



CHESAPEAKE BAY FOUNDATION
Saving a National Treasure

**WRITTEN TESTIMONY OF
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**LEGISLATIVE HEARING on H.R. 4389, H.R. 4770, and H.R. 5009
BEFORE THE**

**BEFORE THE U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON NATURAL RESOURCES
SUBCOMMITTEE ON WATER, WILDLIFE AND FISHERIES
U.S. HOUSE OF REPRESENTATIVES**

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Chairman Bentz, Ranking Member Huffman, and Members of the Subcommittee, thank you for inviting me to testify today on behalf of the Chesapeake Bay Foundation (CBF) and its over 300,000 members in support of H.R. 4770– Chesapeake Bay Science, Education, and Ecosystem Enhancement Act (SEEE Act).

For more than half a century, CBF has led a landmark effort to save the Chesapeake Bay—a national treasure on which the health and wellbeing of over 18 million people¹ and 3,600 species of plants and animals depend.² The watershed spans 64,000 square miles from Cooperstown, New York to Virginia Beach, Virginia and westward to the Allegheny Mountains. In total, it encompasses six states- Delaware, Maryland, New York, Pennsylvania, Virginia, and West Virginia- and the District of Columbia.³ There are 11,684 miles of shoreline and includes 150 major rivers and streams in the watershed.⁴ It is our nation’s largest estuary and the third largest estuary in the world.⁵

The Bay is a vital economic engine for the region and for the nation. According to NOAA’s latest report, in 2020 the commercial seafood industry in Maryland and Virginia brought nearly \$6.7 billion in sales, over \$1.6 billion in income, and nearly

¹ Environmental Protection Agency (EPA) Chesapeake Bay Program (CBF), What is a Watershed?, <https://www.chesapeakebay.net/discover/watershed>.

² The flora and fauna in the watershed including in this number are 348 species of finfish, 173 species of shellfish, over 2,700 plant species and more than 16 species of underwater grasses. Additionally, the 87 species of waterbirds rely on the Bay. Fish and Wildlife Service, Chesapeake WILD, www.fws.gov/program/chesapeake-wild#.

³ EPA CBP, What is a Watershed?, *supra* note 1.

⁴ Id.

⁵ Id.

46,000 jobs to the region.⁶ Recreational fishing in Maryland and Virginia in 2020 supported over 16,000 jobs, nearly \$725 million in sales, and nearly \$268 million in income.⁷

For more than 40 years, federal, state, and local governments alongside non-profit partners and businesses have worked together to reduce pollution, restore habitat, and enhance ecosystem function in the Chesapeake Bay. It is thanks to this broad partnership that we have made great strides toward restoration. In 2025, Chesapeake Bay restoration efforts will face a key deadline for implementation of best management practices and achievement of Bay Watershed Agreement restoration goals, but there is still much work to be done. In order to be successful and to accelerate the pace of progress, we will need the strong support of all federal partners in the Chesapeake Bay clean-up. Thus, the reauthorization of the National Oceanic and Atmospheric Administration Chesapeake Bay Office (NCBO) and authorization of the Chesapeake Bay Watershed Education and Training (B-WET) program, could not come at a more critical time.

H.R. 4770- Chesapeake Bay Science, Education, and Ecosystem Enhancement Act (SEEE Act)

The SEEE Act would reauthorize the NCBO and strengthen the Office's ability to deliver cutting-edge science to help restore the Bay and support the watershed's oyster, blue crab, striped bass, and other ecologically and economically valuable fisheries. Through research, technical assistance, coordination, long-term monitoring, and habitat restoration, NCBO provides important insights for improving the Bay's ecosystem and supporting coastal communities. Through its leadership role in the Environmental Protection Agency (EPA) Bay Program's Goal Implementation Teams, the NCBO is responsible for the stewardship of our fisheries and coastal habitats and ensuring the estuary and the species that depend on it have a healthy future for many years to come.⁸

- **Large-scale Oyster Restoration**

The Eastern oyster (*Crassostrea virginica*) is a keystone species in Chesapeake Bay, responsible for building complex, three-dimensional reefs which provide critical

⁶ National Marine Fisheries Service. 2022. Fisheries Economics of the United States, 2020. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-236A, p.110, available at <https://media.fisheries.noaa.gov/2023-09/FEUS-2020-final2-web-0.pdf>.

⁷ *Id.* at 111.

⁸ See, e.g., EPA CBP, Maintain Healthy Watersheds Goal Implementation Team, https://www.chesapeakebay.net/who/group/maintaining_healthy_watersheds_goal_implementation_team.

nursery habitat for more than 350 species and filtering sediment and nutrients from the water, improving water quality and clarity. Oyster reefs, once a dominant feature of the Bay's shallows are essential habitat for important fish species like black sea bass, red drum, summer flounder, and spotted sea trout. Many recreational fishers value these reef habitats for the abundance and diversity of fish communities they support.

As a result of historical overharvesting, pollution, and disease, the Bay's native oyster population is at a fraction of historic levels. Large-scale restoration projects provide the best chance for reversing the population decline and safeguarding the vital services oysters provide. These projects create reef habitat for oysters to grow, reproduce and contribute larvae to additional reef areas in the Bay. They also build functioning reef systems that work collectively to improve the Bay's water quality and biodiversity.

In 2009, the Executive Order on Chesapeake Bay Protection and Restoration acknowledged the economic, social, and cultural value of the Chesapeake Bay to the nation as a whole and created a Federal Leadership Committee including EPA and NOAA, charged with developing priority strategies to restore the health and natural resources of the Chesapeake Bay.⁹ It was through this committee that the concept of large-scale oyster restoration was born.

In June of 2014, representatives from the entire watershed signed the Chesapeake Bay Watershed Agreement.¹⁰ For the first time, Delaware, New York, and West Virginia committed to full partnership in the Bay Program. The agreement includes the Chesapeake Clean Water Blueprint goals for 2017 and 2025, but also established additional conservation goals, such as goals for habitat restoration and conservation, improving fisheries, increasing public access public access, and environmental literacy. This Agreement included a commitment to large-scale oyster restoration in ten tributaries by 2025.

This outcome, to complete oyster restoration in ten tributaries, is currently on track to be completed by 2025 and is widely recognized as the largest oyster restoration project in the world, thanks in no small part to the contributions of the NCBO.¹¹

⁹ Exec. Order No. 13508, 75 Fed. Reg. 23,099 (May 15, 2009).

¹⁰ EPA CBP, Chesapeake Bay Watershed Agreement, https://www.chesapeakebay.net/what/what_guides_us/watershed_agreement.

¹¹ All of the outcomes under NOAA leadership are on track to meet their commitments making it clear that NOAA plays an invaluable role in ensuring that the partnership is making progress to restoring the Bay. EPA, Charting a Course to 2025: A Report and Recommendations for the Chesapeake Executive Council on How to Best Address and Integrate New Science and Restoration

NCBO provides critical leadership and financial support to Chesapeake Bay oyster restoration efforts. They led the development of the restoration approach, the definition of success metrics, and the ongoing comprehensive monitoring of restoration projects. Each year, NCBO contributes funding to support production of oyster spat-on-shell, a key restoration product used to seed newly-constructed reefs. In 2023, a record 1.7 billion oyster spat were planted in Maryland alone, with nearly 1 billion planted on large-scale restoration projects alone.¹²

NCBO scientists conduct habitat assessments to understand baseline conditions before and after oyster restoration projects, providing critical knowledge to resource managers who work to ensure long-term success of these restoration efforts. The data and information that the NCBO collects helps other resource managers across the globe shape their own restoration projects based on lessons learned here in the Bay.

Over the past decade, with NOAA's coordination and leadership, more than 1,300 acres of oyster reefs have been restored and more than 10 billion juvenile oysters have been planted in Chesapeake Bay. NOAA equates these numbers to "1,055 football fields" of healthy habitat, natural water filtration, and enhanced fishing opportunities for people.¹³ Additionally, NOAA has recently released a draft restoration goal defines steps to build on and improve the next phase of large-scale oyster restoration following the completion of the ten tributaries restoration in 2025.¹⁴

Monitoring indicates that these restoration projects are showing great promise, with most reefs meeting the success criteria to be considered fully restored. A NCBO-led comprehensive research program indicates that restoration is also paying dividends to the Chesapeake Bay ecosystem. Restored reefs are estimated to removed seven times as much nitrogen from the water each day than unrestored areas, reducing excess nutrients that fuel low-oxygen 'dead zones.' Productivity of important prey

Strategies Leading up to 2025, at 25 (July 21, 2023), available at https://d18lev1ok5leia.cloudfront.net/chesapeakebay/documents/Charting-a-Course-to-2025_CBP_2023-07-26-001306_jvtn.pdf.

¹² See Governor Moore Announces New Annual Record for Chesapeake Bay Oyster Planting, (Oct. 10, 2023), <https://governor.maryland.gov/news/press/pages/governor-moore-announces-new-annual-record-for-chesapeake-bay-oyster-planting.aspx>.

¹³ 2022 Chesapeake Bay Oyster Restoration Update, <https://d18lev1ok5leia.cloudfront.net/chesapeakebay/documents/2022-Chesapeake-Bay-Oyster-Restoration-Update.pdf>

¹⁴ Chesapeake Progress, Oysters, <https://www.chesapeakeprogress.com/abundant-life/oysters> (the ten tributaries are Harris Creek, the Little Choptank, Tred Avon, upper St. Mary's and Manokin rivers in Maryland, and the Great Wicomico, Lafayette, Lower York, Lynnhaven and Piankatank rivers in Virginia).

species for fish, including worms, grass shrimp, mud crabs, and others, can exceed 5,000 individuals per square meter, and survival of juvenile blue crabs is three times higher on reefs than in unrestored areas. These ecosystem benefits have tangible advantages for coastal communities as well. Once mature, oyster reefs in the Choptank River system in Maryland are expected to increase fishery landings and revenue by \$23 million annually and support an additional 300 jobs in coastal counties that are heavily dependent on the seafood industry.

Without NCBO's technical expertise, coordination, monitoring, and support, projects of this scale, complexity, and level of success would simply not be possible. The SEEE Act supports and allows the NCBO to expand its restoration efforts.

- **Ocean Monitoring and a Changing Climate**

Across the Chesapeake Bay, the NCBO manages a vast ocean observing network, including observation buoys that track meteorological and oceanographic parameters, telemetry arrays that monitor fish movement, and water quality sensors that monitor ecosystem conditions. For example, the Chesapeake Bay Interpretive Buoy System (CBIBS)¹⁵ provides weather and environmental information such as wind speed, temperature, and wave height, updated every six minutes. The data provided by CBIBS is available online, via mobile app, or by phone call, allowing boaters and anglers to access real-time data to plan their trips and be safe on the water. Data from the buoys are combined with satellite data to track harmful algal blooms, monitor sediment plumes, measure oxygen levels important to fish throughout the year, and forecast the distribution and severity of dangerous bacteria – information critical to oyster aquaculture operations.

Additionally, NCBO is on the front lines of advancing our understanding of how a changing climate will impact the Chesapeake Bay, particularly fish species and the habitats they depend on. NCBO has brought together experts from across the watershed and beyond to understand how rising water temperatures, low oxygen 'dead zones', and habitat availability will change over time, and the impacts that will have on commercial and recreational fisheries. NCBO staff recently co-authored a seminal report on the impacts of rising water temperatures on Chesapeake Bay, including key fish habitat like underwater grasses.¹⁶ Ongoing work will quantify the availability of habitat for species like striped bass, summer flounder, and black sea

¹⁵ NOAA, Chesapeake Bay Interpretive Buoy System, <https://buoybay.noaa.gov/>.

¹⁶ Batiuk, R., Brownson, K., Dennison, W., Ehrhart, M., Hanson, J., Hanmer, R., Landry, B., Reichert-Nguyen, J, Soueidan, J., Tassone, S., Vogt, B. 2023. Rising Watershed and Bay Water Temperatures: Ecological Implications and Management Responses – A STAC Workshop. STAC Publication Number 23-001. Edgewater, MD. (505 pages), available at https://www.chesapeake.org/stac/wp-content/uploads/2023/01/STAC-Report_-_Rising-Temps.pdf.

bass. Researchers are also working to identify the environmental drivers that determine the productivity of forage fish species like Atlantic menhaden, which serve as primary prey for the Bay's top predators. These insights are critical to understanding the challenges that a changing climate presents for the Bay and providing timely, management-relevant information for resource agencies and decisionmakers.

The ability to address the complex challenges of rising water temperatures, low oxygen 'dead zones', and habitat availability have on our watershed demands scientific expertise and adequate funding. As the federal lead for the climate resiliency goal team, the NCBO is equipped to continue leading climate resilience and adaptation work in the watershed. However, to stand up to the challenges a changing climate poses and position the next generation of Bay stewards for success, deeper investments must be made in this vital work. The SEEE Act expands the NCBO ocean monitoring efforts, which will provide the necessary data to implement science-based decision making across the watershed.

- **Environmental Education**

Additionally, the SEEE Act would authorize the B-WET program which offers students and teachers the opportunity to learn about the scientific value and wonder of the Bay ecosystem firsthand. The NCBO is the federal lead for K-12 education in the Chesapeake Bay Program partnership providing the tools, resources, and funding necessary to ensure the next generation of Bay stewards have a comprehensive understanding of our complex watershed.

Throughout the watershed, students, teachers, and experts team up year-round to learn about the Chesapeake's diverse habitats through hands-on learning. Students engage in defining local issues, participate in field investigations, learn to synthesize information and draw conclusions, and develop action-oriented projects. This learning, known as Meaningful Watershed Educational Experiences (MWEE)¹⁷, is a cornerstone of environmental education, and enables student learning in the context of life-relevant, real-world problems.

NCBO implements the B-WET program, which delivers grant funding across the watershed for dozens of environmental literacy programs, educating tens of thousands of students, and providing professional development for hundreds of teachers. B-WET helps equip educators with the skills, knowledge, and confidence

¹⁷ NOAA, Bay Watershed Education and Training, <https://www.noaa.gov/office-education/bwet>; see also CBF, Meaningful Watershed Educational Experiences, <https://www.cbf.org/join-us/education-program/mwee/>.

to effectively teach students about the watershed, ensuring the next generation of bay stewards are environmentally literate. For instance, in Fiscal Year (FY) 2022 NOAA awarded funding to CBF to assist in bringing together teachers and community members to build and maintain successful MWEs in four counties in Pennsylvania.¹⁸ This program will help ensure that educators receive the tools needed to effectively develop and teach an environmental education curriculum in addition to ensuring that the community supports and participates in getting students out into nature.

Moreover, NCBO helps states across the watershed organize. It connects state departments of education with their natural resource agencies, focusing on key opportunities to benefit students and share innovative ideas (such as MWEs) between states.

NCBO also runs the Environmental Science and Training Center, providing educators the knowledge and tools they need to deliver up-to-date science information to the next generation. Through workshops at NOAA's Oxford Lab and throughout the watershed with partner organizations, teachers learn how to apply science with students in the classroom and in the field.

Since its inception two decades ago, Chesapeake B-WET has evolved from funding projects in individual schools to supporting school districts and state-wide environmental literacy efforts. It has directly reached more than 730,000 students and nearly 30,000 professional development opportunities in the Chesapeake Bay watershed¹⁹. Since 2002, NOAA has awarded more than \$117 million to 929 B-WET projects²⁰ with over \$51 million to support more than 275 B-WET projects in the Chesapeake Bay Watershed.²¹

The SEEE Act would authorize the B-WET program, providing more students with the opportunity to learn first-hand about the importance of protecting and restoring the Chesapeake Bay watershed.

¹⁸ NOAA, Past and Current Chesapeake B-WET Projects, www.fisheries.noaa.gov/new-england-mid-atlantic/chesapeake-bay/past-and-current-chesapeake-b-wet-projects#pennsylvania.

¹⁹ EPA CBP, 40 years of Educating Chesapeake Bay Stewards, (Sept. 22, 2023), <https://www.chesapeakebay.net/news/blog/40-years-of-educating-chesapeake-bay-stewards>.

²⁰ NOAA, Bay Watershed Education and Training, *supra* note 17.

²¹ Pers. Comm. with NOAA (Oct. 13, 2023).

- **Funding for NCBO**

The SEEE Act would provide necessary financial stability to the NCBO for FY 2024 through FY 2027. To effectively implement its Strategic Plan²², the NCBO needs reassurances it will have consistent funding. As highlighted above, and one example of how sustained funding is necessary to meet NCBO's goals, the ten oyster restoration projects that NCBO is working on will require additional monitoring and evaluation past 2025 in three-to-six-year intervals.²³ In order to ensure that these long-term restoration projects are completed and the agency has the ability to collect the necessary data to determine the water-quality benefits, reassurances that funding will be available is needed. Additionally, efficiencies can be derived from sustained funding for monitoring and restoration by reducing uncertainty and associated mobilization costs, making federal investments more cost-effective over time.

Conclusion

Restoring the Chesapeake Bay has always been a bipartisan effort. At this critical time for the Bay cleanup effort, we encourage this committee to promote swift passage of H.R. 4770 to ensure that NCBO continues to play a vital role in restoring the health of the Bay – its waterways, fisheries, and wildlife habitats, meeting the 2025 restoration requirements and helping to lead the next chapter of restoration efforts in Chesapeake Bay.

²² NCBO 2020-2025 Strategic Plan, https://repository.library.noaa.gov/view/noaa/28762/noaa_28762_DS1.pdf; see also NCBO Biennial Report to Congress Fiscal Years 2019 and 2020, <https://media.fisheries.noaa.gov/2021-04/NCBO%2019-20%20Biennial%20Report%20to%20Congress%20FINAL.pdf?null>.

²³ Chesapeake Progress, Oysters, *supra* note 14 (“Monitoring and evaluation will take place at three- and six-year intervals following construction and seeding. This monitoring and evaluation phase will not be complete until after 2025.”).