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Ms. Kristy Beard
Fishery Policy Analyst
Office of Aquaculture
National Oceanic & Atmospheric Administration
1315 East-West Highway, 12th Floor
Silver Spring, MD 20910

Re: Request for Information on Aquaculture Opportunity Areas (85 FR 67519)

Dear Ms. Beard:

Please accept these comments from Friends of the Earth, Center for Food Safety, Food & Water Watch, [other groups] on the National Oceanic and Atmospheric Administration's (NOAA) notice and request for information on Aquaculture Opportunity Areas (AOAs).[1]

I. Industrial aquaculture poses a number of environmental and socio-economic risks that cannot be mitigated or avoided.

As further detailed below, offshore finfish aquaculture is associated with many environmental and public health concerns, including: the escape of farmed fish into the wild; outcompeting wild fish for habitat; food and mates or intermixing with wild fish and altering their genetics and behaviors; the spread of diseases and parasites from farmed fish to wild fish and other marine life; and pollution from excess feed, wastes and any antibiotics or other chemicals used flowing through the open pens into natural waters. Offshore aquaculture also significantly affects public health, as antibiotics, pesticides and other chemicals that are heavily used to prevent disease and parasites in offshore aquaculture can accumulate in fish tissues. Because of extensive environmental, socio-economic and public health problems from marine finfish aquaculture, several countries, like Canada, Argentina and Denmark, are already moving away from offshore aquaculture due to these serious impacts.[2]

Escapes Are Inevitable and Disastrous: Marine finfish aquaculture routinely 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, even documented as far north as Vancouver Island, west of the Strait of Juan de Fuca, and south of Tacoma, traveling at least 100 miles from the farm.[3] Escaped farmed fish compete with wild fish for food, habitat, spawning areas, and mates. Even for facilities that rely on the sterility of farmed fish to prevent interbreeding, sterility is

[1] NOAA, Aquaculture Opportunity Areas, 85 Fed. Reg. 67,519 (Oct. 23, 2020).
[2] 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/.
[3] 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/.

never 100% guaranteed. Therefore, the "long-term consequences of continued farmed [fish] escapes and subsequent interbreeding . . . include a loss of genetic diversity."[4]

Finally, escaped farmed fish might spread a multitude of parasites and diseases to wild stocks, which could prove fatal when transmitted.[5]

Pesticides and Other Chemicals: Because finfish aquaculture confines large numbers of fish together, much like Concentrated Animal Feeding Operations (CAFOs) on land, they rely heavily on drugs and pesticides to address disease spread. Marine finfish aquaculture uses pharmaceuticals and other chemicals pervasively for prevention and treatment of disease outbreaks in facilities. The use of these chemicals creates environmental and public health concerns. Just like in CAFOs, 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. But 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.[6] In Nova Scotia, an 11-year-long study found that lobster catches plummeted as harvesters got closer to marine finfish aquaculture facilities.[7] Another study by researchers at Norway's Institute of Marine Research found that alternative chemicals for sea lice treatment, Azamethiphos and deltamethrin, are acutely toxic to lobster larvae, creating a significant risk for the species when located near finfish aquaculture facilities.[8]

Disturbingly, these offshore operations are also bidding to use Imidacloprid—a bee-killing neonicotinoid and neurotoxin that is highly toxic to aquatic invertebrates—to help control sea lice.[9] 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.[10]

[4] 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.

[5] 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-finfish-final.pdf.

[6] 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/.

[7] 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. [8] Parsons, *et al.*, *The impact of anti-sea lice pesticides, azamethiphos and deltamethrin, on European lobster (Homarus gammarus) larvae in the Norwegian marine environment*, Envt'l Pollution 264 (2020). [9] Rob Edwards, The Ferret Scotland, Fish farm companies 'bidding to use bee-harming pesticide (March 17 2020). [10] Rob Edwards, The Ferret Scotland, Toxic fish farm pesticide polluted ten lochs across Scotland (May 24, 2020).

Finally, marine finfish aquaculture facilities' use of antibiotics is contributing to the public health crisis of antibiotic resistance. Residual antibiotics and other chemicals may still be in farmed fish when they reach consumers, and they can also leach into the ocean, contaminating nearby water and marine life. In fact, up to 75% of antibiotics used by the offshore fish farming industry are directly absorbed into the surrounding environment.[11]

Discharge of Pollutants: Another serious concern is the direct discharge of untreated pollutants, including excess food, waste, antibiotics, and antifoulants associated with offshore fish farms. Releasing such excess nutrients can negatively impact water quality surrounding the farm and threaten surrounding plants and animals.

Harm to Wild Marine Life: These underwater factory farms can also physically impact the seafloor, contribute to 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 offshore fish farm caused the death of an endangered monk seal in Hawaii, which was found entangled in the net.[12] 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.[13] These examples are merely two of many unfortunate incidents.

Harm to Forage Fish & Environment for Feed: Large populations of farmed fish also require an incredible amount of fish feed, which carries its own environmental, public health, and human rights risks.[14] Most 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,[15] 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.[16] 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.

Socio-Economic Impacts to Communities: Finally, permitting commercial, marine finfish aquaculture in the United States could bring formidable economic harm to our coastal communities, food producers

[11] United Nations, "Frontiers 2017: Emerging Issues of Environmental Concern" at 15 (2017) https://www.unenvironment.org/resources/frontiers.
[12] 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/. [13] 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.

[14] *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").

[15] Center for Food Safety, GE Food & The Environment, https://www.centerforfoodsafety.org/issues/311/ge foods/ge-food-and-the-environment.

[16] 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.

(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 oceans."[17] 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.[18] Most importantly, our existing seafood producers are acutely struggling from the sweeping impacts of the COVID-19 pandemic. Federal agencies should set aside the flawed mission to advance an industry with myriad documented harms, and instead prioritize protecting and assisting our preexisting – and deeply struggling – seafood production sectors.

II. NOAA should halt development of Aquaculture Opportunity Areas for the purpose of expanding and streamlining development of commercial-scale aquaculture facilities.

There are numerous problems with the federal government's streamlined development of commercial scale offshore aquaculture in the U.S., each of which is alone sufficient to belie NOAA's current plan to develop AOAs.

A. NOAA should immediately cease further development of AOAs given legal implications, forthcoming policy changes, and conflict-of-interest concerns.

On May 7, 2020 the White House issued an Executive Order on Promoting American Seafood Competitiveness and Economic Growth ("EO 13921"), which contains a non-legislative directive that NOAA rapidly identify and develop locations suitable for commercial aquaculture operations.[19] On August 20, 2020, NOAA announced the designation of federal waters in the Gulf of Mexico and Southern California as the first two regions to host Aquaculture Opportunity Areas (AOA).[20] NOAA is planning to allocate a portion of each named region into a parcel for siting 3-5 offshore aquaculture operations for finfish, plants, bivalves, or a combination of species. According to the Public Notice and Request for Information, NOAA intends to follow with the development of eight additional AOAs throughout federally controlled waters over the next four years.

[17] 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/. [18] *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/.

[19] Executive Office of the White House, Promoting American Seafood Competitiveness and Economic Growth, Executive Order 13921 (May 7, 2020).

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

First, there are legal implications as to whether NOAA has authority to undertake these actions. NOAA is creating and designating AOAs as a method of aquaculture development that attempts to circumvent the August 2020 ruling from the Fifth Circuit Court of Appeals, which concluded that the Magnuson Stevens Act "unambiguously 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.[21] While NOAA would not be issuing permits under the current AOA proposal, it would be creating an aquaculture regime through the allocation of parcels of ocean territory, designated for the development of commercial aquaculture facilities. There is no existing authority for NOAA to undertake this action, which is a backdoor attempt to evade the Fifth Circuit's holding. Moreover, should NOAA move forward with the establishment of AOAs, there would be clear violations of the public trust doctrine. Pursuant to this doctrine – which requires that the country's natural and cultural resources be preserved and maintained by the federal government for public use and enjoyment – any entity that established an aquaculture operation within an AOA would be vulnerable to litigation over common law claims such as public nuisance and trespass, among others.[22]

Moreover, continued development of the AOAs will likely be a waste of limited agency resources. President-Elect Biden and his new Administration will take office on January 20, 2021 and has stated that he plans to "quickly sign a series of executive orders," which will be used to reverse many of Trump's shortsighted policies.[23] The development of AOAs specifically comes from a mandate in EO 13921, which may likely be rescinded by the Biden Administration. Indeed, on December 15, 2020, a coalition of 52 organizations representing fishing, farming, food security, and conservation interests submitted a letter formally requesting that President-Elect Biden rapidly replace EO 13921 with an Executive Order that supports U.S. sustainable wild-capture fishing communities instead of prioritizing offshore aquaculture development.[24] In short, it behooves NOAA to place a hold on any further work toward the establishment of AOAs until the new Administration takes office and clarifies its position on the mandates contained in EO 13921.

Finally, there are considerable concerns over pervasive bias within NOAA, which has impacted the agency's ability to set reasonable standards for aquaculture policies and development. NOAA is the self proclaimed lead federal agency on policy formulation and regulation of domestic aquaculture. However, in addition to its regulatory efforts, NOAA also has prioritized the explicit goal of promoting and expanding marine aquaculture production in the United States. In setting its priorities for 2019-2022, NOAA Fisheries stated:

> NOAA Fisheries also seeks to grow domestic marine aquaculture production,

supplementing U.S. wild-caught fisheries while promoting business and employment opportunities. NOAA Fisheries accomplishes this by working closely with federal and state partners to develop effective and streamlined aquaculture permitting systems,

[21] Gulf Fishermens Ass'n v. NMFS, 968 F.3d 454 (5th Cir. Aug. 2020).
[22] *See generally* Richard M. Frank, *The Public Trust Doctrine: Assessing Its Recent Past & Charting Its Future* 45 Univ. Calif. Davis 665 (2012).
[23] Matt Viser *et al*., The Washington Post, *Biden Plans Immediate Flurry of Executive Orders to Reverse Trump Policies* (Nov. 7, 2020), https://www.washingtonpost.com/politics/biden-first-executive-orders measures/2020/11/07/9fb9c1d0-210b-11eb-b532-05c751cd5dc2_story.html.
[24] Cite to letter once submitted.

and by providing science and services to support the expansion and sustainability of U.S. marine aquaculture.[25]

NOAA continues to allow bias to influence its treatment of aquaculture through a clear pattern of charging full steam ahead to promote this hazardous industry without first exercising due diligence and undertaking sound science that fully assesses the risks and impacts of permitting commercial facilities in U.S. waters. Such bias is evident in the two designated regions selected for the first AOAs. Both Southern California and the Gulf of Mexico are the only two regions of the EEZ that already have proposed marine finfish aquaculture facilities. It seems clear that NOAA chose these two regions based heavily on industry interest. Because Southern California and the Gulf of Mexico provide the best prospects of soon having at least two active aquaculture operations, NOAA is automatically one step closer to its goal of expanding the industry as swiftly as possible.

There is a great potential for persistent conflict of interest given the agency's explicit goal to promote and expand the aquaculture industry. Effective regulation and enforcement cannot be achieved by an agency that is deeply invested in industry promotion. NOAA must take all steps necessary to prevent bias from clouding its vision as to what areas might be suitable for certain forms of aquaculture, and
what forms of aquaculture – if any – can be undertaken in a truly safe, sustainable, and ethical manner. This could be achieved by separating these roles through walling off sections and staff within the agency, or more preferably, by surrendering science-based decision-making for aquaculture issues to an independent commission as is the case in Canada.[26]

B. NOAA should prevent the use of AOAs for marine finfish aquaculture given the long history of environmental and socio-economic harms associated with these operations.

Based on the above-listed harms from marine finfish aquaculture operations, the undersigned organizations urge NOAA to refrain from proceeding with the development of Aquaculture Opportunity Areas to streamline development of marine finfish aquaculture facilities.

It is especially problematic that the AOAs will involve permitting facilities pursuant to a combined and consolidated environmental review and public input process. Streamlined environmental review processes should be reserved only for actions that are proven to have no more than minimal adverse impacts. As detailed above, marine finfish aquaculture facilities have a long history of documented

harms in Washington and Maine, as well as in other countries. For these reasons, we strongly recommend that NOAA refrain from streamlining any permitting, reviews, or public input processes for finfish operations. These types of streamlined policies should be intended for low-impact, noncontroversial activities, which simply cannot be said for finfish cultivation in open water. It is abundantly clear that this industry should not be fast-tracked in any way.

[25] NOAA Fisheries, Strategic Plan 2019-2022 at 2-3 (May 19, 2019). The Strategic Plan specifies that it is the agency's priority to "[f]oster U.S. marine aquaculture," *id.*at 6, and Goal 1 for the agency includes goals of "promoting marine aquaculture" and "aquaculture management," *id.* at 8.
[26] Canada's Independent Expert Panel on Aquaculture was established in 2018 to provide a check against potential conflicts of interest in aquaculture promotion and management, with the mandate to provide "advice and recommendations on the appropriate use of scientific evidence in risk-based aquaculture decision-making, the priority-setting process for aquaculture science at DFO, and the communication of aquaculture science and resulting decisions to Canadians." Government of Canada, Report of the Independent Expert Panel on Aquaculture Science (Dec. 13, 2019).

C. NOAA should reconsider designating AOAs in the Gulf of Mexico and Southern California

On August 20, 2020, NOAA announced the designation of federal waters in the Gulf of Mexico and Southern California as the first two regions to host Aquaculture Opportunity Areas (AOA).[27] NOAA is planning to allocate a portion of each region into a parcel for siting 3-5 offshore aquaculture operations for finfish, plants, bivalves, or a combination of species. We object to NOAA's plan to place AOAs in the Gulf of Mexico and Southern California, especially regarding any intentions to site marine finfish aquaculture facilities in these regions.

There are many unique characteristics for each of these regions that make them unsuitable to host an AOA. This year, the Gulf of Mexico had a record-setting hurricane season with the most named storms in history.[28] Hurricane season in the Gulf means winds in excess of 100 miles per hour and storm surges in the double-digits, which has wreaked havoc on offshore drilling platforms.[29] Even a single marine weather event of this magnitude could have a devastating effect on marine ecosystems surrounding the operation through damaging the pens and infrastructure–even if submersible–and allowing a spill of farmed fish and dispersion of pollutants and other detritus into surrounding waters.

Moreover, in recent years the Gulf of Mexico has experienced exacerbated presence of Harmful Algal Blooms, such as the red tide, which has been called "one of the most common chemical stressors" impacting the region and its marine ecosystems.[30] Studies suggests that nutrients including phosphorous and nitrogen – which are directly discharged from marine finfish aquaculture operations[31] – can energize or reawaken red tide.[32] HABs are an environmental and public health crisis for the Gulf of Mexico, and

[27] NOAA, Press Release, NOAA Announces Regions for First Two Aquaculture Opportunity Areas under Executive Order on Seafood (Aug. 20, 2020).
[28] Jason Samenow *et al.*, Washington Post, 2020 Atlantic hurricane season breaks all-time record while leaving Gulf Coast battered (Nov. 10, 2020).
[29] Sarah Zhang, The Atlantic, When a Hurricane Hits an Offshore Oil Platform (Aug. 25, 2017) ("In 2005, the one two punch of Hurricanes Katrina and Rita destroyed 115 platforms and damaged 52 others."). *See also* Reuters, Hurricane Delta shuts most U.S. offshore oil output in 15 years (Oct. 9, 2020) ("Workers had evacuated 279 offshore Gulf of Mexico facilities and producers moved 15 drilling rigs away from Delta's large and strong windfield. Tropical force winds stretched up to 160 miles from its center, the NHC said, a sign of its large size.").
[30] Pierce, R.H. 2008. Harmful algal toxins of the Florida red tide (Karenia brevis): natural chemical stressors in South Florida coastal ecosystems. Ecotoxicology. 2008 Oct. 17(7): 623-631. Doi:10.1007/s10646-008-0241-x. [31]

Olsen, L. et al. 2008. Perspectives of nutrient emission from fish aquaculture in coastal waters. The Fishery and Aquaculture Industry Research Fund.

[32] Olascoaga, M.J. 2010. Isolation on the West Florida Shelf with implications for red tides and pollutant dispersal in the Gulf of Mexico. Nonlinear Process Geophys. 2010 Jan. 1; 17(6): 685-696. Doi:10.5194/npg-17-685-2010; Olascoaga, M.J. et al. 2008. Tracing the Early Development of Harmful Algal Blooms on the West Florida Shelf with the Aid of Lagrangian Coherent Structure. J. Geophys. Res. 2008; 113(c12): c12014-doi: 10.1029/2007JC004533; Poulson-Ellestad, K. et al. 2014. Metabolics and proteomics reveal impacts of chemically mediated competition on marine plankton. PNAS. June 17, 2014. Vol. 11. No. 24. 9009-9014; Morey, J. et al. 2011. Transcriptomic response of the red tide dinoflagellate, Karenia brevis, to nitrogen and phosphorus depletion and addition. Genomics 2011, 12.346; Garrett, M. 2011. Harmful algal bloom species and phosphate-processing effluent: Field and laboratory studies. Marine Pollution Bulletin 62 (2011) 596-601; Heil, C.A. et al. 2014. Blooms of Karenia brevis (Davis) G. Hansen & O. Moestrup on the West Florida Shelf: Nutrient sources and potential management strategies based on a multi-year regional study. Harmful Algae 38 (2014) 127-43; Killberg-Thoreson, L. et al. 2014. Nutrients released from decaying fish support microbial growth in the eastern Gulf of Mexico. Harmful Algae 38 (2014) 40-49; Mulholland, M.R. et al. 2014. Contribution of diazotrpohy to nitrogen inputs supporting Karenia brevis blooms in the Gulf of Mexico. Harmful Algae 38 (2014) 20-29; Redalje, D.G. et al. 2008. The growth dynamics of Karenia brevis within discrete blooms on the West Florida Shelf. Continental Shelf Research 28 (2008) 24-44; Munoz, C. 2018. Scientists: Lake Okeechobee runoff may enhance red tide. Daily

have caused Florida alone to suffer losses of almost $150 million from fish deaths, marine animal deaths, and the resulting loss of tourism. In October 2019, a bloom occurred in the region killing fish, eels, dolphins, and even loggerhead sea turtles.[33] As recent as January 10, 2020, *K. brevis* was found in "low" concentrations of 10,000 – 100,000 cells/liter (level 3, with level 5 being the worst) offshore of Collier county Florida.[34] Shellfish are no longer safe for human consumption at 5,000 cells/liter.[35] Given the known risks of industrial aquaculture to water quality and marine life, coupled with unique concerns over the Gulf of Mexico region's extreme tropical storms and HABs, placing an AOA in the Gulf of Mexico region is both appalling and reckless.

For Southern California, we have unique concerns related to exacerbated harm that an AOA would have on pre-existing uses of the region, sensitive marine areas, and protected species. First, the coastal marine waters of California are among the most biologically productive in the world with habitats ranging from nearshore intertidal and benthic to offshore pelagic. These habitats are home to State and federally listed species as well as numerous California Species of Special Concern (SSC). The Southern California Bight – which is the area between Point Conception and the U.S.-Mexico Border – is habitat for hundreds of marine species, including gray whales, short-beaked common dolphins, Baird's beaked whales, Cuvier's beaked whales, minke whales, dall's porpoise, elephant seals, northern fur seals, and California sea lions.[36]8 The area is also important to numerous species listed under the Endangered Species Act ("ESA"), including blue whales, humpback whales, fin whales, sperm whales, Guadalupe fur seals, loggerhead sea turtles, green sea turtles, and leatherback sea turtles, as well as several listed bird species, including the California least tern, and the western snowy plover.[37] In addition, NMFS has deemed the region a Biologically Important Area for a number of cetaceans that engage in activities throughout the year that are important to the animal's physical health and fitness, reproduction, and ability to survive as a population.[38]

Second, the Southern California region also contains many marine protected areas and marine sanctuaries. Southern California hosts the South La Jolla State Marine Conservation Area and the South La Jolla State Marine Reserve. In addition, the Channel Islands National Marine Sanctuary and the proposed Chumash Heritage National Marine Sanctuary encompass much of the Southern California region. The undersigned are deeply concerned about potential impacts to marine resources

in the vicinity of any AOA, including impacts to the biological diversity within these protected and vulnerable marine areas.

Commercial. Oct. 11, 2018; Burkholder, J.M. and P.M. Gilbert. 2011. Grazing by Karenia brevis on Synechococcus enhances its growth rate and may help to sustain blooms. Aquatic Microbial Ecology 55:17-30. https://apprecautionaryprinciple.wordpress.com/2011/06/16/red-tide-blooms-influenced-by-rea-nitrogren-run offinto-gulf-of-mexico-waters/.

[33] Doug Stanglin, *Red tide, the toxic algae bloom that kills wildlife, returns to southwest Florida*, USA TODAY (Nov. 13, 2019, 12:20 PM), https://www.usatoday.com/story/news/nation/2019/11/13/red-tide-florida-toxic-algae-bloom returns-southwest-beaches/4177117002/.

[34] Florida Fish and Wildlife Conservation Commission, *Red Tide Current Status*, https://myfwc.com/research/ redtide/statewide/?redirect=redtidestatus (last updated Jan. 10, 2020).

[35] Sea Grant Florida, *Understanding Florida's Red Tide* (Dec. 12, 2018), https://www.flseagrant.org/news/ 2018/12/understanding-floridas-red-tide.

[36] NMFS, Cetacean Data Availability, https://cetsound.noaa.gov/cda.

[37] 50 C.F.R. § 17.11.

[38] NMFS, Cetacean & Sound Mapping, Biological Important Areas, https://cetsound.noaa.gov/important; *see also* NMFS, Cetacean Data Availability, https://cetsound.noaa.gov/cda.

Third, Southern California's marine environment is a vital economic resource for commercial and recreational fishing, as well as a wide variety of other recreational and commercial activities. For example, in 2019 the Southern California Bight contributed to more than $53.5M in ex-vessel revenues of wild-caught seafood (landing more than 45M pounds).[39] One of the most critical and valuable fisheries for California, is market squid (*Loligo opalescens*), which is heavily dependent on the Southern California Bight.[40] For the 2019-2020 season, market squid contributed to $15.2M in sales for California.[41] Reports over the years indicate that California's recreational fishing industry – which relies on the Southern California Bight – contributes significantly to the State's economy. In 2017, California's 2,795,253 anglers, who spent $2.4 billion while fishing in California, support more than 35,000 jobs and have a $4.6 billion impact on the state's economic output.[42] In the past year, the Sportfishing Association of California reported that the industry provided nearly 5,000 jobs, $602 million in sales, $222 million in income, and $309 million in gross domestic product.[43] Placing an AOA in Southern California would privatize large parcels of ocean space, increase vessel traffic, and bring a multitude of other significant harms associated with the industry, which could have devastating impacts on the region's marine-reliant industries, protected species, and vulnerable marine areas.

D. NOAA should proceed with caution by fulfilling all applicable federal conservation laws, setting strict requirements for AOA designations, and limiting the types of plant and shellfish operations that may be sited in AOAs.

If NOAA proceeds with the development of AOAs despite the clear implications set forth above, we strongly urge the agency to proceed with the utmost caution.

First, we must highlight the many legal obligations placed on the agency by the National Environmental Policy Act, 42 U.S.C. § 4321 *et seq*., Endangered Species Act, 16 U.S.C. § 1531, *et seq*., the Marine Mammal Protection Act, 16 U.S.C. § 1361, *et seq.*, and the Coastal Zone Management Act, 16 U.S.C. §§ 1451 *et seq*.[44] The establishment of AOAs will constitute final agency action, triggering mandates contained in each of these laws, which must be carefully and completely fulfilled to their entirety. This

[39] California Department of Fish and Wildlife, Poundageand Value of Landings of Commercial Fish into California by Area – 2019, https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=178022&inline. Note that ex-vessel revenues merely represent the value paid to the seafood harvester and does not capture any of the downstream economic contributions.

[40] California Department of Fish and Game, Status of the Fisheries Report (Market Squid), https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=34420.

[41] California Department of Fish and Wildlife, California Commercial Market Squid Landing Receipt Data (2019-2020), https://wildlife.ca.gov/Conservation/Marine/Pelagic/Market-Squid-Landing.

[42] Fish Rap News, Report: Recreational fishing has $4.6 billion impact on California economy (Feb. 24, 2017), https://www.fishrapnews.com/features/report-recreational-fishing-has-4-6-billion-impact-on-california-economy/.

[43] Comments from Ken Franke, Sportfishing Association of California (June 3, 2020), https://protect us.mimecast.com/s/MY02CL905XUqGO0CqoxS8?domain=pfmc.psmfc.org.

[44] On July 16, 2020 the Center for Environmental Quality issued a final rule rewriting the entirety of its NEPA regulations, and on August 27, 2019, the U.S. Department of Fish and Wildlife Service revised implementing regulations for the ESA. Both of these final rules upend virtually every aspect of NEPA and ESA, contradict decades of court interpretations, and undercut the reliance placed on the laws by the public, decision-makers, and other stakeholders. The undersigned do not take the position that these new regulations are valid, especially due to the fact that each are the subject of multiple legal challenges. As such, we strongly recommend that NOAA should not apply these revised regulations and we rely on the longstanding and unchallenged regulations that properly implement NEPA and ESA, and which dictate NOAA's obligations in this instance.

includes being mindful of quality over expediency, including taking however much time is needed beyond the shortsighted and accelerated timelines placed on the agency by EO 13921. It should come as no surprise that NOAA's actions related to aquaculture are being watched very closely, especially with an eye toward potential shirking of legal obligations imposed by federal conservation laws. Should NOAA develop AOAs without fulfilling each of these mandates, it would be vulnerable to legal action for any violations.

Second, we urge that NOAA set strict limits for the AOA designations and the types of plant and shellfish facilities that may operate in those areas. Certain intensive shellfish and plant aquaculture facilities can also carry environmental and socio-economic risks. When sited and scaled inappropriately, these facilities can damage essential habitat, water quality, and public health, as well as increasing marine debris. For example, while plant and bivalve species are known to clean water, the water quality impacts of intensive aquaculture may not always be beneficial; many aquaculture activities can negatively impact 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, installation of plastic gear (e.g., PVC tubes, polyethylene anti-predator netting, and polyolefin ropes), and use of pesticides. Massive shellfish operations also pose risks to marine wildlife and public health and safety.

In light of these risks, should NOAA proceed with creating AOAs at this time, we recommend the following standards for all AOAs and the types of plant and shellfish mariculture that may be sited in the areas to ensure that our marine ecosystems and coastal communities are adequately protected:

(1) no AOAs should be created in or near marine protected areas or sensitive areas, such as essential habitat for seagrass, wild fish, and coral reef;
(2) no AOAs should be created in or near states that have opted out of having them in adjacent federal waters;
(3) AOAs may not host facilities that utilize plastic equipment or inputs such as pesticides, herbicides, or pharmaceuticals;

(4) the permit processes for each facility should include environmental reviews, assessments, and other mandates and procedures imposed by to National Environmental Policy Act, 42 U.S.C. § 4321 *et seq*., Endangered Species Act, 16 U.S.C. § 1531, *et seq*., the Marine Mammal Protection Act, 16 U.S.C. § 1361, *et seq.*, and the Coastal Zone Management Act, 16 U.S.C. §§ 1451 *et seq*., including ample public notice and comment periods;[45]
(5) all facilities in AOAs should be required to provide extensive documentation of compliance with rigorous design, operation, and occupational safety standards, with routine reporting mandates; and
(6) all facilities located in AOA's should be held to rigorous operation, emergency response, and pollution standards, with swift and severe repercussions for noncompliance, including revocation of permits.

As detailed above, we urge NOAA to heed the long history of negative impacts from marine finfish aquaculture in the U.S. and across the globe – as well as overwhelming public opposition – and stop devoting resources to promote and streamline permitting for this harmful form of seafood production.

[45] The undersigned point NOAA to the statement contained in note 27, *supra*, regarding adhering to the longstanding and unchallenged pre-2019 regulations that properly implement NEPA and ESA, and which dictate NOAA's obligations in this instance

This includes refraining from using any Aquaculture Opportunity Area to site operations that cultivate finfish in open water. We also request you to proceed with the utmost caution when designating AOAs for any other aquaculture and mariculture facilities in the ocean.

Thank you for accepting our comments on this important issue. The undersigned organizations welcome further dialogue. Please contact Hallie Templeton via the contact information listed below with any questions for requests for follow-up.

Sincerely,

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