WRITTEN TESTIMONY OF
PEYTON ROBERTSON
DIRECTOR, CHESAPEAKE BAY OFFICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

FIELD HEARING ON THE
CHESAPEAKE BAY AGREEMENT & EXECUTIVE ORDER

BEFORE THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON WATER AND WILDLIFE
U.S. SENATE

SEPTEMBER 8, 2014

Introduction

Good afternoon Senator Cardin. My name is Peyton Robertson and I am the Director of the National Oceanic and Atmospheric Administration's (NOAA) Chesapeake Bay Office within the Department of Commerce. Thank you for inviting me to testify today on NOAA's commitment to support the 2014 Chesapeake Bay Watershed Agreement (Agreement).

NOAA envisions a healthy and sustainable Chesapeake Bay, with habitats that provide a range of benefits for fish and wildlife, commercial and recreational opportunities, and that enable resilient coastal communities. We are fulfilling this vision through the new Agreement by providing a suite of products, services and expertise. I will highlight several recent accomplishments that demonstrate measurable results and successful partnerships. These include restoring oyster populations and habitat on an unprecedented scale, opening fish habitat by removing dams, advancing environmental literacy, supporting science that informs oyster restoration and blue crab and fisheries management, supporting coastal resiliency to climate change, and implementing place-based initiatives through NOAA's Habitat Blueprint. I will describe how these projects are integrated into the goals and outcomes of the new Agreement, and how none are possible without federal, state, and local partnerships. Sustained support for these programs and projects is required to achieve results.

NOAA's Role in the Chesapeake Bay Watershed Agreement

NOAA played a significant role as a member of the Principals Staff Committee, the Management Board and various Goal Implementation Teams of the Chesapeake Bay Program in developing the Agreement, and is a key federal partner in implementing projects that will achieve its goals and outcomes.

Sustainable Fisheries Goal and Outcomes

NOAA chairs the Sustainable Fisheries Goal Implementation Team and worked through this team to facilitate development of the Sustainable Fisheries Goal and associated outcomes for blue crab abundance, blue crab management, oyster restoration, forage fish, and fish habitat.

Blue crab abundance and management outcomes

Blue crab is an iconic species and valuable resource in the Chesapeake Bay. It is one of the most sought-after shellfish in the mid-Atlantic region, and is caught both commercially and recreationally. While blue crab populations are highly variable from year to year, requiring consistent monitoring and sound fishery management, during the last decade, blue crab populations in the Chesapeake Bay reached some of their lowest numbers ever due to overexploitation and habitat degradation.

The Chesapeake Bay Stock Assessment Committee, a workgroup of the Fisheries Goal Implementation Team, is the primary academic and managerial body that examines the annual status of the blue crab population. It also recommends management actions and prioritizes research objectives to ensure the best available science is applied to management. In 2008, this Committee recommended female-specific harvest regulations to begin rebuilding the blue crab population.

The Bay jurisdictions—the State of Maryland, Commonwealth of Virginia, and the Potomac River Fisheries Commission—implemented these regulations, including a shorter harvest season, daily bushel limits and new gear requirements to protect female crabs until a revised population target could be developed. Revision of the population target and threshold began in 2011 with the NOAA funded benchmark stock assessment. The stock assessment recommended jurisdictions shift from a total adult (male and female population) target to a new female-specific set of reference points in order to place more emphasis on female crab conservation. These female-specific reference points (with a target of 215 million and threshold of 70 million adult female crabs) were implemented by the Bay jurisdictions for the 2012 crabbing season and continue to drive management decisions today.

This year, the population of 69 million adult female blue crabs is below the 70 million threshold, but overfishing is not occurring. As a result of these low numbers, Bay jurisdictions agreed to a ten percent harvest reduction and established a July-to-July fishing season. Triggering these management actions was possible because of the scientifically derived and agreed to reference points mentioned above.

However, fishing pressure is not the only challenge affecting blue crabs. Significant overwintering mortality, habitat loss, poor water quality, predation, and cannibalism are all factors thought to be affecting blue crab abundance and recovery, despite a few high recruitment years. NOAA's Chesapeake Bay Interpretive Buoy System, which provides real time observations of weather and water conditions, observed lower water temperatures from February to March 2014 in comparison to previous years. While the buoys measure water temperature at the surface, this overall persistence of colder water could help explain the estimated blue-crab mortality from the winter dredge survey. NOAA will work with the Committee to explore ways of linking buoy observations with the blue crab winter dredge survey to improve our understanding of how physical factors such as temperature may affect crab populations. In addition, the Committee is evaluating the role of these other ecosystem factors and causes of natural mortality. Stock assessments are the most crucial piece to continually improving blue crab management. The next blue crab stock assessment is planned for 2016.

In addition to improving the science, there is interest in evaluating other management approaches. The new Agreement includes an outcome to, *"Evaluate the establishment of a Bay-wide, allocation-based management framework with annual levels set by the jurisdictions for the purpose of accounting for and adjusting harvest by each jurisdiction."*

Oyster restoration outcome

Eastern oysters in the Chesapeake Bay have declined dramatically over the past century due to overfishing, habitat loss (including poor water quality) and disease. Oyster populations are currently estimated to be less than one percent of historic highs Bay-wide, making substantial restoration efforts necessary if the population is to recover. Restoring these oyster populations is important to improving Chesapeake Bay habitat for multiple reasons, including fish habitat and water quality. Because of their tremendous ecological value, the new Agreement commits state and federal agencies to an outcome of, "*Restoring native oyster habitat and populations in 10 tributaries by 2025 and ensuring their protection.*"

NOAA chairs interagency workgroups in Maryland and Virginia, as part of the Fisheries Goal Implementation Team, which are restoring oyster populations on a tributary scale. In Maryland, three tributaries and oyster sanctuaries (Harris Creek and the Tred Avon and Little Choptank Rivers) have been selected for restoration, and plans have been developed for each. In Harris Creek, 377 acres are targeted for restoration, making this the largest single oyster restoration effort ever undertaken. By the end of 2013, 190 acres had been constructed, and another 127 acres are currently underway, with a total of 317 acres expected to be restored by the end of 2014. We anticipate that all 377 acres will be completed by the end of 2015.

Reef construction started in 2014 on the Little Choptank, and will begin in late 2014 on the Tred Avon. Strong partnerships with the U.S. Army Corps of Engineers (Corps), Maryland Department of Natural Resources, University of Maryland, Oyster Recovery Partnership, National Fish and Wildlife Foundation, The Nature Conservancy, Chesapeake Bay Foundation and others have been critical to these projects. In Fiscal Year 2014, Maryland, NOAA and the Corps invested over $14 million to restore these tributaries.

In Virginia, three tributaries have been selected for large-scale oyster restoration, including the Lafayette, Elizabeth and Piankatank Rivers. NOAA and the Corps are chairing workgroups to develop restoration plans for each. Nonprofit organizations, including the Chesapeake Bay Foundation, Elizabeth River Project, Oyster Reefkeepers of Virginia, and The Nature Conservancy, have implemented reef restoration projects in these tributaries to date, some with NOAA funding. Additional key partners include the Virginia Marine Resources Commission, Virginia Institute of Marine Science, the City of Norfolk, and Elizabeth River Project.

The results of the restoration look promising. First, the number of oysters surviving after restoration has increased 100 percent. We believe this improvement is directly related to better site selection, informed by NOAA's seafloor habitat mapping and assessment products. Second, we have evidence of oyster population densities of 49 oysters per square meter. This level is consistent with oyster metrics developed by NOAA, the Corps, states, and other partners, that specify the amount of oyster biomass in a given area for a reef to count as "restored."

As restoration moves forward, it is important to monitor restoration success as well as the ecosystem services restoration provides. NOAA has begun to quantify these benefits by working with partners at University of Maryland and Virginia Institute of Marine Science to measure how nitrogen removal and fisheries productivity changes as a result of large scale restoration.

Forage fish and fish habitat outcomes
NOAA is encouraging Chesapeake Bay states to work across jurisdictional boundaries to implement ecosystem-based fisheries management. In 2006, NOAA published "Fisheries Ecosystem Planning for the Chesapeake Bay," which identified the need to understand the role of habitat and forage base in a fishery's sustainability. Those needs are reflected in the new Agreement Forage Fish Outcome: *"Continually improve the Partnership's capacity to understand the role of forage fish populations in the Chesapeake Bay. By 2016, develop a strategy for assessing the forage fish base available as food for predatory species in the Chesapeake Bay."*

NOAA's Chesapeake Bay fisheries science program supports research on species interactions, disease, habitat, climate, and other factors that affect fish health, populations, and sustainability in the Bay's waters. Annual funding priorities are directly informed by the Fisheries Goal Implementation Team, which uses NOAA research results, along with U.S. Fish and Wildlife Service and U.S. Geological Survey science assessing freshwater fisheries, to inform management decisions. Science conducted under this program, such as studies on the impacts of invasive catfish or value of oyster reefs in providing habitat, supports the development of fish stock assessments that incorporate habitat and ecosystem information. Since 2011, this competitive program has provided over $3.7 million in grants to universities and state agencies in Maryland and Virginia. This research is shedding light on critical fisheries management issues facing the Bay.

NOAA is supporting a large-scale research project to predict how shoreline development interacts with other stressors to change coastal ecosystems and the species that depend on them. Researchers are identifying tipping points - the minimum natural shoreline needed to sustain estuarine habitats and species, and what happens when we exceed that threshold. Coastal zone managers and land use planners can use the results to transform management from the current "parcel by parcel" approach to one that can consider the whole ecosystem. This is the final year of a competitive $4.2 million award to the Smithsonian Environmental Research Center, with partners involved from the University of Delaware, Virginia Institute of Marine Science, University of Maryland, Pennsylvania State University, U.S. Geological Survey, and the Maryland Department of Natural Resources.

<u>Habitat Goal and Fish Passage Outcome</u>
NOAA chaired the Fish Passage Workgroup under the Habitat Goal Implementation Team which established the outcome: *"Continually increase available habitat to support sustainable migratory fish populations in Chesapeake Bay freshwater rivers and streams. By 2025, restore historical fish migratory routes by opening 1,000 additional stream miles."* Dams and other obstructions block the natural migration of fish to their historic spawning habitats. By removing physical obstacles and increasing river connectivity, key species like American shad, river

herring and American eel are able to return to their spawning grounds. Removing dams can also increase recreational opportunities, reduce flooding and remove safety hazards. Since 1988, we have opened 2,807 miles of habitat to migratory and resident fishes in the Chesapeake Bay with more than 120 miles opened in 2014 alone.

Demolition of the Harvell Dam on the Appomattox River in Petersburg, Virginia, was a significant dam removal completed this year. This removal will open significant habitat for American shad, river herring and American eel. The Bloede Dam removal on the Patapsco River in Elkridge, Maryland is set for removal in 2015. This project is a critical component of what will be the largest river restoration in the state of Maryland, and will establish a model for future dam removal efforts in the Chesapeake Bay. Removal of Bloede Dam will open 183 miles of habitat for diadromous fish species including river herring, hickory shad, and American eel. It will also eliminate a public safety hazard in the park where two deaths have occurred in the past two summers.

The Fish Passage Work Group has developed and is using a web-based tool to assist in prioritizing the remaining 5,000 fish passage projects. This tool helps to target high-priority projects based on our collective priorities, allows the Federal, state and local governments, and non-profits to have a consistent voice when advocating for Bay-wide priority projects, and acts as a database for dam information. In the future, we will continue to implement high priority projects as identified through the Fish Passage Tool.

Environmental Literacy and Stewardship Goals and Outcomes

In response to the President's Executive Order on Chesapeake Bay Protection and Restoration, NOAA worked with the regional education community to develop the Mid-Atlantic Environmental Literacy Strategy, which outlines a shared vision for the future of environmental education in the region. This strategy was used as the foundation for the goal and outcomes under the new Agreement, including teacher-supported Meaningful Watershed Education Experiences in elementary, middle, and high schools; sustainable and healthy schools; and statewide plans and metrics to guide environmental literacy efforts.

The NOAA Bay Watershed Education and Training Program has provided small grants that allow school divisions and their partners to establish or strengthen environmental education programs for students. Of the $7.5 million provided for the NOAA Bay Watershed Education and Training Program in the FY 2014 Omnibus, $2.5 million is invested in the Chesapeake area, reaching almost a half million students and creating programs on outdoor environmental education.

NOAA also provides technical assistance and funding to the Chesapeake Bay National Estuarine Research Reserve sites in Maryland and Virginia. These Reserves support research, education, and training programs at seven component sites throughout the Bay watershed in a variety of habitats and support land conservation.

Climate Resiliency Goal and Outcomes

Climate resiliency is a new goal in the agreement. NOAA and the Department of the Interior will provide federal leadership to work with states and local communities to carry out the outcomes.

NOAA is making several important contributions to this effort. At the Cooperative Oxford Laboratory, NOAA is applying climate projections to ecological forecast models for *Vibrio* bacteria in the Chesapeake Bay. These bacteria are naturally occurring pathogens that can cause a range of illnesses resulting from water contact or consumption of raw or undercooked seafood. Our modeling and observation systems are providing decision makers the tools and early warning needed to manage our natural resources, protect human health, and prepare for climate related impacts. Once validated and transitioned to operations, our ecological forecasts will help state and federal coastal and public health managers prepare for potential impacts and inform the seafood industry's practices to ensure delivery of safe seafood to consumers.

Recently, NOAA and its partners initiated the Chesapeake Bay Sentinel Site Cooperative. This Cooperative plans to provide long term multifaceted data that will inform Chesapeake Bay municipalities and natural resource managers by providing critical information needed for community resiliency, protection, and management decisions. Current information includes: land elevation change, mean sea level change, water quality, and biological measurements. NOAA recently completed topographic-bathymetric LiDAR aerial surveys of Bay shorelines that collected data to improve coastal flooding models. We will soon add sociological and economic attributes of communities surrounding monitoring stations. In a related effort, NOAA scientists at the Cooperative Oxford Laboratory, the University of Maryland's Horn Point Laboratory and Virginia Institute of Marine Science are collaborating to study the seven Chesapeake Bay National Estuarine Research Reserve System sites to understand and anticipate the ecological challenges these estuaries will face due to climate change.

NOAA's National Coastal Zone Management System has provided funding to assist with efforts to improve community resilience to coastal hazards. Examples of these efforts include conducting vulnerability assessments and incorporating measures into local plans that help communities adapt to changing conditions. Across the entire National Coastal Zone Management System, approximately $10 million is being spent in FY 2014 on coastal hazards and resilience. In addition, on July 16, 2014, NOAA released updated guidance for the Program that reflects the specific challenges that coastal hazards pose to community resilience. This new guidance will help all coastal management programs, including Virginia and Maryland, develop multi-year strategies to better address priority coastal management issues and emphasizes that these states need to consider how climate change may exacerbate these issues. The guidance also sets aside approximately $1.5 million for competitive funding for FY 2016 to help coastal states make improvements to their coastal management programs, improvements that specifically increase resilience to coastal hazards.

Stakeholder Engagement to Achieve Outcomes

Based on NOAA's long-term involvement with the Chesapeake Bay Program, we have learned that the most effective programs are those that are directly tied to reaching, engaging and empowering communities. We have also learned about the power of special places in the Bay – the backyards of those engaged communities, where stewardship is most likely to take hold and persist over time.

On a national level, NOAA has similarly recognized the need to increase the sustainability and productivity of our fisheries by focusing on the habitat that fish need to spawn and grow, as well

as protect the coastal resources on which our communities depend. In keeping with this philosophy, NOAA established the Habitat Blueprint, which designates Habitat Focus Areas in regions across the Nation.

On May 5, 2014, NOAA announced the selection of the Choptank River watershed in Maryland and Delaware as a place where the agency will focus its resources to support habitat conservation and restoration work to achieve demonstrable results within the next 3-5 years. Three factors drive the focused attention on the Choptank region: (1) the urgency associated with degraded environmental conditions, (2) the community's recognition of significant societal impacts resulting from those conditions, and (3) the desire to protect the significant investments of Federal, State and non-profit organizations in oyster and other habitat restoration efforts. NOAA is also linking this geographic focus to other Federal and state programs on the land, including the U.S. Department of Agriculture's Rural Conservation Partnership Program, the Harriet Tubman Trail, and related land conservation and protection efforts. These coordinated efforts will lead to more effective implementation and achievement of the related outcomes of the new Agreement.

Conclusion

NOAA's missions in science, service and stewardship contribute significantly to the Chesapeake Bay Program and the goals and outcomes of the new Agreement. We worked closely with our partners to develop the new Agreement and look forward to implementing activities that will achieve its goals and outcomes. Continued support for the programs and efforts described in this testimony is critical to achieve desired results.

Thank you for the opportunity to discuss some of these efforts with you. I would be happy to answer any questions you may have.