



MARINE MAMMAL COMMISSION

14 May 2010

Jane Lubchenco, Ph.D.
Undersecretary of Commerce for Oceans and Atmosphere
National Oceanic and Atmospheric Administration
1401 Constitution Avenue NW, Room 5128
Washington, D.C. 20230

Dear Dr. Lubchenco:

The Marine Mammal Commission has learned that the National Oceanic and Atmospheric Administration (NOAA) is seeking comments on the development of a national policy to guide aquaculture in U.S. waters. U.S. fisheries production from wild, free-ranging stocks is not expected to increase in any substantial way and, indeed, a number of target stocks are overfished. Consumer demand for seafood continues to increase because of lifestyle changes and population growth. If well managed, aquaculture seems a potentially valuable means for meeting consumer demand and, perhaps, reducing dependence on foreign-grown seafood. If poorly managed, aquaculture poses a number of serious risks to our nation's waters and to marine ecosystems generally. Several of those risks pertain to operational and ecological effects on marine mammals. With those concerns in mind, the Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, provides the following recommendations and comments for your consideration as you develop NOAA's aquaculture policy.

RECOMMENDATIONS

The Marine Mammal Commission recommends that, in the development of its aquaculture policy, the National Oceanic and Atmospheric Administration —

- clarify that aquaculture operations do not constitute “fishing” for purposes of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and recognize the need for a separate statutory and regulatory regime to govern aquaculture activities;
- specify that aquaculture activities do not constitute commercial fishing operations for purposes of the Marine Mammal Protection Act;
- exclude aquaculture facilities from coverage under section 118 of the Marine Mammal Protection Act and require those using high-powered acoustic devices or other deterrent devices likely to take marine mammals to obtain incidental taking authorizations under section 101(a)(5) of the Act or confine any deterrence activities to those authorized under section 101(a)(4) of the Act;
- not rely entirely on section 101(a)(5) as the mechanism to consider and address possible impacts on marine mammals but adopt additional measures as part of its planning and authorization procedures and processes to consider and mitigate all possible effects on marine mammals;
- develop standards and requirements for aquaculture facilities to limit discharge of aquaculture byproducts including fish or shellfish wastes, feeds, and antibiotics or other

- chemicals to levels determined to be safe for the affected biological communities including, but not limited to, marine mammals;
- craft its policy to ensure that the foods used for cultivated stocks are derived from sustainable sources that do not deplete the wild forage base for marine mammals or other marine species;
 - establish and uphold rigorous standards and requirements for design, construction, and maintenance of aquaculture facilities, including reliable measures for preventing the escape of cultivated stocks;
 - delay completion of its aquaculture policy until the coastal and marine spatial planning framework has been approved by the President and NOAA has confirmed that all aspects of its policy are consistent with the framework;
 - implement its aquaculture policy in a manner that takes into account the best available scientific information on the spatial distribution, movement, and habitat-use patterns of marine mammals;
 - include in its aquaculture policy a clear description of the existing gaps in the scientific information needed to manage aquaculture, the research required to address those gaps, and the funding required to support the research; and
 - include in its policy a requirement that each permit for an aquaculture facility under section 101(a)(5) include a monitoring program adequate to detect and record the nature and number of direct interactions between facility operations and marine mammals.

RATIONALE

Statutory and Regulatory Considerations

NOAA's forthcoming aquaculture policy, and any authorizing legislation and implementing regulations associated with it, should recognize the complex legal framework for managing other activities in the marine environment and strive for clarity and compatibility across uses. The policy should recognize that aquaculture operations are not commercial fisheries in a traditional sense and do not fit well under existing fisheries legislation, which is geared toward the management and harvest of wild fishery resources. NOAA's previous efforts to develop proposed legislation to govern aquaculture recognized the differences between commercial fisheries and aquaculture and explicitly would have excluded aquaculture facilities from the definition of "fishing" under the Magnuson-Stevens Act. Many provisions of the Magnuson-Stevens Act are neither applicable nor tailored to aquaculture operations. The Marine Mammal Commission therefore recommends that, in developing its aquaculture policy, NOAA clarify that aquaculture operations do not constitute "fishing" for purposes of the Magnuson-Stevens Act and recognize the need for a separate statutory and regulatory regime to govern aquaculture activities.

Similar clarity is needed under the Marine Mammal Protection Act. That Act does not define the term "fishing" but contains two separate definitions of the term "fishery." The more important operational definition of "fishery" is set forth in section 118(l) of the Act and refers back to the definition of that term under the Magnuson-Stevens Act. However, the crucial question, for

purposes of applying the incidental-take provisions of the Marine Mammal Protection Act, is whether aquaculture operations are considered “commercial fishing operations,” a term that is not defined in the statute. Implementing regulations promulgated by the National Marine Fisheries Service (50 C.F.R. § 229.2) clarify that the term “commercial fishing operation” “includes licensed commercial passenger fishing vessel activities and aquaculture activities.” The Commission believes that aquaculture operations should be treated consistently under the applicable resource statutes. If it does not constitute fishing for purposes of the Magnuson-Stevens Act (and the Commission agrees with past NOAA views that it should not), then it should not constitute fishing for purposes of the Marine Mammal Protection Act. For this reason and, as discussed later in this letter, to make the incidental taking provisions more effective for aquaculture operations, the Marine Mammal Commission recommends that the aquaculture policy being developed by NOAA specify that aquaculture activities do not constitute commercial fishing operations for purposes of the Marine Mammal Protection Act. This could be accomplished either through statutory changes or by revising the National Marine Fisheries Service’s implementing regulations.

Incidental Takes of Marine Mammals

Aquaculture can take marine mammals in a variety of ways ranging from harassment to injury and even death. Because marine mammals prey upon many species of fish and shellfish suitable for aquaculture production, they may be attracted to aquaculture facilities and attempt to (or successfully) depredate the enclosed stocks. Such changes in foraging behavior are potentially harmful, both to individual marine mammals and to marine mammal populations. For example, they can expose animals to nets, contaminants, disease, parasites, deterrence measures, and other unnatural conditions, as well as alter important behavioral patterns (e.g., changes to the timing of migrations or migratory routes).

Under most circumstances, well-planned, well-constructed, and well-maintained aquaculture operations should have a low probability of causing serious injury or death of a marine mammal. However, the history of aquaculture in the United States (and Canada, where similar facilities are operated) is replete with exceptions to that rule. Taking by injury or death is the main focus of the Marine Mammal Protection Act’s incidental take regime for commercial fisheries. Section 118 of the Act includes (1) an immediate goal of reducing the incidental mortality and serious injury of marine mammals to below the potential biological removal levels of the affected stocks and (2) a long-term goal of reducing the incidental mortality and serious injury of marine mammals to insignificant levels approaching a zero mortality and serious injury rate. Importantly, section 118 does not address sub-lethal effects on marine mammals. If NOAA were to include aquaculture activities under the incidental take regime for commercial fisheries, it would give aquaculture facilities virtually unlimited authority to engage in sub-lethal types of taking (e.g., harassment or exclusion from important habitat) without any responsibility to mitigate the potentially significant impact of their operations on marine mammals.

In fact, some facilities use high-powered acoustic harassment devices or other deterrents to prevent marine mammals from approaching and trying to enter enclosures. Although such deterrents may effectively discourage marine mammal depredation, they also may affect marine

mammal hearing and behavior. This type of taking is excluded from consideration under the Marine Mammal Protection Act (section 118) so long as it does not result in killing or seriously injuring marine mammals. In contrast, others who introduce high-intensity sound into the marine environment, such as the U.S. Navy or those conducting seismic surveys, are required to demonstrate that their activities will have no more than a negligible impact on marine species and stocks and are required to take steps to tailor their activities to have the least practicable impact on marine mammal stocks and their habitat. The Commission believes that similar treatment should be accorded to aquaculture facilities and that, like other sound producers, they should be required to obtain incidental take authorizations under section 101(a)(5) of the Marine Mammal Protection Act. Therefore, the Marine Mammal Commission recommends that NOAA's aquaculture policy exclude aquaculture facilities from coverage under section 118 of the Marine Mammal Protection Act and require those using high-powered acoustic or other deterrent devices likely to take marine mammals to obtain incidental taking authorizations under section 101(a)(5) of the Act. Deterrence measures also could be implemented under section 101(a)(4) of the Act, which, among other things, authorizes owners of private property to deter marine mammals from damaging that property. However, if NOAA intends to rely on section 101(a)(4) as the primary mechanism under which marine mammals can be deterred from depredating aquaculture resources or damaging aquaculture facilities, the Commission encourages the agency to consider alternative approaches tailored more closely to the types of interactions likely to arise in the course of aquaculture activities.

The Commission also encourages NOAA to think broadly about other possible impacts of aquaculture operations on marine mammals as it develops its new policy. In addition to facility operation, siting, construction, servicing, and decommissioning, aquaculture facilities could have impacts in other, less obvious ways. For example, the alteration of the physical environment resulting from aquaculture structures and activities (e.g., support vessels) may affect the way marine mammals use their habitat for feeding, reproduction, or resting. For some species (e.g., Steller sea lion), this may mean that they are effectively denied access to seasonal pulses of prey, such as salmon runs at river mouths. Other marine mammals (e.g., harbor porpoise) often avoid areas of human activity and may simply abandon areas around aquaculture sites because of increased vessel traffic or other operational activities. Wastes from various sources (e.g., fecal matter, food particles, antibiotic and antifungal medicines) and other byproducts of facility operations could attract or otherwise affect marine mammals, exposing them to contaminants, disease, and parasites. Because these types of impacts may be unique to aquaculture operations, the Marine Mammal Commission recommends that NOAA's aquaculture policy not rely entirely on section 101(a)(5) as the mechanism to consider and address possible impacts on marine mammals but adopt additional measures as part of its planning and authorization procedures and processes to consider and mitigate all possible effects on marine mammals.

Ecosystem Alteration and Effects on Marine Mammals

In developing its aquaculture policy, NOAA must look beyond possible operational effects and also consider the broad ecosystem effects of aquaculture and its associated activities. The concentration of fecal matter, unconsumed food, and assorted chemical additives, and the possible introduction of various diseases may affect not only marine mammals but also entire biological

communities around the aquaculture site. Some aquaculture byproducts could be consumed by wild fish and marine mammals, thereby entering and accumulating in the food web. The effects of such wastes will depend on the aquaculture site, its level of production, the physical surroundings (depth, currents, winds), the resilience of adjacent or downstream biological communities, and the regulations designed to manage aquaculture operations. For those reasons, the Marine Mammal Commission recommends that NOAA develop standards and requirements for aquaculture facilities to limit discharge of aquaculture byproducts—including fish or shellfish wastes, feeds, and antibiotics or other chemicals—to levels determined to be safe for the affected biological communities including, but not limited to, marine mammals.

Aquaculture also poses a risk of altering the abundance and genetic composition of wild fish stocks that are clearly important in their own right, but that also constitute the forage base for marine mammals. For example, many species being considered for offshore aquaculture, such as salmon, are carnivorous and require a diet rich in fish protein. To date, the feed for these cultivated species has come primarily from fisheries that harvest forage fish such as herring. The harvesting of forage fish for this purpose means that they are no longer available as prey for marine mammals; that is, the fishery for forage fish is competing with marine mammals. Efforts to develop new protein sources for captive carnivorous fish are not yet producing enough alternative food to alleviate this concern about competition. To address this concern, the Marine Mammal Commission recommends that NOAA craft its policy to ensure that the foods used for cultivated stocks are derived from sustainable sources that do not deplete the wild forage base for marine mammals or other marine species.

Finally, aquaculture also poses a risk that cultivated fish may escape and then interact with their wild counterparts, where they may compete for food, transmit disease, or interbreed and thereby alter the genetic composition of the wild stock. For example, Atlantic salmon being raised in the Pacific Northwest could have major effects on wild Pacific salmon stocks if they escape from their pens. Such effects could then have secondary consequences for Pacific biological communities via ecological interactions including predation, competition, and transmission of disease. The implications for marine mammals could be serious, particularly for those stocks that depend on salmon for prey, such as the endangered southern resident killer whale stock. Escaped salmon also may compete with endangered wild salmon stocks, impeding their recovery and requiring stronger protection for them, which could include severe measures to control marine mammal predation. To avoid such ecological consequences, the Marine Mammal Commission recommends that, in its aquaculture policy, NOAA establish and uphold rigorous standards and requirements for design, construction, and maintenance of aquaculture facilities, including reliable measures for preventing the escape of cultivated stocks.

Integration of Marine Mammals and Aquaculture in Marine Spatial Planning

The operational and ecological effects described above clearly indicate that spatial considerations will be an important determinant of the long-term consequences of aquaculture in U.S. waters. For that reason, NOAA must develop its aquaculture policy in a manner that is consistent with and fully integrated into the Administration's coastal and marine spatial planning

framework. Given the potential application of the framework to aquaculture, the Marine Mammal Commission recommends that NOAA delay completion of its aquaculture policy until the coastal and marine spatial planning framework has been approved by the President and NOAA has confirmed that all aspects of its policy are consistent with the framework. In addition, the Marine Mammal Commission recommends that NOAA implement its aquaculture policy in a manner that takes into account the best available scientific information on the spatial distribution, movement, and habitat-use patterns of marine mammals. For example, offshore aquaculture facilities sited directly in the path of migrating whales, dolphins, or porpoises could lead to an increase in the number of interactions, which would be particularly problematic for endangered and threatened species such as the North Atlantic right whale.

Research and Monitoring Priorities

As NOAA develops its aquaculture policy, it must find ways to facilitate economic activity in the marine environment while ensuring that the environment is adequately protected. This challenge is made more complicated by scientific uncertainty. If NOAA's aquaculture policy is to be science-based, then NOAA also must secure funding for scientific research into the potential problems surrounding aquaculture development. All too often agencies are able to find the resources to promote expansion of human activities in the marine environment, but they either neglect to seek, or are unable to find, the resources to study and manage the potential effects of those activities. Many of the potential effects of aquaculture on marine mammals described in this letter are difficult to evaluate because of insufficient data on the interactions between marine mammals and aquaculture. As a result, attempts to minimize or mitigate these impacts are limited, often to the disadvantage of marine mammal populations. To be consistent with the Administration's draft ocean policy, NOAA must be precautionary in such matters. The Marine Mammal Commission concurs with the Administration's view that a precautionary approach is needed, particularly in the case of aquaculture development where expanding human activities pose a range of potentially serious effects on marine mammals and ecosystems. Not only is such an approach essential for ensuring environmental protection, but it also gives the aquaculture industry an incentive to support scientific research intended to improve management capabilities.

To address the need for adequate scientific information, the Marine Mammal Commission recommends that NOAA include in its aquaculture policy a clear description of the existing gaps in the scientific information needed to manage aquaculture, the research required to address those gaps, and the funding required to support the research. If NOAA declines to include such information, then it could open the door to aquaculture development without the necessary information and oversight to ensure that development does not simply add one more risk factor to our nation's already imperiled marine ecosystems. With regard to marine mammals, the following are examples of topics that warrant further research: (1) facility design and construction standards to minimize damage to and from marine mammals; (2) effectiveness and impacts of acoustic or other marine mammal deterrents; (3) effects (and mitigation) of facility siting, design, and operation on marine mammal behavior, movement, and health; (4) effects (and mitigation) of facility operations and byproducts on marine ecosystems; (5) impacts on the forage base of marine mammals as forage

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fish are harvested for aquaculture feed and measures to alleviate those impacts; and (6) effects of the accidental escape of cultivated species.

One of the most important types of information to be collected pertains to the nature, number, and significance of aquaculture/marine mammal interactions. Over time, the most effective means of evaluating such interactions and identifying possible unforeseen effects is by imposing monitoring and reporting requirements on aquaculture operators. In this regard, the Commission notes that the process for authorizing incidental takes under section 101(a)(5) includes provisions for monitoring effects of approved projects on marine mammals. For those reasons, the Marine Mammal Commission recommends that NOAA include in its policy a requirement that each permit for an aquaculture facility under section 101(a)(5) include a monitoring program adequate to detect and record the nature and number of direct interactions between facility operations and marine mammals. The data collected through such monitoring programs can and should complement—but not replace—the targeted research needs described in the previous paragraph.

As a final note, the Commission appreciates the opportunity to comment on this important aquaculture policy while it is still in the early stage of development. The Commission also encourages NOAA to use the *Federal Register* to invite such comment. The *Federal Register* is the most commonly used source for notices to other agencies, organizations, and the public. Its use ensures that an agency's requests for information are widely distributed, which is to everyone's benefit. Such use also serves stakeholders by limiting the number of places they must monitor to participate in matters of importance to them.

Thank you for considering the Commission's comments as your agency develops a national offshore aquaculture policy. Please don't hesitate to contact me if you have questions about the Commission's recommendations or comments.

Sincerely,



Timothy J. Ragen, Ph.D.
Executive Director

Cc: Mr. James H. Lecky, Office of Protected Resources
Michael Rubino, Ph.D., NOAA Aquaculture Program
Mr. Eric C. Schwaab, National Marine Fisheries Service