



July 27, 2022

Mr. Andrew J. Strelcheck
Regional Administrator
NMFS Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701

Submitted online at Docket No. NOAA-NMFS-2022-0044 at <https://regulations.gov>

RE: Notice of Intent To Prepare a Programmatic Environmental Impact Statement for Identification of Aquaculture Opportunity Areas in Federal Waters of the Gulf of Mexico and To Conduct Public Scoping Meetings

Dear Mr. Strelcheck:

Don't Cage Our Oceans is a coalition of national, regional, and local organizations and businesses working to stop industrial-scale offshore finfish farming while uplifting values-based sea-food systems led by local communities. More responsible forms of aquaculture are community-driven, responsibly sited and appropriately scaled, and use more appropriate species and methods. We respectfully submit these comments in response to NOAA's "Notice of Intent To Prepare a Programmatic Environmental Impact Statement for Identification of Aquaculture Opportunity Areas in Federal Waters of the Gulf of Mexico and To Conduct Public Scoping Meetings" (Agency/Docket Number RTID: 0648-XB900 RTID.) Please note that **we also endorse the comments submitted by the Center for Food Safety. We support the No Action Alternative**, in which no AOAs would be identified in Federal waters offshore of the Gulf of Mexico.

There are several reasons why the most prudent option is for NOAA (through the National Marine Fisheries Service, NMFS) to take no action in designating AOAs pursuant to former President Trump's Executive Order 13921. Chief among these is that NOAA lacks the legal authority to regulate aquaculture in federal waters. Furthermore, there are grave ecological consequences and inevitable financial harms to the regional economy in allowing offshore finfish farming in U.S. federal waters. A few of these concerns would be partially addressed by

unbiased application of relevant environmental law, but EO 13921 seeks to bypass those critical safeguards. Finally, NOAA's activist role in promoting industrial-scale offshore finfish aquaculture introduces unwarranted bias in the decision-making process, and flies in the face of scientific understanding on known harms, violating the precautionary principle.

Legality

NOAA repeatedly asserts authority in setting up and permitting an unprecedented nation-wide system of commercial offshore aquaculture facilities across all U.S. waters, even though Congress has never passed any legislation granting the agency authority to do so. Furthermore, the courts have affirmed this lack of authority to oversee aquaculture activities in federal waters: in 2020 the Fifth Circuit held that NOAA indeed lacks any statutory authority to regulate aquaculture.¹

The 5th Circuit court case *Gulf Fishermens Ass'n* held that NOAA does not have authority to permit or regulate aquaculture in the U.S. federal waters of the Gulf of Mexico, as there is no Congressional authorization to do so under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). For years, NOAA had claimed that the MSA had provided authority under the contorted view that aquaculture falls under the statutory definition of "fishing" for purposes of the MSA, as fish are ultimately extracted from net pens, and that NOAA could thus create a fishery management plan (FMP) to regulate aquaculture. The 5th Circuit Court saw through this nonsensical justification, and ruled against it.

Across several administrations, the agency has acted as an activist and promoter of industrial aquaculture. Following the circuit court ruling, the Trump Administration issued an executive order to grant NOAA authority where Congress had not. While EO 13921 does nothing to bolster NOAA's authority, the agency might argue otherwise. Executive orders cannot confer authority on agencies because the president's powers are executive, not legislative, in nature.² Rather, the President's authority to act "must stem either from an act of Congress or from the Constitution itself."³ As a result, EO 13921 cannot allow NOAA to establish a new offshore aquaculture industry in the absence of any statutory authority granted by Congress.

¹ *Gulf Fishermens Ass'n v. Nat'l Marine Fisheries Serv.*, 968 F. 3d 454 (5th Cir. 2020).

² *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.")).

³ *Id.* at 585.

More recently, NOAA has claimed authority to regulate aquaculture via its role in the interagency Subcommittee on Aquaculture,⁴ established by the National Aquaculture Act of 1980.⁵ This legislation identifies the U.S. Department of Agriculture as the lead agency on aquaculture, and barely assigns any responsibilities to the Department of Commerce (NOAA) at all, let alone authority to designate AOAs. The Act requires only consultation with NOAA for a biennial report on the status of aquaculture,⁶ and several studies due 35 years ago.⁷ None of these submissions required NOAA to determine locations suitable for industrial aquaculture in federal waters.

Absent *any* plain text in support, NOAA cannot establish its authority to designate AOAs in the Gulf of Mexico. In June 2022, the U.S. Supreme Court made plain that an agency must “point to ‘clear congressional authorization’ for the authority it claims.”⁸ NOAA’s attempts here to promote and lead a brand-new, highly controversial industry without pointing to statutory text provides just such an “extraordinary case” in which the “history and the breadth of the authority that [the agency] has asserted,” provides a “reason to hesitate before concluding that Congress” meant to confer such authority.⁹

Here, there is no ambiguity at all. Congress has never given NOAA the authority to regulate aquaculture in federal waters, and the courts have agreed with this interpretation. EO 13921 is an attempt to circumvent Congress, which has repeatedly demonstrated immense skepticism of offshore aquaculture, in order to lay the groundwork for large-scale fish farming in federal waters — an industrial activity that is severely lacking in public approval or buy-in when the details and risks of that development are made plain to the American public. NOAA should stop considering these Gulf of Mexico AOAs because of its clear lack of authority alone. However, even if NOAA’s permitting and regulating of aquaculture were to be legal, there are a variety of other compelling reasons why this activity should not move forward.

⁴ NSTC Subcommittee on Aquaculture, A Strategic Plan to Enhance Regulatory Efficiency in Aquaculture. (Feb. 2022)

https://www.ars.usda.gov/sca/Documents/2022%20NSTC%20Subcommittee%20on%20Aquaculture%20Regulatory%20Efficiency%20Plan_Final%20508%20compliant.pdf.

⁵ 16 U.S.C. §§ 2801-2810.

⁶ *Id.* § 2804(d).

⁷ *Id.* § 2804(c)(1)(C), (D) (requiring the Department of Commerce to submit studies by December 31, 1987).

⁸ *W. Virginia v. EPA*, No. 20-1530, 2022 WL 2347278, at *3 (U.S. June 30, 2022) (citing *Util. Air Regul. Grp. v. EPA*, 573 U.S. 302, 324 (2014)).

⁹ *W. Virginia*, 2022 WL 2347278, at *3; see also *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).

The Federal Government’s “water grab” and misappropriation of public funds is overwhelming rejected by the public

Aquaculture Opportunity Areas are the ocean-based equivalent of a land grab; they are a “water grab” by the federal government to benefit massive corporate interests. The public trust doctrine is a legal principle that the public is considered the owner of the ocean resource, and the government must protect and maintain these resources for the public's use. Cordoning off large portions of the Gulf of Mexico for the exclusive use of the private sector actively harms the public, coastal communities, and the livelihoods of residents who live and work along the water.

For years, NOAA has been funneling millions of dollars of taxpayer money into research, development, and start-up funding to develop Confined Animal Feeding Operations (CAFO)-style finfish farms in U.S. waters. These funds have been transferred to the aquaculture industry through programs like Sea Grant and the Saltonstall-Kennedy program. The agency is hardly a disinterested partner in this space, and is listed as a member of the Ocean Stewards Institute, in its California Sea Grant capacity. The Ocean Stewards Institute identifies as “a trade organization advocating for the emerging open ocean aquaculture industry.”¹⁰

Privatizing public resources for the benefit of large corporations, especially those not the U.S., is inherently un-American. Offshore aquaculture proponents have requested long-term (25-year) leases for their facilities spanning hundreds of acres, which is essentially blocking off a swath of public oceans for more than an entire generation. Through the AOA designation process, NOAA is proposing to carve up and hand control of our federal ocean spaces, a public resource that should be managed for the benefit of all Americans, to private corporations and foreign interests. In rushing through permitting for marine finfish aquaculture, NOAA is actively harming fishing families and the many small businesses in coastal communities that support them. NOAA should instead focus on supporting independent fishermen and co-ops, as their small businesses continue to recover from the ongoing COVID pandemic.

Indeed, it is incredible that the Biden Administration would push through an unnecessary and unpopular program like industrial scale marine finfish aquaculture when it is so detached from actually supporting people with access to food. These factory farms take significant time and money to build; they are not community driven, nor will they benefit people from coastal communities. The species grown in these facilities are high-trophic level fish that are destined for high-end local and foreign markets. CAFO-style fish farming has been repeatedly met with fierce opposition from the public, Congress, and even the courts.

¹⁰ <https://www.oceanstewards.org/>

Few people want to see this industry get a foothold in our public waters except for the mega-corporations (like Cargill, Merck, Sysco, etc.) and their shareholders¹¹ who see an opportunity to profit from industrially produced fish. In the recent NOAA listening sessions for NOAA's 5 year draft strategic plan on aquaculture, people overwhelmingly voiced their opposition to the inclusion of marine finfish aquaculture as part of NOAA's vision in the first place, and urged its removal from the strategic plan. Participants in the commercial fishing industry have collectively voiced their concerns over being forced 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."¹² NOAA has failed to secure public buy-in or societal license to push forward industrial fish farms in federal waters.

Creating AOAs to promote offshore finfish farming harms fishing families and fishing communities

In the AOA Atlas, the agency acknowledges that the Gulf of Mexico commercial fish landings amounted to 1.4 billion lbs of seafood with a value of \$796 million, and that the Gulf of Mexico also supports the largest recreational fisheries in the nation.¹³ The threat of fish escaping into Gulf of Mexico waters is inevitable, because fish escapes are a regular and ongoing occurrence in the industry. After a massive escape of Atlantic salmon from an aquaculture facility in state waters, the state of Washington investigated the site's operator, Cooke Aquaculture, and found that the company lied about both the cause of the escape and its magnitude.¹⁴ The true number of fish that escaped ended up being roughly 263,000 Atlantic salmon in the Pacific Ocean, much higher than Cooke Aquaculture was willing to admit.¹⁵ As a result, in 2018 Washington Governor Jay Inslee signed into law House Bill 2957 which phases out industrial ocean fish farms in state

¹¹ <https://www.strongerthroughseafood.org/sats-members>

¹² 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, <http://foe.org/DecFishFarmingSignOnLetter/>.

¹³ Riley, K.L., Wickliffe, L.C., Jossart, J.A., MacKay, J.K., Randall, A.L., Bath, G.E., Balling, M.B., Jensen, B.M., Morris Jr., J.A. An Aquaculture Opportunity Area Atlas for the U.S. Gulf of Mexico. NOAA Technical Memorandum NOS NCCOS 299. Beaufort, NC. 545 pp., at 54.

¹⁴ Wilson, Deborah. *Report blames negligence, not eclipse, for Washington fish farm collapse*. CBC, February 2, 2018.

<https://www.cbc.ca/news/canada/british-columbia/fish-farm-collapse-cooke-aquaculture-report-washington-state-1.4516075>

¹⁵ Mapes, Lynda V. *Fish farm caused Atlantic salmon spill near San Juans, then tried to hide how bad it was, state says*. Seattle Times, February 2, 2018. Accessible at: <https://www.seattletimes.com/seattle-news/fish-farm-caused-atlantic-salmon-spill-state-says-then-tried-to-hide-how-bad-it-was/>

waters. It does so by banning new leases to non-native net pen operations and prohibits the renewal of existing leases.

Around the world, industrial finfish aquaculture has repeatedly resulted in fish escapes, which impact wild fish and other marine wildlife. For example, in January 2020, 73,600 salmon escaped from a net pen in Mowi, Scotland, marking the third major escape in the area since October 2019.¹⁶ In Norway, approximately four million fish escaped in a single year.¹⁷ AquaChile reported the escape of 787,929 fish in 2013 due to bad weather that damaged cages.¹⁸ In 2018, 680,000 fish escaped from Marine Harvest Chile, 109,515 from Bakkafrost Faroe Islands, and 120,000 from Huon Aquaculture in Tasmania.¹⁹ 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.²⁰

Fish escapes can disrupt the marine ecosystem and threaten wild fisheries. Farmed fish are genetically inferior fish, and when they interbreed with wild fish populations, they bring down the fitness and survivability of the wild fish populations.

If farmed fish from facilities sited within AOAs are actually sold in the U.S., they will likely undercut wild fisheries, and drive small fishing businesses to closure – the impacts of global salmon farming on small-boat salmon fishermen in Alaska during the 1990s are a textbook example of this effect, which caused economic insecurity and contributed to permit loss in small fishing communities.

Floating CAFO-style fish farms incubate and proliferate parasites and diseases (e.g., sea lice) that then spread to the wild fish populations. This is harmful to both the marine ecosystem and wild fisheries. There is more evidence that pathogens from farmed salmon spread to wild salmon: piscine orthoreovirus (PRV) is widespread in farmed salmon and is associated with heart and

¹⁶ *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>.

¹⁷ Nat’l Marine Fisheries Service Pac. Islands Reg’l Off., Draft Programmatic Env’t Impact Statement (DPEIS) 171 (2021).

¹⁸ 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>.

¹⁹ *Id.*

²⁰ 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.

skeletal muscle inflammation.²¹ *Tenacibaculum maritimum* is known to cause disease and mortality.²² The toxic chemicals that offshore fish farm operators use to treat these diseases are widely known to harm other marine life and commercially-sought species as well, as discussed further below. That NOAA would nonetheless enthusiastically pursue the permitting of factory fish farms that are known to harm the very fisheries that the agency is tasked with conserving and managing is deeply troubling.

Creating AOAs would harm the marine environment and exacerbate climate change

For a variety of logistical reasons, the AOAs have generated minimal interest from companies looking to engage in shellfish or seaweed farming. Instead, the agency must be honest in acknowledging that the farming of high-trophic level finfish - that is, carnivorous or omnivorous fish that require high animal protein inputs - is the ultimate endgame for these public-turned-private spaces.

Industrial offshore finfish aquaculture **leads to overfishing** of forage fish. Most farmed marine fish require large amounts of fish in their feed – much of this comes from globally-sourced wild forage fish, including anchovies, menhaden, sardines and other small fish that are critically important to the diet of marine wildlife, including birds, dolphins, sharks, and other fish. Removing massive amounts of forage fish from our oceans reduces prey availability for other marine species and can change relationships in our ecosystem with potential widespread consequences.

NOAA must assess impacts of these industrial facilities on all species, not just those that are listed under the Endangered Species Act. The agency's AOA Atlas notes that "The Gulf of Mexico teems with sea life, from shrimp in the coastal estuaries to deep-water corals living thousands of feet below the surface. Coastal areas are home to a wide variety of living resources, including waterfowl, estuarine shellfish, marine mammals, sea turtles, and fish."²³ Flower Garden Banks National Marine Sanctuary, off the coast of Texas and Louisiana, was recently discovered to be a nursery ground for the giant manta ray,²⁴ which is globally listed as endangered by the IUCN Red

²¹ Palacios G, Lovoll M, Tengs T, Hornig M, Hutchison S, et al. (2010) Heart and Skeletal Muscle Inflammation of Farmed Salmon Is Associated with Infection with a Novel Reovirus. PLOS ONE 5(7): e11487. <https://doi.org/10.1371/journal.pone.0011487>

²² Avendaño-Herrera R, Toranzo AE, Magariños B. Tenacibaculosis infection in marine fish caused by *Tenacibaculum maritimum*: a review. Dis Aquat Organ. 2006 Aug 30;71(3):255-66. doi: 10.3354/dao071255. PMID: 17058606.

²³ Riley, K.L., *supra* n. 13 at 52.

²⁴ Jason Daley, *Teeming Manta Ray Nursery Discovered in the Gulf of Mexico*, Smithsonian Magazine. (June 19, 2018),

List of Threatened Species.²⁵ NOAA has listed nineteen different marine species in the Gulf of Mexico that are listed as threatened and endangered species and critical habitats directly under NOAA's jurisdiction; these species include sea turtles, coral, fish, two species of whales, one species of shark, and the giant manta ray.²⁶ It is extremely likely that aquaculture activities would directly or indirectly impact these species or their habitat. Because the proposed facilities will be located in, or near, species' migration routes or in their habitat, NOAA must analyze the AOA designations' cumulative effects of this project and other proposed projects for the full term of any proposed permit on species.²⁷

Similarly, NOAA must also assess impacts on national marine sanctuaries. NOAA's southeast study area overlaps with the Florida Keys National Marine Sanctuary, and its western study area overlaps with the aforementioned Flower Garden Banks National Marine Sanctuary.²⁸ These two marine sanctuaries provide critical protection for coral reefs and habitats for a variety of marine species,²⁹ which industrial aquaculture will inevitably impact.

Entanglement from ropes, lines, and net pens may harm endangered species and other wildlife in the proposed areas, especially as 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. Recently, NOAA has admitted that industrial aquaculture may attract predators as a result of fish escapes, food drifting outside the pens, and other animals aggregating around the pens.³⁰ In March 2017, an endangered Hawaiian Monk Seal died due to entanglement in net pens at Blue Ocean Mariculture, which is a NOAA research farm.³¹ 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.³²

<https://www.smithsonianmag.com/smart-news/first-manta-ray-nursery-discovered-gulf-mexico-180969410/>

²⁵ Marshall, A., Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Derrick, D., Herman, K., Jabado, R.W., Liu, K.M., Rigby, C.L. & Romanov, E. 2022. *Mobula birostris* (amended version of 2020 assessment). *The IUCN Red List of Threatened Species* 2022: e.T198921A214397182.

<https://dx.doi.org/10.2305/IUCN.UK.2022-1.RLTS.T198921A214397182.en>. Accessed on 22 July 2022.

²⁶ NOAA Fisheries. Threatened and Endangered Species List Gulf of Mexico, last updated July 21, 2022. <https://www.fisheries.noaa.gov/southeast/consultations/threatened-and-endangered-species-list-gulf-mexico>

²⁷ See 33 U.S.C. § 1371(c)(1).

²⁸ Riley, K.L., *supra* n. 13 at 86.

²⁹ Riley, K.L., *supra* n. 13 at C7.

³⁰ Luke T. Barrett, et al., *Impacts of marine and freshwater aquaculture on wildlife: a global meta-analysis*, Reviews in Aquaculture (2018).

³¹ Jones, Caleb. Rare monk seal dies in fish farm off Hawaii. USA Today. March 17, 2017.

<https://www.usatoday.com/story/news/nation/2017/03/17/rare-monk-seal-dies-fish-farm-off-hawaii/99295396/>

³² Barret, *supra* note 30.

Waste from intensive finfish farming (excess feed, fish poop, and any chemicals used on the fish or pens) readily flows from the net pens into surrounding waters. In many cases, the nitrogen outputs associated with the concentrated rearing of hundreds of thousands of fish in a limited area is equivalent to the sewage output of major U.S. cities; worse, in this case, it is *untreated*.

Nutrient pollution decreases oxygen levels in our waters, killing off aquatic life and creating low-oxygen “dead zones” and harmful algal blooms.³³ Two of the proposed AOAs, C-11 and C-13, lie within the Gulf’s dead zone. Climate change further exacerbates these risks of harmful algal blooms, as warmer, more acidic ocean waters increase both the frequency and toxicity of these events.³⁴ Harmful algal blooms 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.³⁵

Aquaculture facilities are intensive operations that generate large amounts of nutrients (nitrogen and phosphorus) and other waste products. The organism that causes Florida red tides, *Karenia brevis*, relies on many sources of nutrients as it forms and intensifies on the west Florida shelf.³⁶ The Vellella Epsilon project off of Sarasota, FL, and other prospective sites promoted through this misguided AOA program would and could fall within the initiation and intensification zone for Florida red tide.³⁷ While the pilot project may not cause red tide bloom initiation, nutrient inputs associated with tens of thousands of fish raised within net-pens could sustain and exacerbate bloom conditions. In addition, fish held in these pens would be susceptible to the toxin produced by *Karenia brevis*. Recent studies have shown that *Karenia brevis* is able to utilize nutrients from decaying fish to fuel blooms.³⁸

In 2018, Southwest Florida experienced one of the worst red tide events in recorded history. On Sanibel Island, the City of Sanibel removed more than 850,000 pounds of dead marine life from its beaches. The local Chamber of Commerce reported that the event caused **\$47 million in economic losses** from July to December related to tourism, real estate and recreational fishing. Permitting a nutrient-polluting aquaculture facility in the shallow Gulf waters in an area where red tide frequently occurs would be irresponsible and would exacerbate existing water quality

³³ Donald Boesch *et al.*, Pew Oceans Comm’n, *Marine Pollution in the United States* 20-22 (2001).

³⁴ Crable, M. Climate change could make toxic algal blooms in our oceans more deadly. *Phys.org* (2020) <https://phys.org/news/2020-07-climate-toxic-algal-blooms-oceans.html>

³⁵ NOAA, Harmful Algal Blooms, <https://oceanservice.noaa.gov/hazards/hab/>.

³⁶ Heil, C.A. et al. 2014. Blooms of *Karenia brevis* (Davis) G. Hansen & O. Moesrup on the West Florida Shelf: Nutrient sources and potential management strategies based on a multi-year regional study. *Harmful Algae* 38: 127-140. <http://dx.doi.org/10.1016/j.hal.2014.07.016>.

³⁷ Weisberg, R.H. et al. 2019. The coastal ocean circulation on the 2018 west Florida shelf *K. brevis* red tide bloom. *Journal of Geophysical Research: Oceans* 124. <https://doi.org/10.1029/2018JC014887>.

³⁸ Killberg-Thoreson, L., R.E. Sipler, C.A. Heil, M.J. Garrett, Q.N. Roberts, & D.A. Bronk. 2014. Nutrients released from decaying fish support microbial growth in the eastern Gulf of Mexico. *Harmful Algae* 38: 40-49. <http://dx.doi.org/10.1016/j.hal.2014.04.006>.

issues. NOAA must consider the likelihood of algal blooms in all study areas and assess the potential harms that could occur to the region.

The spread of disease is also of grave concern. There are documented studies of large populations of sea lice having left their origin sites of fish farms into the broader ocean environment, both in the Atlantic and Pacific oceans. In March 2022, a study from *Scientific Reports* notes: "Our results suggest that salmon lice in the Pacific Ocean have recently evolved substantial resistance to the antibiotic EMB ["SLICE"], and that salmon-lice outbreaks on Pacific farms will therefore be more difficult to control in the coming years."³⁹ A May 2021 study from *Royal Society* shows how the industry is losing the "arms race" in the North Atlantic Ocean because multiresistant salmon lice are dispersed throughout.⁴⁰

As parasites develop resistance to these chemicals, there is a growing trend to increase the level of toxicity of the chemicals used in response; this of course further increases the load of toxic chemicals in the marine environment. NOAA must assess these potential discharges since these pathogens, parasites, and the chemicals used to treat them can easily spread to wild fish, including wild populations that are listed as endangered or threatened under the Endangered Species Act.

The chemicals used as anti-foulants, antibiotics, and pesticides are often **carcinogenic and toxic to marine life**; these chemicals (e.g., organophosphates, cypermethrin) are openly discharged into the marine environment. In fact, up to 75% of antibiotics used by the industrial aquaculture industry directly absorb into the surrounding environment.⁴¹ In Nova Scotia, the use of the antibiotic EMB resulted in "widespread damage to wildlife," including "substantial, wide-scale reductions" in crabs, lobsters and other crustaceans close to marine finfish facilities.⁴²

³⁹ Godwin, S.C., Bateman, A.W., Kuparinen, A. *et al.* Salmon lice in the Pacific Ocean show evidence of evolved resistance to parasiticide treatment. *Sci Rep* 12, 4775 (2022).
<https://doi.org/10.1038/s41598-022-07464-1>.

⁴⁰ Fjørtoft Helene Børretzen, Nilsen Frank, Besnier Francois, Stene Anne, Tveten Ann-Kristin, Bjørn Pål Arne, Aspehaug Vidar Teis and Glover Kevin Alan. 2021. Losing the 'arms race': multiresistant salmon lice are dispersed throughout the North Atlantic Ocean *R. Soc. open sci.* 8: 210265.
<https://doi.org/10.1098/rsos.210265>.

⁴¹ United Nations, *Frontiers 2017: Emerging Issues of Environmental Concern*, at 15 (2017), <https://www.unenvironment.org/resources/frontiers>.

⁴² 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_dru_g_giant_over_pesticides_scandal/.

When it comes to carbon footprint, proponents of offshore finfish farming compare apples to oranges, in contrasting various farmed fish species to land-based livestock, instead of comparing it to land-based fish farming such as predominantly herbivorous species like tilapia or catfish. The carbon footprint for farmed carnivorous finfish is also significantly miscalculated in most models. There is a **massive carbon footprint** associated with the global sourcing, capturing, blending, and shipping of feed inputs to go into the fishfeed, and related infrastructure associated with keeping the farmed fish in cages, feeding them, medicating them, and harvesting them. Instead, most models that calculate the carbon footprint of farmed salmon, for example, rely on the unrealistic expectation that a unit of farmed salmon in Norway was fed from fishfeed derived exclusively from within Norway, and will be eaten by a person in Norway. This does not reflect the reality that industrially-grown salmon is sold globally, and that the international fishfeed industry - both globally sourced and globally distributed - is not structured in such a “local” manner.

CAFO-style fish farming does not feed Americans or help alleviate hunger

In most cases, it takes more fish to feed the farmed fish than for people to simply eat the lower-trophic level fish in the first place. This is an **inherently unsustainable and energy-intensive model** that leads to a **net loss in fish and animal protein**, mocking the purported “feed the world” claims of NOAA and industry alike, through offshore finfish aquaculture.

The higher trophic level fish is aimed to be sold to the higher-end market, since it will be so expensive to set up the infrastructure. This often includes foreign markets, as most of our country’s landed fish and aquaculture is sold abroad. In other words, opening up our waters for foreign investors and mega corporations does not necessarily mean that the farmed fish would be sold domestically, beyond a few expensive restaurants and boutique grocery retailers, nor at an affordable price: it will go where the money is, and leave us with an ecological and economic mess and little else.

Better technology cannot “save” an open flow-through CAFO

Other countries, like Denmark and Canada – both often considered global leaders in offshore marine finfish aquaculture – are moving away from the practice after recognizing harmful effects from it. Prime Minister Trudeau has ordered the phasing out of open-net salmon farming, and that these operations should be land-based instead. This is in no small part to the devastating impact that the salmon farming industry has on wild fish populations, First Nations, and the marine environment. This begs the question: why would the U.S. start pursuing the

promotion of an outdated, largely unwanted, and dangerous form of finfish farming when there are so many better ways to provide seafood?

Scientifically unsound in conception and siting

It is Incredible that NOAA - an agency with so many qualified scientists and experienced fishery regulators on staff - is pushing forward in creating AOAs for offshore finfish farming. This siloed approach to management demonstrates a profound lack of knowledge of fisheries on the part of the agency's proponents, and a grave miscalculation on how important science and public input is in the fisheries regulatory process. The members of this coalition encourage agency staff to talk with fellow staff from different departments entirely, and to also engage with scientists and colleagues *outside* of the aquaculture industry. This can help cut down on both groupthink and agency capture.

NOAA has stated: "The dead zone in the Gulf of Mexico affects nationally important commercial and recreational fisheries."⁴³ Further, NOAA scientists have stated this hypoxic zone was caused by "high levels of nutrients, primarily from activities such as industrial agriculture and inadequate wastewater treatment."⁴⁴ Industrial scale finfish aquaculture in the Gulf would worsen this existing problem. The proposal to site **two of the AOAs in the Gulf dead zone** is a recipe for disaster.

Hurricanes regularly cause widespread devastation in the Gulf of Mexico, and are becoming more intense and frequent.⁴⁵ For 2022, NOAA's National Weather Service is "predicting above-average hurricane activity," which "would make it the seventh consecutive above-average hurricane season."⁴⁶ Hurricane season is literally half of the whole year, from June 1 to November 30, and this new normal of more frequent and devastating hurricanes makes the idea of siting any offshore fish farms in the Gulf of Mexico pure folly.

For the many reasons above, including the lack of authority to regulate aquaculture under existing law, our members strongly urge NOAA to refrain from identifying any Federal waters offshore in the Gulf of Mexico (or anywhere else) as Aquaculture Opportunity Areas. We recommend the no action alternative.

⁴³ NOAA Media Release. *Average 'dead zone' for Gulf of Mexico predicted*, June 9, 2016. <https://www.noaa.gov/media-release/average-dead-zone-for-gulf-of-mexico-predicted>

⁴⁴ *Id.*

⁴⁵ EPA; IPCC, *supra* note 15.

⁴⁶ National Oceanic and Atmospheric Administration. *NOAA predicts above-normal 2022 Atlantic Hurricane Season*, May 24, 2022.

<https://www.noaa.gov/news-release/noaa-predicts-above-normal-2022-atlantic-hurricane-season>

Sincerely,

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