

SB 434 CBF Presentation.pdf

Uploaded by: Allison Colden

Position: FAV

Senate Bill 434

Restorative Aquaculture Pilot Program



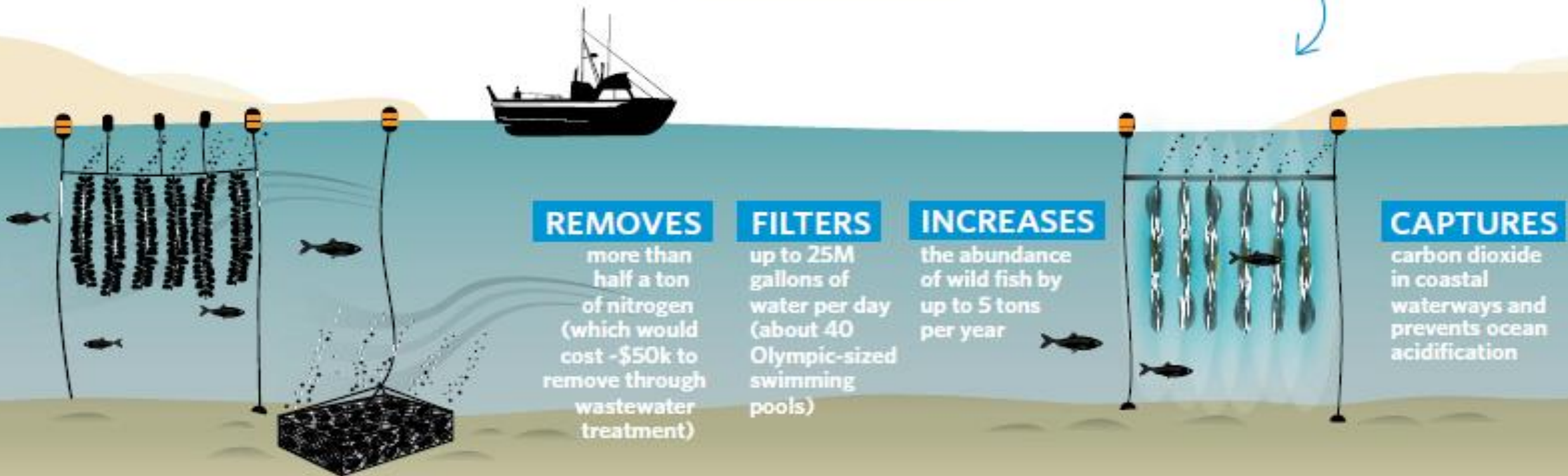
CHESAPEAKE BAY FOUNDATION
Saving a National Treasure

PHOTO: KENNY FLETCHER/CBF STAFF

Restorative Aquaculture

“The intentional use of aquaculture to positively affect ecosystem services” Theuerkauf et al. 2019

A SINGLE HECTARE OF RESTORATIVE FARMS...



Principles of Restorative Aquaculture

Principle 1: Site farms where environmental benefits can be generated.

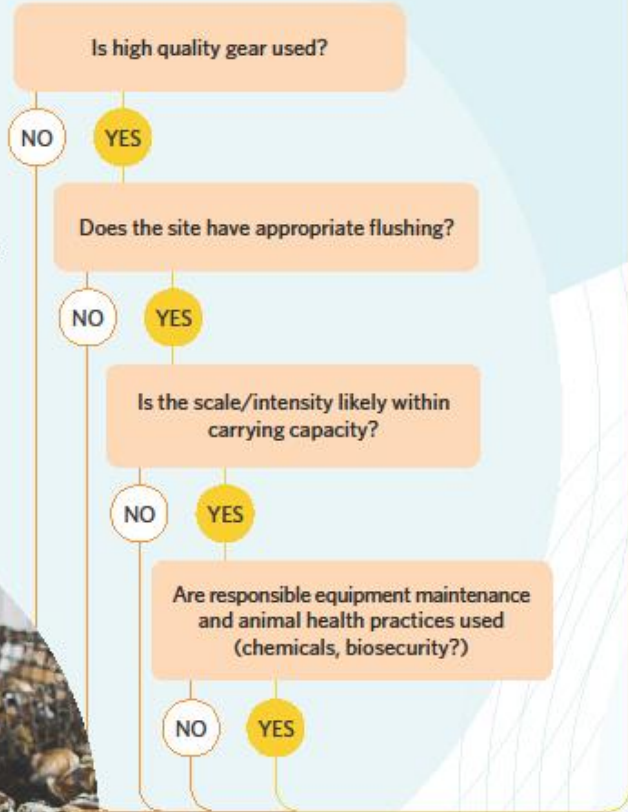
Principle 2: Culture species that can provide the environmental benefits intended.

Principles 3 & 4: Prioritize farming equipment and practices that enhance the delivery of environmental benefits.

Principle 5: Strive to farm at an intensity or scale that can enhance ecosystem outcomes.

Application of Roadmap: Does the Aquaculture Operation Improve Water Quality?

Oyster aquaculture in Chesapeake Bay is managed via regulations that require quality gear to be used and regularly maintained. Farms also must be sited in areas that have an appropriate degree of water movement to support farm-scale flushing. Research has established that the current density of farms and scale of production is conducted within the carrying capacity of the ecosystem, and that no negative environmental impacts on the benthos, sediment or water quality can be detected from the aquaculture activity.

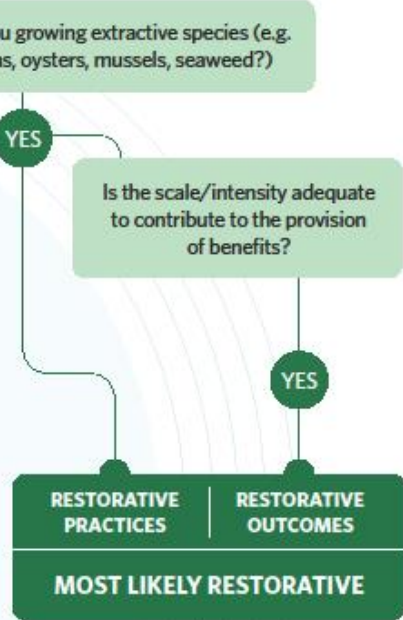


Oyster aquaculture is not occurring in ponds. The water body does require water quality improvement, as established by the mandated requirements for water quality improvement and TMDL.

Oyster aquaculture in the Bay occurs through production of the native species *Crassostrea virginica*; an extractives species that has also undergone significant declines in natural abundance as a result of human activities.

SUMMARY

At a farm-scale, the practices adopted by the industry in the Bay could be considered restorative, because they do not have an adverse impact on the environment and the oysters farmed are filtering water in an area where improvements in water quality are needed. Science has advanced in this local setting to the point where oyster aquaculture practices have been formally recognized by the US Federal Government as a contributor to achieving bay-wide water quality goals. While the current contribution of oyster aquaculture to meeting nutrient removal goals may be relatively small in comparison to the scale of the challenge, oyster aquaculture is one of the few opportunities to remove-non point sources of pollution after they enter the bay.





Senate Bill 434

Principle 6: Recognize the social and economic value of the environmental benefits provided.

- Pilot program provides restorative aquaculture financial incentives
- Encourages adoption of equipment, practices, and siting that improves environmental conditions
- Improves industry resilience to market fluctuations
- May accelerate oyster recovery efforts

SB 434_CBF_FAV.pdf

Uploaded by: Allison Colden

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CHESAPEAKE BAY FOUNDATION

Environmental Protection and Restoration
Environmental Education

Senate Bill 434

Natural Resources – Restorative Aquaculture Pilot Program

Date: March 2, 2023 Position: **Support**
To: Education, Energy, & Environment Committee From: Allison Colden, Sr. Fisheries Scientist

Chesapeake Bay Foundation (CBF) **SUPPORTS** SB 434 which would create a pilot program to provide financial incentives to Maryland's oyster farmers for practicing restorative aquaculture.

By the year 2050, global food demand is expected to increase by 500 Megatons annually. Arable land is limited, and wild capture fisheries production has stagnated, with many stocks considered overfished. Marine aquaculture is one of few sectors with significant scope for growth, and in the case of aquaculture, potential for restorative benefits alongside economic development.^{1,2}

Restorative aquaculture is defined as “the intentional use of aquaculture to positively affect (ecosystem) services.”³ In Chesapeake Bay, the native oyster population has been depleted to a small fraction of its historic size, along with its attendant ecosystem services, including nutrient removal, water filtration, and provision of habitat for fish and crabs. Shellfish aquaculture, when sited properly, has the potential to replace or restore these critical ecological functions while helping the State meet pollution reduction goals (see Attachment I).

In 2016, the Environmental Protection Agency approved oyster aquaculture as a best management practice for the removal of excess nitrogen and phosphorus. Several aquaculture businesses and co-ops are already successfully utilizing this program to generate nutrient credits.⁴ Oyster farms have also been shown to support nearly double the biomass of fish compared to nearby sites without restorative aquaculture gear

Senate Bill 434 would help incentivize the development of restorative aquaculture in Maryland through a financial incentive program. While oyster farmers may receive credit for removal of nutrients, no such program currently exists to recognize and compensate growers for the habitat and oyster recovery services that oyster farms provide. Providing financial incentives will encourage growers to continue investing in these public goods.

Specific metrics and husbandry techniques, developed in collaboration with scientists and members of industry, would ensure restorative aquaculture leases meet or exceed metrics associated with large-scale

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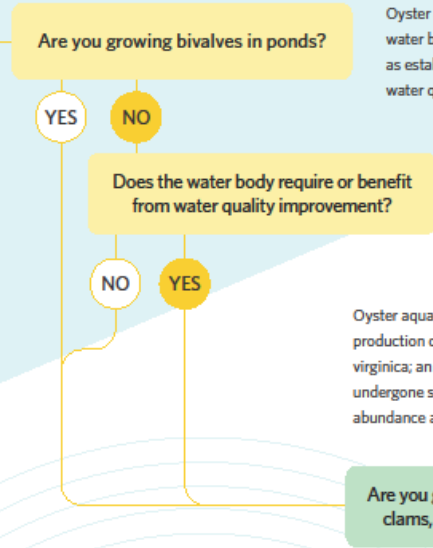
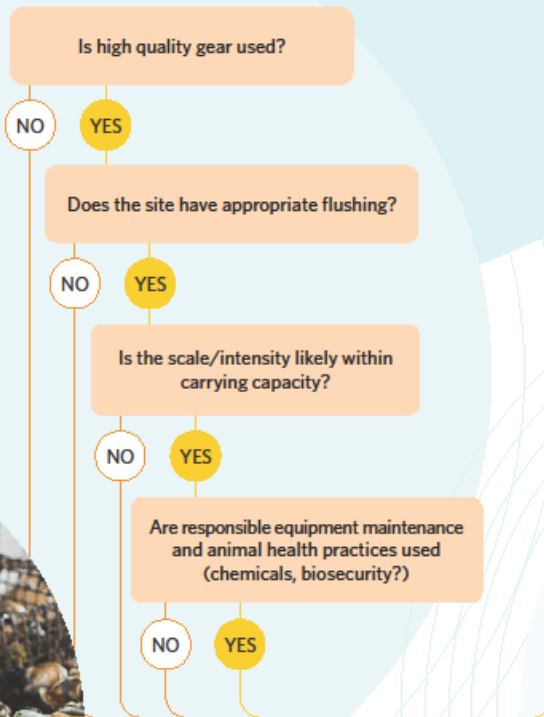
restoration projects in Maryland. This not only helps to diversify income streams for oyster farmers, but also provides an opportunity to partner with the private sector to accelerate the pace of oyster restoration.

CBF urges the Committee's FAVORABLE report on SB 434.

For more information, please contact Matt Stegman, Maryland Staff Attorney, at mstegman@cbf.org.

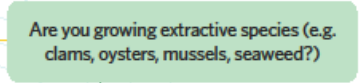
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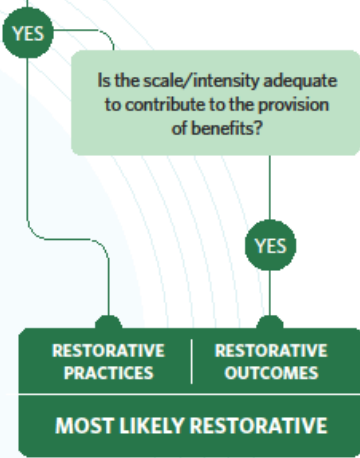
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SB434_MDSierraClub_fav 2March2023.pdf

Uploaded by: Carolyn Parsa

Position: FAV



P.O. Box 278
Riverdale, MD 20738

Committee: Education, Energy, and the Environment

Testimony on: SB 434 “Natural Resources – Restorative Aquaculture Pilot Program”

Position: Support

Hearing Date: March 2, 2023

The Maryland Chapter of the Sierra Club supports a favorable committee vote on SB 434 that will require the Department of Natural Resources (DNR) to establish and operate the Restorative Aquaculture Pilot Program. SB 434 encourages those currently holding an aquaculture lease to participate in the program by offering a financial incentive for maintaining the operations of that lease in accordance with the criteria and metrics for restorative aquaculture for a minimal of four years as identified by the DNR and determined in collaboration with the MD Aquaculture Coordinating Council and the University of Maryland Center for Environmental Sciences (UMCES). SB 434 further incentivizes participation by permitting participants in the pilot program to sell the oysters they grow to the DNR for use in oyster restoration sanctuary projects.

Efforts to repair the Chesapeake Bay as an ecosystem begins with rebuilding the Bay’s vital oyster substrate. It is the ability of the eastern oyster (*Crassostrea virginica*) to form reef habitat that is essential for other Bay life that makes the pollution filtering oyster a keystone species. A technical memorandum published by the NOAA in 2020 predicted an increase of 45% more biomass in the amount of harvest available fish and crab if the newly restored oyster bars from Chesapeake Bay Watershed Agreement would be allowed to reach maturity. Oyster planting projects are Maryland's hope for a future Chesapeake Bay put into present day action. Replenishing and maintaining its oyster population serves both our conservation goals towards a Green Maryland and our economic need to sustain Maryland's historic seafood industry. While organizations such as the DNR are already practicing restorative aquaculture with oyster planting projects, SB 434 would open project participation to aquafarmers, widening the number of participants and increasing the area and number of aquaculture plots studied to collect valuable data concerning oyster density, oyster biomass, and habitat complexity. SB 434 creates a platform for the science of sustainable aquafarming to advance collaboratively by including the Aquaculture Coordinating Council and the scientists of UMCES alongside the DNR to receive and manage all data generated by "The Restorative Aquaculture Pilot Program."

The Maryland Chapter of the Sierra Club recognizes the ecological importance of repairing the Chesapeake’s Bay oyster substate and the need for our state to identify and define the best practices for achieving this goal. We encourage a favorable report for SB 434.

Rev. Melina Frame
Natural Places Committee
mellframe@yahoo.com

Josh Tulkin
Chapter Director
Josh.Tulkin@MDSierra.org

SB 434 COA FAV.pdf

Uploaded by: Chesapeake Oyster Alliance

Position: FAV



Chesapeake
OYSTER ALLIANCE
10 Billion for the Bay

ADVOCATES FOR HERRING BAY - ANNAPOLIS AQUACULTURE - ARUNDEL RIVERS FEDERATION
BLUE OYSTER ENVIRONMENTAL - CAPE CONSERVATION CORPS - CHESAPEAKE BAY FOUNDATION
CHESAPEAKE BEACH OYSTER CULTIVATION SOCIETY - COASTAL CONSERVATION ASSOCIATION MARYLAND
DOWNTOWN SAILING CENTER - FRIENDS OF ST. CLEMENTS BAY - HOOPERS ISLAND OYSTER CO.
LIVING CLASSROOMS FOUNDATION - MARK STREET VENTURES, LLC - NATIONAL AQUARIUM
ORCHARD POINT OYSTER COMPANY - PIRATES COVE OYSTER COMPANY - SEVERN RIVER ASSOCIATION – SHORERIVERS
SOLAR OYSTERS LLC - ST. MARY'S RIVER WATERSHED ASSOCIATION
TRUE CHESAPEAKE OYSTER COMPANY, LLC - WATERFRONT PARTNERSHIP OF BALTIMORE

Senate Bill 434

Natural Resources – Restorative Aquaculture Pilot Program

DATE: March 2, 2023

POSITION: **SUPPORT**

The Chesapeake Oyster Alliance is a broad coalition of non-profits, community organizations, oyster growers, academic institutions, and business owners with the shared goal of adding 10 billion oysters in the Bay by the year 2025. With a focus on expanding aquaculture, increased oyster restoration, and science-based fishery management, the Chesapeake Oyster Alliance aims to accelerate oyster recovery efforts and in so doing the recovery of the Chesapeake Bay.

Oyster aquaculture, as known as oyster farming, is the practice of cultivating oysters on areas leased from the State for harvest. Since 2010, Maryland oyster aquaculture harvest has grown, on average, 24% annually. The industry provides valuable economic benefits and employment opportunities in Maryland's coastal communities.¹ Additionally, oysters planted by oyster farmers provide water filtration, habitat, and a low-carbon source of nutritious seafood to local markets. In 2016, oyster aquaculture was approved by the Chesapeake Bay Program as a nutrient reduction 'best management practice'² allowing municipalities to partner with oyster farmers to help reach their Bay clean-up goals.³

The Chesapeake Oyster Alliance strongly supports Senate Bill 434 and recommends a favorable report from the Senate Education, Energy, and Environment Committee.

SB434 creates a pilot program to provide financial incentives for businesses that manage their aquaculture leases to maximize environmental value. Under this program, leases would be maintained to meet or exceed criteria used in oyster restoration. Incentivizing these aquaculture approaches creates opportunities for partnership with the private sector to support oyster recovery and provides aquaculture businesses with additional revenue streams, making the industry more resilient to unexpected changes in market demand.

¹ van Senten, Jonathan et al. 2020. Analysis of the Economic Benefits of the Maryland Shellfish Aquaculture Industry. Final Report to the Chesapeake Bay Foundation. Available [online](#).

² Oyster BMP Expert Panel Report. 2016. Available [online](#).

³ Wheeler, Tim. 2023. Oyster farming co-op earns money from Maryland county to help reduce pollution. Bay Journal. 23 January 2023. Available [online](#).

Oyster aquaculture is a key component of long-term oyster recovery in Chesapeake Bay. This bill will help ensure the viability and productivity of Maryland's nascent oyster industry, helping to reduce the seafood trade deficit, create jobs in working waterfront communities, and provide Marylanders with fresh, locally produced seafood.

For these reasons, the Chesapeake Oyster Alliance urges a **favorable** report on Senate Bill 434 from the Senate Education, Energy, and Environment Committee. Please contact Tanner Council (tcouncil@cbf.org) with any questions.

Support of SB 434 - Natural Resources - Restorativ

Uploaded by: Colby Ferguson

Position: FAV



Maryland Farm Bureau, Inc.

3358 Davidsonville Road • Davidsonville, MD 21035 • (410) 922-3426

March 2, 2023

To: Senate Education, Energy & the Environment Committee

From: Maryland Farm Bureau, Inc.

Re: **Support of SB 434 - Natural Resources - Restorative Aquaculture Pilot Program**

On behalf of our Farm Bureau member families in Maryland, I submit this written testimony in support of SB 434, legislation that would require DNR to establish a pilot program, in consultation with the Aquaculture Coordinating Council and UMCES, to provide incentive payments for aquaculture farmers who maintain conditions on their lease that provide similar ecosystem benefits as restored reef areas. This program would sunset after 6 years. This would provide alternative revenue stream for oyster farmers who choose to manage their farms to the standards developed by DNR.

Cleaning up the bay requires more than just trying to reduce the pollution entering it. Filtering out the nitrogen and other sediment is critical to truly cleaning up the water body. Oyster aquaculture is one of the best ways to do that. This pilot program will work to restore the ecosystem while still allowing the grower to be profitable.

MDFB Policy: We recommend that greater attention and research be given to what is happening in the water column of the Bay itself. The filter feeders and small aquatic life will have to be a part of the long-term solution for the Bay cleanup.

We support the Maryland Aquaculture Coordinating Council's recommendations that provide science-based guidance on how aquaculture should be managed.

MARYLAND FARM BUREAU SUPPORTS SB 434 & REQUESTS A FAVORABLE REPORT

A handwritten signature in black ink, appearing to read "Colby Ferguson". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Colby Ferguson

Director of Government Relations

For more information contact Colby Ferguson at (240) 578-0396

LOS Bill 434 MD.pdf

Uploaded by: Jonathan van Senten

Position: FAV



Virginia Seafood AREC
Jonathan van Senten, PhD
15 Rudd Lane
Hampton, Virginia 23669
P: (757) 727-4861
jvansenten@vt.edu

Date: February 26, 2023

Attn: Maryland State Legislature / To whom it may concern

Re: Letter of support for Senate Bill 434

Esteemed Senators and Representatives,

I would hereby like to express my support for Senate Bill 434, introduced on February 2nd, 2023 by Senator Klausmeier. The bill seeks to establish a “Restorative Aquaculture Pilot Program” within the state of Maryland, to be administered by the Department of Natural Resources. I echo the General Assembly in asserting the beneficial and restorative nature of aquaculture in Maryland waters; which is soundly supported by the best available scientific research (Shumway et al. 2003; Shumway 2011; Alleway et al. 2019; Theuerkauf et al. 2019; Theuerkauf et al. 2022). Furthermore, the bill seeks to support the development of financial incentives for aquaculture farmers in recognition of the restorative benefits of aquaculture. As an assistant professor and Extension Specialist at the Virginia Seafood Agricultural Research and Extension Center (VSAREC) with Virginia Tech and a self-described “aquaculture economist”, I have closely studied the economics of U.S. aquaculture at the micro-economic level (van Senten & Engle 2017; Engle et al. 2019; Engle et al. 2020; Kumar et al. 2020; van Senten, Smith & Engle 2020; van Senten et al. 2020; Boldt et al. 2022); including specific investigation of the Maryland shellfish aquaculture industry (van Senten et al. 2019, Engle et al. 2021). I am excited to see this bill put forward to the Maryland legislature. Our research on the complexity and cost of regulations on U.S. aquaculture have demonstrated several key challenges affecting the industry: (1) the number of agencies involved in regulating aquaculture at local, state, and federal levels; (2) duplication of reporting requirements for aquaculture producers across multiple agencies; (3) the prescriptive nature of aquaculture permits; (4) the effects of economies of scale and compliance costs for aquaculture farmers. Together these factors conspire to form a barrier to entry for would-be aquaculture farmers and limit the ability of existing aquaculture farmers to expand to meet market demand for shellfish products. Simultaneously this also results in lost opportunities for environmental and restorative benefits derived from aquaculture. The recognition of benefits derived from aquaculture activities is an opportunity to support farmers and the continued operation of Maryland aquaculture farms. The creation of incentives for the restorative aspects of aquaculture will give farmers an opportunity to diversify their activities and compensate them for generating environmental benefits and subsequent positive spillover effects. Diversification can serve as an important risk mitigation strategy for farmers,

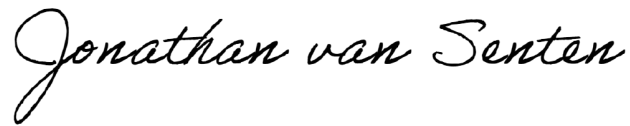
allowing them to be better positioned for market instability or disruptions. As was observed by our investigations during the COVID-19 pandemic, shellfish producers were particularly hard hit by market and supply chain disruptions (van Senten et al. 2020, van Senten et al. 2021). Programs that engaged existing farmers in restorative aspects of aquaculture were of benefit to the industry and provided an alternate source of revenue to farms in their time of need.

I therefore encourage the Maryland legislature to support this proposed legislation and create more opportunities for aquaculture farms.

Please do not hesitate to contact me for clarification or additional information with respect to my comments in this letter.

Thank you for your time and consideration.

Sincerely,



Jonathan van Senten, PhD

Assistant Director, Virginia Seafood AREC
Assistant Professor and Extension Specialist
Virginia Seafood AREC & Department of Agricultural and Applied Economics
Affiliate Faculty, Center for Coastal Studies
Affiliate Faculty, Center for Advanced Innovation in Agriculture
Virginia Tech
Email: jvansenten@vt.edu
Tel: [757-727-4861](tel:757-727-4861)
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References:

Alleway, Heidi K., et al. "The ecosystem services of marine aquaculture: valuing benefits to people and nature." *BioScience* 69.1 (2019): 59-68.

- Boldt, Noah C., et al. "A regulatory cost assessment of ornamental aquaculture farms in Florida." *Journal of the World Aquaculture Society* (2022).
- Engle, Carole R., Jonathan van Senten, and Gary Fornshell. "Regulatory costs on US salmonid farms." *Journal of the World Aquaculture Society* 50.3 (2019): 522-549.
- Engle, Carole R., Ganesh Kumar, and Jonathan van Senten. "Cost drivers and profitability of US pond, raceway, and RAS aquaculture." *Journal of the World Aquaculture Society* 51.4 (2020): 847-873.
- Engle, Carole, et al. "Economic tradeoffs and risk between traditional bottom and container culture of oysters on Maryland farms." *Aquaculture Economics & Management* 25.4 (2021): 472-503.
- Kumar, Ganesh, et al. "Economics of US catfish farming practices: Profitability, economies of size, and liquidity." *Journal of the World Aquaculture Society* 51.4 (2020): 829-846.
- Shumway, Sandra E., ed. *Shellfish aquaculture and the environment*. John Wiley & Sons, 2011.
- Theuerkauf, Seth J., et al. "A global spatial analysis reveals where marine aquaculture can benefit nature and people." *PLoS One* 14.10 (2019): e0222282.
- Theuerkauf, Seth J., et al. "Habitat value of bivalve shellfish and seaweed aquaculture for fish and invertebrates: Pathways, synthesis and next steps." *Reviews in Aquaculture* 14.1 (2022): 54-72.
- van Senten, Jonathan, and Carole R. Engle. "The costs of regulations on US baitfish and sportfish producers." *Journal of the World Aquaculture Society* 48.3 (2017): 503-517.
- van Senten, Jonathan, et al. "Analysis of the economic benefits of the Maryland shellfish aquaculture industry." *Final Project Report* 31 (2019).
- van Senten, Jonathan, et al. "Regulatory costs on Pacific coast shellfish farms." *Aquaculture Economics & Management* 24.4 (2020): 447-479.
- van Senten, Jonathan, Matthew A. Smith, and Carole R. Engle. "Impacts of COVID-19 on US aquaculture, aquaponics, and allied businesses." *Journal of the World Aquaculture Society* 51.3 (2020): 574.
- van Senten, Jonathan, Carole R. Engle, and Matthew A. Smith. "Effects of COVID-19 on US aquaculture farms." *Applied Economic Perspectives and Policy* 43.1 (2021): 355-367.

SB 434_CBF_FAV.pdf

Uploaded by: Matt Stegman

Position: FAV



CHESAPEAKE BAY FOUNDATION

Environmental Protection and Restoration
Environmental Education

Senate Bill 434

Natural Resources – Restorative Aquaculture Pilot Program

Date: March 2, 2023 Position: **Support**
To: Education, Energy, & Environment Committee From: Allison Colden, Sr. Fisheries Scientist

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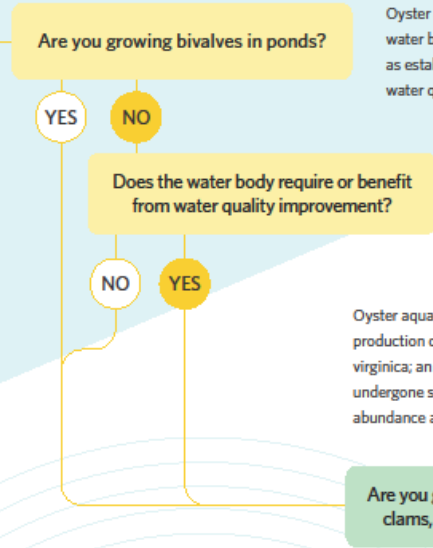
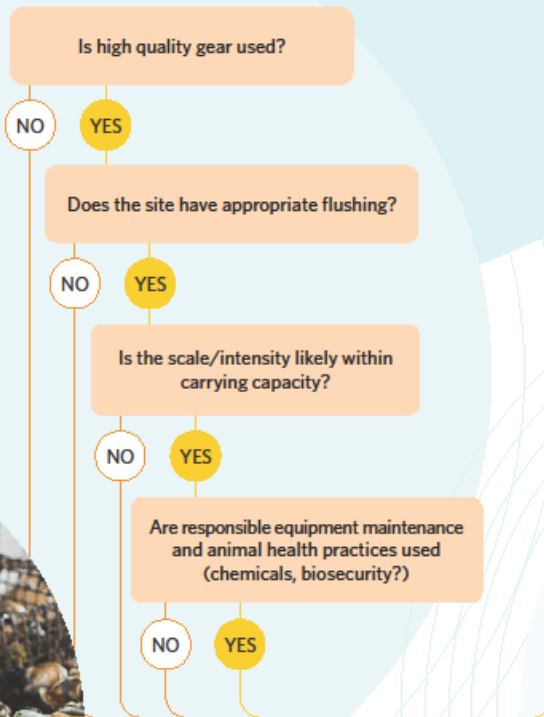
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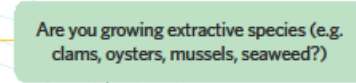
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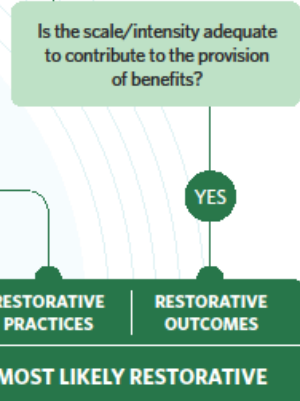
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SB 434 Natural Resources - Restorative Aquaculture

Uploaded by: Michelle Dietz

Position: FAV

Thursday, March 2, 2023

TO: Brian Feldman, Chair of the Senate Education, Energy and the Environment Committee, and Committee Members

FROM: Mark Bryer, The Nature Conservancy, Chesapeake Bay Program Director; and Michelle Dietz, The Nature Conservancy, Director of Government Relations

POSITION: Support SB 434 Natural Resources – Restorative Aquaculture Pilot Program

The Nature Conservancy (TNC) supports SB 434 offered by Senator Klausmeier. For the past two decades, the world has looked to the Chesapeake Bay to learn what's possible in oyster restoration. No effort in the world matches the scale of what has been accomplished here, and TNC has been proud to support and invest in oyster restoration along with many others during this time.

SB 434 would require the Maryland Department of Natural Resources (DNR) to establish a Restorative Aquaculture Pilot Program. This program would provide financial incentives to aquaculture lease holders who, for restoration purposes, only seed shellfish on their lease holdings for four or more years. Pausing oyster harvesting for this set amount of time will allow for restorative aquaculture activity that benefits water quality, oyster productivity and habitat. The program will also enable DNR to purchase oysters from these growers for use in ongoing restoration sanctuary projects. Over the course of this pilot program, DNR will work with partners like the University of Maryland Center for Environmental Science, the Aquaculture Coordinating Council, and other interested parties to develop restorative aquaculture criteria and metrics as well as define program eligibility and financial incentives for the pilot program. By allowing broad engagement in this process, members of the aquaculture industry, conservation community, researchers and state agencies can work together to ensure this program is supported by all interests in the Chesapeake Bay.

Sanctuaries and protected areas in the Chesapeake Bay improve recreational and commercial fishing in by providing persistent habitat for blue crabs, striped bass, white perch and other important finfish species. Oysters within these protected areas can produce larvae that benefit areas not only within these boundaries, but also in public fishery areas adjacent to sanctuaries, which increases harvest opportunities. By establishing the Restorative Aquaculture Pilot Program, Maryland is providing the aquaculture industry with financial incentive to support enhancing the shellfish population for their environmental benefits to the Chesapeake Bay.

TNC has a history of working across sectors to leverage private, state and federal funding to support the aquaculture industry in Maryland. Our Supporting Oyster Aquaculture and Restoration (SOAR) program is a good example of leveraging investments to establish alternative markets for oyster farmers to sell oysters for reef restoration projects, as well as to expand the Shellfish Grower's Resilience Fund in Maryland. In 2022, TNC received \$150,000 in Congressionally Directed Funding thanks to support from Senators Cardin and Van Hollen. This funding will be used to purchase farmed oysters in the spring of 2023 for use in sanctuary restoration in Maryland. TNC is pleased to see additional state investments into developing programs such as the Restorative Aquaculture Pilot Program, assisting oyster growers in the Chesapeake Bay to participate in restoration efforts.

TNC commends Senator Klausmeier for advancing legislation that is aimed at investing in Maryland's critical oyster industry by incentivizing restoration practices. SB 434 reflects a positive step forward in the long road to restoring oysters to the Chesapeake.

Therefore, we urge a favorable report on SB 434.

Knoche Testimony - Senate Bill 434.pdf

Uploaded by: Scott Knoche

Position: FAV

Testimony By Scott Knoche, Director of Morgan State University PEARL
Senate Bill 434: Restorative Aquaculture Pilot Program
March 1, 2023

Maryland Senator Klausmeier,

As the Director of the Morgan State University Patuxent Environmental and Aquatic Research Laboratory (MSU PEARL) and an environmental economist by training, I was very pleased to see **Senate Bill 434: Restorative Aquaculture Pilot Program**. I stand in strong support of this bill, which would provide financial incentives to the Maryland shellfish aquaculture industry that I expect would increase shellfish production.

Shellfish such as oysters are filter feeders that contribute to reducing excess nutrients - a key issue impeding the restoration of the Chesapeake Bay. Oysters also provide habitat for fish and blue crabs, which benefits commercial watermen and recreational fishers. The production of oysters through well-managed aquaculture benefits Maryland seafood consumers, supports small businesses and generates regional economic impacts to coastal communities and economies.

As an environmental economist by training, I understand very well the power of incentives in motivating individuals to undertake private actions that contribute to the public good. The nature of the Maryland shellfish aquaculture industry is well-suited for the implementation of an incentive program, as the industry consists of small businesses cultivating shellfish for commercial sale while concurrently generating public benefits such as improved water quality and habitat provision for recreationally and commercially important species. Because these public benefits accrue to broader society and are currently of no direct financial benefit to the shellfish industry, shellfish production by the Maryland aquaculture industry is lower than what is socially optimal. By providing well-targeted financial incentives through a Restorative Aquaculture Pilot Program, Senate Bill 434 would help increase shellfish aquaculture production to a more optimal level that reflects both the private and public benefits of shellfish aquaculture.

Thank you for the opportunity to voice my support for Maryland Senate Bill 434. Please do not hesitate to reach out if you have any questions.

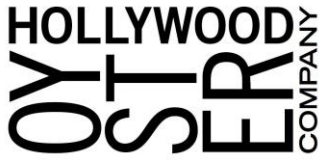


Dr. Scott Knoche
Director, Morgan State University PEARL

SB 434 hollywood oyster testimony FOR.pdf

Uploaded by: talmage petty

Position: FAV



Tal Petty, Founder/Farmer
Hollywood Oyster Company
44149 Tranquility Farm Ln
Hollywood MD 20636

March 1, 2023

RE: SB 434

Natural Resources – Restorative Aquaculture Pilot Program

Hello and thank you for considering the subject Bill which Hollywood Oyster Company strongly supports.

Hollywood Oyster, Hollywood, St. Mary's County, MD employs 12 full time people and farms millions of oysters on 5 leases totaling almost 20 acres on the Patuxent River near Solomons Island.

We ship Maryland Farmed Oysters nationally under our Sweet Jesus and Hollywood Oyster brands.

We have invested heavily in a packing house, delivery truck and have thousands of grow cages. We commenced operations in 2010 as a result of the new aquaculture legislation and have tried to be a model participant.

Oyster aquaculture is in the top tier of sustainable farming methods. Hollywood Oyster is additionally sustainable for electricity; producing more than we consume with our solar farm.

Oyster aquaculture has significant bio diversity benefits. All of our 20 acres of leased area are sandy bottom that historically supported grasses but that prior to farming were deserts. Literally huge areas of river/bay with no area for crab or fish to hide or feed.

By introducing cage on bottom in large areas we create habitat for the entire food chain within each cage and among the cages for safe areas for crabs and fish. Our water teems with minnows and our skies and waters teem with their predators as part of the increased habitat.

Thus we create significant ecological benefits to the Chesapeake Bay by our activities yet are not rewarded financially for those efforts. This is an area of opportunity to support aquaculture as well as a financial methodology to support technical and other best practices to increase these ecological benefits.

Thank you for your attention
Grow more oysters!
Tal

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Uploaded by: Emily Wilson

Position: FWA



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Acting Secretary
Allan Fisher, Deputy Secretary

March 2, 2023

BILL NUMBER: Senate Bill 434 – First Reader

SHORT TITLE: Natural Resources – Restorative Aquaculture Pilot Program

DEPARTMENT’S POSITION: SUPPORT WITH AMENDMENTS

EXPLANATION OF DEPARTMENT’S POSITION:

The Department supports Senate Bill 434 with amendments.

The Department suggests amending this bill to first require a task force to study the concept of a restorative aquaculture pilot program, with a report issued by the end of 2023 including concepts for a pilot program that would be created with the metrics and criteria determined by the task force. The Department believes that allowing time for a summer study with appropriate involvement and consultation will result in both good dialogue on this concept as well as assisting in creating the best possible outcome for a restorative aquaculture pilot program.

BACKGROUND INFORMATION:

None.

BILL EXPLANATION:

The bill would create an aquaculture pilot program that focuses on restoration activities.

Contact: Emily Wilson, Director, Legislative and Constituent Services (Acting)
emilyh.wilson@maryland.gov ♦ 410-260-8426 (office) ♦ 443-223-1176 (cell)

BY:

(To be offered in the Education, Energy, and the Environment Committee)

AMENDMENTS TO SENATE BILL 434
(First Reading File Bill)

AMENDMENT NO. 1

On page 1, in line 2, strike “**Natural Resources –**” and substitute “**Task Force to Study**”; in the same line, strike “**Pilot Program**”; strike beginning with “requiring” in line 3 down through “Program” in line 8 and substitute “requiring the Aquaculture Coordinating Council to create a Task Force to study restorative aquaculture; and generally relating to shellfish aquaculture”; and strike in their entirety lines 9 through 13, inclusive.

AMENDMENT NO. 2

On page 1, in line 15, strike “the Laws of Maryland read as follows”.

On pages 1 through 3, strike beginning with “**Article – Natural Resources**” in line 16 on page 1 down through “**PROGRAM.**” in line 16 on page 3 and substitute:

“(a) The Aquaculture Coordinating Council established under § 4-11A-03.2 of the Natural Resources Article shall create a Task Force to study restorative aquaculture.

(f) The Task Force shall review and study:

(1) circumstances under which commercial shellfish cultivation within an area leased for aquaculture constitutes a restorative activity that benefits water quality, oyster productivity outside of the leased area, and habitat for organisms other than the commercial aquaculture products in the leased area;

(2) criteria and metrics for identifying when commercial aquaculture is providing the restorative benefits described in paragraph (1) of this subsection; and

(3) ways to incentivize commercial shellfish leaseholders to cultivate shellfish in a manner that meets the criteria and metrics for providing the restorative benefits described in paragraph (1) of this subsection.

(g) On or before December 31, 2023, the Task Force shall submit a final report on its findings, in accordance with § 2-1257 of the State Government Article, to the General Assembly.”.

On page 3, in line 18, strike “October” and substitute “June”; in the same line, strike “6 years” and substitute “7 months”; and strike beginning with “September” in line 18 down through “2029” in line 19 and substitute “January 1, 2024”.