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Submitted Electronically via Regulations.gov

Re: Notice of Intent to Prepare a Programmatic Environmental Impact Statement for the Gulf of Mexico Aquaculture Opportunity Area

Thank you for the opportunity to comment on the National Marine Fisheries Service's (NMFS's) Notice of Intent to Prepare a Programmatic Environmental Impact Statement for the Gulf of Mexico Aquaculture Opportunity Area (AOA).¹ On behalf of themselves and their members, the organizations listed below submit the following comments to identify key issues that NMFS must address before it designates Aquaculture Opportunity Areas in the Gulf of Mexico.

INTRODUCTION

The Center for Food Safety (CFS) is a nonprofit, public interest organization with a mission to protect public health and the environment by curbing the proliferation of harmful food production technologies, such as industrial aquaculture practices, and by promoting sustainable forms of food production. CFS represents over 950,000 members who reside in every state across the country, who support safe, sustainable food production, including members in Gulf states. CFS has long had a specific aquaculture program, dedicated to addressing the adverse environmental and public health impacts of industrial aquaculture, including numerous policy, scientific, and legal staff. In its program, CFS strives to ensure and improve aquaculture oversight, furthering policy and cultural dialogue with regulatory agencies, consumers, chefs, landowners, and legislators on the critical need to protect public health and the environment from industrial aquaculture and to promote and protect more sustainable alternatives.

¹ NMFS, Notice of Intent to Prepare a Programmatic Environmental Impact Statement for the Gulf of Mexico Aquaculture Opportunity Area (June 1, 2022) (NOI).

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Oceanic Preservation Society is a California-based organization that works to inspire, empower, and connect a global community using high-impact films and visual storytelling to expose the most critical issues facing our planet.

Friends of the Earth fights to protect our environment and create a healthy and just world by promoting clean energy and solutions to climate change, keeping toxic and risky technologies out of the food we eat and products we use, and protecting marine ecosystems and the people who live and work near them. This work includes highlighting the dangers of industrial ocean fish farming and supporting sustainable seafood production alternatives. The organization has over 4.7 million members and activists across all 50 states working to make these visions a reality. The organization is part of the Friends of the Earth International federation, a network in 74 countries working for social and environmental justice.

Recirculating Farms is a 501c3 non-profit collaborative of farmers, educators, and activists committed to building an equitable food system from farm to fork. We run ecologically and socially responsible programs, that provide local, affordable food through innovative, eco-efficient methods, rooted in historic practices. Through training, outreach, and advocacy, we advance sustainable farming and create stable jobs in green businesses, in diverse communities, to foster physical, mental, and financial wellness.

Don't Cage Our Oceans is a coalition of national, regional, and local organizations and businesses working to stop offshore fish farming while uplifting values-based sea-food systems led by local communities.

SUMMARY OF COMMENTS

The National Marine Fisheries Service (NMFS) plans to designate one or more locations as Aquaculture Opportunity Areas (AOAs) in the Gulf of Mexico. These designations will identify suitable areas for future offshore finfish, shellfish, macroalgae, or multi-species aquaculture in the Gulf's federal waters. Designation will streamline the approvals of industrial aquaculture operations for up to nine "AOA options" covering 500-2,000-acres in the Gulf, including three sites off the coast of Texas, three off the coast of Louisiana, and three off the coast of Florida to the detriment of the regional economy and the environment.² NMFS's proposed designations would also designate areas for commercial offshore aquaculture in the

² *Id.*

federal waters of the United States, without proper legal authority and without complying with the relevant federal statutes.

Contrary to NMFS's assertion of authority under Executive Order 13921, the Fifth Circuit has already determined that NMFS does not have statutory authority to set up an unprecedented system of commercial offshore aquaculture in federal waters.³ On the basis of the lack of authority alone, NMFS must halt the Gulf AOA designations.

If, however, NMFS does proceed with the AOA designations, NMFS must thoroughly assess the myriad impacts of offshore aquaculture on the marine ecosystem, human health, and the economy. NMFS must address the lack of federal authority to regulate aquaculture in federal waters, and take a "hard look" at the proposed AOA designations, its alternatives, all reasonably foreseeable direct, indirect, and cumulative impacts of each proposed alternative (including intertwined socioeconomic impacts), and the feasibility and enforceability of any mitigation measures proposed, as required by the National Environmental Policy Act (NEPA). Additionally, NMFS must also ensure compliance with other federal statutes, including the Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), Magnuson-Stevens Act (MSA), Coastal Zone Management Act (CZMA), Migratory Bird Treaty Act (MBTA), and National Marine Sanctuaries Act (NMSA). Failure to do so would violate federal environmental law.

STATUTORY BACKGROUND

A. Magnuson-Stevens Conservation and Management Act

The Magnuson-Stevens Act (MSA) is the nation's longstanding program aimed at the management and conservation of ocean fish and fishing resources.⁴ In order to address threats to wild fisheries and the coastal communities that rely on them, in 1976 Congress passed the MSA to "prevent overfishing, to rebuild overfished stocks, to insure conservation, to facilitate long-term protection of essential fish habitats, and to realize the full potential of the Nation's fishery resources."⁵ The MSA aims to conserve and protect these resources through a system for setting catch levels for the nation's wild fisheries.

The MSA created regional fishery management councils, charged⁶ with preparing fishery management plans and implementing regulations that are

³ *Gulf Fishermens Ass'n v. Nat'l Marine Fisheries Serv.*, 968 F. 3d 454 (5th Cir. 2020).

⁴ 16 U.S.C. § 1801(a); *id.* § 1801(b)(1).

⁵ *Id.* § 1801(a)(6); *id.* § 1801(a)(1)-(3).

⁶ *Id.* §§ 1851; 1801.

necessary and appropriate to manage and conserve the fisheries under their authority.⁷ The Gulf of Mexico Fishery Management Council is one such council, charged with managing fisheries in federal waters in the Gulf of Mexico.

The MSA defines “fishing” as “(A) the catching, taking, or harvesting of fish; (B) the attempted catching, taking, or harvesting of fish; (C) any other activity which can reasonably be expected to result in the catching, taking, or harvesting of fish; or (D) any operations at sea in support of, or in preparation for, any activity described [above].”⁸ Under this authority, NMFS may grant fishing permits solely to fishing “vessels,” the operators of such vessels, and processors.⁹

The MSA requires that Plans contain conservation measures, minimize impacts to essential fish habitat, use the best scientific information, and be consistent with the Act’s national standards, which include preventing overfishing, achieving optimum yield, reasonably allocating fishing privileges among fishermen, and minimizing impacts to fishing communities and bycatch.¹⁰

The MSA’s key regulatory unit is a “fishery,” defined as “(A) one or more stocks of fish which can be treated as a unit for purposes of conservation and management and which are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics; and (B) any fishing for such stocks.”¹¹ A key MSA purpose is to prevent “overfishing,” defined as “a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield.”¹²

The MSA tasks NMFS with the narrow role of reviewing a finalized FMP to ensure that “it is consistent with the national standards, the other provisions of this Act, and any other applicable law.”¹³ NMFS also has the authority to promulgate regulations to implement an approved FMP within the timeframes set forth in the MSA.¹⁴ The MSA requires that NMFS, in promulgating relevant rules and regulations under the Act, ensure that “irreversible or long-term effects on fishery resources and the marine environment are avoided”¹⁵ and that “a multiplicity of options available with respect to future uses of [fishery] resources.”¹⁶ NMFS must

⁷ *Id.* § 1852(h).

⁸ *Id.* § 1802(16).

⁹ *Id.* § 1853(b)(1).

¹⁰ *Id.* U.S.C. §§ 1801; 1851; 1853; 1854.

¹¹ *Id.* § 1802(13)(A)- (B).

¹² *Id.* § 1802(34).

¹³ *Id.* § 1854(a)(1)(A).

¹⁴ *Id.* § 1854.

¹⁵ *Id.* § 1802(5)(ii).

¹⁶ *Id.* § 1802(5)(iii).

ensure that “national fishery conservation and management programs utilize[], and [are] based upon, the best scientific information available.”¹⁷

B. The National Environmental Policy Act

NEPA establishes the federal government’s policy “to use all practicable means and measures to foster and promote the general welfare, create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.”¹⁸ Its purpose is to require federal agencies to consider relevant environmental information and to provide the public with that information and an opportunity to comment.¹⁹ NEPA is a procedural statute, enacted to ensure that federal agencies engage in a public process in taking actions, and that they take a “hard look” at the environmental consequences of their decisions.²⁰

NEPA and its implementing regulations require federal agencies like NMFS to prepare an Environmental Impact Statement (EIS) regarding all major federal actions “significantly affecting the quality of the human environment.”²¹ The EIS must be prepared before the agency commits “resources prejudicing selection of alternatives.”²² “Action” broadly includes “[a]doption of official policy, such as rules, regulations, and interpretations.”²³ “Major federal action[s]” under NEPA include “activit[ies] or decision[s] subject to Federal control and responsibility.”²⁴ “If any ‘significant’ environmental impacts might result then an EIS must be prepared before the action is taken.”²⁵

NEPA prohibits an agency from avoiding significance, and thus from performing an environmental assessment, by dividing a proposed project into component parts.²⁶ A federal agency should prepare a programmatic EIS for the adoption of new agency programs.²⁷ A programmatic EIS ensures that an agency’s

¹⁷ *Id.* § 1801(a)(6).

¹⁸ 40 C.F.R. § 1500.1(a); 42 U.S.C. §§ 4331-4370h.

¹⁹ 40 C.F.R. § 1500.1(a).

²⁰ *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 193-94 (D.C. Cir. 1991); *Baltimore Gas & Elec. Co. v. Nat. Res. Def. Council*, 462 U.S. 87, 100 (1983).

²¹ 42 U.S.C. § 4332(2)(C).

²² 40 C.F.R. § 1502.2(f).

²³ *Id.* § 1508.1(q)(3)(i).

²⁴ *Id.* § 1508.1(q).

²⁵ *Sierra Club v. Peterson*, 717 F.2d 1409, 1415 (D.C. Cir. 1983).

²⁶ 40 C.F.R. § § 1502.4(a).

²⁷ *Id.* § 1502.4(b); *id.* § 1508.1(q)(3)(iii). (definition of major federal action includes “adoption of programs, such as a group of concerted actions to implement a specific

NEPA review is “relevant to the program decision and timed to coincide with meaningful points in agency planning and decision making” and “should be available before the program has reached a stage of investment or commitment to implementation likely to determine subsequent development or restrict later alternatives.”²⁸

An EIS, including a programmatic EIS, must disclose all the consequences of the proposed action, including the direct, indirect, and cumulative effects.²⁹ In addition to direct and indirect, a cumulative effect results from the incremental impact of the proposed action “when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency ...undertakes such other actions.”³⁰

NEPA’s implementing regulations define cumulative impact as “effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” and can result from “individually minor but collectively significant actions taking place over a period of time.”³¹ In considering cumulative impacts, “an agency must provide some quantified or detailed information; . . . general statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definite information could not be provided.”³²

C. The Endangered Species Act

The ESA is the most comprehensive legislation for the preservation of endangered species ever enacted by any nation.³³ Congress’s “plain intent . . . in enacting [the ESA] was to halt and reverse the trend towards species extinction,

policy or plan; systematic and connected agency decisions allocating agency resources to implement a specific statutory program or executive directive.”)

²⁸ *Id.* § 1502.4.

²⁹ *Id.* § 1508.1(g).

³⁰ *Id.* § 1508.1(g)(3).

³¹ *Or. Natural Res. Council v. U.S. BLM*, 470F.3d 818 (9th Cir. 2006); 40 C.F.R. § 1508.1(g)(3).

³² *Ocean Advocates v. U.S. Army Corps of Eng’rs*, 402F.3d 846, 868 (9th Cir. 2004) (quoting *Kern v. U.S.*, 284 F.3d 1062, 1075 (9th Cir. 2002); *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 810 (9th Cir. 1999); *Ctr. For Env’t Law & Policy v. U.S. Bureau of Reclamation*, 655 F.3d 1000, 1007 (9th Cir. 2011).

³³ *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 180 (1978).

whatever the cost.”³⁴ The ESA’s “language, history, and structure” make clear that “Congress intended endangered species to be afforded the highest of priorities.”³⁵

To fulfill the purposes of the ESA, “each Federal agency shall, in consultation with and with the assistance of the [FWS], insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [the critical] habitat of such species.”³⁶ The scope of agency actions subject to consultation is broad, and includes “all activities *or programs* of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies.”³⁷ The ESA’s definition of “effect” is also broad, and includes “all consequences to listed species and critical habitats that are caused by the proposed actions, including the consequences of other activities that are caused by the proposed action,” including those that “may occur later in time.”³⁸

The ESA prohibits federal agencies from making “any irreversible or irretrievable commitment of resources” that would “forclos[e] the formulation or implementation of any reasonable and prudent alternative measures” through the consultation process.³⁹ An agency is required to review its actions “at the earliest possible time.”⁴⁰

D. Migratory Bird Treaty Act

Congress passed the Migratory Bird Treaty Act (MBTA)⁴¹ to implement the respective conventions between the United States and Great Britain, Japan, Mexico, and Russia. The MBTA prohibits the “take” of migratory birds, defining “take” as “pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any covered migratory bird . . . or any part, nest, or egg of any such bird.”⁴² The Secretary of the Interior may authorize the otherwise prohibited take of migratory birds through regulations;

³⁴ *Id.* at 184

³⁵ *Id.* at 174; *see also* 16 U.S.C. § 1536(a); 1531(c)(1) (“[A]ll Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authority in furtherance of the purposes of this [Act].”).

³⁶ 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(a).

³⁷ 50 C.F.R. § 402.02 (emphasis added).

³⁸ *Id.*

³⁹ 16 U.S.C. § 1536(d).

⁴⁰ 50 C.F.R. § 402.14(a).

⁴¹ *Id.* §§ 703 *et seq.*

⁴² *Id.* § 703(a).

however, current regulations do not expressly address the incidental take of migratory birds.

E. Marine Mammal Protection Act

All marine mammals are protected under the Marine Mammal Protection Act (MMPA). The MMPA prohibits, with certain exceptions, the “take” of marine mammals.⁴³ “Take” is defined under the MMPA as “harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect.”⁴⁴ Pursuant to this law, NMFS is charged with protecting whales, dolphins, porpoises, seals, and sea lions, and the U.S. Fish and Wildlife Service (FWS) is charged with protecting walrus, manatees, otters, and polar bears. NMFS and FWS have promulgated joint implementing regulations.

F. Coastal Zone Management Act

The purpose of the Coastal Zone Management Act (CZMA) is to “preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations.”⁴⁵ To accomplish these ends, the CZMA encourages the states to draw up “management plans” for their coastal zones and requires that “[e]ach Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs.”⁴⁶ A federal agency ensures consistency of its proposed actions with state management programs by submitting a “consistency determination to the relevant State agency.”⁴⁷ Federal agencies must provide State agencies with a consistency determination “at the earliest practicable time in the planning ... of the activity.”⁴⁸ After receipt of the consistency determination, the “State agency shall inform the Federal agency of its concurrence with or objection to the Federal agency's consistency determination.”⁴⁹

G. National Marine Sanctuaries Act.

The National Marine Sanctuaries Act (NMSA) prohibits the destruction, loss of, or injury to any sanctuary resource managed under the law or by permit, and requires Federal agencies to consult with NOAA on actions that are likely to

⁴³ *Id.* §§ 1361 et seq.

⁴⁴ *Id.* § 1362(13).

⁴⁵ 16 U.S.C. § 1452(1).

⁴⁶ *Id.* § 1456(c)(1)(A).

⁴⁷ *Id.* § 1456(c)(1)(C); *see also* 15 C.F.R. § 930.36.

⁴⁸ 15 C.F.R § 930.36 (b)(1).

⁴⁹ *Id.* § 930.41.

destroy, injure, or cause the loss of any sanctuary resource.⁵⁰ If an applicant plans to conduct activities prohibited under the NMSA but authorized under a valid Federal or state lease, permit, license, approval, or authorization, the applicant must obtain a permit from NOAA for the activities and comply with terms and conditions to protect marine sanctuaries.⁵¹

COMMENTS

I. NMFS lacks legal authority to designate Aquaculture Opportunity Areas in federal waters.

As NMFS is aware, in 2018, CFS, along with other conservation and fishing groups, successfully challenged NMFS's authority to regulate aquaculture in federal waters under the MSA.⁵² In August 2020, the Fifth Circuit Court of Appeals affirmed the lower court's decision to vacate the nation's first commercial aquaculture permitting scheme in the Gulf of Mexico and concluded that the MSA "unambiguously precludes the agency from creating an aquaculture regime."⁵³ This is because "nothing in the [MSA's] definition [of 'fishing'] plausibly suggests the agency has been given authority to regulate aquaculture."⁵⁴ Accordingly, NMFS currently lacks the authority to designate AOAs in federal waters, and NMFS's position as the lead agency of the DPEIS process is improper.⁵⁵

NMFS attempts to circumvent this decision in its Atlas by pointing to authority in the National Aquaculture Act of 1980, the NOAA Marine Aquaculture Policy, and Executive Order 13921, "Promoting American Seafood Competitiveness and Economic Growth" (May 7, 2020). But none of these sources provide authority. First, the policy document from 2011 assumes authority from the Magnuson-Stevens Act in direct contradiction to the Fifth Circuit's decision.⁵⁶ It states incorrectly that NMFS may regulate aquaculture in the Exclusive Economic Zone through Fishery Management Plans under the MSA.⁵⁷ As noted above, the Fifth Circuit definitively determined it may not.

⁵⁰ 16 U.S.C. §§ 1431-1445; 15 C.F.R. pt. 922.

⁵¹ 15 C.F.R. §§ 922.48-49.

⁵² *See Gulf Fishermens Ass'n v. NMFS*, 341 F. Supp. 3d 632 (E.D. La. 2018).

⁵³ *Gulf Fishermens Ass'n v. NMFS*, 968 F.3d 454 (5th Cir. Aug. 2020).

⁵⁴ *Id.* at 465.

⁵⁵ *See, e.g., AquAlliance v. U.S. Bureau of Reclamation*, 287 F. Supp. 3d 969 (E.D. Cal. 2018).

⁵⁶ NOAA Marine Aquaculture Policy, at 3 (2011), <https://media.fisheries.noaa.gov/2021-01/2011-noaa-marine-aquaculture-policy.pdf?VersionId=null>.

⁵⁷ *Id.*

Second, it is black letter law that executive orders cannot confer authority on agencies because the president’s powers are executive, not legislative, in nature.⁵⁸ Rather, the President's authority to act “must stem either from an act of Congress or from the Constitution itself.” *Id.* at 585. As a result, Executive Order 13921 cannot allow NMFS to establish a novel offshore aquaculture industry without statutory authority from Congress.

And third, nothing in the National Aquaculture Act grants authority for NMFS, or to any agency, to designate massive swaths of federal ocean waters for industrial aquaculture. Rather, Congress passed the National Aquaculture Act more than forty years ago only to demonstrate support for the aquaculture industry.⁵⁹ Specifically the Act assigned the Department of Agriculture to serve as lead agency in 1) establishing a National Aquaculture Information Center,⁶⁰ 2) serving as a central source to monitor and assess the industry,⁶¹ and 3) establishing a National Aquaculture Development Plan.⁶² The Act’s only provision with potential to even *affect* regulatory oversight was its mandate to the Department of Agriculture to simply *identify* “regulatory constraints” to the industry and produce a report due forty years ago.⁶³

The Act barely assigns responsibilities to the Department of Commerce, let alone authority to designate AOAs. The Act requires only consultation with the Department of Commerce for a biennial report on the status of aquaculture,⁶⁴ and several studies due 35 years ago.⁶⁵ None of these submissions required NMFS to determine locations suitable for industrial aquaculture.

Without *any* plain text in support, NMFS cannot establish its authority to designate AOAs in the Gulf. The courts have already held NMFS lacks this authority to do this and must return to Congress if it is to proceed. NMFS’s attempts here to spearhead an entire brand-new industry without pointing to statutory text cannot proceed.⁶⁶ Indeed, when Congress passed the National

⁵⁸ *Doe #1 v. Trump*, 957 F.3d 1050, 1062 (9th Cir. 2020) (citing *Youngstown Sheet & Tube Co. v. Sawyer*, 343 U.S. 579, 587 (1952) (“[T]he President's power to see that the laws are faithfully executed refutes the idea that he is to be a lawmaker.”)).

⁵⁹ 16 U.S.C. §§ 2801-2810.

⁶⁰ *Id.* § 2801(b)(3).

⁶¹ *Id.* § 2804.

⁶² *Id.* § 2803(a)(2).

⁶³ *Id.* § 2808.

⁶⁴ *Id.* § 2804(d).

⁶⁵ *Id.* § 2804(c)(1)(C), (D) (requiring the Department of Commerce to submit studies by December 31, 1987).

⁶⁶ See *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 159-160 (2000); *Nat’l Fed’n of Indep. Bus. v. Dep’t of Lab., Occupational Safety & Health Admin.*, 142 S. Ct. 661, 666, 211 L. Ed. 2d 448 (2022).

Aquaculture Act, it knew how to delegate authority to regulate aquaculture because it had done so under the Water Pollution Control Act, yet it refused to delegate that same authority under the National Aquaculture Act. This lack of text is significant and does not grant permission to regulate a novel industry with unprecedented impacts on ocean waters.

II. NMFS must not ignore the numerous impacts of offshore aquaculture.

Even if NMFS had authority to regulate offshore aquaculture, NMFS must fully assess industrial aquaculture's wide breadth of environmental problems in its DPEIS. This massive designation of large swaths of the Gulf for aquaculture, covering 13,500 acres,⁶⁷ will undoubtedly have harmful environmental and economic impacts that any future permit conditions cannot mitigate or avoid. NEPA plainly mandates that NMFS fully assess these problems, or the proposed AOA designation will remain vulnerable to legal challenge.

A. Under NEPA, NMFS must take a hard look at the direct, indirect, and cumulative impacts of the AOA designations in a DPEIS.

NMFS must take a hard look at the direct, indirect, and cumulative impacts of the AOA designations in the DPEIS.⁶⁸ NMFS cannot satisfy this requirement with “conclusory assertions that an activity will have only an insignificant impact on the environment.”⁶⁹ Rather, NMFS must “consider[] all foreseeable direct and indirect impacts” and analyze adverse impacts in a manner that “does not improperly minimize negative side effects.”⁷⁰ In doing so, NMFS must apply “reliable existing data” and ensure the scientific integrity of its analyses.⁷¹

Here, there is no question that it is “reasonably foreseeable” that NMFS's AOA designations will result in industrial aquaculture facilities in those locations. The Executive Order plainly states its purpose to remove regulatory burdens for offshore aquaculture.⁷² The DPEIS therefore must encompass the myriad of environmental and economic impacts industrial aquaculture will have in the Gulf.

⁶⁷ See K.L. Riley, *et. al.*, *An Aquaculture Opportunity Area Atlas for the U.S. Gulf of Mexico* (2021), <https://doi.org/10.25923/8cb3-3r66> (Atlas).

⁶⁸ *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1211 (9th Cir. 1998); 40 C.F.R. § 1508.1(g).

⁶⁹ *Ocean Advocates v. U.S. Army Corps of Eng'rs*, 402 F.3d 846, 864 (9th Cir. 2004).

⁷⁰ *League of Wilderness Defenders-Blue Mountains Biodiversity Project v. U.S. Forest Serv.*, 689 F.3d 1060, 1075 (9th Cir. 2012).

⁷¹ 40 C.F.R. § 1502.23.

⁷² Exec. Order No. 13,921, 85 Fed. Reg. 28,471 (May 12, 2020).

Furthermore, much of NMFS's DPEIS must assess the cumulative impacts designation of multiple AOAs will have on the Gulf. NEPA defines cumulative impacts as "effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions."⁷³ Here, multiple AOAs will cumulatively impact species, water quality, public health, and local fishing communities. NMFS must therefore consider cumulative impacts of multiple AOA designations, as well as other activities affecting species and water quality in the Gulf.

1. Offshore aquaculture may contribute to oxygen depletion and harmful algal blooms, exacerbating hypoxia in the Gulf.

First, NMFS must fully assess impacts to water quality from the fish feed, dead fish, and fish feces industrial aquaculture facilities will directly discharge into our waters. Nutrient pollution decreases oxygen levels in our waters, killing off aquatic life and creating low-oxygen "dead zones" and harmful algal blooms.⁷⁴ The Gulf of Mexico is already "[t]he largest hypoxic zone in the U.S. coastal waters and the second largest in the world."⁷⁵ Red tides (harmful algal blooms) have been documented in the Gulf of Mexico as far back as the 1700s.⁷⁶ Many red tides produce toxic chemicals that can kill fish and other vertebrates by affecting their central nervous systems, and can cause serious illness in humans with severe or chronic respiratory conditions.⁷⁷ EPA has even stated that aquaculture in the Gulf contributes to algal blooms and coastal eutrophication.⁷⁸ NMFS must therefore not rely on its cursory dismissal in the Atlas that aquaculture "may afford the opportunity to mitigate nutrient pollution and eutrophication," as aquaculture will more likely exacerbate the problem.⁷⁹

2. NMFS must properly assess discharge of pathogens and parasites.

Second, NMFS must assess the potentially harmful impacts of pathogens and parasites. Housing large populations of animals inevitably breeds pests and disease, which agriculture and aquaculture sectors respond to with a pharmacopeia of

⁷³ 40 C.F.R. § 1508.1(g)(3).

⁷⁴ Donald Boesch *et al.*, Pew Oceans Comm'n, *Marine Pollution in the United States* 20-22 (2001).

⁷⁵ Atlas at 333.

⁷⁶ Florida Fish and Wildlife Conservation Comm'n, *Red Tide FAQ* (June 27, 2022), <https://myfwc.com/research/redtide/faq/>.

⁷⁷ *Id.*

⁷⁸ Goldberg, *et al.*, *Marine Aquaculture in the United States: Environmental Impacts and Policy Options*, Pew Oceans Commission (2001), https://fsi-live.s3.us-west-1.amazonaws.com/s3fs-public/marine_aquaculture_pew_2001.pdf.

⁷⁹ Atlas at 297.

chemicals. Recent research has indicated that the probability of detecting pathogen environmental DNA was 2.72 times higher at active versus inactive salmon farm sites.⁸⁰ In 2012, off the coast of Bainbridge Island, a massive viral outbreak in Atlantic salmon net pens led to the deaths of over one million pounds of farmed Atlantic salmon.⁸¹ Because these pathogens and parasites can easily spread to wild fish, NMFS must assess these potential discharges to ensure they do not impact wild populations.

Climate change only exacerbates this possibility of disease spread. Fish are vulnerable to changes in their aquatic habitat, especially, in the case of net pens, where they cannot move away.⁸² Not only does climate change increase the risk of escapes, but it can impact the production environment including pathogen prevalence and/or virulence and host susceptibility (immunosuppression) and transmission.⁸³

3. NMFS must assess industrial aquaculture's contributions to antibiotic resistance.

Third, NMFS must assess the potential threat to human health and the environment caused by using antibiotics at the proposed AOA designations. The crowded nature of industrial aquaculture facilities will inevitably breed pests and disease for which operators will likely use antibiotics. This use will not only leave residues in seafood, but it will also leach into the ocean, contaminating nearby water and marine life. For example, the salmon aquaculture industry widely uses Emamectin benzoate to treat sea lice, which could result in drug resistance.⁸⁴ In Nova Scotia, the use of this antibiotic resulted in “widespread damage to wildlife,” including “substantial, wide-scale reductions” in crabs, lobsters and other

⁸⁰ L.N. Frazer, et al., Environmental DNA (eDNA) from multiple pathogens is elevated near active Atlantic salmon farms, *Proceedings of the Royal Society* (2020), <http://dx.doi.org/10.1098/rspb.2020.2010>.

⁸¹ Our Sound, Our Salmon, *New Federal Analysis Finds Puget Sound Commercial Net Pens Are Harming Salmon, Steelhead, And Other Protected Fish*, (June 30, 2022), <https://www.oursound-oursalmon.org/news/2022/5/18/new-federal-analysis-finds-puget-sound-commercial-net-pens-are-harming-salmon-steelhead-and-other-protected-fish>.

⁸² Food and Agriculture Organization of the United Nations, *Impacts of Climate Change on Fisheries and Aquaculture*, at 526 (2018), <http://www.fao.org/policy-support/tools-and-publications/resources-details/en/c/1152846/>.

⁸³ *Id.*

⁸⁴ Chun Ting Lam, et. al, *Sea lice exposure to non-lethal levels of emamectin benzoate after treatments: a potential risk factor for drug resistance* (Jan. 22, 2020), available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6976678/>.

crustaceans close to marine finfish facilities.⁸⁵ In fact, up to 75% of antibiotics used by the industrial ocean fish farming industry are directly absorbed into the surrounding environment.⁸⁶ Such impacts could harm marine life throughout the entire region.

4. NMFS must assess impacts from escaped fish.

Fourth, NMFS must take a hard look at the inevitable fish escapes that will result from industrial aquaculture. AOA designations in the Gulf render fish escapes likely due to the ongoing climate crisis, which continues to boost the intensity of storms in the Gulf of Mexico. NMFS admitted in its Atlas that “[t]he Northern Gulf ecoregion is affected by strong tropical cyclones during summer months; severe weather events including thunderstorms and tornadoes are typical for the region as well.⁸⁷ NMFS must study these weather events as well as the Gulf’s increasingly devastating hurricane season. In 2021, for example, the Atlantic hurricane season featured twenty-one named storms, seven of which became hurricanes, and four of which became major hurricanes.⁸⁸ According to NOAA, the long-term averages per year are fourteen named storms, seven hurricanes, and three major hurricanes.⁸⁹ Human-induced climate change has led to, and will lead to enhanced risks of intense and economically damaging tropical cyclones and hurricanes.⁹⁰ Experts expect the proportion of category 4-5 storms to increase substantially under a warming climate, meaning more and more impending destruction.⁹¹

Offshore aquaculture facilities remain vulnerable to these extreme weather events, which frequently result in fish escapes. In January 2020, 73,600 salmon escaped from a net pen during a storm in Mowi, Scotland, marking the third major

⁸⁵ 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/.

⁸⁶ United Nations, *Frontiers 2017: Emerging Issues of Environmental Concern*, at 15 (2017), <https://www.unenvironment.org/resources/frontiers>.

⁸⁷ Atlas at 15.

⁸⁸ Nat’l Hurricane Ctr. and Central Pacific Hurricane Ctr., *Monthly Atlantic Tropical Weather Summary*, <https://www.nhc.noaa.gov/text/MIATWSAT.shtml>.

⁸⁹ *Id.*

⁹⁰ Thomas R. Knutson, *et. al.*, *Climate change is probably increasing the intensity of tropical cyclones 4* (March 2021), https://sciencebrief.org/uploads/reviews/ScienceBrief_Review_CYCLONES_Mar2021.pdf.

⁹¹ *Id.* at 2.

escape in the area since October 2019.⁹² From facilities in Norway, a series of storms resulted in approximately four million escaped fish in a single year.⁹³ Even without extreme weather, in August 2017, an industrial net pen operation maintained by Cooke Aquaculture Pacific, LLC allowed for approximately 160,000 farmed Atlantic salmon to escape into Puget Sound and the Pacific.⁹⁴

In fact, in countries where the majority of marine finfish farms operate, escapes due to weather are not isolated or rare occurrences. In a given year, a single company or facility will likely experience multiple escapes. AquaChile, for example, reported the escape of 787,929 fish in 2013 due to bad weather damaging cages.⁹⁵ Five years later, in 2018, 680,000 fish escaped from Marine Harvest Chile due to bad weather.⁹⁶ Bakkafrost Faroe Islands, too, reported weather as the cause of 109,515 fish escaping in 2017, Scottish Sea Farm in Scotland, of 258,000 fish escaping in 2000, and Huon Aquaculture in Tasmania of 120,000 fish escaping in 2018.⁹⁷ Recognizing the regularity of fish escapes from ocean-based net pens, the U.S. Council on Environmental Quality has stated that it “must be *assumed* that escapes will occur” from net pens, even in the absence of severe weather.⁹⁸ With respect to 233 documented fish escapes globally from 1995-2014, severe weather and storms caused 24 percent of the escapes.⁹⁹ And of all escapes, those caused by severe weather averaged 36 times as many fish lost compared to other common causes, such as net holes, predator attacks, human error, and undefined equipment failure.¹⁰⁰

⁹² *Escape calls high energy salmon sites into question*, The Fish Site (Jan. 20, 2020), <https://thefishsite.com/articles/mowi-reports-mass-salmon-escape-from-colonsay>.

⁹³ Nat’l Marine Fisheries Serv. Pac. Islands Reg’l Off., Draft Programmatic Env’t Impact Statement (DPEIS) (2021).

⁹⁴ E. Tammy Kim, *Washington State’s Great Salmon Spill and the Environmental Perils of Fish Farming*, The New Yorker (Sept. 13, 2017), <https://www.newyorker.com/tech/elements/washington-states-great-salmon-spill-and-the-environmentalperils-of-fish-farming>.

⁹⁵ Lola Novarro, *Here are the largest recorded farmed Atlantic salmon escapes in history*, IntraFish (Feb. 1, 2019), <https://www.intrafish.com/aquaculture/here-are-the-largest-recorded-farmed-atlantic-salmon-escapes-in-history/2-1-388082>.

⁹⁶ *Id.*

⁹⁷ *Id.*

⁹⁸ Council for Environment Quality & Office of Science and Technology Policy, Case Study No. 1: Growth-Enhanced Salmon, at 23 (2001),

<https://clintonwhitehouse5.archives.gov/media/pdf/salmon.pdf>; *CEQ and OSTP Assessment: Case Studies of Environmental Regulations for Biotechnology*, https://hygeia-analytics.com/wp-content/uploads/2016/12/RP_RegGETech_CEQ.pdf.

⁹⁹ Center for Food Safety, *Like Water and Oil*, at 6 (Oct. 2014),

http://www.centerforfoodsafety.org/files/like-water-and-oil-aquaculture_54029.pdf.

¹⁰⁰ *Id.*

These fish escapes impact local stocks in a variety of ways, including predation, competition for food, habitat, and spawning areas, and interbreeding with wild populations of the same fish.¹⁰¹ For example, Atlantic salmon that have escaped from aquaculture operations in Washington State and British Columbia compete with wild Pacific stocks, and increasing numbers of Atlantic salmon have been observed returning to rivers on the West Coast.¹⁰² In the Atlantic region, the U.S. Fish and Wildlife Service has determined that “Atlantic salmon that escape from farms and hatcheries pose a threat to native Atlantic salmon populations.”¹⁰³ They also predict that “escapement and resultant interactions with native stocks are expected to increase given the continued operation of farms and growth of the industry under current practices.”¹⁰⁴

Furthermore, 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.”¹⁰⁵ Studies have also shown that when farmed and wild fish interbreed their offspring have diminished survival skills, reduced fitness, and potentially altered life history characteristics such as altered timing of development events.¹⁰⁶ Researchers in Ireland, for example, have found that the interactions of farm escapees and wild salmon reduced the overall fitness of wild species and could lead to the extinction of wild populations.¹⁰⁷

¹⁰¹ DPEIS *supra* n. 93, at 158.

¹⁰² Goldberg, et al., *Marine Aquaculture in the United States: Environmental Impacts and Policy Options*, Pew Oceans Commission (2001), https://fsi-live.s3.us-west-1.amazonaws.com/s3fs-public/marine_aquaculture_pew_2001.pdf.

¹⁰³ Endangered and Threatened Species; Proposed Endangered Status for a Distinct Population Segment of Anadromous Atlantic Salmon (*Salmo salar*) in the Gulf of Maine, 64 Fed. Reg. 62627, 62635 (Nov. 17, 1999).

¹⁰⁴ *Id.*

¹⁰⁵ 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>.

¹⁰⁶ This occurs because farmed fish selected for aquaculture are bred to thrive in controlled, rather than wild, environments. Congressional Research Service, *Open Ocean Aquaculture*, at 7 (Aug. 9, 2010), <https://crsreports.congress.gov/product/pdf/RL/RL32694/19>.

¹⁰⁷ *Id.*

Even when aquaculture operations source broodstock from the wild, escape poses a threat to wild stocks.¹⁰⁸ The longer a broodstock line is developed (i.e., bred to improve growth, quality, and disease resistance, etc.) the greater the chance that their genes may begin to drift from their wild counterparts.¹⁰⁹

NMFS also notes in its recent biological opinion on aquaculture in the Puget Sound, that efforts to recapture escaped fish result in significant bycatch.¹¹⁰ These efforts continue despite the likely resultant harm and infeasibility of recapture.¹¹¹ In Puget Sound, a “normal” year without a large-scale failure resulting in a massive fish escape results in thousands of escaped fish (0.3% of total farmed fish) wreaking havoc on local wild fish populations and habitats.¹¹² These escaped fish can also travel into tributary rivers and streams, resulting in longer-term, and wider-ranging habitat effects.¹¹³

5. NMFS must fully assess cumulative impacts on federally listed species, and other wildlife.

Fifth, NMFS must assess impacts on species. NMFS’s Atlas reveals that aquaculture facilities placed in the proposed AOAs will overlap with critical habitat for the giant manta ray, the green sea turtle, and the loggerhead sea turtle.¹¹⁴ Additional endangered and threatened species known to overlap with the proposed AOAs include five species of sea turtles, two whale species, the Nassau grouper, the smalltooth sawfish, the oceanic whitetip shark, and the gulf sturgeon,¹¹⁵ while additional federally protected marine mammals include nine dolphin species and ten whale species.¹¹⁶ The west study area overlaps with 18 essential fish habitats, the central study area with 23, and the eastern study area with nine.¹¹⁷

¹⁰⁸ DPEIS, *supra* n. 93, at 171.

¹⁰⁹ *Id.*

¹¹⁰ NMFS, Reinitiation of Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Environmental Protection Agency’s Approval of Washington State Department of Ecology’s Sediment Management Standards (Feb. 16, 2022), https://wildfishconservancy.org/wp-content/uploads/2022/04/2022_02-16_FinfishRearingReinit_WCRO-2018-00286-3.pdf.

¹¹¹ *Id.* at 105.

¹¹² *Id.* at 126.

¹¹³ *Id.* at 62-63.

¹¹⁴ *Id.* at 294.

¹¹⁵ *Id.* at 31-32.

¹¹⁶ *Id.* at 32.

¹¹⁷ *Id.* at 295-96.

Industrial aquaculture may impact these species in numerous ways. Namely, entanglement from ropes and lines may harm endangered species and other wildlife in the proposed area. This risk is significant considering the large scale of this aquaculture management program and current estimations that entanglement in fishing gear already results in the deaths of some 300,000 marine mammals each year.¹¹⁸ Net pens could also entrap wildlife, ESA-listed species, and other marine mammals and result in them drowning.¹¹⁹ Of the 53 whale entanglements documented by NMFS in 2020, 29 of confirmed live and dead cases (or, fifty-five percent) involved commercial or recreational fishing gear.¹²⁰

Furthermore, NMFS must assess anthropogenic noise pollution from these facilities and the boats that serve them. Noise pollution can harm marine mammals by masking their communications at almost all frequencies these mammals use.¹²¹ “Masking” refers to a “reduction in an animal’s ability to detect relevant sounds in the presence of other sounds.”¹²² Such an impairment to communication could also result in harmful impacts to these protected species, which NMFS must take into account.

Moreover, the facilities’ propensity to act as fish aggregating devices (FADs) further exacerbates risks of entanglements and vessel strikes as species are drawn to the facilities. Industrial aquaculture may attract predators as a result of fish escapes, food drifting outside the pens, and other animals aggregating around the pens.¹²³ An increase in the presence of predators and other species could lead to adverse effects such as injury or death. The FAD effect may result in more frequent encounters with protected species, which could increase the likelihood of injury from structures or equipment associated with the facility.¹²⁴

¹¹⁸ DPEIS, *supra* n. 93, at 22.

¹¹⁹ Atlas at 10.

¹²⁰ NOAA, *2020 Large Whale Entanglement Report 9* (June 2022), <https://media.fisheries.noaa.gov/2022-06/National%20Report%20on%20Large%20Whale%20Entanglements%20Confirmed%20in%20the%20United%20States%20in%202020.pdf>.

¹²¹ *See e.g.*, Hildebrand, J.A., Impacts of Anthropogenic Sound, in *Marine Mammal Research: Conservation Beyond Crisis* (Reynolds, J.E. III et al., eds. 2006); Weilgart, L., 2007, The Impacts of Anthropogenic Ocean Noise on Cetaceans and Implications for Management, 85 *Canadian J. Zoology* 1091-1116 (2007).

¹²² *Ocean Noise and Marine Mammals*, National Research Council, at 96 (2003), http://www.nap.edu/openbook.php?record_id=10564&page=R1.

¹²³ Luke T. Barrett, et al., *Impacts of marine and freshwater aquaculture on wildlife: a global meta-analysis*, *Reviews in Aquaculture* (2018).

¹²⁴ *Id.*

NMFS must also assess light pollution from the facilities and other coastal zone development that offshore aquaculture will require.¹²⁵ Light pollution harms species by affect mating cycles and habits, as well as rendering fish more active at night and increasing their exposure to predators.¹²⁶ Light pollution at night can also disorient marine birds.¹²⁷

6. NMFS must take a hard look at cumulative impacts on coral.

NMFS must also fully assess impacts on coral. Three of the nine potential AOAs are within 1 to 3 km of hundreds of unique hardbottom areas (natural reefs).¹²⁸ Hardbottom areas include a range of animal and plant life including a thin veneer of live corals.¹²⁹ NMFS itself has expressed increasing concern that these fragile deepwater coral reefs and their associated resources may be in serious danger.¹³⁰ Due to the proximity of the AOAs to these critically fragile habitats, NMFS must sufficiently analyze the cumulative impacts of the proposed projects to hardbottom areas.

7. NMFS must consider impacts from marine debris.

Offshore aquaculture projects have the potential to generate significant marine debris including plastic waste. Industrial shellfish operations create water pollution with toxic plastic and Styrofoam from cages, rack-and-bags, trays, surface or floating structures, or long lines suspended over the tide bed. For example, geoduck (clam) aquaculture uses PVC tubes stuck into the bed at a rate of 42,000 tubes per acre, which are covered with plastic “anti-predator” netting. Storms can dislodge the plastic gear used in production or it can break down into microplastics, adding more plastics to our oceans and beaches and acting as a poison pill to marine species that ingest microplastics coated in whatever pollutants are in the water (including the very shellfish grown for human consumption).¹³¹

¹²⁵ Atlas at 203.

¹²⁶ Forschungsverbund Berlin, *Light Pollution Makes Fish More Courageous* (Sept. 21, 2018), <https://www.sciencedaily.com/releases/2018/09/180921113456.htm>.

¹²⁷ *Id.*

¹²⁸ Atlas at 243, 260, 277.

¹²⁹ *Id.* at C-14.

¹³⁰ NOAA, *Lessons from the Deep: Exploring the Gulf of Mexico’s Deep-Sea Ecosystems Educators’ Guide* 11-12 (2010), https://oceanexplorer.noaa.gov/edu/guide/gomdse_edguide.pdf.

¹³¹ 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).

8. NMFS must consider impacts from pesticide use.

NMFS must also consider pesticide use in industrial shellfish production, which creates its own suite of risks and adverse impacts. Pesticide use to clear away wild species and allow intensive shellfish farming has harmful impacts on biodiversity.¹³² In Washington state, shellfish growers have historically used pesticides to kill native burrowing shrimp, recently changing from carcinogenic carbaryl to experiments with the neonicotinoid imidacloprid.¹³³ Currently, Washington permits shellfish growers to use the herbicide, imazamox, to control Japanese eelgrass.¹³⁴ If used at facilities in the AOAs, these pesticides and herbicides would not only kill the target species — they would also harm other invertebrates, fish, and the species that rely on these species as a food source.

9. NMFS must assess greenhouse gas emissions from increased vessel traffic.

NMFS must also assess climate change impacts from increased vessel traffic. The AOA designations could potentially result in dozens of offshore industrial aquaculture operations, with the farthest area 133 kilometers offshore.¹³⁵ These facilities will inevitably increase vessel traffic, and as a result, emit more harmful greenhouse gases.

10. NMFS must assess impacts on federal marine sanctuaries.

NMFS must also assess impacts on national marine sanctuaries. NMFS's southeast study area overlaps with the Florida Keys National Marine Sanctuary, and its western study area overlaps with the Flower Garden Banks National

¹³² See e.g., CFS, *Water Hazard 2.0: Continued Aquatic Contamination by Neonicotinoid Insecticides in the U.S.* (2017), <http://bit.ly/32rDyov>; Morrissey, C. A., et al., *Neonicotinoid contamination of global surface waters and associated risk to aquatic invertebrates: a review*, *Environment International* 74:291-303; Margaret Eng et al., *A neonicotinoid insecticide reduces fueling and delays migration in songbirds* (2019), *Science*, <https://science.sciencemag.org/content/365/6458/1177>; Goulson, D., *An overview of the environmental risks posed by neonicotinoid insecticides*, 977-87, *Journal of Applied Ecology*, 50(4) (2017).

¹³³ Wash. Dept. of Ecology, *Burrowing shrimp control (Imidacloprid)*, <https://www.ecology.wa.gov/Regulations-Permits/Permits-certifications/Aquatic-pesticide-permits/Burrowing-shrimp-control-Imidacloprid>.

¹³⁴ Mallory Gruben, *Ecology reissues permit for 'low toxicity' Japanese eelgrass herbicide*, *The Daily News* (March 7, 2020), https://tdn.com/news/local/ecology-reissues-permit-for-low-toxicity-japanese-eelgrass-herbicide/article_b8b79f47-6f7b-5676-8ba6-0014b3ef63b2.html.

¹³⁵ Atlas at 305.

Marine Sanctuary.¹³⁶ These two marine sanctuaries provide critical protection for coral reefs and habitats for a variety of marine species,¹³⁷ which industrial aquaculture will inevitably impact.

11. NMFS must assess cumulative impacts of oil and gas exploration in the Gulf.

NMFS must also consider how its AOA designations will cumulatively impact the Gulf along with Department of the Interior's proposed five-year program for offshore oil and gas leasing.¹³⁸ The proposed program would allow for 10 lease sales over five years in the Central and Western Gulf of Mexico planning areas and considers the potential for about 95 million acres of lease sales throughout the Gulf.¹³⁹ Numerous LNG pipeline activities (both new construction and expansion projects) have also been occurring throughout the Gulf and must be considered.¹⁴⁰ NMFS should consider these conflicting uses of the Gulf and avoid overlap in its designations.

12. NMFS must consider cumulative impacts of carbon capture and storage in the Gulf.

NMFS must also consider how its AOA designations will cumulatively impact the Gulf along with the burgeoning carbon capture and storage industry. For years, companies have identified the Gulf as a prime spot to deploy carbon capture and storage (CCS) technology.¹⁴¹ This industry is reasonably foreseeable, as Exxon, along with fourteen other chemical companies, drillers and refiners, including Dow Inc. and Chevron Corp., have pledged to support large-scale carbon capture from facilities in the Houston area, aiming to capture and store roughly 50 million metric tons of CO₂ per year by 2030. NMFS should consider impacts of the CCS industry along with its designations.

¹³⁶ *Id.* at 86.

¹³⁷ *Id.* at C-7.

¹³⁸ Interior Department Invites Public Comment on Proposed Five Year Program for Offshore Oil and Gas Leasing (July 1, 2022), <https://www.doi.gov/pressreleases/interior-department-invites-public-comment-proposed-five-year-program-offshore-oil-0>.

¹³⁹ *Id.*

¹⁴⁰ See, e.g., Scott DiSavino, *Delfin seeks more time to build US Gulf of Mexico LNG export plant* (July 21, 2022), <https://www.reuters.com/business/energy/delfin-seeks-more-time-build-us-gulf-mexico-lng-export-plant-2022-07-21/>.

¹⁴¹ Heather Richards & Carlos Anchondo, *CCS in the Gulf: Climate solution or green washing?* (Jan. 31, 2022), <https://www.eenews.net/articles/ccs-in-the-gulf-climate-solution-or-green-washing/>; see also *Best Management Practices for Offshore Transportation and Sub-Seabed Geologic Storage of Carbon Dioxide* (Dec. 2017), <https://espis.boem.gov/final%20reports/5663.pdf>.

13. NMFS must not overlook impacts to local economies and markets for wild fish.

NMFS must also take a hard look at economic harms to coastal communities, food producers (on land and at sea), and other marine-reliant industries. Commercial and recreational fishing account for a large portion of the Gulf Coast economy.¹⁴² Members of the wild-capture fishing industry have collectively voiced their trepidations over attempting to coexist with the marine 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.”¹⁴³ The operations located in the proposed AOAs could 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. Finally, 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.¹⁴⁴

a. NMFS must acknowledge the possibility of physical displacement of local fishermen.

NMFS has already acknowledged potential impacts on commercial fishing operations in its Atlas.¹⁴⁵ There, NMFS explicitly acknowledged that commercial fishing “supports many communities along the Texas coastline, providing

¹⁴² Atlas at 45.

¹⁴³ 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/>.

¹⁴⁴ See 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/>.

¹⁴⁵ Atlas at 45.

employment, income, and revenue from seafood sales,” “supports the entire network of communities along the bayous leading to the Gulf of Mexico oceanic basin,” and recognized “a long tradition and a persistent presence of commercial fishing nested in communities like Cedar Key, Tarpon Springs, Clearwater, St. Petersburg, and Key West [. . .] [and] recogniz[ed] that the commercial fleet and infrastructure are in decline.”¹⁴⁶ In light of this acknowledgement, NMFS’s DPEIS must also assess the cumulative impacts of the expansion of aquaculture projects on the activities of local commercial fishermen over time. The change in the availability of resources and wild fish stocks due to the prolonged presence of aquaculture may drastically alter the patterns and routes of commercial fishermen. Changing migration patterns, species displacement, or hypoxia may force wild fish and fishermen into new waters. Therefore, NMFS must also address these cumulative future impacts on the physical displacement of local fishermen.

b. NMFS must assess harms to markets for wild fish.

NMFS must also assess the AOA designation’s impact on the value of local catch. Aquaculture corporations in the Gulf could potentially flood local markets with farmed versions of native species, thus decreasing the price of the same wild stocks and consequently harming local fishermen. For example, salmon farming and its resulting constant supply of farmed salmon in the global market drastically reduced the price of salmon—wild or farmed—worldwide.¹⁴⁷ Indeed, rather than complementing wild-capture fisheries in the Gulf,¹⁴⁸ offshore aquaculture in the Gulf may flood the market with an abundance of farmed finfish—resulting in net loss to the local fishermen.

c. NMFS must fully assess impacts to wild caught fisheries.

NMFS must also assess the AOA designations’ impacts on wild caught fisheries. Rather than replacing wild fish consumption, farmed fish production in other regions has instead exacerbated the diminishing populations of wild fish. This will be especially true in offshore aquaculture farming carnivorous fish species native to the Gulf, such as red snapper, which require a diet high in fishmeal and oil often derived from wild-caught fish stocks such as mackerel, herring, menhaden, and anchovies.¹⁴⁹ The industry’s ever-growing demand for feed jeopardizes the

¹⁴⁶ *Id.* at 303-6.

¹⁴⁷ R. Naylor *et al.*, *Salmon Aquaculture in the Pacific Northwest: A global Industry with Local Impacts*, 45 *Environment*, at 18-39 (Oct. 2003).

¹⁴⁸ NOAA, Press Release, NOAA Announces Regions for First Two Aquaculture Opportunity Areas under Executive Order on Seafood (Aug. 20, 2020).

¹⁴⁹ Albert Tacon & Marc Metian, *Fishing for Feed or Fishing for Food: Increasing Global Competition for Small Pelagic Forage Fish*, 38 *Ambio*, at 294-302 (Sept. 2009); R. Naylor & M. Burke, *Aquaculture and Ocean Resources: Raising Tigers of*

survival of wild stocks and disrupts the balance of the marine ecosystem.¹⁵⁰ The removal of wild fish to produce fish feed reduces the natural supply of food for the farmed fish's wild counterparts, as well as seabirds and other marine life.¹⁵¹ Ten years ago, the FAO reported that most reduction fisheries were already fully exploited and some were considered overexploited, meaning they were already producing catches at or near the maximum sustainable level, and they risked depletion of stocks if catches were not reduced.¹⁵²

Specifically in the Gulf of Mexico, there is a long history of concern about the impacts of the menhaden fishery on the aquatic food web. It is primarily a "reduction" fishery, meaning the fish are pressed into fishmeal and fish oil for use in various products, like pharmaceuticals and notably pet and fish feeds.¹⁵³ Locally called "pogies," these fish are at the base of the food chain and are important prey for a wide range of marine life, including marine mammals such as dolphins, sea birds, and predatory fish, which will be harmed by their depletion.¹⁵⁴ Further, the industry admits it has a bycatch rate of up to 2.8%, with no catch cap and no regular monitoring, which causes major disruptions to the Gulf ecosystem.¹⁵⁵ Further development of industrial aquaculture will only increase the demand for pogies and contribute to these impacts on Gulf species and the ecosystem in its entirety.

B. Any mitigation measures must have adequate explanation and support.

While NMFS can use terms in a DPEIS to prevent harm from an impact, the "feasibility of mitigation measures is not self-evident," and the record still needs to support the conclusion that the measures attached to the DPEIS will actually have the intended effect.¹⁵⁶ NMFS must support the conclusion that their proposed

the Sea, 30 Annual Review of Env'tl. Resources, 185-218 (2005); Brian Halweil, *Farming Fish for the Future* 20 (Worldwatch Inst. 2008).

¹⁵⁰ Changing Markets Foundation, *Until the Seas Run Dry* (2019), <http://changingmarkets.org/wp-content/uploads/2019/04/REPORT-WEB-UNTILL-THE-SEAS-DRY.pdf>.

¹⁵¹ Tacon & Metian, *supra* n.149; Marine Aquaculture Task Force, Woods Hole Oceanographic Inst., *Sustainable Marine Aquaculture: Fulfilling the Promises, Managing the Risks* 16 (27).

¹⁵² FAO, *The State of the World Fisheries* (2012), <http://www.fao.org/docrep/016/i2727e/i2727e.pdf>.

¹⁵³ Monterey Bay Aquarium, *Atlantic Menhaden, Gulf Menhaden* 8 (June 4, 2015), <https://www.seafoodwatch.org/-/m/0590004cbae64cc593dbd54530940c56.pdf>.

¹⁵⁴ *Id.* at 50.

¹⁵⁵ *Id.* at 24.

¹⁵⁶ *See O'Reilly v. U.S. Army Corps of Engineers*, 477 F.3d 225, 234 (5th Cir. 2007) (holding that the agency did not provide a rational basis for determining that the

conditions will render significant impacts from oxygen depletion, pathogen spread, antibiotic resistance, fish escapes, federally listed species and other wildlife, and local economies insignificant. Failing to properly support their conclusions renders them arbitrary and capricious and contrary to law.

III. NMFS must initiate formal programmatic ESA Section 7 consultation on the proposed AOA designations and prepare a Biological Assessment.

NMFS acknowledges that numerous listed species may be present throughout the Gulf, with critical habitat even overlapping with the proposed AOAs, yet NMFS has yet to consult with the Services or prepare a biological assessment as required by 16 U.S.C. § 1536(c)(1). The ESA regulations plainly state that “[a]ny request for formal consultation may encompass ... a number of similar individual actions within a given geographical area or a segment of a comprehensive plan. This does not relieve the Federal agency of the requirements for considering the effects of the action as a whole.”¹⁵⁷ Accordingly, NMFS must engage in programmatic consultation regarding impacts of these AOA designations on federally protected species throughout the Gulf of Mexico.

As detailed above, offshore aquaculture facilities present serious environmental concerns, both on an individual level and cumulatively. Based on this fact and the ESA regulations, it is therefore unequivocal that consultation on NMFS’s specific site designations or on each individual future permit does not relieve NMFS of its duty to consult on the AOA designations at a programmatic level. While AOA site-specific or project-specific consultation is also clearly required for any project that may affect listed species, NMFS cannot justify its potential designations of multiple AOAs in the Gulf based on that later, site-specific consultation. Relying only on site-specific consultation fails to capture the cumulative impacts that the Gulf AOA designations may have on listed species. The only way to ensure that the designations will not jeopardize listed species is to complete a programmatic consultation – otherwise the Services are not provided the opportunity to identify which facilities may be problematic for listed species, and to provide reasonable and prudent measures to minimize harm, such as measures to ensure that NMFS gathers and analyzes sufficient data to prevent jeopardy to listed species.

USACE has adequately complied with NEPA because “the EA provides only cursory detail as to what those measures are and how they serve to reduce those impacts to a less-than-significant level.”).

¹⁵⁷ *Nat’l Wildlife Fed’n v. Brownlee*, 402 F. Supp. 2d 1, 10 (D.D.C. 2005) (citing 50 C.F.R. § 402.14(c)).

A. Numerous endangered and threatened species would be threatened by AOA designations.

The Atlas documents numerous threatened and endangered species vulnerable to the impacts of offshore aquaculture facilities in the Gulf of Mexico. Critical habitat for the giant manta ray, the green sea turtle, and the loggerhead sea turtle overlaps with the study areas,¹⁵⁸ while NMFS lists eleven other endangered and threatened species known to occur in NMFS's study areas.¹⁵⁹ These species include numerous other endangered whale species, several sea turtle species, the Nassau grouper, the smalltooth sawfish, the oceanic whitetip shark, and the gulf sturgeon.¹⁶⁰

B. NMFS's AOA designation poses a risk of direct, indirect, and cumulative adverse impacts on listed species.

AOA designations would thus pose a risk of direct and cumulative adverse harm to these ESA listed species, which, as discussed above, must be analyzed through formal consultation. In addition to cumulative impacts discussed above, discharges from offshore aquaculture operations typically contain organic and inorganic solids, nutrients, and chemicals used in the prevention and treatment of various diseases. Any of these discharges could impair the water quality in the receiving waters and harm endangered species, especially when discharged from multiple facilities. At elevated concentrations, chlorine and ammonia are toxic to aquatic life, while discharged nutrients could cause periodic extreme decreases in dissolved oxygen. These impacts must be assessed on a programmatic level to ensure the protection of endangered species.

C. NMFS cannot commit resources to the proposed project without first consulting with the Services.

Under Section 7(d) of the ESA, NMFS may not act until the agency consults with the Services, and the Services concur with NMFS's determination. Section 7(d) of the ESA provides that, once a federal agency initiates consultation on an action under the ESA, the agency, as well as any applicant for a federal permit, "shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection (a)(2) of this section."¹⁶¹

¹⁵⁸ Atlas at 294.

¹⁵⁹ *Id.* at 25.

¹⁶⁰ *Id.* at 31-32.

¹⁶¹ 16 U.S.C. § 1536(d).

Since the purpose of Section 7(d) is to maintain the environmental status quo pending the completion of consultation, Section 7(d) prohibitions remain in effect while NMFS completes its programmatic consultation. These prohibitions must also remain in effect throughout the consultation period and until the federal agency has satisfied its duty under Section 7(a)(2) to insure that the action will not result in jeopardy to listed species or adverse modification of critical habitat. Hence, NMFS may not designate AOAs until it has complied with the statutory mandates of the ESA.

D. NMFS must consult with the Services for a Biological Opinion prior to designating AOAs.

Due to the far-reaching nature of the proposed designations and the multiple impacts on species throughout the Gulf, NMFS will also need to prepare a Biological Opinion (BiOp). The result of formal consultation is the preparation of a BiOp by the expert wildlife agencies (FWS and NMFS) which provide their analysis of the best available scientific data on the status of the species and how it would be affected by the proposed designations.¹⁶² Additionally, a BiOp must include a description of the proposed action, a review of the status of the species and critical habitat, a discussion of the environmental baseline, and an analysis of the direct and indirect effects of the proposed action and the cumulative effects of reasonably certain future state, tribal, local, and private actions.¹⁶³

E. Incidental take statements must be prepared on an individual level.

While formal programmatic consultation is required, it would be improper and unlawful for any incidental take statement to be issued as part of the Services' biological opinion.¹⁶⁴ Numerous different ESA-protected species and their

¹⁶² When preparing a biological opinion, the consulting agency must (1) "review all relevant information," (2) "evaluate the current status of the listed species," and (3) "evaluate the effects of the action and cumulative effects on the listed species," 50 C.F.R. § 402.14, using "the best scientific and commercial data available," 16 U.S.C. § 1536(a)(2); *see also Greenpeace v. Nat'l Marine Fisheries Serv.*, 80 F. Supp. 2d 1137, 1149-50 (W. D. Wash. 2000) (remanding biological opinion where agency failed to "meaningfully analyze" the risks to the species and the key issues).

¹⁶³ *See* Consultation Handbook at 4-14 to 4-31.

¹⁶⁴ It is well-settled that programmatic biological opinions do not require an incidental take statement where those opinions explicitly mandate future site-specific consultations for take authorizations. *See Gifford Pinchot Task Force v. USFWS*, 378 F.3d 1059, 1067-68 (9th Cir.) *am. by* 387 F.3d 968 (9th Cir. 2004); *Forest Serv. Employees for Env't Ethics*, 726 F. Supp. 2d at 1224-1225; *W. Watersheds Project v. BLM*, 552 F. Supp. 2d 1113, 1139 (D. Nev. 2008); *Swan View Coal., Inc. v. Turner*, 824 F. Supp. 923, 934-35 (D. Mont. 1992). Here, should the Services issue a no-jeopardy opinion on the AOA designations, it should not be

designated critical habitats are likely to be adversely affected. It remains unclear whether sufficient protections at the programmatic level will be implemented to ensure that listed species are not jeopardized by cumulative impacts from activities covered by these designations.

Moreover, there is no feasible way that the Services can predict, let alone quantify, the amount of incidental take of currently-listed species that will result from offshore aquaculture facilities throughout the Gulf of Mexico in the years to come. Further, the Services could not possibly analyze or quantify incidental take for future-listed species that will be adversely affected by the proposed AOA designations. Rather, incidental take can only occur, and can only be analyzed and appropriately permitted, at the site-specific and species-specific level. Therefore, the programmatic consultation should acknowledge that it is a framework programmatic consultation under which any incidental take will be subsequently authorized under a permit-specific Section 7 or Section 10 process.¹⁶⁵

IV. NMFS must also comply with the Marine Mammal Protection Act.

Due to potential “takes” of marine mammals, NMFS must obtain proper authorization before finalizing any AOA designations. Offshore aquaculture facilities approved as a result of these designations could result in harassment of nineteen marine mammal species in the proposed areas.¹⁶⁶ Thus, NMFS must complete an accurate assessment of risks posed by designations to marine mammals.

V. NMFS must comply with the MBTA.

NMFS has also failed to consider whether the AOA designations may result in the “take” of migratory birds, despite the fact that migratory birds will likely interact with offshore aquaculture facilities. Now, pursuant to the MBTA, NMFS must undertake this evaluation before finalizing AOA designations.

accompanied by an incidental take statement because all incidental take should only be authorized, if at all, via a Section 10 permit or Section 7 consultation.

¹⁶⁵ See 80 Fed. Reg. 26,832 (May 11, 2015) (adding definition of “framework programmatic action” to 50 C.F.R. § 402.02 and adding 50 C.F.R. § 402.14(i)(1)(6) on incidental take statements not being required at the programmatic level where subsequent actions resulting in incidental take will be separately consulted on). See *also* Interagency Handbook at 4-50-51 (stating that in programmatic consultations that cannot determine anticipated levels of incidental take “the incidental take statement should indicate that the issue will be reexamined during the consultation process for site-specific actions under the umbrella of the larger planning document.”).

¹⁶⁶Atlas at 26.

VI. NMFS must ensure protection of essential fish habitat, as required under the MSA.

The MSA established procedures to identify, conserve, and enhance Essential Fish Habitat (EFH) for species regulated under a federal Fisheries Management Plan.¹⁶⁷ The MSA requires consultation with NMFS on all actions, including proposed actions, which may adversely affect EFH.¹⁶⁸ To “adversely affect” means any impact that reduces the quality and/or quantity of EFH, and may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey or reduction in species fecundity), site-specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.¹⁶⁹ When NMFS is consulted on impacts to EFH under the MSA, it must “recommend to such agency measures that can be taken by such agency to conserve such habitat,” and, should the action agency fail to adopt those measures, it must explain its reasons for not following those measures.¹⁷⁰

Here, before NMFS can finalize any designations, NMFS must ensure that none of the proposed sites will adversely affect the EFH for all federally managed fish species. NMFS’s Atlas identifies 18 essential fish habitats in the west study area, 23 in the central study area, and nine in the eastern study area,¹⁷¹ rendering this consultation all the more essential.

VII. NMFS must consult on National Marine Sanctuaries.

The National Marine Sanctuaries Act established procedures to ensure protection of National Marine Sanctuaries. NMFS’s southeast study area overlaps with the Florida Keys National Marine Sanctuary, while the western study area overlaps with the Flower Garden Banks National Marine Sanctuary.¹⁷² These two marine sanctuaries protect coral reefs and provide habitat for a variety of marine species.¹⁷³ As a result NMFS must consult with itself regarding whether the designations are likely to destroy, injure, or cause the loss of any sanctuary resource.¹⁷⁴

¹⁶⁷ 16 U.S.C. §§ 1801 *et seq.*

¹⁶⁸ *Id.* § 1855(b)(2).

¹⁶⁹ 50 C.F.R. § 600.810.

¹⁷⁰ 16 U.S.C. § 1855(4).

¹⁷¹ Atlas at 295-96.

¹⁷² *Id.* at 86.

¹⁷³ *Id.* at C7.

¹⁷⁴ 16 U.S.C. § 1434(d); *see also Greenpeace Foundation v. Mineta*, 122 F.Supp.2d 1123, 1127 n.5 (D. Haw. 2000) (noting that where “NMFS is both the acting and consulting agency ... NMFS consults with itself”).

VIII. Designating the AOAs without consistency determinations would violate the Coastal Zone Management Act.

NMFS has yet to submit a CZMA consistency determination to the pertinent state agencies so that they and the public can comment on the designations' consistency with the Gulf states' Coastal Management Programs. This failure to make such a determination violates the CZMA and its regulations. NMFS's regulations specify that federal agencies must provide state agencies with a consistency determination "at the *earliest* practicable time in the planning ... of the activity."¹⁷⁵ Submitting consistency determinations to the states after NMFS's NEPA review and eventual designation plainly delays this determination beyond the "earliest" time in the process. Allowing state agencies to review the NMFS consistency determination is vital, given how the proposed designations likely conflict with the protections currently provided in the Gulf states' Coastal Management Programs.

CONCLUSION

For the foregoing reasons, NMFS should halt its AOA designations until proper federal oversight has been established. If NMFS does proceed, the agency must comply with the mandates of NEPA, the MMPA, the MSA, the ESA, the NMSA, the CZMA, and the MBTA.

Thank you for your consideration of these comments.

Sincerely,

Center for Food Safety

Don't Cage Our Oceans Coalition

Recirculating Farms Coalition

Oceanic Preservation Society

Friends of the Earth

¹⁷⁵ 15 C.F.R § 930.36 (b)(1) (emphasis added).