



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

¹ Costello, C., Cao, L., Gelcick, S., et al. 2020. The future of food from the sea. *Nature* 588: 95-105.

² Barrett, L.T., Theuerkauf, S.J., Rose, J.M., Allevay, H.K., Bricker, S.B, Parker, M., Petrolia, D.R. and R.C. Jones. 2022. Sustainable growth of non-fed aquaculture can generate valuable ecosystem benefits. *Ecosystem Services* 53: 101396.

³ Theuerkauf, S. J. et al. (2019) ‘A global spatial analysis reveals where marine aquaculture can benefit nature and people’, *PLOS ONE*, 14(10), p. e0222282. doi: [10.1371/journal.pone.0222282](https://doi.org/10.1371/journal.pone.0222282).

⁴ Wheeler, Timothy. Oyster farming co-op earns money from Maryland county to help reduce pollution. *Bay Journal*. 23 January 2023. Available [online](#).

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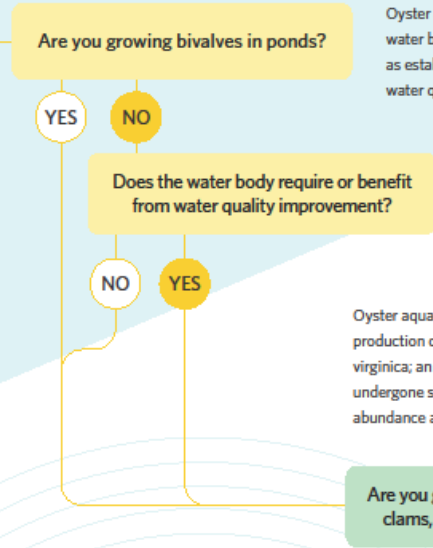
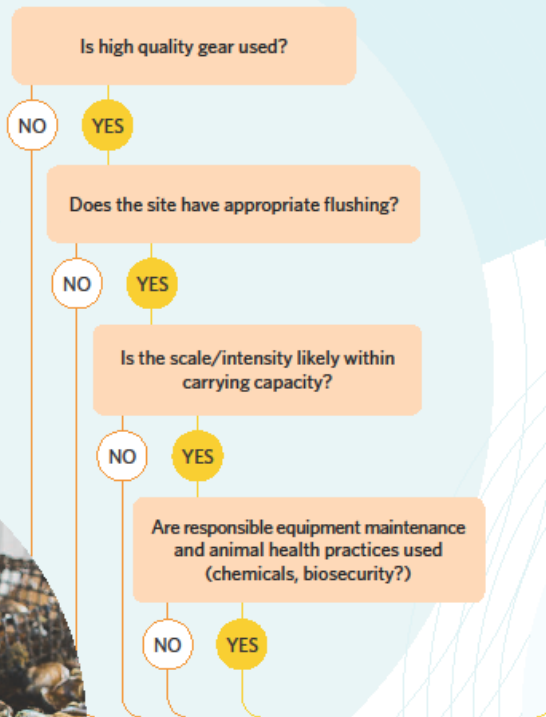
restoration projects in Maryland. This not only helps to diversify income streams for oyster farmers, but also provides an opportunity to partner with the private sector to accelerate the pace of oyster restoration.

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

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

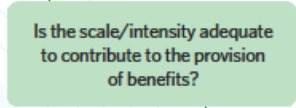
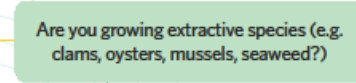
Application of Roadmap: Does the Aquaculture Operation Improve Water Quality?

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.

