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U.S. DEPARTMENT OF COMMERCE**

**LEGISLATIVE HEARING ON OFFSHORE AQUACULTURE
BEFORE THE
NATIONAL OCEAN POLICY STUDY SUBCOMMITTEE OF THE
COMMERCE, SCIENCE AND TRANSPORTATION COMMITTEE
U.S. SENATE**

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Chairman Sununu, and members of the Subcommittee, good morning and thank you for inviting me here today to testify on behalf of the Administration. I would also like to thank Senator Stevens and Senator Inouye for introducing S. 1195, the *National Offshore Aquaculture Act of 2005*. I am William Hogarth, Assistant Administrator of the National Marine Fisheries Service, National Oceanic and Atmospheric Administration (NOAA) within the Department of Commerce.

Secretary of Commerce Carlos Gutierrez was interested in testifying today and regrets that he could not be here this morning. He expresses his full support for the bill and asked that I share this statement with the subcommittee.

“I am convinced that the United States must explore the potential of offshore aquaculture to help meet the growing demand for seafood in this country and to create jobs and economic opportunity for coastal communities. To support that, we are making the National Offshore Aquaculture Act of 2005 a priority for this department and this country. We need to create this opportunity now.”

We believe that there is a compelling case for the development of the domestic marine aquaculture industry in the United States to meet the growing demand for seafood. Nutritionists are encouraging Americans to increase our consumption of seafood. We already import over 70 percent of our seafood and half of those imports are products of aquaculture. The United States could benefit from increasing its domestic aquaculture production, which includes the propagation and rearing of aquatic organisms in controlled or selected environments for any commercial, recreational, or public purpose.

We want to work with you and our stakeholders to create an opportunity for aquaculture in Federal waters so that we can ensure that the industry develops in a predictable, environmentally compatible, and sustainable manner, in cooperation with our wild harvest. We also want to ensure that the protection of the marine environment, the rights of other users of marine

resources, and human health and safety are a top priority. At NOAA, we have already taken steps to prepare for our role as the regulator for offshore aquaculture.

My testimony today will address the opportunities and challenges posed by offshore aquaculture. I am also including an attachment that will clarify specific questions commonly posed by stakeholders with regard to S. 1195, NOAA's Aquaculture Program, and broader issues related to aquaculture.

The National Offshore Aquaculture Act is a Starting Point

Offshore aquaculture requires careful consideration on many levels, and S. 1195 maps out a strong framework for safe, sustainable marine aquaculture operations in Federal waters. Regulatory uncertainty is widely acknowledged as the major barrier to the development of offshore aquaculture in the United States. The bill will provide regulatory certainty, which is important to the offshore aquaculture industry as well as to those who are concerned about the potential impacts of offshore aquaculture. Business needs regulatory certainty in order to make sound investment decisions and obtain financing. Those concerned about the impacts of offshore aquaculture need to know that the industry will be held to strict environmental standards.

Enactment of S. 1195 provides the Department of Commerce the authority to directly regulate aquaculture in Federal waters, and to establish a coordinated process among the Federal agencies. We envision a one-stop regulatory shop, coordinated by NOAA, and integrated into NOAA's environmental stewardship responsibilities. Action on the Administration's bill will allow us to begin a public rulemaking process to produce a comprehensive, environmentally sound permitting and regulatory program for aquaculture in Federal waters, as we indicated we would do as part of the *U.S. Ocean Action Plan*.

At the same time, NOAA views S. 1195 as a starting point. Since last June, there have been a number of suggestions from a variety of stakeholders to improve the bill. One example is environmental standards. NOAA acknowledges the concerns expressed by stakeholders and would like to work with Congress to take a closer look at their suggestions.

Aquaculture is an Important Opportunity for Coastal Communities

More and more communities are recognizing that aquaculture presents a sustainable alternative for areas hit hard by job loss, natural disasters, or other challenges. As interest grows, these communities are beginning to take the initiative to integrate aquaculture into their economy. For instance, in Brownsville, Texas, a diverse set of interests, including local fishermen, seafood processors, distributors, entrepreneurs, university representatives, and others met recently to discuss opportunities for aquaculture operations in their city. Like other maritime communities, Brownsville has boats, fishermen, processing plants, hatcheries, distribution centers, and a whole seafood infrastructure that could be put to work year round with a steady, reliable source of product from aquaculture.

Aquaculture, like agriculture, requires inputs of goods and services from many sources, while its outputs are processed into value-added offerings. Beneficiaries include owners and employees of aquaculture businesses, equipment suppliers, boat owners and operators, feed ingredient suppliers such as soybean farmers and fishermen who supply fishmeal, feed manufacturers,

seafood processors, and transportation and distribution companies. Other opportunities include sales, marketing, and accounting services. In turn, these activities benefit the coastal communities in which these businesses operate, as well as the increasing portion of the general public who eat seafood and benefit from its health attributes.

Overall, NOAA estimates that one million tons of domestic aquaculture production—from all forms of aquaculture, including freshwater and marine—will create 25,000 direct and 50,000 indirect jobs in the United States. Aquaculture in Federal waters could make a significant contribution to this level of job creation.

Offshore Aquaculture and Commercial Fisheries

While we are certain that there could be direct economic benefits from our bill, we must consider its potential impacts, including the impact on our nation's commercial fisheries. Some have expressed concern that offshore aquaculture will hurt wild harvest in the United States. If aquaculture is managed correctly, we do not believe wild harvest will be impacted.

Aquaculture, whether imported or domestic, competes with wild caught fisheries. We acknowledge that concern, but that competition will not go away in the absence of domestic aquaculture. We live in a global market. Demand for seafood products in this country is growing and we simply do not have the ability to meet that demand through wild-caught fishing activities alone. Significant competition is already coming from imports and from other forms of protein such as beef and chicken. Over 70 percent of the seafood Americans' consume annually is imported. Half of those imports come from foreign aquaculture operations. The challenge is to integrate aquaculture into domestic seafood production so that our boat owners, fishermen, processors, and marketing companies can benefit directly from aquaculture.

In some cases, U.S. fishermen have already integrated with or linked to aquaculture. Examples include:

- Fishermen in New England who are interested in adding aquaculture as part of their business and researchers at the University of New Hampshire are working in tandem to design equipment, site operations, share knowledge, and service and operate cod and mussel farms in open ocean locations.
- Fishermen in Florida and New England, displaced by closures of wild fisheries or declining catches, have turned to shellfish aquaculture.
- States along the Gulf of Mexico are looking to aquaculture to help rebuild seafood infrastructure and retain seafood jobs. Fishing communities damaged by the hurricanes are seeking to rebuild docks, processing, and distribution facilities. Aquaculture could provide additional fish and shellfish to local processing plants, and fishermen may be able to use existing vessels to support aquaculture operations.

Recreational and commercial fishing will also benefit from hatcheries and stock enhancement techniques developed for offshore aquaculture. Currently, U.S. hatcheries are used to grow finfish and shellfish for stock enhancement for recreational and commercial fishing with great

success. For example, recreational fishermen in Southern California work closely with the Hubbs-SeaWorld Research Institute on a white seabass restocking program. It is an excellent program and one that helped rebuild and sustain the valuable recreational fishery for seabass in California.

The United States needs a strong commercial fishing industry and a robust aquaculture industry in order to meet projected seafood demand and supply the nation's stock enhancement needs. While we look for aquaculture to help meet demand, NOAA will continue to assist wild capture fisheries with management programs, stock enhancement, and marketing to channel wild capture products to high valued premium markets outlets—such as the shrimp and salmon marketing programs. But we also need to supply that vast middle market that demands a year-round supply of affordable, healthy, safe seafood—and we can do that through domestic aquaculture.

Aquaculture Research and Technology Development Provide Economic Benefits

As the world moves toward aquaculture in offshore waters, another key factor is technological innovation—an area where the United States is a world leader. As a concept, offshore aquaculture has been around for years. However, the technological advances and other research applications that now make offshore aquaculture possible have only come online within the last 10 years. For example, equipment innovations for the offshore include submersible cages and remote controlled feeding apparatuses—all designed to withstand the challenges of the ocean environment.

To date, with leadership and foresight provided by NOAA through the *National Marine Aquaculture Initiative*, the United States has invested just over \$10 million in offshore aquaculture research, and the technology is now being used in commercial applications. Examples include:

- Two finfish operations in Hawaii and one in Puerto Rico using submersible cages designed and produced in the United States have become commercially viable. The owner/operators of these facilities include a local commercial fisherman, a family company in the seafood business, and U.S. investors.
- Two commercial mussel farms owned and operated by fishermen have started production off New Hampshire.
- Additional projects are in design in the Gulf of Mexico, the Virgin Islands, and California. All involve some combination of U.S. investors, coastal fishermen, university scientists, and local processing, hatchery, feed, and equipment supply companies.

U.S. research and technology development will continue to provide key contributions to aquaculture development made possible by S. 1195.

S. 1195 Will Provide for the Sustainable Development of Offshore Aquaculture

The *National Offshore Aquaculture Act* will enable offshore aquaculture, provide safeguards for the marine environment, and balance multiple uses of the oceans and coasts by providing for the

establishment of siting, operating, and environmental criteria; the monitoring of environmental impacts; and the enforcement of regulations and permit conditions.

The bill will:

- Authorize the Secretary of Commerce to issue offshore aquaculture permits and to establish environmental requirements where existing requirements under current law are inadequate;
- Stipulate that aquaculture products will not be subject to fishing regulations that restrict size, season, and harvest methods;
- Require the Secretary of Commerce to work with other Federal agencies to develop and implement a coordinated permitting process for aquaculture in Federal waters. This includes the authority to set additional environmental requirements to ensure that such development proceeds in an environmentally responsible manner that is consistent with stated policy to protect wild stocks and the quality of marine ecosystems and is compatible with other uses;
- Authorize the establishment of a research and development program in support of offshore aquaculture; and
- Provide for enforcement of the Act.

The bill will not supersede existing laws such as those concerning navigation, offshore structures, management of fisheries, environmental quality, protected resources, and coastal zone management.

If the legislation is enacted, NOAA estimates that development of detailed implementing regulations should take two to three years, including the development and publication of draft rules, a review period, and publication of final rules. Environmental standards and other permit requirements will be designed with public input, and the process will allow for public review and comment through Federal Register notices as well as meetings with states, fishery management councils, and other forums. We already have good models of regulations from coastal states and other industrialized countries as well as industry best management practices.

Other Federal activities, led by NOAA and supported by other Federal agencies, that will support implementation of the bill—and ensure rational and sustainable development of aquaculture—will include:

- Mapping and data gathering to identify areas best suited for offshore aquaculture;
- Additional economic and social analysis of regulatory options, species, and production methods;
- Continued research on environmental issues and best management practices; and

- Pilot and demonstration projects with public and private sector partners and coastal communities.

This bill is a first step in what will be a careful and inclusive process to establish a regulatory structure for offshore aquaculture. This will be done step-by-step. NOAA believes that carefully sited, regulated, and monitored finfish and shellfish operations in U.S. Federal waters can be an effective way to reduce our nation's growing dependence on seafood imports, provide jobs for economically depressed coastal communities, and increase regional food supply and security. We also believe that this is an opportunity for the United States to lead by example and encourage aquaculture operators in other countries to adopt best management practices developed here.

NOAA Prepares for Offshore Aquaculture in the United States

NOAA has been working on this issue for the last 10 years, preparing for it on many fronts. Specific steps the agency is currently taking to prepare include:

- Designing environmental risk management guidelines for aquaculture, as highlighted in a recently published NOAA technical memo;
- Developing an economic analysis of offshore aquaculture for delivery later this year;
- Outlining environmental impact statement (EIS) and regulatory design steps to be taken if legislation is passed;
- Conducting ongoing consultations with communities and businesses; and
- Examining aquaculture's role in ecosystem management with an international group of experts.

Conclusion

Mr. Chairman and members of this subcommittee, the Department is looking forward to working with you, the public, the fishing and aquaculture industries, and the environmental community to craft a regulatory framework for offshore aquaculture. A strong, comprehensive framework will offer the regulatory certainty industry needs while safeguarding the marine environment, and creating economic opportunities for those Americans who depend on an abundance of marine resources for their livelihood. The United States must take the initiative to become more self sufficient in the production of healthy seafood, provide jobs for coastal communities, and reduce the seafood trade deficit. We must develop aquaculture as a tool to complement commercial fishing because we will need both to produce seafood to meet the growing demand.

I appreciate the opportunity to present the *National Offshore Aquaculture Act of 2005* to you today, and I would be happy to answer any questions.

ATTACHMENT TO WRITTEN TESTIMONY

This information in this attachment is intended to clarify specific issues or questions posed by stakeholders with regard to S. 1195, as well as broader issues related to aquaculture.

Definition of Aquaculture – NOAA’s definition of aquaculture is, “The propagation and rearing of aquatic organisms in controlled or selected environments for any commercial, recreational or public purpose.” This definition was established in the *1998 NOAA Aquaculture Policy*.

Role of Coastal States – S. 1195 requires coordination with states during the regulatory design process and establishment of environmental and other requirements that would follow enactment of a bill, and also as part of the review of each individual permit application. S. 1195 specifically includes a provision on the need to consult with state agencies as part of the coordinated and streamlined permit process for offshore aquaculture, so states will have a say in decisions on offshore aquaculture permits as well. S. 1195 does not supersede any other laws, such as the *Coastal Zone Management Act*, that include a role for states with respect to activities in Federal offshore waters. In addition, the offshore aquaculture facilities will require support facilities on land and the landing of seafood product on land—both of which will be subject to state and local approvals.

Role of Fishery Management Councils – NOAA has an ongoing working relationship with the Regional Fishery Management Councils, established under the *Magnuson-Stevens Fishery Conservation and Management Act*. S. 1195 requires NOAA to consult with these Councils in developing and implementing the regulatory regime for offshore aquaculture development. Since the Administration’s bill was introduced, NOAA has briefed the councils on the legislation, and begun to engage them in our planning for how the bill would be implemented. NOAA would consult with the Councils in the regulatory design process, in the establishment of environmental and other requirements—especially as they relate to interactions with wild stocks managed by the Councils—and in the review of individual permit applications.

Environmental Standards – The question of environmental standards for offshore aquaculture is an important one and the establishment of rigorous environmental standards for offshore aquaculture is central to the *National Offshore Aquaculture Act*. S. 1195 provides the necessary authority to require, through regulations or permit conditions, appropriate measures to avoid, minimize, or mitigate unacceptable impacts. The bill also provides authority to take emergency actions to address unanticipated impacts in a timely manner. S. 1195 does not override or preempt existing laws to protect the marine environment, wild stocks, endangered species, marine mammals, and habitat.

Space Requirements and Siting – We believe that space requirements and siting issues for offshore aquaculture operations can be addressed by careful mapping of existing uses of the open ocean and in consultation with coastal communities and users of ocean space. The U.S. Exclusive Economic Zone (EEZ) is the largest in the world. It spans over 13,000 miles of and contains 3.4 million square nautical miles of ocean. It is larger than the combined land area of all 50 states. Based on our pilot and demonstration projects, the total spatial demands for the

different components of an offshore operation are relatively small compared to the EEZ. According to estimates from experts at NOAA, it would require less than one percent of the area currently set aside for the National Marine Sanctuaries to produce about one million tons of seafood in the United States. To get a sense of spatial requirements, it is estimated that 100 farms producing 1,000 tons of seafood each would, in total, occupy an area about the size of the Pentagon complex [1 square mile]. Another example of the projected spatial impact of offshore aquaculture is the area needed to produce 80,000 metric tons of mussels. According to NOAA experts, that level of production would require an area less than 10 square miles, or less than the size of the Kennedy Space Center at Cape Canaveral.

Fish Meal – In the wild, fish such as salmon will consume roughly 10 pounds of fish to gain one pound of body weight. Cultured marine finfish also consume wild fish—albeit as an ingredient in formulated feed made from fish meal and oil, and vegetable-based fats, proteins, and carbohydrates. As a result, cultured fish consume only about three pounds of processed, wild fish for every pound they gain. Because feed is a major component of an aquaculture operation’s cost of production, there are strong economic incentives for the aquaculture industry to substitute less costly ingredients for fish meal and fish oil in feed formulas, and to become more efficient in converting feed into product. Research into plant-based alternatives to fish meal, such as soybeans, is expanding. However, research on plant-based alternatives in fish meal has found that maintaining some fish oil or suitable alternatives in fish feed is important in order to maintain the health benefits of marine fish, including the Omega-3 fatty acids. In addition to industry, NOAA and other Federal agencies are working on research to develop protein substitutes to reduce reliance on fish meal and oils, such as marine algae. These agencies will continue to work with grain and feed companies and feed researchers to find suitable alternatives.

The source for most of the world’s fish meal in feed is the anchovy fishery off the coast of South America. U.S. fishermen also land sardines and menhaden used in fish meal. The annual capture of these fish has remained stable since the 1960s, despite the steady rise in aquaculture and the continued consumption of fish meal in the pork, poultry and pet food industries. However, wild caught fishmeal sources are not likely to continue to be able to satisfy the demand for fish meal from aquaculture and terrestrial agriculture.

Escapes – The issue of escapes is being addressed with technological innovation, best management practices, and careful species selection. For example, the use of submersible cages for offshore aquaculture reduces the vulnerability to storm damage that can lead to escapes. In addition, the knowledge NOAA and other agencies have gained from stock enhancement programs for commercial and recreational fishing—deliberate releases of finfish, oysters, and crabs—allows managers to design safeguards for conserving wild stock.

Aquatic Animal Health – Disease transmission is becoming less of a concern for aquaculture, since the marine aquaculture industry has replaced antibiotics with vaccinations administered before fish are stocked into cages. NOAA, working with the U.S. Department of Agriculture and other Federal agencies, is also at the forefront in developing a *National Aquatic Animal Health Plan* which will provide for safe national and international commerce of aquatic animals and the protection of cultured and wild aquatic animals from foreign pests and diseases.