



## Maryland Sea Grant Aquaculture Researcher Roundtable Meeting Synopsis

January 10, 2018 • College Park, Maryland

In 2014, half of the seafood consumed in the world came from aquaculture. Very little of that was produced in the United States, and hardly any of it came from Maryland. Why? What are the barriers to producing more seafood in a state with thousands of miles of shoreline and a bay once known as “the great protein factory?” How can Maryland entrepreneurs, researchers, and consumers capitalize on a greater interest in producing domestic seafood, and a government that is increasing funding for such endeavors?

To find out, Maryland Sea Grant convened an Aquaculture Researcher Roundtable on January 10, 2018 in College Park. The meeting complemented a November gathering in Annapolis that focused on Maryland’s aquaculture industry’s needs, which mostly focused on oyster farmers as the largest aquaculture industry in the state.

The idea of the January meeting was to ask questions regarding expanding aquaculture including and beyond oysters. Once the concerns were clear, it would be possible to match researchers interested in projects with those in the aquaculture industry willing to work on them. The meeting began with an overview of the current situation in Maryland for aquaculture—from finfish to oysters to razor clams—and the challenges and opportunities in growing that industry here. Following the overall talks from researchers and short perspectives from those in industry, the room broke up into discussion tables. Topics ranged from genetic bottlenecks and species survival rates to legal and marketing concerns. Sea Grant provided a briefing book that included descriptions of federal funding opportunities,

About 70 researchers, oyster growers, extension specialists, and facilitators from across Maryland met to discuss potential research topics to improve aquaculture in Maryland and beyond.



Oyster farmers, Extension agents, and researchers gather at a table to talk about sustainability at the aquaculture meeting that Maryland Sea Grant organized. PHOTO BY NICOLE LEHMING/MARYLAND SEA GRANT

so participants would have an idea of the range of aquaculture research projects NOAA, the USDA, and the Atlantic States Marine Fisheries Commission, among others, might be interested in funding.

“We’re trying to build these kinds of innovative teams, and see if there is funding to match the efforts,” said Maryland Sea Grant Director Fredrika Moser. “We’re trying to ask, ‘how would you go about solving this problem?’”

The issues addressed with the researchers and those representing the industry included:

**Breeding and genetics:** Triploid oysters are bred to be sterile, and resistant to the two diseases that have devastated wild populations in the Chesapeake Bay. There is generally a high mortality in small oysters in hatchery settings. But neither scientists nor farmers know why the older oysters sometimes have inexplicable mortality rates. Is it related to water quality in a certain tributary? Salinity? Temperature? Would a certain hybrid oyster do better in a low-salinity or high-salinity location? Could a seed catalog of sorts, as garden stores have for plants, help indicate which varieties of oysters would grow best in which places? Further, could technologies used to develop sterile hybrid striped bass be used

to create sterile oysters with lower mortality rates? Dr. Yonathan Zohar, one of the keynote speakers, is working on such problems at the Institute of Marine and Environmental Technology at Baltimore's Inner Harbor.

**Business optimization:** Maryland Sea Grant business specialist Matt Parker helps prospective oyster farmers obtain loans through state programs. But participants also identified a need to create more shucking houses to accept product and send the shells back to oyster farmers. In much of the Chesapeake Bay, shucking houses have dwindled. Two participants, Yang Tao, an engineer at University of Maryland, who has already developed an apple sorter and packer, noted his current research to develop a robotic oyster shucker that would cut down on labor costs. Oyster farmer Jon Farrington, also an engineer by training, said the state needs to investigate ways for shucking capacity to return to Maryland and efficiently recycle shell.

**Theft prevention and enforcement:** Currently, Maryland has 408 active leases totaling 6,000 acres in the Chesapeake Bay and its tributaries. The value of that fishery, according to the state Department of Natural Resources, is \$5 million, and expected to continue to grow rapidly. Karl Roscher, who presented a talk at the meeting, manages the aquaculture program at the Maryland Department of Natural Resources, said, as of 2016, more than 170 oyster farmers had leased more than 6,000 acres of Maryland's part of the Chesapeake Bay and its tributaries. Dozens more have applied since then. The increase in oyster aquaculture has opened the door for an increase in theft, on leases. It doesn't take but a few minutes for a dredge to run over a lease and take four or five bushels, Roscher said. A bill in the General Assembly this year, if passed, could make theft of more than \$1,000 a felony. Other solutions discussed at the meeting included a technical innovation that could alert leaseholders and police that a boat has entered a lease. Several oyster farmers expressed their interest in this and other novel ideas to explore how technology could reduce theft.

**Diversification:** Marylanders don't generally eat razor clams. We use them as bait, even though they cost \$6 a pound. Same with eels. Tuck Hines of the Smithsonian Environmental Research Center urged researchers and entrepreneurs to think about eels, razor clams, and

aquatic plants as high-value products Marylanders can raise that may not become food staples or products for us, but would be popular in other regions. There is a strong worldwide demand for these products.

**Finfish in closed aquaculture systems:** The University of Maryland's Institute of Marine and Environmental Technology at Baltimore's Inner Harbor is raising bronzini and cobia in a closed-recirculating system. But it only operates at 30 to 50 percent of its capacity. Other countries do much more because their governments invest millions in scaling up these systems. Participants discussed how this approach may portend a future where these bio-secure, disease-free systems could grow fish, far from the sea, at low environmental risk.

**Legal issues:** Oyster farmers have long complained about a protest system that can tie up their leases for months. Were aquaculture to expand into finfish in Maryland, it's likely the same protests would occur. Wealthy property owners often fear cages, floats and tanks next to their homes will obstruct views. When the same types of complaints emerge about agriculture, though, they don't go to the courts, but to a state mediation board. Conference attendees wondered if an aquaculture mediation board could provide similar assistance. If there were such a board, it might remove a stumbling block for potential entrepreneurs and encourage more investment.

**Continued dialogue and tangible proposals:** Aquaculture entrepreneurs and researchers appreciated the opportunity to talk to each other. Everyone who completed a survey wanted the roundtables to become an annual or semi-annual event. Our hope is that sustainable aquaculture in Maryland for finfish and other species can develop, from the start, with input from industry, regulators, and scientists from institutions all across Maryland—from oceanographers at the U.S. Naval Academy to engineers at the University of Maryland and sanitation experts from the University of Maryland—Eastern Shore in Princess Anne. Many who attended our meeting found potential collaborators who they simply wouldn't have met if not brought together in the same room. Sea Grant is excited to further such collaborations.

—Rona Kobell



Maryland Sea Grant is a federal-state partnership and is part of the University System of Maryland. Our offices are located in College Park, MD, and are administered by the University of Maryland Center for Environmental Science.

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