

FRIENDS OF THE EARTH · CENTER FOR FOOD SAFETY · NORTHWEST ATLANTIC MARINE ALLIANCE  
OCEAN CONSERVATION RESEARCH · RECIRCULATING FARMS COALITION

September 2, 2020

Mr. Marc Gorelnik, Chair  
Pacific Fishery Management Council  
7700 NE Ambassador Place #200  
Portland OR 97220-1384

Re: Recent aquaculture proposals impacting West Coast Fisheries

Dear Mr. Gorelnik and Council Members:

Please accept the following comments on behalf of Friends of the Earth, Center for Food Safety, Northwest Atlantic Marine Alliance, Ocean Conservation Research, and Recirculating Farms Coalition, and our hundreds of thousands of members and activists located throughout the West Coast, to raise our alarm over recent proposals that would advance industrial aquaculture in and near the state.<sup>1</sup> As detailed below, we object to any agenda that furthers industrial aquaculture production based on the established history of negative environmental and socio-economic impacts, and we urge the Pacific Fishery Management Council to assert its unique authority and expertise, and demand to be integrally involved as these policies develop.

**I. We thoroughly object using industrial aquaculture as a means to increase domestic seafood production.**

Industrial ocean fish farming – also known as marine finfish or offshore aquaculture – is the mass cultivation of fish in the ocean in net pens, pods or cages. Industrial fish farms are known to contaminate waters with pharmaceuticals, toxic chemicals, untreated waste and disease. Farmed fish spills can also threaten the wild fish populations and natural ecosystems. Coastal businesses could be negatively impacted by the increases in pollution and ecological damage. We have been tracking, and are entirely opposed to, the multitude of advances by the Trump Administration to recklessly develop and expand this destructive, outdated, and unnecessary form of aquaculture in the United States.

Other countries with marine finfish aquaculture have suffered extensive environmental, socio-economic and public health problems associated with the industry. These impacts are varied and widespread, and oftentimes do not come to light until years after the damage has been done. The U.S. should acknowledge and learn from these negative experiences. Several countries, like Canada, Argentina, and Denmark, are already moving away from offshore aquaculture due to these serious impacts.<sup>2</sup>

Marine finfish aquaculture regularly results in farmed fish escapes that adversely affect wild fish stocks. In August 2017, a Cooke Aquaculture facility in Washington State spilled more than 263,000 farmed Atlantic salmon into Puget Sound. Long after the escape, many of these non-native, farmed fish continued to thrive and swim free – some were even documented as far north as Vancouver Island, west

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<sup>1</sup> NOAA, [Recommendations for a Comprehensive Interagency Seafood Trade Strategy](#), 85 FR 41566 (July 10, 2020).

<sup>2</sup> Hallie Templeton (Feb. 10, 2020). *International examples offer US a blueprint for aquaculture regulation in 2020*. Friends of the Earth. <https://foe.org/international-examples-offer-us-blueprint-aquaculture-regulation-2020/>

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of the Strait of Juan de Fuca, and south of Tacoma, traveling at least 100 miles from the farm.<sup>3</sup> Escaped fish increase competition with wild stocks for food, habitat, spawning areas and mates. Moreover, reliance on the sterility of farmed fish to prevent interbreeding is *never* 100% guaranteed; therefore, the “long-term consequences of continued farmed [fish] escapes and subsequent interbreeding . . . include a loss of genetic diversity.”<sup>4</sup> Finally, escaped farmed fish might spread a multitude of parasites and diseases to wild stocks, which could prove fatal when transmitted.<sup>5</sup>

Also on the topic of parasites and diseases, we have significant concerns over the pervasive use of pharmaceuticals and other chemicals for prevention and treatment of outbreaks in marine finfish aquaculture facilities. The use of these chemicals creates environmental and public health concerns. It is no secret that large concentrated populations of animals are more susceptible to pests and diseases due to confined spaces and increased stress. In response, the agriculture and aquaculture sectors administer a pharmacopeia of chemicals – and in the open ocean, residues of these drugs are discharged and absorbed into the marine ecosystem. For example, the marine finfish aquaculture industry treats sea lice with Emamectin benzoate (marketed as SLICE®), which has caused “widespread damage to wildlife,” including “substantial, wide-scale reductions” in crabs, lobsters and other crustaceans.<sup>6</sup> For example, in Nova Scotia, an 11-year-long study found that lobster catches plummeted as harvesters got closer to marine finfish aquaculture facilities.<sup>7</sup> These industrial operations also have a plan in the works to apply Imidacloprid – an extremely hazardous, bee-killing neonicotinoid – to help control sea lice.<sup>8</sup> In addition, the industry has embraced the use of Formaldehyde – a toxic carcinogen posing risk to both public health and the marine ecosystem – as a form of disinfectant.<sup>9</sup> Finally, the use of antibiotics in marine finfish aquaculture facilities is contributing to the public health crisis of antibiotic resistance. In farmed fish, there may still be antibiotic and other chemical residues by the time they reach consumers, and they can also leach into the ocean, contaminating nearby water and marine life. In fact, up to 75% of

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<sup>3</sup> Lynda V. Mapes, Seattle Times, *Despite agency assurances, tribes catch more escaped Atlantic salmon in Skagit River* (Dec. 1, 2017), available at <https://www.seattletimes.com/seattle-news/environment/despite-agency-assurances-tribes-catch-more-escaped-atlantic-salmon-in-skagit-river/>.

<sup>4</sup> Fisheries and Oceans Canada, Newfoundland and Labrador Region, *Stock Assessment of Newfoundland and Labrador Atlantic Salmon* (2016), available at <http://waves-vagues.dfo-mpo.gc.ca/Library/40619655.pdf> (“Genetic analysis of juvenile Atlantic Salmon from southern Newfoundland revealed that hybridization between wild and farmed salmon was extensive throughout Fortune Bay and Bay d’Espoir (17 of 18 locations), with one-third of all juvenile salmon sampled being of hybrid ancestry.”); see also Mark Quinn, CBC News, *DFO study confirms ‘widespread’ mating of farmed, wild salmon in N.L.* (Sept. 21, 2016) <https://www.cbc.ca/news/canada/newfoundland-labrador/farmed-salmon-mating-with-wild-in-nl-dfo-study-1.3770864>.

<sup>5</sup> Jillian Fry, PhD MPH, David Love, PhD MSPH, & Gabriel Innes, VMD, Johns Hopkins University, Center for a Livable Future, “Ecosystem and Public Health Risks from Nearshore and Offshore Finfish Aquaculture” at 6-7 (2017) [https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/\\_pdf/research/clf\\_reports/offshor-fish-farm-final.pdf](https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/_pdf/research/clf_reports/offshor-fish-farm-final.pdf)

<sup>6</sup> Rob Edwards, The Sunday Herald, *Scottish government accused of colluding with drug giant over pesticides scandal*, (June 2, 2017) [http://www.heraldscotland.com/news/15326945.Scottish\\_government\\_accused\\_of\\_colluding\\_with\\_drug\\_giant\\_over\\_pesticides\\_scandal/](http://www.heraldscotland.com/news/15326945.Scottish_government_accused_of_colluding_with_drug_giant_over_pesticides_scandal/).

<sup>7</sup> Milewski, *et al.*, (2018) *Sea Cage aquaculture impacts market and berried lobster catches*, Mar. Ecol. Prog. Ser. 598: 85-97, available at <https://www.int-res.com/articles/meps2018/598/m598p085.pdf>.

<sup>8</sup> Rob Edwards, The Ferret Scotland, [Fish farm companies ‘bidding to use bee-harming pesticide](#) (March 17 2020).

<sup>9</sup> Rob Edwards, The Ferret Scotland, [Toxic fish farm pesticide polluted ten lochs across Scotland](#) (May 24, 2020).

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antibiotics used by the industrial ocean fish farming industry are directly absorbed into the surrounding environment.<sup>10</sup>

Another serious concern is the direct discharge of untreated pollutants, including excess food, waste, antibiotics, and antifoulants associated with industrial ocean fish farms. Releasing such excess nutrients can negatively impact water quality surrounding the farm and threaten surrounding plants and animals. These underwater factory farms can also physically impact the seafloor, create dead zones, and change marine ecology by attracting and harming predators and other species that congregate around fish cages. These predators – such as birds, seals, and sharks – can easily become entangled in net pens, stressed by acoustic deterrents, and hunted. In fact, an industrial ocean fish farm caused the death of an endangered monk seal in Hawaii, which was found entangled in the net.<sup>11</sup> In August 2018, Cooke Aquaculture entangled an endangered Humpback whale in large gillnets that it cast to recapture escaped farmed fish from a Canada facility.<sup>12</sup> These examples are merely two of many unfortunate incidents.

Large populations of farmed fish will require an incredible amount of fish feed, which carries its own environmental, public health, and human rights risks.<sup>13</sup> Most industrially farmed finfish, like salmon, are carnivorous and require protein in their feed. This often consists of lower-trophic level “forage fish,” many of which are already at risk of collapse. Lately, aquaculture facilities are relying more on ingredients such as corn, soy, and algae as substitute protein sources, many of them genetically engineered, and which do not naturally exist in a fish’s diet. Use of these ingredients can lead to heightened, widespread environmental degradation, a heightened demand on natural resources, and a less nutritious fish for consumers. Moreover, the fish feed industry is a global contributor to human trafficking and slavery.<sup>14</sup> There are very few requirements for the industry to include traceability of ingredients or sourcing methods in fish feed, allowing these serious problems to pervade.

Finally, permitting commercial, marine finfish aquaculture in the United States could bring formidable economic harm to our coastal communities, food producers (on land and at sea), and other marine-reliant industries. Members of the wild-capture fishing industry have collectively voiced their trepidations over attempting to coexist with the marine finfish aquaculture industry, stating that “this emerging industrial practice is incompatible with the sustainable commercial fishing practices embraced by our nation for generations and contravenes our vision for environmentally sound management of our

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<sup>10</sup> United Nations, “Frontiers 2017: Emerging Issues of Environmental Concern” at 15 (2017) <https://www.unenvironment.org/resources/frontiers>.

<sup>11</sup> Caleb Jones, USA Today, *Rare Monk Seal Dies in Fish Farm off Hawaii* (Mar. 17 2017), available at <https://www.usatoday.com/story/news/nation/2017/03/17/rare-monk-seal-dies-fish-farm-off-hawaii/99295396/>.

<sup>12</sup> Terri Coles, CBC News, *Humpback whale freed from net meant for escaped farm salmon in Hermitage Bay* (Aug. 14, 2018), <https://www.cbc.ca/news/canada/newfoundland-labrador/whale-caught-gill-net-cooke-aquaculture-1.4784732>.

<sup>13</sup> See generally, Changing Markets Foundation, *Until the Seas Run Dry* (2019), available at <http://changingmarkets.org/wp-content/uploads/2019/04/REPORT-WEB-UNTILL-THE-SEAS-DRY.pdf> (concluding that using wild fish to feed farmed fish “raises concerns of overfishing, poor animal welfare and disruption of aquatic food webs; it also undermines food security in developing countries, as less fish is available for direct human consumption”).

<sup>14</sup> David Tickler, *et al.* (2018) *Modern slavery and the race to fish*, Nature Communications 9: 4643, available at <https://www.nature.com/articles/s41467-018-07118-9>.

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oceans.”<sup>15</sup> These massive facilities could also close off and essentially privatize large swaths of the ocean that are currently available for numerous other commercial purposes, including fishing, tourism, shipping, and navigation. Given what we know about economies of scale and the business models of modern agriculture and terrestrial food production, we can only expect a similar trend at sea: that is, the marine finfish aquaculture industry could easily push out responsible, small-scale seafood producers and crop growers. This dynamic equates to an alarming imbalance of power, and allows corporations to dominate business structures, production methods, and management policies within the industry. Giving corporations disproportionate influence over food production also severely limits consumer choices.<sup>16</sup> Most important is the fact that our existing seafood producers are acutely struggling from the sweeping impacts of the COVID-19 pandemic. The Administration should set aside its flawed mission to advance an industry with myriad documented harms, and instead prioritize protecting and assisting our preexisting – and deeply struggling – seafood production sectors.

The risks are not isolated to marine finfish operations. Other forms of aquaculture – such as intensive bivalve cultivation and large-scale warehouses on land – can also be destructive to essential habitat, water quality, and public health when poorly sited and scaled. While *wild* bivalves are known to clean water, the water quality impacts of intensive shellfish aquaculture may not always be beneficial; many aquaculture activities can negatively affect water quality through the removal of eelgrass, the increase of wastes from concentrated production, and the disruption of sediments. Other significant potential environmental impacts from dense shellfish aquaculture is a reduction in shoreline biodiversity,<sup>17</sup> installation of plastic gear (e.g., PVC tubes, polyethylene anti-predator netting, and polyolefin ropes),<sup>18</sup> and use of pesticides.<sup>19</sup> These massive shellfish operations also pose risks to marine wildlife and public

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<sup>15</sup> Open letter to Members of the U.S. House of Representatives and Senate, Dec. 4, 2018, re: Opposition to marine finfish aquaculture in U.S. waters, available at <http://foe.org/DecFishFarmingSignOnLetter/>.

<sup>16</sup> See generally, Undercurrent News, “World’s 100 Largest Seafood Companies” (Oct. 7, 2016) <https://www.undercurrentnews.com/report/undercurrent-news-worlds-100-largest-seafood-companies-2016/>; Tom Seaman, Undercurrent News, “World’s top 20 salmon farmers: Mitsubishi moves into second place behind Marine Harvest” (June 29, 2016) <https://www.undercurrentnews.com/2016/06/29/worlds-top-20-salmon-farmers-mitsubishi-movesinto-second-place-behind-marine-harvest/>; Aslak Berge, Undercurrent News, “These are the world’s 20 largest salmon producers” (July 30, 2017) <http://salmonbusiness.com/these-are-the-worlds-20-largest-salmon-producers/>.

<sup>17</sup> See *id*; Bouwman, L., A. Beusen P. M. Glibert, C. Overbeek, M. Pawlowski, J. Herrera S. Mulsow, R. Yu, and M. Zhou, *Mariculture: significant and expanding cause of coastal nutrient enrichment*, Environ. Res. Lett. 8 (2013); DeFur, P. and D.N. Rader, *Aquaculture in estuaries: Feast or famine?* Estuaries Vol. 18, No. 1A (1995); Hastings, R.W. and D.R. Heinle, *The effects of aquaculture in estuarine environments: Introduction to the dedicated issue*, Estuaries Vol. 18, No. 1A (1995); Dethier, M., *Native shellfish in nearshore ecosystems of Puget Sound*, Puget Sound Nearshore Partnership Report No. 2006-04, Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington (2006); Diana, J.S., H. S. Egna, T. Chopin, M.S. Peterson, L. Cao, R. Pomeroy, M. Verdegem, W.T. Slack, M.G. Bondad-Reantaso, and F. Cabello, *Responsible Aquaculture in 2050: Valuing Local Conditions and Human Innovations Will Be Key to Success*, Bioscience, Vol. 63(4) (2013); Bendell, L.I. and P.C.Y. Wan, *Application of aerial photography in combination with GIS for coastal management at small spatial scales; a case study of shellfish aquaculture* (2013).

<sup>18</sup> Bendell, L.I., *Favored use of anti-predator netting (APN) applied for the farming of clams leads to little benefits to industry while increasing nearshore impacts and plastics pollution*, Marine Pollution Bulletin (2015).

<sup>19</sup> Jennifer Wing, [Willapa Bay Oyster Farmers Ask State Again For Permission To Use Neurotoxin](#), KPLU, (Jan. 9, 2016); Wash. Dept. of Ecology, [Willapa Bay- Grays Harbor: Burrowing Shrimp Control – Imidacloprid](#) (last visited Aug. 1, 2016).

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health and safety.<sup>20</sup> Avalon Aquafarms is one such facility that would span 2,000 acres on the San Pedro Shelf approximately 3.3 miles off the coast of Huntington Beach, CA. As mentioned in comments to the U.S. Army Corps of Engineers earlier this year, we are opposed to this facility based on these inherent risks.<sup>21</sup>

Massive land-based finfish aquaculture facilities also pose risks. One such facility is being proposed in California by Nordic Aquafarms, Inc. – a U.S. based subsidiary of a Norwegian corporation – which is also securing permits for a similar operation in Maine. Nordic’s two operations will be the largest in North America, with California hosting a 30-acre site in Humboldt Bay on the Samoa Peninsula that will produce 55 million pounds of fish annually.<sup>22</sup> Although these types of operations are referring to themselves as “Recirculating Aquaculture Systems,” these are not actually what is commonly defined as a recirculating system (fully recirculating, reusing waste and water within the system) and have regular discharge. Co-opting the term recirculating aquaculture system to describe these facilities, is simply a form of greenwashing the operations, in the hopes of garnering support for it by confusing the public about their true nature. Given its scale, Nordic Aquafarms is likely to routinely discharge *millions of gallons of effluent daily* off California’s coast through a 1.5 mile long ocean outfall pipe.<sup>23</sup> Regardless of any dilution efforts, effluent from a facility of this size contains alarming amounts of fish waste, excess food, and pharmaceutical residues. Moreover, the facility will use a stunningly irresponsible amount of water and have an extreme carbon footprint. Finally, the colossal scale of this facility is cause for extreme concern for the wellbeing of California’s independent fishing community as well as small and mid-sized seafood businesses. The California facility is currently moving into the application phase, and recently announced the submission of its first application for a water discharge permit to the Regional Water Quality Control Board.<sup>24</sup> Based on these reasons, we are opposed to the facility and strongly object to the issuance of any permits for its operation in the State and further are very concerned about their usage of the term “recirculating aquaculture” in the manner.

**II. We oppose NOAA’s designation of Southern California as an Aquaculture Opportunity Area.**

On August 20, 2020, the National Oceanic and Atmospheric Administration (NOAA) announced the designation of federal waters in the Gulf of Mexico and Southern California regions as Aquaculture Opportunity Areas (AOA).<sup>25</sup> NOAA created the AOA designations despite a ruling from the Fifth Circuit Court of Appeals earlier in August that concluded that the Magnuson Stevens Act “unambiguously

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<sup>20</sup> Richard Langan, Kevin Heasman, [Shellfish Culture in the Open Ocean: Lessons Learned for Offshore Expansion](#), Marine Technology Science Journal (May 2010).

<sup>21</sup> On May 7, 2020, Friends of the Earth, Center for Biological Diversity, and Center for Food Safety highlighted these risks in a comment letter to the U.S. Army Corps of Engineers opposing the issuance of a Clean Water Act permit to Avalon. These risks include, but are not limited to, destruction of benthic habitat and native sea grass, monoculture practices, depositing waste on the seabed, chemically altering sediment, changing the physical dynamics of the environment, and numerous other risks to marine wildlife and public health and safety.

<sup>22</sup> Chris Chase, Seafood Source, [Nordic Aquafarms announces plans for RAS facility in California](#) (Feb. 11, 2019).

<sup>23</sup> Nordic’s operation in Maine aims to produce 33,000 tons of fish annually, discharging 7.7 million gallons of effluent daily. See Abigail Curtis, Bangor Daily News, [State officials get an earful about proposed Belfast fish farm](#) (Feb. 13, 2020).

<sup>24</sup> Nordic Aquafarms, Press Release, [Nordic Aquafarms has submitted first permit application for the Humboldt, California project](#) (Aug. 18, 2020).

<sup>25</sup> NOAA, Press Release, [NOAA Announces Regions for First Two Aquaculture Opportunity Areas under Executive Order on Seafood](#) (Aug. 20, 2020).

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precludes the agency from creating an aquaculture regime, and affirmed the lower court's decision to vacate the nation's first commercial aquaculture permitting scheme.<sup>26</sup> Instead, NOAA made the AOA designations in response to a non-legislative mandate contained in the May 7, 2020 Executive Order on Promoting American Seafood Competitiveness and Economic Growth ("EO").<sup>27</sup> NOAA is planning to designate a portion of each named region into a parcel that can host 3-5 offshore aquaculture operations for finfish, plants, bivalves, or a combination of species.

While it is currently unclear what NOAA is defining as "Southern California," NOAA has stated that it chose the region "based on the already available spatial analysis data and current industry interest in developing sustainable aquaculture operations in the region." This statement in itself is troubling, as the agency has clearly failed to take into account whether the state of California consents to having aquaculture facilities sited in its adjacent federal waters. Indeed, California does not currently permit marine finfish aquaculture, nor does the majority of states in the region. Before the Southern California AOA can legally be finalized, the Coastal Zone Management Act mandates a consistency review with the California Coastal Commission to explore this important issue.<sup>28</sup>

Based on its history of environmental and socio-economic harms, we urge the PFMC to oppose the use of the Southern California AOA for marine finfish aquaculture facilities. However, we are mindful that certain low-trophic marine aquaculture facilities do not pose the same risks. Therefore, for bivalve and plant operations, we request the PFMC to urge NOAA to only permit facilities in the AOA that are moderately scaled, appropriately sited, and which do not require feed or other inputs such as chemicals, herbicides, and pesticides.

Marine conditions are highly localized and can vary greatly even within a small parcel of ocean space. Therefore, for the facilities that will be permitted, we are strongly opposed to any streamlined or programmatic environmental review process and recommend that each facility undergo rigorous review by pertinent agencies, including meaningful public participation and fulfillment of all mandated environmental reviews, consultations, and other conservation processes, including, but not limited to, those contained in the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 *et seq.*, the Endangered Species Act (ESA) 16 U.S.C. § 1531, *et seq.*, the Marine Mammal Protection Act, 16 U.S.C. § 1361, *et seq.*, and the Migratory Bird Treaty Act, 16 U.S.C. § 703, *et seq.*

**III. We oppose the U.S. Army Corps draft nationwide permits streamlined approach to permitting industrial aquaculture.**

Pursuant to the EO, the U.S. Army Corps of Engineers (USACE) has drafted a new set of nationwide permits for finfish, plant, and multi-trophic aquaculture facilities, as well as amended the pre-existing nationwide permit 48 for shellfish aquaculture. An unofficial draft of the permits has been provided for public inspection by the Federal Register, with formal publication of the official draft and a 60-day public comment period forthcoming.<sup>29</sup>

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<sup>26</sup> Gulf Fishermens Ass'n v. NMFS, 968 F.3d 454 (5th Cir. Aug. 2020).

<sup>27</sup> Executive Office of the White House, [Promoting American Seafood Competitiveness and Economic Growth](#), Executive Order 13921 (May 7, 2020).

<sup>28</sup> 16 U.S.C. § 1455(c).

<sup>29</sup> Dep't of Defense, [Proposal to Reissue and Modify Nationwide Permits](#), Dkt. No. 2020-0002 (Aug 3, 2020).

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Without the official copy, we will refrain from commenting on the finer details of the draft nationwide permits. However, we assert our opposition to any streamlined approach to permitting industrial aquaculture operations, and object to any permitting for marine finfish aquaculture facilities. Many of the risks inherent with industrial aquaculture operations cannot be mitigated or avoided. Moreover, as mentioned above, even localized ocean space can vary significantly within the same region, which requires a unique and targeted review for each proposed site. For these reasons, each individual permit and its potential environmental and socio-economic harms must be closely and thoroughly scrutinized by pertinent agencies, including a rigorous public participation process.

**IV. We recommend the following actions by PFMC with regard to emerging aquaculture proposals:**

The Magnuson Stevens Act acknowledges the critical relationship between fishing and non-fishing uses of the ocean through its mandate to consider all ocean uses when creating or amending fisheries policy. By the same logic, the PFMC has a vested interest in ensuring that emerging ocean policies and uses do not compromise West Coast fishing activities by damaging the ocean ecosystem, disrupting ongoing spatial uses, or harming marine life. Indeed, the fish harvesters that PFMC represents all deeply depend on a healthy, robust marine environment, which would be put at significant risk by industrial aquaculture. To help fulfill its responsibilities, we recommend that PFMC exercise its unique influence and authority to undertake the following as related to emerging marine aquaculture proposals:

- Request the Secretary of Commerce to initiate Essential Fish Habitat consultations on all proposed aquaculture permits or siting proposals – including the draft nationwide permits and AOA designations – at the earliest possible opportunity, not to be consolidated with other environmental review procedures.
- Coordinate and provide input into proposed aquaculture permits or siting proposals – including the draft nationwide permits AOA designations – to the extent allowed by the environmental review procedures in the National Environmental Policy Act (NEPA), the Clean Water Act (CWA), and the Coastal Zone Management Act (CZMA).
- Provide to the Secretary of Commerce, Secretary of Interior, and Secretary of Defense an assessment of the environmental and socio-economic risks of industrial aquaculture in the region and request that the assessment be incorporated into all agency strategies and decisions on aquaculture proposals and policies for the region.
- Incorporate language into conservation and management measures that rejects marine finfish aquaculture facilities in the region based on the industry's impacts on ocean health and wild fish productivity abundance, and distribution.

In conclusion, we are deeply concerned over recent proposals that seek to advance the growth of industrial aquaculture – many without proper oversight, environmental review and public participation processes, and other assurances to adequately protect water quality, wildlife habitat, and coastal economies. It is clear that industrial aquaculture has myriad, inherent environmental and socio-economic harms. Instead of treading carefully toward permitting an emerging industry with well-documented harms, we are alarmed that federal agencies have taken measures to rush the regulatory and environmental review processes to speed production while ignoring many risks and external costs.

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Based on industrial aquaculture's long-established history of environmental and socio-economic risks, we do not support these proposals, or any future policies that prioritize this risky method of seafood production. We urge the PFMC to adopt the above recommendations and object to any efforts that would assist the hasty development of this dangerous industry.

Thank you for accepting these comments. We are available for any follow-up you may have in response to this communication.

Sincerely,

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