TESTIMONY OF DR. PAUL DOREMUS
DEPUTY ASSISTANT ADMINISTRATOR FOR OPERATIONS
NATIONAL MARINE FISHERIES SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

ON
AQUACULTURE
BEFORE THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION
U.S. SENATE

OCTOBER 16, 2019

Good morning, Chairman Wicker, Ranking Member Cantwell, and Members of the Committee. My name is Paul Doremus and I am the Deputy Assistant Administrator for Operations within the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) in the Department of Commerce. From daily weather forecasts and severe storm warnings, to fishery management, coastal restoration, and supporting marine commerce, NOAA's products and services support economic vitality and affect more than one-third of America's gross domestic product. NMFS' mission includes supporting sustainable fisheries, including aquaculture, while recovering and conserving protected marine species. We support the long-term sustainability of our fisheries to benefit commercial, recreational, and subsistence fishermen as well as aquaculture producers, the seafood industry, and coastal communities that depend on those fisheries and coastal resources. Our support for aquaculture is part of a larger priority initiative to grow the American Blue Economy.

Limits to wild fisheries, environmental changes, the nutritional benefits of seafood, and trends in global seafood markets underscore the need to increase U.S. marine aquaculture production, particularly in Federal waters. I appreciate the opportunity to discuss aquaculture with you today, and to convey the untapped potential of this segment of the U.S. seafood sector.

Overview and Opportunities

U.S. wild-capture fisheries are among the world's largest and most sustainable. By preventing overfishing and rebuilding stocks, we are strengthening the value of fisheries to the economy and communities that depend on them, and also ensuring a sustainable supply of seafood for the Nation in the future. However, the U.S. currently imports at least 85% of its seafood, about half from aquaculture in other countries. The U.S. trade deficit in seafood has grown to over $16 billion and is increasing. In effect, we have outsourced the large majority of our seafood production and associated jobs. By providing a clear regulatory framework for aquaculture in Federal and State waters, we could increase U.S. seafood production, while maintaining a healthy and vibrant wild capture fishery industry, creating more jobs in coastal communities and throughout the agricultural heartland and providing our country with more local sources of one

of the most healthy, sustainably produced forms of protein. Stated simply, responsible aquaculture is good for the economy, good for our communities, and good for the planet.

NMFS is fully committed to improving output from the sustainable harvest of wild capture fisheries; however, there simply is not enough fish in the water to meet demand. Today, global aquaculture supplies more than 50 percent of all seafood produced for human consumption. That percentage will continue to rise as global seafood demand increases. In addition, relative to other types of farming, growing seafood is one of the most resource-efficient ways to produce protein, generally requiring less space, less feed, and less fresh water than farming the equivalent amount of terrestrial animals. With proper management and science-based tools, such as those developed by NOAA and our partners, we can minimize environmental impacts and user conflicts. These two conditions—the global imbalance between supply and demand and the comparatively low environmental impact of seafood production—are compelling reasons alone for focusing on U.S. aquaculture production. The benefits to public health and nutrition of a more seafood-rich diet provide yet additional reasons. Despite these considerable benefits, U.S. aquaculture production remains far below its potential.

The United States has significant untapped potential to expand sustainable marine aquaculture. While the U.S. has the second largest Exclusive Economic Zone (EEZ) in the world, it ranks 17th in the world in aquaculture. An uncertain regulatory environment has constrained the growth of U.S. aquaculture. To overcome these burdens and increase domestic aquaculture production over the next decade, NOAA is working to improve opportunities for investment in and development of aquaculture businesses by facilitating permitting and siting of aquaculture facilities and by advancing the science and technologies needed to develop and manage responsible aquaculture production.

NOAA's Role

At NOAA, we support cutting-edge science and research to grow sustainable aquaculture in the United States. I'd like to provide just a few examples to highlight these efforts.

Sustainable aquaculture begins with proper siting. To this end, NOAA recently released our OceanReports tool, an intelligent web application developed in partnership with the Bureau of Ocean Energy Management and the Department of Energy. OceanReports is capable of providing custom spatial analysis of any U.S. ocean space within seconds. Now anyone can quickly get wide-ranging information for a particular space - from ocean laws to environmental data and economic data about shipping activity and energy infrastructure. By providing instant access to an ocean of data and spatial reports for our "ocean neighborhoods," this web-based tool provides a transparent, rigorous, and efficient way to identify sustainable areas for siting new ocean industries while minimizing potential user conflicts. OceanReports and similar tools provide an excellent starting point for discussions with the fishing industry and other ocean users about where to site, or not site, aquaculture operations. This tool is one example of a larger NOAA-wide effort to rapidly advance emerging technologies such as artificial intelligence, unmanned systems, and cloud computing to more effectively and efficiently accomplish our mission.

NOAA scientists and our partners have also worked on numerous other tools to foster sustainable aquaculture development. These include supporting advances in new finfish feeds that have significantly reduced the amount of wild fish required to raise a given volume of farmed fish; models to predict and avoid negative impacts to water quality and wild populations; and novel ways such as use of probiotics to reduce the incidence of disease in shellfish farms. NOAA continues to refine and expand these and other tools.

Looking Ahead

NOAA has a long history of sustainable seafood management under the Magnuson-Stevens Fishery Conservation and Management Act. The United States now has one of the most dynamic, accountable, and innovative wild-capture fishery management systems in the world. Our fishermen abide by the most robust stewardship laws. Evolving over the past 40 years, the results of our science-based management system are impressive: overfishing and overfished stocks are at historic lows. NOAA manages its wild fisheries in close coordination and proactive engagement with states, fishing communities, environmental organizations, and the public in a coordinated multi-stakeholder process. This approach is built into our fabric and we apply these same collaborative, locally driven approaches and lessons from wild fish management to marine aquaculture. However, in order to be more effective, we need to address several key underlying challenges.

By making aquaculture permitting more efficient and coordinated, U.S. aquaculture production can be more competitive in the marketplace. Furthermore, providing mechanisms establishing the security of tenure required for private sector investment in offshore aquaculture is essential for growth in this space.

Currently, there is only one commercial aquaculture facility permitted in federal waters – a mussel farm off the coast of California. There are several pilot and commercial projects at various stages in the permitting process; however, none are at commercial production levels. A good model of sustainable aquaculture offshore production is occurring in state waters. Blue Ocean Mariculture operates in Hawaiian state waters but in conditions similar to the open-ocean given the location's steep continental shelf. Blue Ocean's fully integrated facility optimizes the life cycle of a finfish species called Almaco jack from hatch to harvest. Production begins with fertilized eggs from dedicated brood stock, meaning there is no capture pressure on wild fish populations beyond securing the initial brood stock. They transfer juvenile fish from their hatchery facility to open ocean net pens. Careful monitoring occurs during feeding. This feeding approach, along with the selection of a site with relatively deep waters and strong currents, greatly reduces the probability of feed settling to the bottom. The farm site has been in continuous operation within the Humpback Whale National Marine Sanctuary since 2004 and adheres to robust environmental monitoring protocols. It recently received authorization to expand production on its current site.

Blue Ocean Mariculture is just one example of how industry is implementing what we have learned since the origins of U.S. marine aquaculture about how to properly locate and manage marine aquaculture to reduce potential impacts and user conflicts. It also provides a compelling example of what kind of businesses can evolve in Federal waters if we respond to the challenges that have prevented more extensive investment in this promising segment of the seafood sector.

We can support the health and future prosperity of sustainable seafood through U.S. seafood farming in ways that complement our management of commercial fishing and provide additional employment and economic opportunities throughout the seafood supply chain. The Department stands ready to work with the Committee on this important national issue. Thank you again for the opportunity to testify before your Committee today. I would be happy to answer any questions you may have.