

# EAST COAST SHELLFISH GROWERS ASSOCIATION



The East Coast Shellfish Growers Association represents over 1,300 shellfish farmers from Maine to Florida and the Gulf states. These proud stewards of the marine environment produce sustainable, farmed shellfish while providing thousands of jobs in rural coastal towns.

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## The Mouth of the Bay Things Are Looking Up



Executive Director  
Bob Rheault

I love the fall weather, with its cool days and brisk nights, but I am always dismayed by how rapidly the days grow shorter and the light fades in the evenings. This time of year sees our shellfish crops preparing for winter by stocking up on glycogen, getting sweeter and plumper, making for some prime slurping. I've even had a chance to enjoy shellfish festivals once again after a long hiatus. It's such a treat to get out the shucking knife and see the smiles on the faces of eager shellfish lovers. (Especially when I'm not in charge!) I am also looking forward to attending conferences again and catching up with old friends. Although Zoom meetings can reduce our carbon footprints and save on travel costs, they are a poor substitute for handshakes and conversations at the bar.

I hope everyone has recovered from the challenges of the pandemic. I am hearing that markets have bounced back, and that unlike last year, few growers are sitting on piles of oversized product. The predicted consolidation of farms was largely averted thanks to substantial relief programs that kept most growers solvent in the face of unprecedented hardship.

## Free Mediation Services Resolve Lease Conflicts Without Lawyers

by Robert Rheault,  
ECSGA Executive Director

As every reader of this publication is no doubt aware, lease applications seem to be getting more and more contentious. Many factors are contributing to this trend, including the increasing popularity of more-visible floating gear, a growing population of recreational boaters and what seems to be a general trend of people just getting more cantankerous.

All these contentious interactions could benefit from an independent mediator who is trained in helping folks to cool down and see things from the opposing side. As it turns out, the U.S. Department of Agriculture (USDA) offers free or low-cost mediation services to farmers in 42 states. It is certainly cheaper than hiring a lawyer, and according to one grower I have spoken to, far more satisfying.

### Rhode Island lease conflict

Jules Opton-Himmel started Walrus and Carpenter Oysters with leases in Rhode Island's Charlestown Pond in 2009. He has a year-round crew of three that swells to 11 in peak season. In 2016 Jules began the process of seeking a couple of new leases in Narragansett Bay where he could deploy floating gear.

His application for a 6-acre site was denied because of potential interactions with diving ducks and hunters, but a smaller 2-acre site nearby was approved for floating gear. Unfortunately, when waterfront homeowners noticed the gear they began to organize a campaign against the farm.

The lease opponents felt that the state regulatory agency, the Coastal Resources Management Council (CRMC), had failed to provide adequate notice of the lease hearings, and contended that the picturesque views from their homes were being trashed by 2 acres of OysterGro® cages. When Jules tried to apply for a lease modification to add a few strings of kelp, the homeowners brought out the pitchforks and torches. There was some confu-



JULES OPTON-HIMMEL

A Rhode Island lease site set off a heated conflict over floating gear with nearby homeowners. Thanks to free USDA-funded mediation services, both sides worked together to find a solution that satisfied everyone.

sion about how many cages had been permitted on the site, and things started to get really ugly as the homeowners began to lawyer up and toss around accusations of poor regulations and criminal capitalism.

When Jules hired a lawyer the CRMC was forced to bring its own lawyers into the fray. Things were spiraling down fast when Jules learned about a group called the Rhode Island Agricultural Mediation Program, which provides free mediation services to farmers.

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Member Spotlight:  
**OysterGro® Aquafarming Systems**

BBI Group, Saint Edouard de Kent,  
New Brunswick, Canada

Almost two years after a global pandemic turned the world upside down, Atlantic Canada's OysterGro® Aquafarming Systems by BBI Group is thriving and looking toward a bright future.

BBI Group is known for its long history of manufacturing products for the commercial fishing industry, 50 years to be exact. Over the years, our product line has grown to include polystyrene buoys, lobster traps, escape hatch- es, deep floats and many other items for the retail and wholesale commercial markets.

However, BBI Group's best-known innova- tion is the OysterGro®, a floating-cage oyster aquaculture system. OysterGro® is the industry leader and the units are highly regarded world- wide for their quality, longevity and ability to

consistently grow premium oysters. Since OysterGro® was launched in 2003 the BBI team have never looked back, continuously developing and improving the OysterGro® system to meet the evolving needs of the modern-day oys- ter farmer.

OysterGro®'s open approach and partnership mentality has spelled success for the many pioneering oyster farmers who took a chance on our systems 18 years ago and are still work- ing with them today, growing their farms to thousands, and in some cases, tens of thou- sands of cages! These original customers were followed by hundreds of other successful farmers working with over a half-million deployed Oyster- Gro® systems, producing and delivering hundreds of mil- lions of premium quality oys- ters to restaurant tables around the world!



BBI GROUP

More than a half-million OysterGro® floating cage systems have been deployed all over the world by growers who value consistent, high- quality oysters. BBI Group is known for its collaborative design approach, welcoming customer feedback to continually improve its products.

Gro®, where he hosted a trade booth and spoke on the environmental responsibili- ties of equipment manufac- turers. As the conference progressed, he began to notice that more and more conversations concerned the growing pandemic and the effects it was having on other countries, their people and their industries. At the time, no one could have predicted the impact it would have here in North America.

Soon after the conference wrapped up, COVID-19 forced countries all over the world into lockdown, and it wasn't long before Canada followed suit. Only two short months into owner- ship of BBI Group, the team decided to face the multitude of challenges and unknowns head-on. They surged ahead, focusing on best practices and doing whatever was

needed to make sure their employees contin- ued working and the business maintained its forward momentum.

In early March 2020, Canada's Minister of Innovation, Science and Industry issued a call- to-action for manufacturers to join the fight against COVID-19. With our expertise in plas- tic injection molding and a highly qualified and adaptable team working in our state-of-the-art molding facility, BBI Group rose to the chal- lenge. Partnering with Dalhousie

University's Engineering Depart- ment, we worked around the clock to design a face shield and procure the necessary tooling for production. The entire process, which normally would have taken months, was completed in a mere 10 days.

Just a few months after launching the face shields, BBI Group de- signed and manufactured optional accessories to enhance their utility and comfort, allowing users to configure up to four unique face shield combinations. On top of this, BBI Group achieved both Health Canada and CE Mark cer- tifications, clearing the product for use in medical facilities through- out Canada and Europe.

As you can see, it is simply in BBI Group's DNA to innovate and constantly push the envelope in terms of design, manufacturing and product functionality. We rose to the challenge to support frontline healthcare workers in their time of need, yet still contin-

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# Hatchery Problems Spawn Call for Collaboration

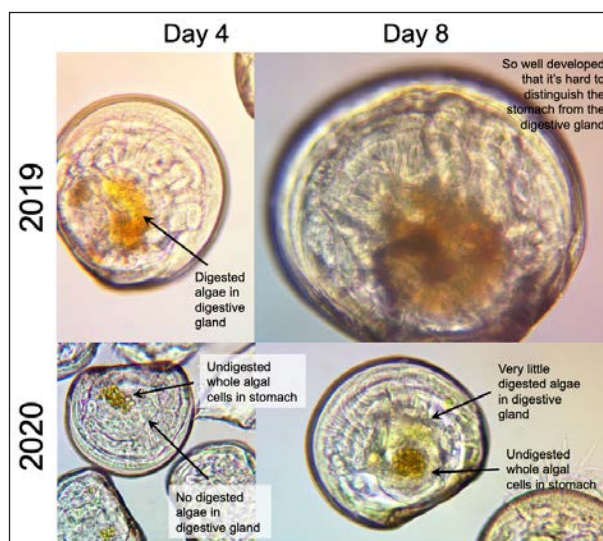
Meredith M. White, PhD  
Director of Research and Development  
Mook Sea Farm, Walpole, Me.

Dependable hatchery production is the linchpin to successful shellfish farming, but even with advances in technology and production techniques, hatchery problems occur too often and constrain our industry. There are signs that hatchery production failures are increasingly due to environmental conditions beyond the control of individual hatcheries. As many of you know, Mook Sea Farm has recently faced production challenges. We know we are not alone. While we persisted through the problem-solving process, we became acutely aware that if we had more open and collaborative communication with other hatcheries, it could be a benefit to all of us. We hope that by sharing our experiences, we are opening the door to an increased dialogue about changing environmental conditions, how we can respond as an industry, and in what ways federal agencies can support us through these challenges.

## 2020 larval production issues

The Mook Sea Farm hatchery world was turned upside down even before the pandemic started in 2020. Within days after our first spawn in January 2020, we knew something was wrong with the larvae—they were eating their food, but not digesting it. When we looked at them under the microscope, we could see whole algal cells spinning around in their stomachs, but the cells were not making it through their digestive systems. To be blunt, the larvae were constipated. As you'd expect, they were unable to grow and remained the size of Day 2 larvae by the time we threw them away on Day 8 and started over. When it happened again with the second spawn, the alarm bells went off. We went into full problem-solving mode with all hands on deck. Still, with the combined years of experience and expertise on our team, we figured we'd work this out quickly.

The mystery deepened when after checking for the usual suspects (broodstock issues, microalgae food, bacterial infection, potential changes in hatchery systems and protocols) we came up empty handed. It turned out the problem was a chemical in the seawater we were pumping into the hatchery, and it was present throughout the Damariscotta River and nearby coastal waters. But we had no idea what it was or where it came from! When water samples sent to the state lab found no typical pollutants such as pesticides or other hydrocarbons, we were really scratching our heads. After the fifth, sixth, seventh spawns were showing the



Comparison of normal oyster larvae produced in 2019 to abnormal larvae produced in 2020. All images are at the same scale and were taken under 400x magnification. Normal day 4 larvae from 2019 show dark golden color of digested microalgae food in their digestive gland, with little to no undigested algal cells in the stomach. In 2020, day 4 larvae had large numbers of undigested, whole algal cells in their stomachs, with no digested algae in their digestive glands (i.e., constipation). Abnormal larvae in 2020 showed little growth from day 4 to day 8 and were clearly smaller than a normal day 8 larva from 2019. The 2020 day 8 larvae showed a small amount of digested material in their digestive gland, while the normal 2019 day 8 larvae had developed to the point where it is hard to distinguish the stomach from the digestive gland.

same symptoms, the lack of sleep and emotional toll was mounting as we thought about what this meant for our seed customers and for our business. We were living in a pressure cooker. After what seemed like endless tests conducted by us and others, we were able to figure out

some really important chemical characteristics of the mystery compound. It was sticking to the algal cells that we were feeding the larvae and wreaking havoc with their digestive systems. (This explained the constipation.) Any treatment of the seawater that oxidized it, like vigorous aeration or adding bleach and then neutralizing it, made things worse.

The biggest break in the case involved some serendipity. When we turned off our UV sterilizer (which we have used successfully for decades), we were able to restore near normal production. Given our discovery about oxidizing conditions making things worse, it made sense that photo-oxidation by UV would, too. The return of near-normal production came too late in the season to allow us to fulfill all of our seed orders, and Hatchery Manager Andy Stevenson took on the hard job of calling our seed customers to let them down. It is a call that no hatchery manager wants to make.

## Getting to the hypothesis

At this point we knew we needed some help from some “ringers,” so we brought in some heavy hitters from the University of Maine, Bigelow Laboratory for Ocean Sciences, NOAA's National Marine Fisheries Service Milford Laboratory, and the University of Rhode Island to give us some guidance, while we did much of the legwork. It was Dr. Steve Archer at Bigelow who came up with an idea for the source and identity of the mystery toxin that eventually panned out. It turns out that in response to grazing or environmental stress, some phytoplankton initiate a process that breaks down polyunsaturated fatty acids (PUFAs).

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# SmartOysters Raises \$1 Million, Grows U.S. Presence

SmartOysters, Batemans Bay,  
New South Wales, Australia

Australian-based SmartOysters has scored a big win for our aquaculture software, raising just over \$1 million to continue building out our farm-operation management application. The funding came from a combination of a successful crowdfunding campaign, strategic investment and a commercialization grant from the Australian government to expand the software to include seaweed and mussel farming.

SmartOysters CEO, Director and co-founder Ewan McAsh, himself an oyster farmer, said, “We were absolutely blown away by the investment received by the crowdfunding campaign; more than 200 investors including oyster farmers invested in SmartOysters. It goes to show that people really do love what we do as farmers and they want to see the industry grow, and they want to eat more oysters!

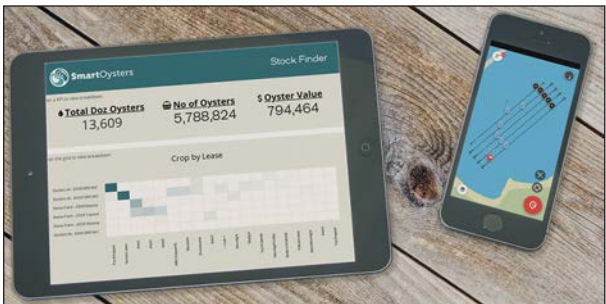
“We have a lot of farmers coming onboard in the U.S. and from all over, including back in

Australia. This investment ensures we can keep delivering great service to farmers, while at the same time improving the application. There are so many benefits of using technology like SmartOysters, and the farmers who use it are really thriving.”

SmartOysters is also excited to welcome aboard a new U.S.-based brand ambassador, Madeline Wachtel, a creative strategist and advocate for regenerative aquaculture. Her appreciation for the oyster farming industry grew through her work as deputy director of the oyster-restoration nonprofit Billion Oyster Project, based in New York City.

In 2021, Madeline founded Bloomcourt, a specialty flower and produce farm in Chappaqua, N.Y. Bloomcourt was born out of the desire to create a buzzing ecosystem and learning space on what had previously been clay-covered tennis courts. Outside of farming, Madeline continues to consult for nonprofits and to invest in aquaculture-focused businesses. She met the SmartOysters team while on a road trip from Sydney in 2015, and has believed in the company’s work ever since.

Madeline is excited to be U.S. brand ambassador because she believes in SmartOysters’ ability to give ocean farmers more control over their operations and to grow an industry that offers significant ecosystem services to our shared environment.



SMARTOYSTERS

SmartOysters has made improvements to the app, such as a faster dashboard showing real-time reports, including how much water is filtered and how much carbon and nitrogen are sequestered.

Madeline joins current U.S. Sales Representative Josh Neese, who is making it his mission to expand the U.S. aquaculture industry and ramp up oyster production in Florida. The 41-year-old biologist has been involved with aquaculture for a decade and believes there is a huge demand for craft oysters in the U.S. With the industry still in its infancy, he has created a patent-pending production model that allows farms to operate at their own scale and on their own schedule to control their business.

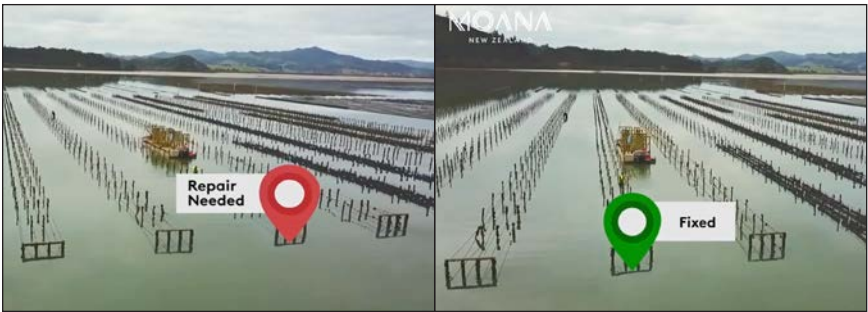
Josh signed up to be the company’s first U.S. lead generator because he believes that SmartOysters, which has a similar ethos to help businesses grow through innovation and sustainability, aligns with his model. He will introduce the concept of SmartOysters to his clients to help them scale their businesses. Josh believes that “we can all operate in the blue-ocean philosophy. I believe there is so much need and so much abundance that new concepts need to be applied to realize the potential.

“SmartOysters is answering the question of farm management and day-to-day operations.

We’re answering and addressing hurdles, we’re supplying solutions to make others more successful to grow the industry. It’s about helping people, not necessarily about the bottom line. These are people’s livelihoods. That’s why I’m doing this. To help grow the industry and help the people in it to be successful.”

The timing of the cash infusion couldn’t be better for SmartOysters as the company launches new features and functionality. Those additional features include a faster dashboard displaying reports in real time, as well as environmental reports that show how much water is filtered each day, and how much carbon and nitrogen are sequestered. Often described as Google maps for your farm, SmartOysters uses GPS maps and customizable forms that allow farmers to easily record stock movements, and to schedule and assign farm tasks.

SmartOysters is currently running a special offer for shellfish and seaweed growers wanting to try it out. We welcome all inquiries from farm operations of any size.



MOANA NZ

Moana New Zealand is the country’s largest Māori-owned fisheries company. The SmartOysters app allows them to identify gear in need of repair, and then shows the updated status when the gear is fixed.

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A farmer wearing a dark bucket hat and a light-colored shirt is looking down at a smartphone. The phone screen shows the SmartOysters app interface with various icons like Camera, Photos, Calendar, Notes, and Google Maps. The background is a blurred view of an oyster farm.



— Continued from page 1  
**Mediation a Win-Win**

He asked them to intervene, and after both sides agreed to leave their lawyers at home a meeting was set up.

Everyone went into the meeting expecting the worst. No one shook hands or even made eye contact as each side presented their views, and the mediator tried to ensure that personal attacks were avoided. It took several, two- to three-hour sessions, but slowly the level of acrimony came down. Everyone was forced to listen to what the others had to say, and while the two sides didn't agree on everything, they were able to negotiate a mutually acceptable compromise. Each side recognized that they had lots of misunderstandings about the other, and they stopped hating on each other and started working on solutions. The homeowners who participated eventually were able to bring along others in the community who had also become wrapped up in the fight.

The homeowners came to recognize that much of their beef was actually about the process—they felt that they had not been given adequate notice and that their voices were not being heard. So they asked that representatives from the CRMC attend the next meeting to allow them to vent about the process.

Eventually everyone felt they had been heard, and the two sides negotiated a solution that involved moving the farm a half-mile to the north. Jules was able to get a larger lease at the new location, achieving the full buildout he had initially envisioned. Now the homeowners say hi when they see him and call him up if they have any concerns. Jules has a new-found respect for the folks he had once written off.

The process may not have been fast, but then contentious lease applications never move quickly. State Aquaculture Coordinator Dave Beutel was pleased that the two sides were able to break the impasse because he stopped getting weekly calls from irate homeowners. He noted that the process toned down the level of animosity and forced the two sides to listen to each other. The CRMC is now modifying its protocols for notifying abutters, and the outcome looks like a win-win for all involved.

All this came as a big surprise to me. I had never heard of this free service, and it seems like a marvelous opportunity for growers to explore before involving lawyers and letting things get really ugly and expensive. I wish I had known about mediation when I was struggling to get a lease, before 600 letters of objection landed in my file!

Visit [agriculturemediation.org](http://agriculturemediation.org) for more info about low- or no-cost USDA-funded mediation services for farmers.



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- Duane Fageran, Calm Cove Oysters, WA



BLUE-TRACE.COM

## Oyster Tracker Pivots to BlueTrace, Wins Funding

Oyster Tracker, now known as BlueTrace, has just completed a major pivot in their business. With new products, new funding and an expanded team they are focusing their technical talents on the tagging, compliance, food safety, marketing and traceability aspects of the shellfish world.

As CEO Chip Terry described it, "Since launch last year, our tagging/traceability solutions are growing fast. Today we have over 120 shellfish harvesters and dealers using us on an almost daily basis, so it makes sense to focus on this solution."

Helping that decision along: BlueTrace won a \$500,000 grant from the National Oceanic and Atmospheric Administration (NOAA) to fund further development of their Tide to Table Traceability and Marketing System. In combination with venture capital funding, this grant has allowed BlueTrace to hire a number of developers and seafood experts.

As part of this change, the Oyster Tracker Farm Manager system is being retired. Product Lead Catherine Ganim noted that, "We have a great product in Farm Manager, but like any company we need to focus on profitable businesses."



CHIP TERRY/BLUETRACE

BlueTrace has changed its name from Oyster Tracker. CEO Chip Terry explained that the company has already been working with other types of seafood, like these clams ready for delivery in Boston. BlueTrace can help shellfish growers, wholesalers, distributors and dealers keep up with their inventory and comply with new regulations on the horizon that will require full digital traceability of seafood from boat to table.

We found that the managers of farms would often change and with it the perceived need for our product would change. The churn in our customer base made it hard to build a profitable business." All Oyster Tracker clients will receive a free license until the end of March 2022 and assistance in moving to competitors such as SmartOysters or Compass Aquaculture.

But why the name change? According to Terry, "We already work with a number of foods beyond oysters (clams, mussels, lobster, etc.) and the new regulations coming from section 204 of the Food Safety Modernization Act will cover almost all seafood. The regulations will likely require full digital traceability from boat to table. Most producers and many distributors are small- to medium-sized businesses that can't afford the time or expense of buying an IBM or Microsoft system. They're looking for a mobile affordable alternative that has the key functionality at a lower price tag. We can help our clients surmount the increasing challenges of regulatory compliance so [that] small businesses can continue to thrive. Helping companies comply with regulations, keep their customers safe and reduce their costs is a win for everyone."

To learn more about BlueTrace visit [Blue-Trace.com](https://www.bluetrace.com).

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# New Resources to Educate Foreign Buyers on Northeast U.S. Oysters

Colleen Coyne, Seafood Program Coordinator  
Food Export USA–Northeast

At [Food Export–Northeast](#), it’s our job to elevate the unique, high-quality taste profile of Northeast U.S. seafood species internationally to help suppliers grow their business overseas. From hosting [events](#) with our in-market representatives around the globe, to [lead qualification](#), [virtual consultations](#), providing [marketing-cost-reimbursement opportunities](#) and much more, Food Export–Northeast has a number of programs that support Northeast U.S. seafood companies. As part of these efforts, the organization partners with subject-matter experts to expand the knowledge base of overseas buyers on various seafood species.

Recently Food Export–Northeast collaborated with two Northeast oyster experts—Barton Seaver, a renowned seafood chef and author of [The Joy of Seafood](#) and [For Cod and Country](#),

and Bob Rheault, former shellfish farmer and Executive Director of the East Coast Shellfish Growers Association—to develop new educational videos on the Northeast U.S. oyster targeted to international buyers and chefs.

“It’s always a pleasure to work with talented chefs like Barton Seaver, because they know how to bring out the best in our products,” said Rheault. “Our hard-working members take great pride in providing fresh, nutritious, sustainable shellfish, and it is such a treat to see how talented chefs can elevate the dining experience with creative recipes and preparations.”

Food Export–Northeast has created a comprehensive multi-lingual digital guide to the American oyster for international buyers. In addition, two short videos are now in production. One will feature an oyster tasting and conversation between the two experts about how oysters from different farms each can have their own merroir, and the factors that influence a flavor profile. A second video will cover the regulatory side of growing, harvesting and handling U.S. oysters and will include tips for how international buyers should handle and store deliveries of American oysters.



FOOD EXPORT-NORTHEAST

Renowned author and chef Barton Seaver teamed up with ECSGA Executive Director Bob Rheault to shoot an educational video featuring a tasting and discussion of flavor profiles in U.S. oysters.

“There are few people I admire more than shellfish farmers, and there are few shellfish farmers I admire more than Bob Rheault,” said Seaver. “Northeast U.S. shellfish stands out in a crowded field for its sustainability, deliciousness, and story—and it’s little tools like these videos that can shine a light on these ingredients and provide a guide map or translation vehicle for Northeast U.S. shellfish to earn their place on menus everywhere.”

The new educational materials will be available later this year and will be shared with Food Export–Northeast’s in-market representatives around the globe to help educate foreign buyers. Food Export–Northeast brings buyer delegations to the U.S. to learn firsthand about various seafood sectors, including oyster

production. Buyers who seek to introduce or expand their purchases of Northeast fish and shellfish can also receive promotion support. Northeast U.S. shellfish growers seeking to promote their brand to international buyers may also be eligible for cost-share assistance. If you’d like to learn more about Food Export–Northeast, visit [www.foodexport.org/our-programs/seafood-program](http://www.foodexport.org/our-programs/seafood-program) or contact Colleen Coyne, [ccoyne@foodexport.org](mailto:ccoyne@foodexport.org).

Founded in 1973, Food Export USA–Northeast (Food Export–Northeast) is a non-profit organization funded through the Market Access Program (MAP), administered by the USDA’s Foreign Agricultural Service. It works collaboratively with its 10 member states’ agricultural promotion agencies from Maine to Delaware. It has helped Northeast fish and shellfish suppliers gain access to a broad range of export markets, supported overseas in-market educational and promotional programs and offers emerging suppliers access to funds to help grow their export business.



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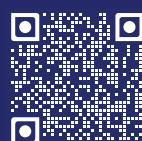
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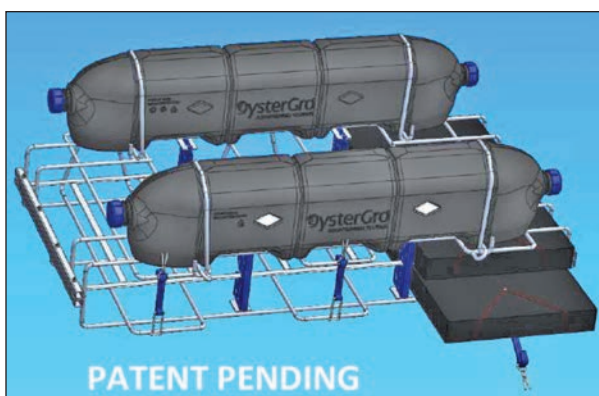
## OysterGro®

ued to improve our product by enhancing user comfort and protection. BBI Group's continuous innovation with the OysterGro® system, based on customer feedback over the years, has been no different.

### Partnering with industry

The original OysterGro® system was developed with the collective input of a team of marine biologists, aquaculturists, members of the fishing industry and the manufacturing team at BBI Group. Through continuous feedback with customers and OysterGro®'s partnership mentality, this eventually led to five distinct model offerings, ranging from the lightweight LowPro 2-Bag Cage to the heavy-duty HighFlo 6-Bag Cage designed for rough water. When some customers contacted us about issues with leaking caps in the OysterGro® floats, the team went back to the drawing board and fixed the problem by redesigning the cap, retooling and adding automation to the injection-molding process.

Recently, BBI Group held a triple-launch event, introducing a new product, a new division



BBI GROUP

The Hybrid Shift system is the latest addition to the OysterGro® line. It's been engineered to drastically reduce shipping costs, environmental impact and assembly labor. The shelf, extra side braces and dividers provide full bag containment. Interlocking floats and dividers, bolted side structure and a standard shelf create a rigid structure.

and a new financing partnership. To date, the financing portion of the launch is the first and only one of its kind in the aquaculture industry and is available to all Canadian customers through a partnership with Farm Credit Canada. As part of the triple launch, BBI Group also revealed two of its latest innovations: AquaFab Engineering for Aquaculture and the

all-new OysterGro® Hybrid Shift cage system.

AquaFab is BBI Group's newest division, drawing on the company's strengths in engineering, metal fabrication, tooling design and plastics manufacturing to improve the aquaculture industry. Whether it's rope-kit design, improving farming processes, or fabricating specialty support equipment, AquaFab Engineering for Aquaculture has a diverse and highly qualified technical team to service those needs.

When customers reported that wear and tear on the neck of the OysterGro® floats was causing their caps to leak, the AquaFab team came up with a float-neck resurfacing tool to refresh or remove any damage to the face of the neck. This quick repair has saved growers from having to replace entire floats, saving them money and keeping plastic out of landfills. To see the tool in action, visit [youtu.be/lwg0-nV6cqo](https://youtu.be/lwg0-nV6cqo); it can be purchased by contacting the company.

OysterGro®'s newest Hybrid Shift 6-Bag Cage combines aluminum alloys and engineered polymers to increase the strength and rigidity of the cage system, all while reducing its weight. It's an easy self-assembly system designed to drastically reduce shipping costs, lessen environmental impact, and reduce assembly labor. The main inspiration behind this cage was driven by customer feedback and a desire to reduce carbon footprint. The enhanced cage longevity, full-bag containment and rigid structure make this product a great value that OysterGro® expects will be the premium choice for its customers going forward.

OysterGro® prides itself on being more than just a supplier, but rather a long-term partner. Looking toward the future, the OysterGro® team's objective remains the same: continue to

innovate, deliver the best-quality products in the marketplace and offer a range of systems with enough variety to match the needs of today's oyster farmer.

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— Continued from page 3

## Hatchery Problems

PUFAs (think omega-3 fatty acids) are good and are actually a very important part of oyster larval nutrition. However, the breakdown products of PUFAs can then be oxidized to a group of compounds called oxylipins, which are known to have a negative impact on invertebrates, although their effect on oyster larvae has not been studied. We suspected the PUFA breakdown products were photo-oxidized to oxylipins by our UV sterilizer. Bethanie Edwards of the University of California Berkeley found the “smoking gun,” discovering higher levels of certain oxylipin compounds in our UV-sterilized seawater compared to non-UV-sterilized seawater.

But answers always lead to more questions. Why did oxylipins suddenly become a problem in 2020? Have environmental conditions shifted to cause this stress response in phytoplankton?

Was there a change in phytoplankton species composition? Are these conditions and/or phytoplankton the “new normal” or something that will fluctuate from year to year?

We don’t have the capacity to answer these questions without help. However, the current large-scale federal grant system is not designed to respond rapidly to time-sensitive, industry research needs. A small business in crisis needs answers in weeks or months, not in years. During our 2020 crisis, we received funding from Maine Sea Grant, the Aquaculture Research Institute at the University of Maine and the Center for Venture Research for Seafood Solutions at Bigelow Laboratory for Ocean Sciences. Without these small pots of funding, we would not have been able to conduct the analyses that allowed us to characterize and better understand our larval production issues. We are extremely grateful for this support, as well as for the problem-solving help we received from collaborators.

## A need for collaboration among hatcheries

We had heard rumors that other hatcheries in the Northeast were having “problems.” However, without direct conversations among hatcheries, it is very difficult to pin down whether they are experiencing the same symptoms, which may have a common cause linked to environmental change.

The dependable production of high-quality hatchery seed is crucial to our industry. As our coastal environment changes—through warming; species composition shifts; changes in dissolved oxygen, salinity, and pH; and increased harmful algal blooms—hatcheries will face more unexplained failures, affecting the entire shellfish aquaculture industry.

When we hatchery operators experience persistent problems and exhaust the list of usual suspects (including proprietary processes), sharing specific information in real time with each

— Continued on page 13

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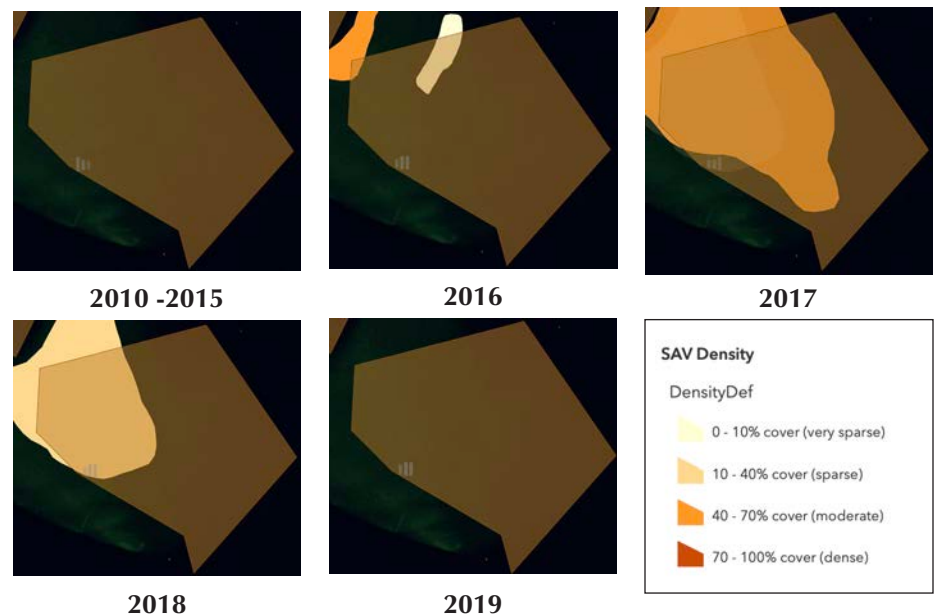


# SAV and Aquaculture Can Co-Exist

by Melissa Southworth, Virginia Institute of Marine Science, Gloucester Point, Va.

As with any industry, shellfish aquaculture in Virginia has seen its fair share of conflicts. One growing concern: the conflict between the goal of increasing and protecting submerged aquatic vegetation (SAV) within Chesapeake Bay waters and the potential impact of aquaculture operations on SAV growth and survival. Current regulations in Virginia restrict aquaculture in areas where SAV is present. Not only are new leases not permitted in areas containing SAV, but aquaculture on existing

leases can be restricted if SAV spreads into the lease area, regardless of SAV density or the type of species present. When considering restrictions, the state's regulating agency, the Virginia Marine Resources Commission (VMRC) uses the criteria of presence/absence of SAV from the most recent 5-year period of data on record. VMRC makes those determinations using data mapped by the Virginia Institute of Marine Science's (VIMS) Submerged Aquatic Vegetation program, which annually surveys growth and distribution of SAV from high-resolution aerial photography in the Virginia and Maryland portions of the Chesapeake Bay.



How SAV coverage can change over a 10-year period (2010-2019). Even though cages were initially placed in spots with little or no SAV present, through time the density and coverage of SAV within and around cages often increased, but sometimes disappeared from year to year or season to season.





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*Tyler Chadwick, Carolina Gold Oyster Company*

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In a study entitled, "Expanding Virginia's Oyster Industry While Minimizing User Conflict," a group of VIMS researchers examined both the use of leases for intensive aquaculture (containerized in floating or bottom cages) and the interaction between aquaculture and SAV on existing leases in Virginia ([cmap2.vims.edu/OysterInfoToolVa](http://cmap2.vims.edu/OysterInfoToolVa)). During the 7-year period from 2013 through 2019, roughly 37 percent of all leases reported any harvest. Around 29 percent of those leases (11 percent of all leases), used intensive harvest methods. Although this represents a small proportion of the total leased bottom in Virginia, the numbers have been steadily increasing over the past decade.

The study compared harvest data with SAV coverage from the VIMS SAV program in 5-year intervals, which is the period of time used by VMRC for regulating purposes. Between the 5-year periods spanning 2013 to 2017 and 2015 to 2019, the percentage of leases that reported using intensive aquaculture techniques *and* having SAV on the lease increased from 41 percent to 44 percent, accounting for a little under half of all the leases using intensive aquaculture techniques. The analysis reflects the ephemeral nature of SAV, as it may be controlled by changes in climate and weather rather than impacts associated with aquaculture. A review of the density and distribution of the baseline SAV data used in this study also reflects this variability.

Today we have a management conundrum: bottom conditions that

are good for intensive aquaculture operations are often ideal for SAV colonization and growth. At sites in the Virginia waters of the Chesapeake Bay, widgeon grass (*Ruppia* sp.) was the predominant species of SAV associated with intensive aquaculture. Widgeon grass is ephemeral and shows great variability between seasons and from year to year, regardless of the presence or absence of aquaculture. The study revealed that **even though cages were initially placed in spots with little or no SAV present, through time the density and coverage of SAV within and around cages increased.** Often widgeon grass would significantly increase around cages within a water body over the summer and then disappear during the other seasons in the same year, or have coverage one year and completely disappear the next. **The pattern and distribution over time suggests that cages may enhance, rather than deter the growth of the grasses.**

The footprint of intensive aquaculture using floating or bottom cages, as practiced in the Virginia portion of the Chesapeake Bay, is proportionally quite small, generally between 100 and 300 cages per acre. Most cages cover between 10 and 12 square feet, resulting in footprints for intensive activity of much less than 10 percent of an acre. Based on the time series analysis of multiple, individual aquaculture operations where SAV was present, **there did not appear to be negative impacts**

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**Hatchery Problems**

other and with scientists will help us solve environmental challenges as they emerge. Working together we can learn from each other, solve problems faster, and do a better job providing seed to the farms we supply. If we can demonstrate that multiple hatcheries are experiencing similar challenges that may be due to environmental change, and are collaborating to solve problems, we will have a stronger voice to seek financial assistance.

Furthermore, by working together, we may be able to convince federal funding agencies that support aquaculture, including NOAA and USDA, to create new funding strategies allowing for dispersal of small pots of discretionary funds that can be easily and rapidly accessed by hatcheries to cover the analytical expenses of troubleshooting hatchery failures that may be linked to external factors.

We encourage anyone with further questions about these issues to reach out directly to Meredith White at [meredith@mookseafarm.com](mailto:meredith@mookseafarm.com).



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## Preventing Theft

Those of us who farm on the water know that theft is a pervasive challenge. Shellfish, and sometimes even the gear we grow them in, seem to sprout legs and disappear in the dark of night or under the cover of fog. It is a frustrating fact that there are plenty of desperate people with a deficiency of scruples out there who are more than willing to help you harvest a high-value crop that

you've invested time and money to produce.

I had an interesting conversation with Jason Masters, who grows oysters in Peconic Bay off Long Island and works as an oceanographer in his real job. He told me about some tools he has bought for his farm after seeing how well they worked tracking expensive, highly instrumented oceanographic buoys. Growers might find some of these GPS tracking devices useful on their own farms.

GPS trackers have been around for a while. Basically, they are small, battery-powered devices that call home on a regular schedule to tell the owner where they are. They are commonly employed by operators of truck fleets so they can monitor where their vehicles are at any given time. Like all electronic devices, they get smaller and cheaper every year. But even more importantly, their battery life has been greatly improved, so growers should start to think about how



The ATLT Long Term Asset Tracker from Linxup is small, light and waterproof, but not submersible. The device costs around \$30 with a 3-year plan that runs about \$19 per month.

they might be used to help track things on the farm.

After a doing a little research I discovered that [Linxup.com](http://Linxup.com) sells a waterproof device that measures about 3" x 1" x 1.5" and weighs in at around 3 oz. The hardware costs about \$30 and the tracking service runs about \$20 a month. Most of the weight is the battery, which has about a 3-year lifetime. You can set up your tracker via the internet to adjust how often it sends its location data, and you can program it so that it will send you a text alert if it moves out of a predefined area. Jason placed one in each of his lease's corner markers and was able to track down two of them when they strayed from his lease. The company he works for managed to track an oceanographic buoy that was ripped from its mooring and dragged across the Pacific.

Obviously, you can't put one on your oysters, but I could see a variety of potential applications that might help growers cut down on theft or vandalism of other valuable assets. It could be handy to put one in your boat and turn it on during storms to see if it gets loose from its mooring or to conceal one in your boat trailer to make sure it doesn't walk away.

With high-definition night-vision cameras costing thousands of dollars, this is one low-cost way to cut down on theft and vandalism. I also have been talking to some researchers who are exploring the utility of hydrophones, and I'm thinking there might be an application for their use in lease monitoring. If you have something that works or if you have an idea worthy of exploration, please share!

—RBR

For more info about theft prevention read our 2017 newsletter story at [ecsga.org/wp-content/uploads/2017/01/ECSCGA\\_NL\\_v3-16.pdf](http://ecsga.org/wp-content/uploads/2017/01/ECSCGA_NL_v3-16.pdf)

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— Continued from page 12  
**SAV and Aquaculture**

on SAV from intensive aquaculture activity as currently practiced in the Virginia portion of the Chesapeake Bay.

The results of the study support the position that SAV and intensive aquaculture *can* and have been co-existing. In spite of these findings, it still remains within the regulatory authority of VMRC to force shellfish growers to cease operations or be relocated, regardless of harvest history, longevity of lease holding, or consistency with the approved use plan on file. Such actions have been enforced more than once in recent history. The results of the study call into question the basis for such stringent regulation and show a clear need for revising the restrictive policy on SAV and the practice of intensive aquaculture in Virginia.

**Disclaimer:** The views and opinions of this study are solely those of the authors and do not necessarily represent VIMS.



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<p><i>Tetraselmis sp.</i></p>  <p><b>Avg. Density:</b> (5-10) (million cell/mL)  <b>Cell Size:</b> (10-20) (micron)</p>	<p><i>Nannochloropsis gaditana</i></p>  <p><b>Avg. Density:</b> (100-200) (million cell/mL)  <b>Cell Size:</b> (3-5) (micron)</p>	

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