Conclusion

As explained above, we strongly oppose this project due to the significant, adverse impacts it would have on Humboldt Bay and the many special ecosystems and species that it supports. This project would have significant, unavoidable adverse effects on herring, birds, eelgrass function and ecosystem services, special status species, and federally managed commercial fish species including salmon and groundfish.

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[94] *Mountain Lion Coalition v. California Fish and Game Comm'n*, 214 Cal.App.3d 1043, 1052 (1989).
[95] Pub. Resources Code § 21092.1.
[96] *Sutter Sensible Planning, Inc. v. Sutter County Board of Supervisors*, 122 Cal. App. 3d 813, 822 (1981); *City of San Jose v. Great Oaks Water Co*., 192 Cal. App. 3d 1005, 1017 (1987).
[97] Humboldt Bay Harbor, Recreation, and Conservation District. January 2007. Initial Study for Coast Seafoods Continued Humboldt Bay Oyster Culture.
[98] *Napa Citizens for Honest Government v. Napa County Board of Supervisors* (1st Dist. 2001) 91 Cal App. 4th 342, 359.

The DEIR fails in numerous ways to consider and address these impacts. It fails to adequately analyze the individual and cumulative impacts of the project; substantiate its findings with scientific evidence; offer sufficient mitigation measures to meet CEQA's mandate to avoid, then minimize, adverse impacts; to comply with relevant local, state, and federal laws and policies protecting natural resources; and to analyze a reasonable range of alternatives.

In order to cure the many DEIR defects identified in this letter, the Harbor District must obtain substantial new information to adequately assess the proposed Project's environmental impacts and identify effective mitigation and alternatives capable of alleviating the Project's significant individual and cumulative impacts. Given the unique and sensitive nature of the resources concerned, and the requirements of applicable law and policies, the only viable alternative in this instance may be the "No Project" alternative. Should the Harbor District decide to continue to pursue expanded operations, we request that it entirely revise and recirculate the DEIR so that the public and decision-makers can fully understand the Project's environmental consequences, allowing fully informed decision-making about the Project. We also urge the Harbor District to coordinate this process with other federal and state permitting processes by adopting the Coastal Commission's suggestion to convene a Joint Review Panel of responsible agencies to review both the Coast Seafoods and Harbor District proposed projects.

Finally, we urge the Harbor District to approach continued aquaculture operations and any proposed expansion of aquaculture operations in Humboldt Bay in the marine spatial planning framework described at the beginning of this letter. Such an approach would protect vital resources and provide and integrate important information to inform any future proposals to alter or expand aquaculture operations.

Thank you for your time and consideration.

Sincerely,

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Oceana

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Figure 1. Oyster culch on longline aquaculture, Humboldt Bay, January 2015. Source: DFW.

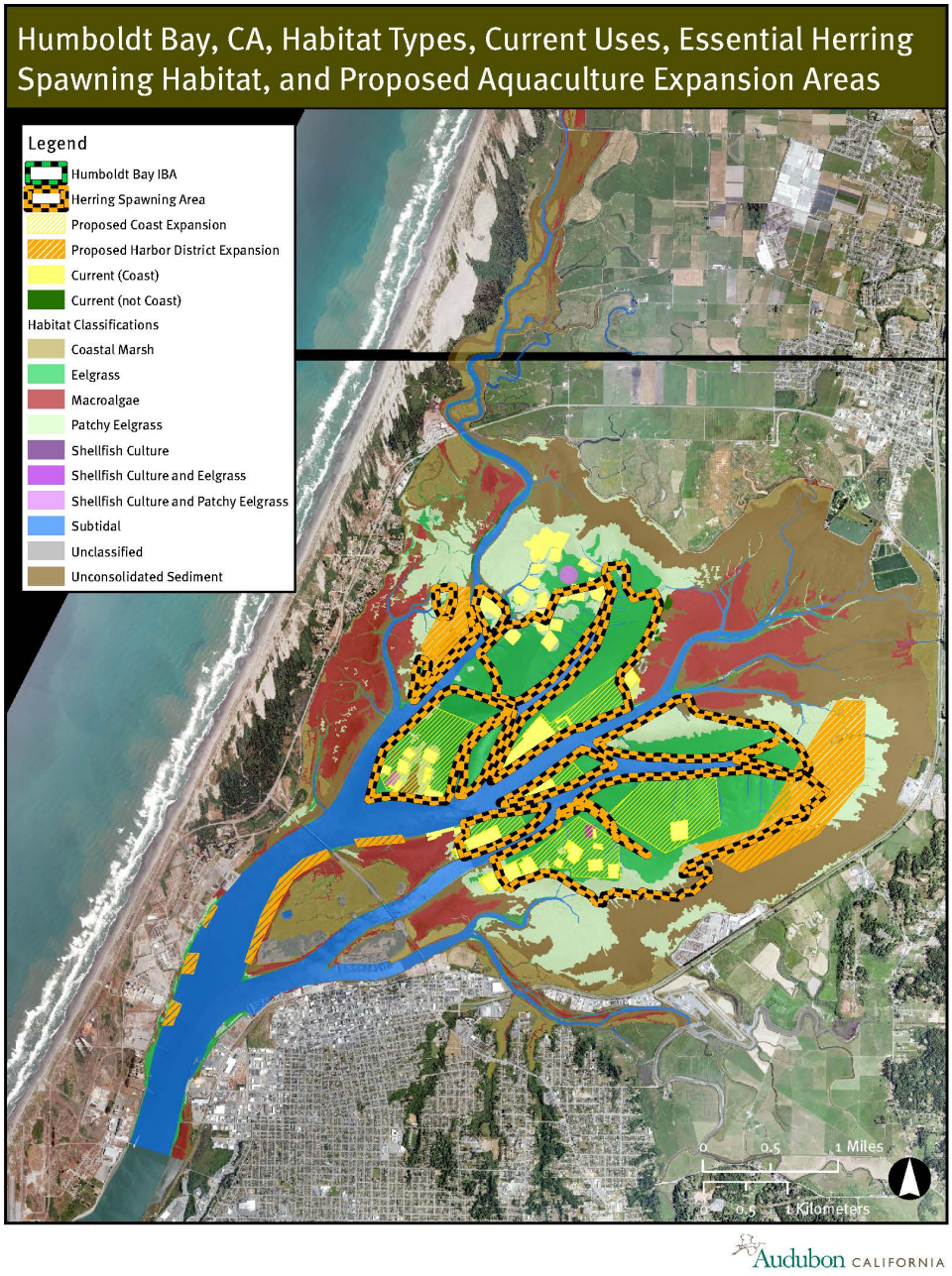

Figure 2. Current and proposed footprints of Coast Seafoods and Harbor District projects, and areas of persistent herring spawn (see key). Source: James Ray, Environmental Scientist, DFW, Eureka, CA.

February 23, 2014

Mr. Jack Crider
Executive Director
Humboldt Bay Harbor, Recreation and Conservation District
P.O. Box 1030
Eureka, CA 95502-1030

Dear Director Crider and Commissioners:

On behalf of our members, we submit the following comments on the Initial Study: Coast Seafoods Company, Humboldt Bay Shellfish Culture Permit Renewal and Expansion Project. While we recognize that shellfish aquaculture, when properly sited and sized, can be carried out in sustainable manner, we have significant concerns regarding the siting, size, and overall impacts of this project. We are concerned that the proposed project would significantly and adversely affect hundreds of acres of eelgrass as well as other key estuarine habitat in Humboldt Bay. Because this project is likely to have significant effects on the environment, the Harbor District must prepare a full Environmental Impact Report ("EIR") that analyzes the cumulative impacts that the project would likely have on the environment, as well as alternatives to avoid those impacts.

As explained below, eelgrass is a critically important plant and sensitive habitat that supports numerous fish and bird species, and we urge the Harbor District to reject any proposed expansion of mariculture operations into eelgrass habitat. We further recommend that the Harbor District consider any continued or expanded aquaculture operations in Humboldt Bay in a marine spatial planning framework[1] that makes avoidance of adverse impacts to eelgrass a primary management goal, consistent with federal and state policies and regulations, and that considers the impacts of sea-level rise and other anticipated consequences of climate change to the study area and surrounding communities.[2]

The proposed project would more than double the footprint of existing mariculture operations in the North Bay. This vast expansion is at odds with recent agency efforts to reduce mariculture impacts in this area, which only a few years ago required Coast Seafoods to reduce the footprint of its active operations from 500 acres to 300 acres. The proposed project would add 622 acres of operations, mostly located in eelgrass, likely resulting in the degradation or loss of as much as one third of the remaining eelgrass habitat in the North Bay. This project, together with the 550 acres of expanded mariculture proposed by the Harbor District itself[3], would nearly quadruple the size of mariculture operations in the North Bay and degrade or eliminate large portions of eelgrass and mudflat habitats. These impacts would harm numerous seabird, shorebird, and fish species, including a number of species protected under federal and state endangered species laws and species managed under the federal Magnuson-Stevens Fishery Conservation and Management Act.

The California Department of Fish and Wildlife ("DFW") has documented that this project will likely have unavoidable, significant environmental impacts on intertidal habitats and associated wildlife. We agree with the DFW's conclusion that the project likely would have unavoidable, significant impacts on the environment.[4] The Initial Study's conclusions that impacts to biological resources would be less than significant are not based on sufficient analysis or sound science. To the contrary, available information shows that the project would likely have unavoidable, significant, and unsustainable impacts to eelgrass and other sensitive habitats that support Pacific herring, brant and other waterfowl and shorebirds. These natural resources provide substantial aesthetic and economic value to the local area, California and the Pacific Flyway.

In sum, there is substantial information to indicate that the proposed project may cause significant impacts and is likely to substantially degrade the quality of the environment and substantially reduce the habitat for fish or wildlife species. Cal.Code Regs., tit. 14, §15065 (a)(1) (CEQA Mandatory Findings of Significance). Therefore, the Harbor District must prepare an EIR fully analyzing the project's impacts before it may consider moving forward.

Legal Background: California Environmental Quality Act

The California Environmental Quality Act ("CEQA") is intended to provide for the protection and enhancement of the state's environment and to "ensure that the long-term protection of the environment, consistent with the provision of a decent home and suitable living environment for every Californian, shall be the guiding criterion in public decisions." Pub. Res. C. § 21001(a)-(d). CEQA accomplishes these goals in part by ensuring that proposed projects are authorized only after their environmental impacts are thoroughly analyzed in an EIR, the public has full opportunity to inform that analysis, and necessary mitigation measures have been adopted.

CEQA therefore requires the preparation of an EIR "[i]f there is substantial evidence, in light of the whole record before the lead agency, that the project may have a significant effect on the environment." Pub. Res. C. § 21080(d). When the initial study indicates that the project will have potentially significant effects on the environment, the lead agency may only make a negative declaration if the applicant makes or agrees to revisions in the project plans that would avoid or mitigate the effects "to a point where *clearly* no significant effect on the environment would

occur, and . . . there is no substantial evidence, in light of the whole record before the lead agency, that the project, as revised, *may* have a significant effect on the environment." Pub. Res. C. § 21080(c)(2) (emphasis added); *see also* Cal. Code Regs., tit. 14, § 15064(f)(1) ("if a lead agency is presented with a fair argument that a project may have a significant effect on the environment, the lead agency shall prepare an EIR even though it may also be presented with other substantial evidence that the project will not have a significant effect.") CEQA defines "significant effect on the environment" as "a substantial, or potentially substantial, adverse change in the environment." Pub. Res. C. § 21068.

Currently, Humboldt Bay supports approximately 400 acres of oyster mariculture, most of which is cultivated using culch-on-longline (Figure 1) and bag-on-rack methods. The proposed Coast Seafoods project requires extending approvals for 289 acres of existing mariculture and permitting an additional 622 acres of intertidal and subtidal mariculture area. The majority of the proposed expansion – 531 acres – would occur in dense eelgrass (>84% cover); an additional 68 acres of the proposed expansion would occur in patchy eelgrass (<84% cover). (Figure 2). Up to 522 acres of the expanded area would be converted to culch-on-longline mariculture with a spacing of 2.5 feet between lines and 10 feet between each row. The remaining expansion area would be used for rack-on-bag or basket-on-longline gear culture. The total of the existing 289 acres of existing mariculture to be continued, and the 622-acre expansion, is 911 acres.

The Initial Study asserts that the project would have less than significant impacts with mitigation incorporated on special status species, riparian habitats and sensitive natural communities, wildlife corridors or nursery sites, and federally protected wetlands. It also asserts that the project would not conflict with local policies and ordinances protecting biological resources, or with approved local, state or regional habitat conservation plans.

These assertions are not consistent with the best available science or the laws and policies protecting the natural resources at issue. As described below, the Initial Study falls far short of demonstrating that this massive project would "clearly" have no significant effect on California's environment. As such, this proposed project must be analyzed in an EIR.

The Project Would Have Significant Impacts on Eelgrass (*Zostera marina*)

We strongly disagree with the Initial Study's conclusion that "with implementation of the above [best management practices], equipment spacing, and Mitigation Measure BIO-2, impacts to eelgrass and other habitats listed in Table 1 are considered less than significant." This conclusion is not supported by science. A published study evaluating oyster stake culture in Willapa Bay, WA, found that eelgrass in aquaculture areas had smaller plants (32% smaller) and lower production (70% lower production) than in uncultivated areas,[5] and these authors note that "most research to date has shown that eelgrass is less dense within aquaculture than at similar tidal elevations outside aquaculture areas." In Coos Bay, OR, oyster stake culture in an intertidal eelgrass meadow reduced eelgrass cover by 75% relative to nearby control areas.[6] In a subset of beds in Willapa Bay, eelgrass densities were approximately 60% lower in both long-line and dredged oyster beds relative to uncultivated areas.[7]

Furthermore, the Initial Study fails to present sound information demonstrating that the "best management practices" ("BMPs") it describes, including spacing equipment, controlling boat transit, avoiding shading, removing equipment from fallow areas, and avoiding shell deposition, are adequate to protect eelgrass.[8] For example, the Initial Study's assertion that the equipment spacing regime to be employed by the project has been recommended by "several agencies, including the NMFS and WA DNR . . . as an appropriate conservation measure to minimize impacts to eelgrass, based on Rumrill & Poulton's (2004) work evaluating longline spacing in Humboldt Bay" is not referenced or substantiated. Indeed, the results of Rumrill & Poulton (2004), a report that is neither peer-reviewed nor published, are compromised by pseudoreplication in the study methods[1] and other problems with experimental design. Therefore, this study does not provide a credible basis for finding that the proposed best management practices would result in less than significant harm to eelgrass.

Loss of Eelgrass Habitat Is a Significant Environmental Effect and Allowing Such Loss Is Incompatible with Applicable Law and Policy

Humboldt Bay contains approximately 5,646 acres of eelgrass, which represents between 45-53% of the state's total eelgrass.[9] Eelgrass is the dominant macrophyte of the shallow subtidal and lower intertidal zones. These eelgrass beds host more than 60% of the total brant population each year.[10] While highly productive, eelgrass is one of the rarest habitats in California. Collectively just five bays—Humboldt, San Francisco, San Diego, Mission, and Tomales—support more than 80% of the known eelgrass in the state. The uneven distribution of eelgrass resources increases the risk to this habitat and contributes to its dynamic nature. Further, the narrow depth range within which eelgrass can occur further places this habitat at risk in the face of global climate change and projected sea-level rise.

Eelgrass is highly productive and is considered to be a foundation or habitat-forming plant species. Eelgrass contributes to ecosystem functions at multiple levels: as a primary and secondary producer, habitat structuring element, substrate for epiphytes and epifauna, and a sediment stabilizer and nutrient cycling facilitator. Eelgrass provides important foraging areas and shelter to young fish and invertebrates, food for migratory waterfowl and sea turtles, and spawning surfaces for invertebrates and fish, such as Pacific herring. Indeed, eelgrass is an essential refuge, foraging, and spawning habitat for many marine species, including such economically valuable species as Pacific salmon, Pacific herring, and Dungeness crab.[11] Dungeness crab adults are found in subtidal or intertidal areas on sand, mud, or associated with eelgrass beds. Bare habitats are infrequently used by juveniles, most likely due to a lack of refuge from predation and decreased food abundance. Vegetated, intertidal estuaries appear to be important nursery habitats for young crabs.[12]

Eelgrass also is a source of organic carbon in estuarine and nearshore marine food webs, thus contributing to productivity beyond the eelgrass beds themselves. In addition, eelgrass has the capacity to sequester carbon in the underlying sediments and may help offset carbon emissions.[13]

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[1] Each experimental plot had a different "treatment," hence there was no replication of the "spacing" treatment. The four experimental plots appear to be adjacent to one another and are therefore insufficiently independent. ANOVA assumptions may be violated via unbalanced design and unequal population variance, as well as small sample sizes.

Maintaining and rehabilitating eelgrass habitat is clearly important to the quality of California's environment. This fact is underscored by the California Eelgrass Mitigation Policy ("CEMP"), developed and promulgated by the National Marine Fisheries Service ("NMFS"). The primary directive of the CEMP is to preserve existing eelgrass extent and function by avoiding development in eelgrass:

> It is NMFS' policy to recommend no net loss of eelgrass habitat function in California. For all of California, compensatory mitigation should be recommended for the loss of existing eelgrass habitat function, but only after avoidance and minimization of effects to eelgrass have been pursued to the maximum extent practicable.

The CEMP further notes that "while improvements in eelgrass management have occurred overall, the importance of eelgrass both ecologically and economically, coupled with ongoing human pressure and potentially increasing degradation and losses associated with climate change, highlight the need to protect, maintain, and where feasible, enhance eelgrass habitat."[14] Unfortunately, Coast Seafoods has not chosen to avoidance impacts to eelgrass. Mitigation Measure BIO-2, to "develop and implement an eelgrass monitoring and adaptive management program, utilizing the concepts of the CEMP,"[15] fails to implement the CEMP's key directives and therefore is inconsistent with the CEMP.

The importance of protecting eelgrass is further reflected in state and federal regulations. California regulations prohibit cutting or disturbing eel grass.[16] Aquaculture leases produced by DFW reflect this regulation by including explicit language in lease agreements that eelgrass "may not be cut or disturbed."[17] DFW further requires a 10-foot buffer between the eelgrass and the aquaculture gear.[18] In Tomales Bay, aquaculture operations purposely have been sited to avoid eelgrass. In San Francisco Bay, the Subtidal Goals Project recommends protecting existing, established eelgrass beds by establishing eelgrass reserves.[19]

Federal fisheries management regulations protect eelgrass habitat due to its vital role in supporting commercially targeted fish populations. The Fishery Management Plan for the Pacific Coast Groundfish Fishery and regulations implementing essential fish habitat ("EFH") designations for this fishery include Humboldt Bay as a Habitat Area of Particular Concern ("HAPC") for Estuaries and for Sea Grass.[20] An HAPC is an area within designated EFH that is "rare, particularly susceptible to human-induced degradation, especially ecologically important, and/or located in an environmentally stressed area. HAPC designations are used to provide additional focus for conservation efforts."[21] In designating sea grass habitat as an HAPC, fishery managers noted that they are of ecological importance and are sensitive to human-induced environmental degradation.

The Project Would Have Significant Impacts on Pacific Herring and Its Predators

The Initial Study states that the project would have a less than significant impact on spawning Pacific herring. The Initial Study also notes that "[s]pawning herring will be avoided, as described in BMP-9 above, by postponing harvesting and planting activities for two weeks on

beds where spawning has occurred" and that Coast will "notify the California Department of Fish and Wildlife's Eureka Marine Region within 24 hours" when herring spawning is observed on aquaculture beds."

Since the 1970's, Department staff and Humboldt Bay herring fleet leaders have undertaken collaborative research to describe the phenology, stock profile, and geospatial distribution of spawning herring in Humboldt Bay.[22] In the 12 seasons between 1974 and 2015 when research has been conducted, areas where herring persistently spawn has been mapped. These maps clearly show the virtually complete overlap of the proposed expansion areas with spawning habitat (areas outlined in orange, Figure 2). These areas are used by herring between 17%-100% of the time, and collectively are the key areas for herring in Humboldt Bay. Within spawning habitat, numerous factors, such as environmental variables and fish abundance, influence the locations where spawning occurs in a given year, and this spatial diversity of spawning locations promotes population resiliency and may enable the population to spawn in years with varying environmental conditions: "The locations that support large and repetitive spawnings deserve the most attention and consideration from possible environmental impacts."[23]

As noted above, the project would have significant unavoidable impacts on eelgrass, a preferred spawning substrate for Pacific herring. While herring will to some extent spawn on hard natural and artificial substrates, such as unsilted gravel and pilings,[24,25,26,27] artificial surfaces do not provide the same quality spawning habitat as eelgrass. Indeed, a study in Puget Sound found that "[t]he local disappearance of some eelgrass meadows has led to the cessation of herring spawning activity in particular areas."[28]

The project is also likely to disturb holding and spawning herring through routine maintenance operations. The Washington Department of Fish and Wildlife notes that "[c]onservation of herring spawning habitat, and *minimizing disturbance in the prespawning holding areas* (emphasis added) is key to the preservation of the herring stocks inside Puget Sound."[29] The same principles apply in Humboldt Bay.

The project's likely significant adverse impacts on herring are all the more serious in light of the reduced abundance of Pacific herring stock abundances on the West Coast, [30] including in Humboldt Bay. From 1974 to 2007, herring biomass estimates for Humboldt Bay averaged just under 400 tons. Herring returns weakened dramatically between 2000 and 2007—the last year spawning biomass was assessed in Humboldt Bay—when biomass had fallen to 7 tons.[31] According to preliminary analyses from the Farallon Institute for Advanced Ecosystem Research, there has been a statistically significant negative linear trend in herring spawning biomass in Humboldt Bay from 1974-2007.[32]

In sum, the project would likely have unavoidable significant impacts on herring by reducing the areal extent of dense and patchy eelgrass, a preferred spawning substrate, in the core spawning area and by disrupting and disturbing herring as they hold in pre-spawning areas and spawn. Based on available information, we strongly disagree that the proposed project will avoid significant impacts to herring spawning habitat and urge the Harbor District to require that any current or future proposal to expand aquaculture entirely avoid herring spawning habitat.

The Importance of Humboldt Bay Herring to Salmonids and Other Marine Wildlife

Humboldt Bay supports the third largest herring spawning aggregation in California and the largest aggregation between Puget Sound, WA and Tomales Bay, CA. A growing body of literature points to Pacific herring as a key prey item for marine predators, including commercially and recreationally important species, such as salmonids, and dozens of other taxa of marine predators, including seabirds, whales, and pinnipeds.

A. Salmonids

Herring is one of the most important prey items of Chinook salmon in central California, along with anchovies, sardines, and jack mackerel.[33] Chinook salmon feed preferentially on herring in offshore areas.[34] Reductions in prey availability have played a role in recent declines in Chinook salmon abundance. Over the last half century, there has been a dramatic decline of herring in Chinook salmon diet in central California. In 1955, herring comprised the majority of Chinook salmon diet in the late winter and spring (February, March, and April) with significant pulses also in summer. In 1980-1986, herring comprised a minority of Chinook salmon diet in late winter/spring, although summer pulses were still evident at similar levels. The winter/spring season was not sampled in 2005-2007, but herring were undetectable during the summer period when herring had previously comprised 10% of salmon diet.[35] At the same time, stocks of anchovies in southern California, and stocks of sardines coast-wide, have declined.[36] This overall reduction in prey availability and diversity has "likely contributed to reduced and more variable Chinook salmon abundance and return rates."[37]

Adverse impacts to salmon are particularly significant in light of their imperiled status. Chinook salmon, coho salmon, and steelhead are protected under both the California and federal endangered species acts. In addition to relying on the herring spawned in Humboldt Bay as a critical food source, these species rely on Humboldt Bay itself as part of their habitat. In fact, Humboldt Bay is included in designated critical habitat for Chinook salmon, coho salmon, and steelhead under the federal ESA.

B. The importance of herring to other marine wildlife

Due to the foundational importance of herring as prey for salmon and wildlife, a primary goal of the DFW's herring commercial fishery program is to "safeguard herring as an important forage species for all living resources of marine and estuarine ecosystems that utilize herring as a food source."[38] Recent analyses of predator diets in the California Current System (British Columbia through Baja California) highlight the importance of herring to predators. For 32 predators evaluated in this region, Pacific herring ranks as the fourth most significant prey species out of a total of 27 prey species. [39]

Herring and their roe provide a persistent, energy-rich, and aggregated food source for a wide suite of bird species. Herring aggregate to spawn in the late winter and spring, and their eggs are highly available, energetically rich, and high in lipids. Spawning locations are localized and herring eggs are abundantly available for several weeks. Herring roe are eaten by dozens of bird species, including brant, American wigeon, lesser and greater scaup, harlequin duck, surf scoter,

greater white-fronted goose, common goldeneye, black scoter, white-winged scoter, redhead, canvasback, bufflehead, ring-billed gull, glaucous-winged gull, Bonaparte's gull, western gull, and mew gull.[40] Adult herring are consumed by numerous marine birds including Brandt's and double-crested cormorants, brown pelicans, western grebes, terns, gulls, shearwaters, cormorants, common murre, auklets, tufted puffins, marbled murrelet, and brown pelican.[41,42]

Pacific sea ducks are more dependent on herring than other avian taxa. Harlequin ducks aggregate in British Columbia when feeding on herring roe,[43] and long-tailed ducks [44]seek out and preferentially feed on herring roe. Scoters in particular are highly dependent on herring roe for overwinter survival and breeding success. Scoters alter their movement and habitat use patterns in spring to take advantage of ephemeral and energy-rich herring roe, suggesting that this food resource is of particular importance to these species.[45,46] The Pacific population of surf scoters have declined by 50-60% in the last 50 years,[47] while greater and lesser scaup, two other diving ducks that depend on herring roe, have declined by 15%.[48] In British Columbia, waterbirds aggregate at increasingly fewer spawning sites.[49] Wintering piscivourous marine birds in Puget Sound have declined over decadal scales, likely reflecting a decline in herring, sand lance and smelt.[50] These decreases in herring spawning aggregations throughout the birds' ranges make the remaining spawning sites, like in Humboldt Bay, all the more significant and in need of protection.

The Project Is Likely to Have Significant Impacts on Brant, Other Waterfowl, and Shorebirds

Humboldt Bay has been designated by the National Audubon Society and BirdLife International as a global and national Important Bird Area due to its importance to brant, other waterfowl, and shorebirds. Removing or degrading eelgrass would impact many bird species that prey on fauna associated with eelgrass beds. Shorebird species that forage in Humboldt Bay eelgrass beds include black-bellied plover, semipalmated plover, marbled godwit, black turnstone, long-billed curlew, dunlin, whimbrel, willet, long-billed and short-billed dowitchers, sanderling, and lesser and greater yellowleg. Waterfowl, including pintail, mallard, and green-winged and cinnamon teal feed on eelgrass seeds and infaunal bivalves.[51]

Humboldt Bay is believed to be the most important spring staging area for brant in California, and one of the most important in the entire Pacific Flyway. An estimated 80,000 birds use the bay each year, representing more than 60% of the total brant Pacific population. Humboldt Bay's eelgrass beds provide overwintering brant with the bulk of their diet. Both the quantity and quality of Humboldt Bay's eelgrass are important for brant breeding success.[52] Brant do not use upland habitat for foraging. Human activities which have the greatest potential for physically degrading migration and wintering habitats include aquaculture.[53]

The Pacific population of brant has only recently increased above the continental management objective of 150,000 birds. [54]A specialization on eelgrass makes the brant particularly vulnerable to forced changes in their environment.[55] Availability and abundance of eelgrass is a major factor affecting distribution and abundance of brant during winter[56] and spring staging.[57, 58]

The Initial Study speculates that brant "may avoid areas with culture present (i.e., structures suspended over eelgrass) and increased human disturbance (i.e., the presence of culturists and boats)," but that brant may "gradually adapt to the presence of aquaculture." There is no evidence that brant would adapt to this type of disturbance. Brant's response to stimuli ranges from brief alert behaviors to immediate departure from a site. Excessive disturbances that interrupt foraging time are a concern because they can prevent birds from obtaining necessary resources for migration and egg-laying and thus lower reproductive performance.[59]

The Initial Study acknowledges that "brant may be required to expend additional energy to relocate to areas without aquaculture structure." Alternatively, if they have no other options, the Study claims that "it is likely that brant would forage in the Project footprint, even if wary of the infrastructure or occasionally flushed by culturists." Published studies show that brant change their seasonal use patterns due to disturbance. In Washington, oyster farming activities were correlated with reductions in eelgrass abundance and in turn, significant decreases in brant use-days.[60] Therefore, the Study's assertion that disturbance to brant would not significantly affect them is contradicted by scientific findings.

Moreover, the Initial Study's suggestion that "[a]lthough the Project may contribute to cumulative effects to brant by potentially reducing foraging, population reductions in brant are expected to be avoided through monitoring and adaptive management by the Pacific Flyway Council" is not supported. In reality, according to the Pacific Brant Management Plan, conservation measures currently do not adequately protect primary brant staging and wintering areas.[61] The proposed expansion would only further undermine the guidelines of the Pacific Brant Management Plan.

Reducing winter food availability would decrease the ability of adults to breed and has the potential to decrease the size of the brant Pacific population. The dependence of brant on eelgrass and other intertidal habitats leaves them vulnerable to the human activities that increasingly impact shallow bays and estuaries along North America's coast, including the large-scale expansion of mariculture.[62],[63]

The Project May Adversely Affect Threatened and Endangered Species

The proposed project area falls within known habitat for a number of species protected under the federal and state endangered species acts. Humboldt Bay is inhabited by multiple species listed as threatened under the federal ESA, including the Chinook salmon, coho salmon, steelhead, green sturgeon, Pacific eulachon, western snowy plover, and marbeled murrelet. In addition, the state-listed longfin smelt occurs here. The Initial Study does not adequately analyze the project's individual and cumulative effects on these species, and instead, without substantiation, dismisses those effects as less than significant. For example, the Initial Study dismisses impacts to salmon despite acknowledging that salmon, which use this area as a migratory pathway, avoid swimming under floating structures such as those the project proposes to use. The Initial Study also acknowledges that the addition of vast new stretches of oyster beds will likely reduce the overall abundance of planktonic food and organic matter, which many small fish rely on as a food source. The reduction of planktonic food sources could directly affect smaller fish species and invertebrates, as well as listed species that eat those small fish and invertebrates. These

impacts must be fully analyzed in an EIR and through CESA and ESA consultation with the DFW, NMFS, and FWS.

The Initial Study's Findings Are Inconsistent with CEQA Standards and Past CEQA Determinations Regarding the Impacts of Coast Seafoods' Operations in Humboldt Bay

The Initial Study's assertions that the project will have less than significant impacts on the environment are undermined by the history of Coast Seafoods' operations and CEQA review. In 2007, the Harbor District reviewed Coast Seafoods existing operations and determined that scaling back Coast Seafoods' then *existing* operational footprint from 500 acres to 300 acres was a primary mitigation measure necessary to offset the overall project's adverse effects and obtain a Mitigated Negative Declaration.[64] The Initial Study offers no explanation of how the current proposed expansion of operations into – and beyond – areas that were required to be set aside for mitigation just a few years ago can now be considered a less than significant impact.

The Initial Study also fails to acknowledge that Coast's current proposal to more than triple its own footprint in the North Bay is concurrent with the Harbor District's proposal to expand mariculture in the same part of Humboldt Bay by an additional 550 acres. Each of these projects alone would have significant impacts on Humboldt Bay and the many species that depend on it. Together, these projects would nearly quadruple the portion of Humboldt Bay being converted from natural habitat to mariculture. When viewed in the context of the Harbor District proposal and existing operations, the impacts of Coast Seafoods' proposal are unquestionably "cumulatively considerable" under CEQA. Cal.Code Regs., tit. 14, § 15064(h).

The fact that the current proposed expansion includes areas previously required to be set aside for mitigation furthers demonstrates that this project may not be permitted without the completion of a full EIR and the implementation of measures to avoid and minimize environmental harm. CEQA Guidelines allow a lead agency to "determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program . . . that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located." Cal. Code Regs., tit. 14, § 15064(h)(3). In this case, Coast Seafoods' proposed expansion directly violates previous mitigation requirements.

Such a large-scale alteration of the environment may not be permitted without thorough and transparent CEQA review in an EIR. That EIR must fully analyze the cumulative impacts of this project when added to existing and proposed mariculture operations and must present alternatives and mitigation measures to prevent and minimize environmental damage. The 2007 Mitigated Negative Declaration for Coast Seafoods' operations demonstrated that such alternatives and mitigation measures include substantially reducing the extent of operations.

Conclusion

In sum, we believe it is clear—based on available scientific and other information—the proposed project will have very significant adverse impacts on Humboldt Bay and California's environment as a whole. We therefore request that the Harbor District deny Coast Seafoods'

request for a Mitigated Negative Declaration and require the completion of a full EIR for the project. We further request that the Harbor District review this project together with other proposed aquaculture projects so as to understand and base decisions on the true extent of their cumulative impacts. In this larger context, we urge the Harbor District to require any proposed expansion of aquaculture operations to entirely avoid impacts to eelgrass habitat, other sensitive habitat areas, and key forage species including herring.

Thank you for your time and consideration.

Sincerely,

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Figure 1. Oyster culch on longline aquaculture, Humboldt Bay, January 2015. Source: DFW.

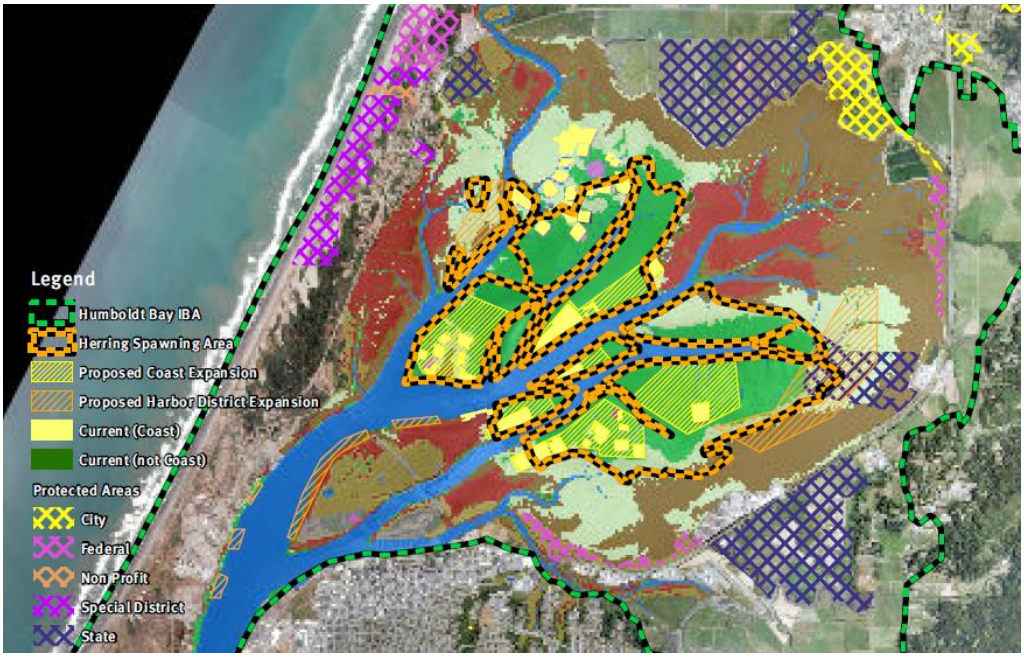

Figure 2. Current Coast Seafoods operation (yellow solid area, see Key); Proposed Coast Seafoods Expansion Area (yellow hatched area, see Key); and areas of persistent herring spawn (outlines in orange and black, see Key). Source: James Ray, Environmental Scientist, DFW, Eureka, CA.

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