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Via Electronic and/or Certified Mail

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Re: 60-Day Notice of Intent to Sue NOAA under the Endangered Species Act Regarding Sea Grant's Funding of Offshore Aquaculture Projects

Dear Secretary Ross, *et al.*:

Friends of the Earth ("FOE") and Center for Food Safety ("CFS") hereby notify you of violations of the Endangered Species Act ("ESA"), 16 U.S.C. §§ 1531-1544, in connection with Project 107-NH-Chapman ("Project"), an offshore aquaculture project proposed by the University of New Hampshire and funded by a grant from the National Sea Grant College Program's ("Sea Grant") 2018 Ocean, Coastal, and Great Lakes National Aquaculture Initiative. The Project calls for the construction and deployment of an Aquafort system approximately 12 kilometers offshore in a depth of 52 meters of water. The Aquafort system consists of a floating



platform occupying over 1650 square feet, and supports two nets to grow steelhead trout.¹ Additionally, around the perimeter of the platform, 112 lines, approximately 10 meters in length, will be suspended to collect mussel spat for shellfish aquaculture.

This project will have serious adverse consequences for federally endangered and threatened species and their critical habitat, yet Sea Grant never assessed those risks in any legally required consultation with the National Marine Fisheries Service (“NMFS”) and the U.S. Fish and Wildlife Service (“FWS”), thereby resulting in ongoing violations of the ESA. Consequently, FOE and CFS are notifying Sea Grant, the Office of Oceanic and Atmospheric Research (“OAR”), and the Department of Commerce (“DOC”)—as well as NMFS and FWS—of these violations so that Sea Grant, OAR, and the DOC, along with the consulting agencies, can take the necessary steps to correct them.

BACKGROUND

A. Statutory Framework

The ESA “represent[s] the most comprehensive legislation for the preservation of endangered species ever enacted by any nation.” *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 180 (1978).² Section 9 of the ESA prohibits any “person” from “taking” any member of an endangered or threatened species. 16 U.S.C. § 1538(a).³

¹ Steelhead trout are an anadromous salmonid species, meaning they return to freshwater from the sea to spawn. U.S. FWS, *Steelhead Trout*, https://www.fws.gov/fisheries/freshwater-fish-of-america/steelhead_trout.html (last visited May 8, 2019). When in freshwater, steelhead trout are referred to as rainbow trout. *Id.* Steelhead are native to Western North America, *id.*, and are non-native to the Atlantic coast. Kristen Patterson & Paul J. Blanchfield, *Oncorhynchus mykiss Escaped from Commercial Freshwater Aquaculture Pens in Lake Huron, Canada*, 4 *Aquaculture Env’t Interactions* 53, 54 (2013) (Attach. O)

² NMFS and FWS share responsibilities for implementing the ESA. 16 U.S.C. § 1532(15). Pursuant to a 1974 Memorandum of Understanding, NMFS has primary jurisdiction over marine and anadromous species, including marine mammals (except walruses) and marine turtles, while FWS has primary jurisdiction over land-dwelling and freshwater species, including birds. *See* Memorandum of Understanding Between the U.S. FWS of the Department of the Interior and the NMFS NOAA DOC Regarding Jurisdictional Responsibilities and Listing Procedures Under the ESA of 1973 at 3, 5 (1974).

³ The term “take” is defined broadly to include “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect.” *Id.* § 1532(19). By regulation, NMFS has defined “harm” to mean “an act which actually kills or injures fish or wildlife,” and “include[s] significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering.” 50 C.F.R. § 222.102. Likewise, FWS has defined “harass” to include “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns, including

Pursuant to Section 7 of the ESA, before undertaking any action that may have direct or indirect effects on any listed species, an action agency must engage in consultation with NMFS and/or FWS (collectively, the “consulting agencies”) in order to evaluate the impact of the proposed action. *See id.* § 1536(a). In jointly issued regulations, the consulting agencies defined the term “action” for the purposes of Section 7 broadly to mean “all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies,” 50 C.F.R. § 402.02, “in which there is discretionary federal involvement or control.” *Id.* § 402.03. An agency may only avoid this consultation requirement for a proposed action if it determines that its action will have “no effect” on threatened or endangered species or critical habitat. *Id.* § 402.14(a).

The purpose of consultation is to ensure that the action at issue “is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [designated] habitat of such species.” 16 U.S.C. § 1536(a)(2). As defined by the ESA’s implementing regulations, an action will cause jeopardy to a listed species if it “reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.” 50 C.F.R. § 402.02. The evaluation of the effects of the proposed action on listed species during consultation must use “the best scientific . . . data available.” 16 U.S.C. § 1536(a)(2). Moreover, after the initiation of consultation, the action agency is prohibited from making “any irreversible or irretrievable commitment[s] 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.” *Id.* § 1536(d).

Consultation under Section 7 may be “formal” or “informal” in nature. Informal consultation is “an optional process” consisting of all correspondence between the action agency and the consulting agency, which is designed to assist the action agency, rather than the consulting agency, in determining whether formal consultation is required. *See* 50 C.F.R. § 402.02. During an informal consultation, the action agency requests information from the consulting agency as to whether any listed species may be present in the action area. If listed species may be present, the action agency is required by Section 7(c) of the ESA to prepare and submit to the consulting agency a “biological assessment” that evaluates the potential effects of the action on listed species and critical habitat. As part of the biological assessment, the action agency must make a finding as to whether the proposed action may affect listed species and submit the biological assessment to the consulting agency for review and potential concurrence with its finding. 16 U.S.C. § 1536(c). If the action agency finds that the proposed action “may affect, but is not likely to adversely affect” any listed species or critical habitat and the consulting agency concurs with this finding, then the informal consultation process is terminated. 50 C.F.R. § 402.14(b).

breeding, feeding, or sheltering.” 50 C.F.R. § 17.3. In addition, “harm” is defined to “include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.” *Id.*

If, on the other hand, the action agency finds that the proposed action “may affect” listed species or critical habitat, then the action agency must undertake formal consultation. 50 C.F.R. § 402.14; *see also* FWS & NMFS, Endangered Species Consultation Handbook (“Consultation Handbook”) at 3-13 (1998). The result of formal consultation is the preparation of a biological opinion (“BiOp”) by the consulting agency, which provides the consulting agency’s analysis of the best available scientific data on the status of the species and how it would be affected by the proposed action.⁴ 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. *See* Consultation Handbook at 4-14 to 4-31.

At the end of the formal consultation process, the consulting agency determines whether the proposed action is likely to jeopardize the continued existence of a listed species or destroy or adversely modify any designated critical habitat. If the consulting agency determines that the proposed action is not likely to jeopardize the continued existence of listed species or adversely modify critical habitat, but that the proposed action will nevertheless result in the incidental taking of listed species, then the consulting agency must provide the action agency with a written Incidental Take Statement specifying the “impact of such incidental taking on the species” and “any reasonable and prudent measures [(“RPMs”)] that the [consulting agency] considers necessary or appropriate to minimize such impact” and setting forth “the terms and conditions . . . that must be complied with by the [action] agency . . . to implement [those measures].” 16 U.S.C. § 1536(b)(4). If the consulting agency determines that the action will jeopardize a listed species or destroy or adversely modify designated critical habitat, then the consulting agency must offer the action agency reasonable and prudent alternatives (“RPAs”) to the proposed action that will avoid jeopardy to a listed species or adverse habitat modification, if such alternatives exist. *Id.* § 1536(b)(3)(A).

Without an adequate biological opinion and incidental take statement in place, any activities likely to result in incidental takes of members of listed species are unlawful. *Id.* § 1538(a)(1)(B). Accordingly, anyone who undertakes such activities, or who authorizes such activities, *id.* § 1538(g), may be subject to criminal and civil federal enforcement actions, as well as civil actions by citizens for declaratory and injunctive relief, *see id.* § 1540.

⁴ 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).

B. Factual Background

1. Offshore Aquaculture and Endangered Species

Offshore aquaculture is broadly defined “as the rearing of marine organisms in exposed areas beyond significant coastal influence.” See Harold F. Upton & Eugene H. Buck, *Open Ocean Aquaculture*, Cong. Res. Serv. 1 (Aug. 9, 2010) (Attach. A). There are two main types of marine aquaculture: shellfish farming, which involves growing large numbers of shellfish on nets, cages, or lines; and finfish farming, which involves growing large numbers of finfish in net pens, pods, or cages. See *id.* at 10; see also Bernd Wüsig & Glenn A. Gailey, *Marine Mammals and Aquaculture: Conflicts and Potential Resolutions*, in *Responsible Marine Aquaculture* 45, 45 (eds. R.R. Stickney & J.P. McVey 2002) (Attach. B). In both cases, the lines, pens, and/or cages are open to the surrounding marine environment. Attach. A at i. Proposals for offshore aquaculture systems are highly controversial, as the operations would be located a considerable distance from shore and subjected to harsher environmental conditions from wind and wave action. *Id.* at 1. Thus, to date, most aquaculture operations in the United States are located inshore, or in nearshore environments under state or territorial jurisdiction. *Id.* at i, 2.⁵

Despite regulatory difficulties, scientific uncertainties about impacts to habitat and listed species, and public opposition, government, academic, and private entities have begun to explore expanding aquaculture into the offshore environment. See Carol Seals Price et al, NOAA, *Protected Species and Marine Aquaculture Interactions* vi (Jan. 2017) (Attach. C).⁶ The rich waters of the Gulf of Maine, off of the coast of New England, have generated particular interest in the aquaculture industry. See *id.* at 4. The Gulf of Maine “is one of the most dynamic and productive ecosystems in the world,” Gulf of Maine Council on the Marine Env’t, *Framework for Action: 2018-2022* 5 (2018) (Attach. D). The Gulf watershed encompasses over 7500 miles of coastline stretching from Cape Cod, Massachusetts to Nova Scotia, and drains into 36,000 square miles of semi-enclosed coastal sea. *Id.* These rich waters also provide a temporary or permanent home to sixteen federally listed threatened and endangered species, including the Gulf of Maine Distinct Population Segment (“DPS”) of Atlantic Salmon; the Gulf of Maine DPS of Atlantic Sturgeon; the North Atlantic right whale; five species of sea turtle, all of which are protected under the ESA, see Attach. C at 32; and the roseate tern. See Gulf of Maine Council on the Marine Env’t, *Species at Risk: State of the Gulf of Main Report* 9 (May 2013) (table of federally listed species in Gulf of Maine) (Attach. E). The Isles of Shoals off of the coast of New Hampshire “serve[] as a major premigratory staging area and migratory stopover for many

⁵ Generally, coastal state jurisdiction extends to three nautical miles from shore. Attach. A at i. The United States Exclusive Economic Zone (“EEZ”) generally extends from three to 200 nautical miles from shore. *Id.* “Open-ocean aquaculture” generally refers to “operations in exposed ocean areas beyond significant coastal influence and may include areas in state waters within three nautical miles of the shoreline and beyond the 200 nautical mile EEZ.” *Id.* at 1.

⁶ In particular, due to local opposition and state-level restrictions, NOAA “has made it a priority to pursue the development of large offshore aquaculture operations in the exclusive economic zone, beyond the reach of state laws.” Rosamond Naylor, et al., *Fugitive Salmon: Assessing the Risks of Escaped Fish from Net-Pen Aquaculture*, 55 *BioScience* 427, 428 (2005) (Attach. K).

Neotropical birds and provides wintering habitat for land birds,” including the endangered roseate tern. See N.H. Fish & Game Dep’t, *New Hampshire Habitat Action Plan* App’x B, B-33 (2015) (Attach. F).⁷ The Gulf is also designated as critical habitat for the critically endangered North Atlantic right whale. See *Endangered and Threatened Species; Critical Habitat for Endangered North Atlantic Right Whale*, 81 Fed. Reg. 4838, 4861 (Jan. 27, 2016) (Attach. G).

The expansion of aquaculture systems into the open ocean generally, and the Gulf of Maine in particular, presents serious environmental concerns. Open nets, cages, and lines allow for the free discharge of untreated particulate wastes from uneaten fish feed and fecal pellets; discharge of nitrogen and other nutrient pollution; agricultural drugs such as antibiotics, antiparasitics, and growth-inducing treatments; and anti-foulant chemicals. See, e.g., Attach. A at 10-11; Rebecca J. Goldberg et al., Pew Oceans Comm., *Marine Aquaculture in the United States* 6-18 (2001) (Attach. H). This effluent flows directly into the open ocean and settles on the seafloor, impacting benthic communities and increasing microbial growth, which contributes to ocean acidification and eutrophication.⁸ See Marianne Holmer, *Environmental Issues of Fish Farming in Offshore Waters: Perspectives, Concerns and Research Needs*, 1 *Aquaculture Env’t Interactions* 57, 63 (2010) (Attach I); P. Rapp, et al., *Measurement of Organic Loading Under an Open-Ocean Aquaculture Cage, Using Sediment Traps on the Bottom*, 23 *J. Applied Ichthyology* 661, (2007) (reporting that “[t]he loading observed in this study does not substantiate the dilution of cage outfall into a large volume of water,” and that instead, “the organic loading descends almost vertically, to make a footprint no bigger than the footprint under many near-shore cages”) (Attach. U); Rosamond Naylor & Marshall Burke, *Aquaculture and Ocean Resources: Raising Tigers of the Sea*, 30 *Annual Rev. Envtl. Res.* 185, 201-02 (2005) (reporting that “large changes in sediment chemistry and in the benthic community can occur even with relatively low salmon stocking and feeding rates in the early stages of production”) (Attach. V). Moreover, the use of antibiotics promotes the spread of antibiotic resistance in fish pathogens, which leads to the development of more virulent strains of fish diseases, which can then be transmitted to wild fish—including endangered species—which often aggregate around off-coast farms and predate on farmed shellfish. See Attach H at 16-17; Attach. I at 64; see also Ole E. Heuer, et al., *Human Health Consequences of Use of Antimicrobial Agents in Aquaculture*, 49 *Food Safety* 1248 (2009) (reporting that the “[i]ntensive use of antimicrobial agents in aquaculture provides a selective pressure creating reservoirs of drug-resistant bacteria and transferable resistance genes in fish pathogens and other bacteria in the aquatic environment”) (Attach. T); Attach. V at 204

⁷ The Isles, which are located off the coast of New Hampshire, have been the site of an “intense tern restoration project” that has seen the successful restoration of breeding colonies. Attach. F. at B-33. The Isles are located approximately 1.5 miles north of the University of New Hampshire’s open aquaculture site. See Alexa Brickett, *NOAA Funding Supports NH Sea Grant Research*, UNH Today (Oct. 17, 2018), available at <https://www.unh.edu/unhtoday/2018/10/14/m-aquaculture>.

⁸ Indeed, research suggests that because particulate wastes sink quickly, even offshore aquaculture sites will experience increased rates of sedimentation, modifying benthic communities and creating “dead zones” underneath the net pens. See Attach. H at 12-13.

(noting that “various bacterial and viral diseases affecting fish health are prevalent in salmon aquaculture,” including bacterial diseases such as “kidney disease, vibriosis, and furunculosis”).⁹

Offshore aquaculture operations also contribute to the introduction and magnification of diseases and parasites in wild populations. Attach. H at 9-10; *See also* Michael B. Rust, et al., *Environmental Performance of Marine Net-Pen Aquaculture in the United States*, 39 *Fisheries* 508, 514 (2014) (“[P]athogens that normally exist in low numbers and do not cause disease in the wild may result in disease and observable mortality in farmed fish.”) (Attach. J). The transmission of pathogens and diseases from aquaculture to vulnerable wild fish can occur through populations that are infected at the hatchery source, through contact with wild hosts of the disease, through infected escapees, and through wild fish migrating or moving within the vicinity of an infected pen or disease outbreak. Attach. K at 431. Upon infection, the farmed fish in net pens “become point sources” for parasites and disease. Attach. I at 65. The increased concentration of aquaculture of salmonid fish—including steelhead, salmon, and brown trout—has been linked to disease outbreaks in wild salmon populations, Attach. K. at 431,¹⁰ and has even been implicated in the introduction of pathogens previously thought to only affect freshwater fish into the marine environment. *See* Gilles Olivier & Anne-Margaret MacKinnon, *Fisheries & Oceans, Canada, A Review of Potential Impacts on Wild Salmon Stocks from Diseases Attributed to Farmed Salmon Operations* 5 (1998) (Attach. L).¹¹ The risk of transfer of disease and parasites from farmed fish to wild fish “is high, if offshore farms are placed near major migration routes or in areas with intensive fishing.” Attach. I at 65. Likewise, where offshore farms are located “relatively close, e.g. within a few kilometers, to the coastal areas [] similar risks of direct and indirect interactions with wild fish populations are possible.” *Id.*

⁹ Several fish pathogens have become resistant to the drugs used in aquaculture, including two FDA-approved antibiotics, making them more difficult to control. Attach. H at 16-17.

¹⁰ For example, the “[d]ispersal of cultured salmonids is heavily implicated in the spread of whirling disease[], a disease that can affect many anadromous salmonid species.” Attach. K at 431. Additionally, the increased concentration of aquaculture has been linked to outbreaks of parasites such as sea lice in wild fish. *Id.*; *see also* Attach. H at 9-10 (“While these parasites are relatively common, sea lice epidemics have occurred in wild salmon and trout in every major salmon-farming country.”). The spread of sea lice is of particular concern because the parasites can serve as hosts for other lethal diseases, including Infectious Salmon Anemia, a “highly virulent,” lethal disease that has been steadily moving south from New Brunswick, Canada. *See* Attach. K at 431; Attach. H at 9-10; *see also* Attach. V at 203-04 (confirming that “outbreaks of sea lice in wild fish are connected with the increased concentration of aquaculture”).

¹¹ For example, the virus causing viral haemorrhagic septicaemia (VHS), an important disease of salmonids, was initially thought to be a freshwater fish pathogen primarily affecting farmed rainbow trout. Attach. L at 5. However, VHS has been widely detected in several marine fish, including Atlantic herring, Atlantic cod, and haddock. *Id.* These findings “strongly suggest[] marine reservoirs of the virus,” and the most likely culprit is the widespread aquaculture of steelhead trout, the anadromous form of rainbow trout. *Id.*

Compounding these and other concerns is the heightened risk of escape of farmed fish from net pens due to harsh marine weather conditions, predator interactions, and/or equipment failure. *See* Attach. H at 6 (“Some escapes occur through normal operational ‘leakage,’ where only a few fish are lost; large-scale escapes can occur when storms, marine mammals, vandalism, or human error damage the netpens.”). Escapes occur in all aquaculture regions, and are likely unavoidable. *See* Attach. K at 427 (noting that escapes occur through “regular, low-level ‘leakage,’ and through episodic events”). The introduction of nonnative farmed fish populations can be catastrophic for native wildlife due to impacts such as increased competition for food and spawning grounds, the taking over of habitat, genetic dilution and alteration of the wild salmon gene pool due to such competition, and disease transmission. *See* Attach. K at 429-31; *see also* Martiza Sepúlveda, et al., *Escaped Farmed Salmon and Trout in Chile: Incidence, Impacts, and the Need for an Ecosystem Review*, 4 *Aquaculture Env’t Interactions* 273, 277 (2013) (“Collectively, the evidence suggests that salmonid species have detrimental impacts on native fishes in all types of ecosystems, including lakes [], rivers [], and inner seas.”) (Attach. M). Salmonid species exhibit territorial and social dominance; thus, “the addition of cultured fish to wild populations can affect both mortality and growth of the wild fish.” Attach. K at 429. Indeed, the introduction of non-native steelhead trout have been shown to “reduce[] fitness-related traits” in native Atlantic salmon, including in body length, mass, and condition. *See* Aimee Lee S. Houde, et al., *Competitive Effects Between Rainbow Trout and Atlantic Salmon in Natural and Artificial Streams*, 25 *Ecology of Freshwater Fish* 248, 255-57 (2016) (Attach. N). “Lowered productivity is of special concern where local populations are endangered,” Attach. K at 431, particularly given the long-distance movements and high growth rates exhibited by escaped salmonids, including rainbow trout, *see* Attach. O at 61. Notably, “[w]hile hybrids between Atlantic and Pacific salmon[ids] are unlikely to be viable, attempted fertilization may still result in a loss of wild gametes and hence a decline in wild populations, especially if the number of escaped farm salmon[ids] in rivers is large.” Attach. K at 431.

Finally, offshore aquaculture presents serious “entanglement, habitat exclusion, marine debris, and behavioral alterations” risks to marine mammals, sea turtles, and seabirds.¹² Attach. C at 12. Offshore shellfish aquaculture typically involves the use of fully submerged, high-tension longlines that are anchored to the seafloor, and support suspended “dropper” lines on which shellfish are grown. *Id.* at 8-9. As the facility size increases, these support and dropper lines carry the heightened risk of entanglement of marine mammals, sea turtles, and seabirds, resulting in serious injury or death.¹³ *See id.* at 19 (listing known interactions between protected

¹² Although historically, there has been few published accounts of harmful interactions at aquaculture sites in United States waters, this “partly because there is currently a low density of operational gear deployed in the U[nited] States.” Attach. C at 8. Data from countries with an established offshore commercial aquaculture industry demonstrate that protected species interactions are to be expected from the expansion of aquaculture in the United States’ Exclusive Economic Zone. *See id.*

¹³ With respect to marine mammals, entanglement in lines may result in death by drowning, but can also cause impaired locomotion, decreased ability to forage, tissue infection, and necrosis, all of which may lead to traumatic injuries, prolonged suffering and starvation, leading to death.

marine mammals and aquaculture gear); *id.* at 32 (reporting known instances of sea turtle entanglement in aquaculture gear); *id.* at 33, 35 (discussing the entanglement risks posed by shellfish and finfish aquaculture to seabirds).

With respect to marine mammals, it is generally thought that echolocating marine mammals (e.g., toothed whales, dolphins, and porpoises) can effectively perceive mussel and fish farms and navigate through or around them. *Id.* at 11. However, species of baleen whales—five of which frequent the Gulf of Maine and are listed as endangered, *see* Attach. E at 9¹⁴—are not evolved to echolocate and, instead, rely on visual and audio queues. *Id.* Consequently, they are at a higher risk of entanglement in aquaculture gear. *Id.*¹⁵ This risk may be more pronounced for species, such as the North Atlantic right whale, that spend the majority of their time at or near the surface, where they are likely to encounter aquaculture gear. *Cf.* Susan E. Parks, et al., *Dangerous Dining: Surface Foraging of North Atlantic Right Whales Increases Risk of Vessel Collisions*, 8 *Biology Letters* 57, 57 (2012) (reporting that North Atlantic right whales “are commonly observed feeding at or just below the water’s surface”) (Attach. P); Attach. C. at 21 (“In general, larger, less agile species with flippers and fins that extend relatively far from the body [] and gaping mouths [] may be more likely to have negative physical interactions.”). The North Atlantic right whale is one of the most endangered species in United States waters, with a population size less than 500 individuals. Attach. C at 11. Even a few mortalities have the potential to greatly affect the population structure and inhibit the species’ recovery and survival. *Id.* Thus, the expansion of aquaculture in the Gulf of Maine, the majority of which is designated critical habitat for the North Atlantic right whale, 81 Fed. Reg. at 4861, and the associated increased entanglement risks are of grave concern to the continued viability of the species.

With respect to seabirds, both shellfish and finfish aquaculture present entanglement risks, particularly from anti-predator nets that may be erected to protect the farmed fish from predation, or from submerged lines. Attach. C. at 35. These risks are higher for diving seabirds, *id.*, like the endangered roseate tern, *see* U.S. FWS, *Roseate Tern: North American Subspecies 1* (2011) (noting that the roseate tern “captures food mainly by plunge diving, completely submerging its body underwater to catch prey”) (Attach. Q). Moreover, even pilot-scale

Attach. C at 46. Thus, interactions with aquaculture gear must consider the potential for both immediate mortality as well as secondary impacts. *Id.*

¹⁴ These species are: the blue whale, the fin whale, the humpback whale, the North Atlantic right whale, and the sei whale. Attach. E at 9.

¹⁵ When determining relative risks of entanglement to marine mammals presented by aquaculture gear, it is appropriate to look to fishing gear and general marine equipment lines as proxies, given the fact that since some fishery gears, or components of the gear, are similar or analogous to aquaculture gear. Attach. C at 40. An examination of entanglement incidents with analogous fishing gear “confirm[s] that any sort of vertical lines in the water column pose a risk” of entanglement, particularly to endangered humpback and North Atlantic right whales. *Id.* at 42; *see also id.* at 45 (reporting that humpback, right, and minke whales “seem especially prone to entanglement”). Both whales are present in the Gulf of Maine. Attach. E. at 9.

aquaculture operations have been demonstrated to “affect[] behaviors like feeding, grooming, and social activity.” Attach C. at 35.

Compounding these challenges is the increasing presence of trap gear in the Gulf of Maine as fishermen follow the changing patterns of distribution of target species, including the American lobster.¹⁶ NMFS, *North Atlantic Right Whales-Evaluating Their Recovery Challenges in 2018* 1 (Sept. 2018) (Attach. Q). Incidents of right whale entanglement in fishing gear continues to rise, *id.*, and adding offshore aquaculture operations to waters already rife with sources of entanglement will only serve to exacerbate the problem.

2. NOAA’s Decision to Grant Federal Funding Assistance to the Steelhead Project

In October 2018, Sea Grant announced the award of over \$700,000 to the University of New Hampshire (“UNH”) to develop and deploy the “Aquafort,” an Integrated Multi-trophic Aquaculture (“IMTA”) system, at UNH’s offshore aquaculture site, located approximately 1.5 miles south of the Isles of Shoals in the Gulf of Maine. Rebecca Briggs, Sea Grant, *Categorical Exclusion (CE) Evaluation Worksheet 1* (2018) (“Project Proposal,” attached as Attach. Q). The Project is a proof of concept research endeavor, with a stated goal of exploring the commercial viability of similar future systems in the Gulf of Maine. *Id.* Indeed, Sea Grant recently announced new funding opportunities for Aquaculture, including projects that the agency *admits* are “high risk, developmental projects that will envision, explore and advance aquaculture opportunities.” See Brooke Carney, Sea Grant, *Sea Grant Announces Funding Opportunities for Aquaculture* (Feb. 26, 2019), <https://seagrants.noaa.gov/News/Article/ArtMID/1660/ArticleID/2711/Sea-Grant-Announces-Funding-Opportunities-for-Aquaculture>.

The Project consists of a floating platform of approximately 1650 square feet supporting two nets in which to grow steelhead trout, an anadromous salmonid species native to the Pacific Northwest. *Id.* The platform will also support 112 lines, each 10 meters long, suspended its perimeter to will collect mussel spat for shellfish aquaculture. *Id.* According to the project proposal, the Aquafort Project is intended to serve as a “proof of concept,” and economic analysis of the operation will be used to “facilitate financial investment in new [aquaculture] businesses,” *id.* at 1-2—i.e., the explicit purpose of the project is to test the concept and lay the groundwork to implement this on a much wider scale in the future. Researchers “will recruit

¹⁶ The American lobster distribution has moved north into the deeper, cooler waters of the Gulf of Maine. Attach. Q at 1. American fisheries are moving farther offshore to capitalize on this, “increasing the overlap between their fishing activity and North Atlantic right whale foraging areas and migration corridors.” *Id.* The vertical lines used in lobster traps and similar gear present a serious threat of entanglement to whales, sea birds, and turtles. NOAA Marine Debris Program, *Impact of “Ghost Fishing” via Derelict Fishing Gear* 10 (March 2015) (Attach. R). In fact, trap gear has been implicated in 81% of right whale and humpback whale entanglements. *Id.* Increased fishing presence also presents the risk of increased presence of derelict or abandoned gear—i.e., “ghost gear”—which also entangle whales, birds, and turtles. See Gulf of Maine Lobster Found., *Gear Grab*, <http://www.gomlf.org/gear-grab/> (last visited May 22, 2019) (reporting that 175,000 lobster traps are lost in the Gulf of Maine on an *annual* basis) (Attach. S).

fishermen and farmers . . . to participate in workshops and daily operations of farming steelhead trout and blue mussels,” and will “educate local farmers on permitting challenges through formal workshops where participants will be assisted through the state and federal aquaculture permitting process.” *Id.*

In approving this project for federal funding, Sea Grant issued a Categorical Exclusion in which it asserted, without supporting evidence, that the project’s activities “will be limited to impacting living resources on a small scale relative to the size of the populations,” and will not have any “adverse impacts to . . . critical habitat or listed species.” *Id.* at 2. Sea Grant also asserted, without evidence, that the Project “does not impact species protected” by the ESA. Sea Grant went on to note that the Project “works with Rainbow trout . . . [that] will be cultured offshore” from eggs that are “certified that they [are] disease free.” *Id.* at 3. Sea Grant insisted, again, without evidence, that “the multi-trophic technologies [] system is a sustainable aquaculture facility” and “[a]s such there are no expected adverse effects on other species or habitats in the area.” *Id.*

However, it is readily apparent that the construction and operation of a pilot project—funded by Sea Grant—expressly intended to facilitate the development of the aquaculture industry in the Gulf of Maine could have serious adverse effects on listed species and designated critical habitat. For example, the Project could become a reservoir of disease should an infected wild fish come into the vicinity of the cages. *See, e.g.,* Attach. I at 65. Escaped steelhead trout could further spread disease and parasites, and additionally, could compete with native salmonids—including the endangered Gulf of Maine Atlantic Salmon Distinct Population Segment—for food and space. *See, e.g.,* Attach. K at 431. Indeed, escaped rainbow trout, the freshwater form of steelhead trout, are capable of long-distance movements on the same scale as naturalized populations, and have been detected over 350 km from their release site. Attach. O at 53. The escaped fish’s ability to travel such great distances and maintain high growth rates absent human care enables farmed trout to “pervade the . . . habitats of wild fish [and] increases the likelihood of interaction and competition.” *Id.* at 63. Critical habitat for the endangered Atlantic Salmon DPS is well within this 350 km radius of the Project site. *See Endangered and Threatened Species; Designation of Critical Habitat for Atlantic Salmon (Salmo salar) Gulf of Maine Distinct Population Segment; Final Rule*, 74 Fed. Reg. 29,300, 29,336 (June 19, 2009). Finally, the Project’s suspended mussel spat lines and predator deterrents pose significant individual and cumulative entanglement risks to the endangered baleen whales that frequent the Gulf of Maine, endangered sea turtles, and the endangered roseate tern, particularly when considered against the environmental baseline of increasing fishing presence in the Gulf of Maine.¹⁷ *See generally* Attach. C. This final point is particularly concerning because the Project is located in designated critical habitat for the North Atlantic right whale, one of the most critically endangered listed species. *See* 81 Fed. Reg. at 4861. The loss of even one right whale

¹⁷ As discussed above, entanglement in aquaculture gear is of particular concern to diving seabirds, like the roseate tern. *See supra* at 8-10. Consequently, to minimize entanglement, it is generally recommended that fish farms be sited away from important seabird habitat. Attach. C at 35. Yet, the Project site is a mere 1.5 miles from an “intense tern restoration project” that has seen the successful restoration of breeding colonies. *See supra* at 6 n.7. At no point did Sea Grant examine the possible effects to roseate terns from negative interactions with aquaculture gear.

could have dire effects for the long-term viability and recovery of the species. *See* Attach. C at 11.

Yet, despite the Project's adverse effects to listed species and critical habitat, at no point did Sea Grant conduct any Section 7 consultation (either formal or informal) on the Project. Nor did Sea Grant ever evaluate in any sort of Section 7 process the indirect or cumulative impacts to listed species that *will* occur should this pilot project fulfill its intended purpose and incentivize the expansion of commercial aquaculture in the Gulf of Maine.

Legal Violations

A. Sea Grant is in Violation of Section 7(a)(2) of the ESA by Failing to Consult with NMFS and FWS Regarding its Funding of the Steelhead Aquaculture Project.

Completion of the consultation process is vital to compliance with the ESA's substantive mandates. "Absent consultation with [NMFS and/or FWS], there is no confirmation that [the agency's action] would avoid jeopardizing threatened or endangered species or adversely modifying critical habitat." *Nat'l Parks Conservation Ass'n v. Jewell*, 62 F. Supp. 3d 7, 21 (D.D.C. 2014) (citations omitted). Here, Sea Grant failed to undertake the legally mandated process for analyzing and addressing impacts to listed species and their habitat, although it is apparent that the Project indisputably harms myriad such species in various ways.

By providing federal funds to an offshore aquaculture project, Sea Grant's action indisputably "may affect" listed species through, e.g., increased pollution, habitat loss, genetic dilution, increased disease risk, resource competition, and entanglement. Examples of such listed species that are affected by aquaculture projects include the Atlantic Salmon, the Atlantic Sturgeon, and the right whale. Additionally, Sea Grant's action "may affect" the critical habitat of the North Atlantic right whale through, e.g., increased pollution, habitat competition, and increased entanglement risk.¹⁸ Although there are uncertainties and gaps in the available data concerning the magnitude of these effects, the ESA demands that agencies act consistently with its policy of "institutionalized caution" and "afford[] endangered species the highest of priorities." *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 194 (1978). Consequently, where there is uncertainty regarding how a federal or federally authorized action may harm a listed species, the ESA requires that the Service "give 'the highest of priorities' and the 'benefit of the doubt'" to listed species. *Sierra Club v. Marsh*, 816 F.2d 1376, 1386 (9th Cir. 1987) (citing *Tenn. Valley Auth.*, 437 U.S. at 194; H.R. Conf. Rep. No. 697, 96th Cong., 1st. Sess. 12 (1979)).

Furthermore, the funding of this project is expressly intended to facilitate the development of the commercial aquaculture industry in the Gulf of Maine, an overt acknowledgment that the expansion of commercial-scale aquaculture operations into the Gulf of

¹⁸ As the North Atlantic Right Whale Recovery Plan notes, "*reducing* direct and indirect threats to right whale habitat is integral to recovery." Sean A. Hayes, et al., *North Atlantic Right Whales – Evaluating Their Recovery Challenges in 2018* 9 (2018) (Attach. W). Siting an aquaculture project that presents a serious entanglement risk to the right whale in its critical habitat undermines that goal.

Maine is an anticipated indirect effect of the Aquafort Project, the impacts of which were *never* evaluated in any form of consultation. *See* 50 C.F.R. § 402.02 (defining “indirect effect” as one that is (1) “caused by the proposed action,” (2) occurs later in time than the action, and (3) is reasonably certain to occur”); *id.* § 402.14(g) (requiring a BiOp to evaluate the “effects of the action,” which include the action’s “indirect effects”); *see also San Luis & Delta-Mendota Water Auth. v. Locke*, 776 F.3d 971, 1009 (9th Cir. 2014). By providing the training, economic analyses, and environmental data necessary “to facilitate financial investment in new [aquaculture] businesses,” the Aquafort Project, at the very least, “may affect” listed species and right whale critical habitat in the Gulf of Maine. Indeed, considering that the identified impacts to listed species increase commensurate with the increase in concentration of aquaculture farms, it defies logic to assume that funding a project designed to incentivize growth in the industry would *not* affect listed species.

Likewise, cumulatively, the resulting increase in entanglement sources from aquaculture operations and increased fishing in the Gulf of Maine “may affect” the whales, sea turtles, and birds that frequent the area. Yet, the cumulative effects of the Project were *never* evaluated in any form of consultation. *See* 50 C.F.R. §§ 402.02, 402.14 (defining “cumulative effects” as “those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation”); *id.* § 402.14(g) (requiring a BiOp to evaluate the “effects of the action,” which include the action’s “cumulative effects”). Accordingly, prior to funding the Aquafort Project or any other offshore aquaculture project, Sea Grant was obligated to consult with the relevant agencies to “insure” that its decision will avoid jeopardy to those species. *See* 16 U.S.C. § 1536; *cf. Nat’l Parks Conservation Ass’n*, 62 F. Supp. 3d at 12-13 (“The “may affect” threshold for triggering the consultation duty under section 7(a)(2) is low.”); *see also id.* at 13 (“Any possible effect, whether beneficial, benign, adverse, or of an undetermined character, triggers the formal consultation requirement.”).

Yet, Sea Grant has never undergone *any* such consultation in connection with this Project, in violation of Section 7(a)(2). To the contrary, Sea Grant’s funding of an offshore aquaculture project that is intended to promote the growth of the highly controversial commercial aquaculture industry in a region that provides important habitat for listed species without even considering the potential impacts of said growth cannot possibly be reconciled with the ESA’s command that federal agencies “insure” that their actions avoid species jeopardy. *See* Ex. S at 7-8. As the Supreme Court has explained, to “‘insure’ something . . . means ‘[t]o make certain, to secure, to guarantee (some thing, event, etc.)’” *Nat’l Ass’n of Home Builders*, 551 U.S. at 667 (quoting 7 Oxford English Dictionary 1059 (2d ed. 1989)). Sea Grant has not made “certain” or “guaranteed” that its actions are not likely to jeopardize the listed fish, reptile, seabird, and marine mammal species that live in the biologically rich Gulf waters, or adversely modify the right whale’s designated critical habitat.

In fact, because Sea Grant has failed to undergo any consultation, it has likewise failed to obtain the necessary determinations from NMFS and the FWS that would enable Sea Grant to avoid jeopardy or avoid adversely modifying designated critical habitat, let alone authorization from the FWS for the incidental take of listed species in connection with Sea Grant’s funding of the Project and other offshore aquaculture projects incentivized and facilitated by this grant.

Thus, Sea Grant has failed to ensure that its actions funding this Project will avoid jeopardy or adverse modification of critical habitat, in violation of Section 7(a)(2).

Accordingly, because Sea Grant and OAR have failed to notify NMS or FWS—much less submit a biological assessment to either agency with jurisdiction—of their actions that are undoubtedly harming, harassing, and otherwise adversely affecting listed species including the North Atlantic right whale, sea turtles, Atlantic Salmon, birds, and other listed species and their habitat, Sea Grant and OAR have violated section 7 of the ESA and its implementing regulations.

B. Sea Grant Cannot Lawfully Proceed with the Funding of the Steelhead Aquaculture Project or Engage in or Authorize the Distribution of Funds to the University of New Hampshire for the Steelhead Project.

The best available scientific evidence demonstrates that listed species, including threatened and endangered marine mammals, sea turtles, fish, and seabirds, inhabit or utilize the Gulf of Maine where the Project is located. Additionally, the best available scientific evidence demonstrates that the Project is located in designated critical habitat for the North Atlantic right whale. Consequently, the agencies must address this evidence and thoroughly evaluate potential impacts to ensure that vulnerable species and their critical habitat will be protected, consistent with the ESA and its implementing regulations.

Moreover, the ESA’s policy of institutionalized caution mandates a ban on the funding of the Project and similar offshore aquaculture projects until consultation with NMFS and/or FWS can be completed. *See* 16 U.S.C. 1536(d) (“Federal agency and the permit or license applicant shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation of any reasonable and prudent alternative measures[.]”). To allow the agency to continue to fund the Project would be exactly the kind of commitment of resources which would foreclose the implementation of other alternatives, in express violation of the ESA. *See id.*

The agencies must evaluate and mitigate the direct, indirect, and cumulative impacts of the project on the listed species that depend on the rich waters of the Gulf of Maine for breeding, feeding, migratory, stopover, and general habitat. Until this consultation process is completed, the issuance of offshore aquaculture grants must be halted to prevent potential harm to the endangered and threatened species that depend on the Gulf of Maine habitat and the essential biological functions it provides.

Pursuant to Section 7(d) of the ESA, Sea Grant and OAR must ensure that all funding decisions and activities related to the Project and the Aquaculture Program are halted until the consultation deficiencies can be remedied and to prevent irreversible or irretrievable commitment of resources foreclosing implementation of alternatives during the consultation process. *See* 16 U.S.C. § 1536(d).

C. Sea Grant Violated its Affirmative Conservation Duty Under § 1536(a)(1) of the ESA by Taking No Actions to Mitigate the Adverse Effects of Offshore Aquaculture Funded by its Aquaculture Funding Opportunities on the Endangered and Threatened Species in the Gulf of Maine, or Their Critical Habitat Prior to Funding the Programs.

In addition to the obligation to avoid jeopardizing species under section 7(a)(2), section 7(a) of the ESA also imposes an obligation on all federal agencies, in consultation with NOAA and FWS, to “carry[] out programs for the conservation” of listed species. 16 U.S.C. § 1536(a)(1). This provision imposes an “affirmative duty on each federal agency to conserve each of the species listed.” *Sierra Club v. Glickman*, 156 F.3d 606, 616 (5th Cir. 1998); *accord Pyramid Lake Paiute Tribe of Indians v. Dep’t of the Navy*, 898 F.2d 1410, 1416–17 (9th Cir. 1990) (noting that federal agencies have “affirmative obligations to conserve under [S]ection 7(a)(1)”). “Conserve” is defined by the Act to mean recovery, i.e., the “use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary.” 16 U.S.C. § 1536(a)(1).

Sea Grant has also violated this obligation by carrying out a program that has had the opposite effect of conserving listed species and their critical habitat, i.e., its funding of the Aquafort Project and Aquaculture Funding Opportunities is impairing the North Atlantic right whale’s critical habitat and otherwise subverting the right whale and other listed species’ prospects for recovery. Especially under these circumstances, where Sea Grant actively seeks to advance and expand offshore aquaculture through funding initiatives, section 7(a)(1) mandates that Sea Grant rectify the situation by adopting, in coordination with NMFS, FWS, and other agencies, an effective and comprehensive “program” for ensuring that the North Atlantic right whale’s critical habitat is not impaired by the impacts of the Aquafort and other offshore aquaculture projects, and for ensuring the conservation of listed species and their habitat that have been, are being, and likely will be harmed by impacts of expanded offshore aquaculture.

D. Because Sea Grant Has Not Obtained a Biological Opinion from NMFS or FWS Concerning its Activities that are Reasonably Certain to Take Listed Species, its Continued Issuance of Funds to and Support of the Steelhead Project Violate Section 9 of the ESA.

The failure of Sea Grant and OAR to undergo *any* consultation for its decision to fund the Project, offshore aquaculture, or associated actions violates both Section 7(a)(2) and Section 7(d) of the ESA for the reasons explained above. Additionally, because Sea Grant and OAR have not undergone consultation, a biological opinion has not been issued. Pursuant to Section 9 of the ESA, it is unlawful to undertake or authorize activities that are reasonably certain to result in the incidental take of listed species without an adequate biological opinion—and, most importantly, an incidental take statement—in place. 16 U.S.C. §§ 1536, 1538(g). Those who chose to do so despite this prohibition may be subject to criminal and civil federal enforcement actions, as well as civil actions by citizens for declaratory and injunctive relief. *See* 16 U.S.C. § 1540. As extensively discussed above, the funding, construction, and operation of the Project is reasonably certain to take listed species. Thus, by proceeding with the funding of the Aquafort and other

offshore aquaculture projects without obtaining authorization from NMFS or FWS to take listed species, Sea Grant and OAR are in ongoing violation of Section 9 by engaging in activities reasonably certain to take listed species without lawful authorization to do so. 16 U.S.C. § 1538(a)(1)(B). Likewise, by proceeding with the construction and operation of project that is reasonably certain to take listed species, UNH is in ongoing violation of Section 9 by engaging in activities reasonably certain to take listed species without lawful authorization to do so. *Id.*

CONCLUSION

Sea Grant's funding of the Project violates the ESA and threatens to harm both listed species and critical habitat. Thus, Sea Grant and OAR must promptly correct these violations by immediately ceasing the certification of wetland determinations under this new policy and initiating consultation with NMFS and the FWS to ensure that the listed species and critical habitat that are adversely impacted by Sea Grant's actions are afforded the legal protections to which they are entitled under federal law.

Sincerely,

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