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Talbot Watermen Association's
Summary and Analysis
of the
Maryland Department of Natural Resources
Oyster Sanctuaries Report
2016-2020

I.
MARYLAND OYSTER SANCTUARIES REPORT
October 2021

The Department of Natural Resources (Department or DNR) Oyster Sanctuaries Report submitted to the Oyster Advisory Commission (OAC) in October 2021, has been thoroughly reviewed by the Talbot Watermen Association (TWA). This Summary provides an overview of the latest DNR Report of Maryland's 51 oyster sanctuaries.
This Summary will also analyze whether the DNR's stated objectives for the sanctuaries are being met and where they are falling short.

⇒ Since 2010 with the adoption of the current far-reaching oyster sanctuary program there are 51 designated oyster sanctuaries comprising 253,007 acres of the Chesapeake Bay bottom.

⇒ In October 2021, the DNR published its second Oyster Management Review, Appendix A (Report) presenting "detailed data" on each of the oyster sanctuaries under its management for the period of 2016-2020.

⇒ In the Executive Summary of its Report the Department identified six objectives for the sanctuary program, which included:

Objective #1: *Protect half of the Bay's most productive oyster grounds that remain and allow investigation of the reasons why these remain most productive.*
The Department states that this objective is met.

Objective #2*: Facilitate development of natural disease resistance.*
The Department states that this objective is underway and remains under evaluation.

Objective #3*: Provide essential natural ecological functions that cannot be obtained on a harvest bar.*
The Department states that this objective is being met and will continue to be evaluated.

Objective #4*: Serve as a reservoir of reproductive capacity.*
The Department states that this objective remains under evaluation.

***Objective #5**: Provide a broad geographic distribution across all salinity zones.*
The Department states that this objective is being met.

***Objective #6**: Increase our [the department's] ability to protect these important areas from poaching.*
The Department states that this objective is being met.

⇒ In its Report, the Department essentially has declared that it has met three of its six objectives with "continued evaluation" of two of the Objectives and a mixed message of goal attainment and continued evaluation of Objective #3.

⇒ In its Objective #3 the Department notes its commitment to "restore five large scale restoration sanctuaries". This Summary will particularly address the DNR's two established large-scale projects: Harris Creek (Talbot County) and The Little Choptank River (Dorchester County), which the Report itself discloses are far from sustaining the Department's goals and expectations despite the expenditure of tens of millions of dollars of federal and state funds.

⇒ Also, the Department states that it is still evaluating its Objective #4 as to whether the sanctuaries have and/or can function over time as a productive reservoir of oyster spat to repopulate the oysters of the Bay. This Summary will disclose that the Report's 2016-2020 tests and monitoring of the 51sanctuaries provide no substantive evidence to support the Department's Objective #4. Without any specific data the Report only states that the spat regeneration and broadcasting from the major sanctuaries is the subject of a computer model, based on "theoretical larvae supply" projections. Curiously, after 10 years this goal of the sanctuary program is still "under evaluation".

II.
AREAS OF MAJOR CONCERN

1. **The Report on its face discloses the overall failure of the majority of sanctuaries and raises serious questions as to the effectiveness of the Two Large Scale Restoration Projects, Harris Creek and Little Choptank.**

The Report's analysis of the successes and failures of each of the 51 oyster sanctuaries in the Department's program from 2016-2020, based on its own testing methods, reflects the following:

A. Of the 51 Reported Sanctuaries:

1. Thirty-eight (38) are failures with no appreciable densities of spat, small and or marketable oysters with some of the sanctuaries having not been monitored since 2006.
2. Eight (8) have mixed results with varying increases/decreases of spat, small and market size oysters.

3. Two (2) large-scale restoration projects are touted as successes, however, a close review of the results of their monitoring are mixed. Therefore, the overall performance of the sanctuaries balanced against their aspirations must be considered as inconclusive.
4. Three (3) are successes.

This Summary's assessment that a large majority of the 51 sanctuaries have failed is significant. The public is not aware of this stunning and ongoing problem under the common assumption that after ten years (2010-2020) the sanctuary program was repopulating the Bay with oysters. The Department's 2016-2020 suggests otherwise.

B. Regarding the two major identified Large Scale Oyster Restoration Projects, the reported results of sampling in the Harris Creek and Little Choptank sanctuaries raise even more concerns and inconsistences:

Harris Creek

1. A proclaimed Large Scale Restoration Success bolstered by massive reef bottom restoration efforts and the expenditure of tens of millions of dollars, reflects surprisingly mixed results.
2. DNR has conducted limited Fall Survey sampling on sites without granite reef bases and no Patent Tong Surveys since 2006. The Department's Fall Survey samples reflects a sharp decline in live small oysters per square meter since 2011-2015, and a lesser decline in live market sized oysters for the same period.
3. "Other Organizations" have conducted monitoring of the restoration areas (limestone reefs) with patent tong and diver surveys reporting 97% of reefs met the minimum threshold of success criteria for restoration of 15 oysters per square meter.
4. The diver and bathymetric sampling of the reef bottoms by NOAA and its Workgroup (Other Organizations) lack the random sampling of a patent tong survey and are easily manipulated and therefore suspect.
5. The NOAA/Workgroup Surveys are not set forth in the Department's Report and only mentioned in a footnote (Note 32, page 57, Report Appendix A). The surveys can be accessed from the other DNR websites and for 2019 and 2020 boast of meeting minimum threshold oyster densities (15 oysters per m^2) in the 97% range and target oyster densities (50 oysters per m^2) in the 81% range for 30% of the reef areas. Given the suspect and subjective methods of monitoring (divers and bathymetric sampling) and the fact that the threshold data is are not reported other than as percentage conclusions, there are grave concerns about the integrity of the NOAA/Workgroup's methods and findings.
6. Interestingly the Department's Report Appendix B, page 256-262, for Broad Creek, a public fishery area disclosed vastly greater small oyster and biomass density as well as comparable market size oyster density compared to its heavily subsidized neighbor, Harris Creek. Broad Creek

as part of the public fishery is harvested on a yearly basis and has received plantings of shell, wild seed and spat on shell, but not to the extent of its sanctuary neighbor. Notwithstanding, these disparities, Broad Creek exceeds the minimum and target thresholds of the NOAA/Workgroup Report.

7. Harris Creek has been judged by the Department as a resounding success, however, a close look at the details of the DNR's 2016-2020 Report raise unanswered questions as to its efficacy.

Little Choptank

1. A proclaimed Large Scale Restoration Success bolstered by massive reef bottom restoration efforts and the expenditure of tens of millions of dollars.
2. DNR has conducted limited Fall Survey sampling on site without granite and fossil reef bases and no Patent Tong Surveys since 2014. The Department's Fall Survey samples reflect a steady number of small oysters per m^2 since 2011-2015, but a 42% decline in market size oysters for the same period.
3. "Other Organizations" have conducted monitoring of the restoration areas (limestone reefs) with patent tong and diver surveys reporting 97% of reefs met the minimum threshold of success criteria for restoration of 15 oysters per square meter.
4. The diver and bathymetric sampling at the reef bottom by NOAA and its Workgroup (Other Organizations) lack the random sampling of a Patent Tong Survey and are easily manipulated and therefore suspect.
5. The NOAA/Workgroup Surveys are not markedly different for the Little Choptank, a three-year-old reef than those in Harris Creek, a six-year-old reef and are subject to the same questions and concerns.
6. The NOAA/Workgroup Report, page 14, reveals an expensive failure to properly ascertain the nature of the river bottom (mud) before depositing quantities of spat-on-shell in 2013 and 2017. The entire plantings of these two years were lost. Oysters and their spat are suffocated in muddy bottoms and areas with high instances of silt accretion. The Workgroup's mistake was not discovered until a 2019 patent tong survey by the ORP. The NOAA/Workgroup in its best "professional judgement" has now resolved to confirm that future sites must meet "established pre-restoration criteria for river bottom type to maximize the chance of post-restoration success." Had the group infused common sense and rudimentary bottom scanning as part of its restoration regimen, then this expense blunder could have been averted. The input of watermen, many of whose vessels have bottom scanning devices, would have been able to detect areas of muddy and inhospitable bottom and averted the waste of two years of spat on shell plantings.
7. The Report's 2016-2020 sizable increase in spat density was admittedly due to the large 2020 Bay-wide spat set, which was naturally occurring.

Also, in its Fall Survey the Department reports another record spat set in the Bay amid three years of increasing public harvests. There is no empirical evidence that the record count is anything other than a natural occurrence and not the direct result of any "management" practice or policy.

2. The Report reflects a decline in volume of cultch in many of the sanctuaries.

Cultch is a blanket term for stone, shell or other materials deposited or naturally occurring on oyster bars or bottoms, which furnish points of attachment and growth of spat /immature oysters. The existence of cultch on oyster grounds is a necessary component of oyster propagation.

One of the most disturbing trends recorded in the DNR's Report relates to the declining volume of cultch in the sanctuaries. This is evidenced by the fact that the Department noted a decline in cultch volume in nineteen (19) of the monitored sanctuaries with seven (7) remaining stable and only four (4) reflecting modest increases.

Of major concern in the cultch counts are the reported decreases in Harris Creek and the Little Choptank, the two sanctuaries in the Mid-Shore earmarked for Large-Scale Oyster Restoration. Each has received plantings of billions of spat-on-shell. However, over the past five (5) years of the current Report, both reflect declining cultch levels. This begs the obvious question as to what happened to the enormous volume of planted shell in these large-scale restoration sanctuary projects? The Report offers no explanation about this stunning incongruity, nor does it raise any concerns about the mystery of the missing cultch, other than to note in each instance that the amount of culch declined slightly from the previous five-year measurement.

The enormous shell plantings alone should result in increased culch volume particularly in Harris Creek and the Little Choptank, restoration sanctuary projects where no harvesting is permitted. Instead, the Report admittedly reflects that their cultch counts are down. No causes such as siltation, mud/porous bottoms or increased turbidity are identified or even explored. This is particularly concerning since cultch volume is a necessary element in reaching the goal of long-term oyster sustainability.

3. The Department's failure to provide any competent evidence of the effectiveness of the sanctuary program in repopulating the Bay's oyster stock.

In Objective #4 of the Report's Executive Summary (page 6) the Department conceded that it was still evaluating whether the sanctuaries were fulfilling the goal of materially repopulating the Bay with oyster larvae. This goal lies at the heart of the expanded sanctuary program, which was established in 2010 during the O'Malley Administration. It continues to remain elusive and for the most part unrealized.

The Report's Appendix A, "Ecosystem Services" contains a glaring admission about the migration of oyster larvae from the sanctuaries by stating that its Objective #4 after 10 years is still being evaluated. In its 310-page Appendix A (Sanctuaries) the Report does not contain or cite any empirical evidence that sanctuary generated oyster larvae are being dispersed in the Bay. Instead, it merely notes that: "Researchers from the University of Maryland are using computer models to estimate the theoretical larvae supply from sanctuaries to public fishing areas." See Report, Appendix A, page 13.

4. The Report's failure to provide substantive information of the results of restoration effects on the Large-Scale Oyster Restoration Projects.

Replenishment and Restoration (R&R) are important terms/concepts in the Department's efforts to improve and increase oyster bar productivity in the Bay, and are specifically defined in the Report, Appendix A, page 6 as:

> "Replenishment efforts are conducted on public fishery bottom prior to an area becoming a sanctuary and were primarily intended to enhance the public fishery for economic benefits. Restoration efforts are conducted on sanctuary areas with the primary objective to restore oyster populations for ecosystem and ecological benefits. those activities occurring after the establishment of the sanctuary with the objective to restore oyster populations for ecosystem and ecological benefits. The types of enhancements employed in both replenishment and restoration include planting fresh and dredged shell, transplanting natural, wild seed, and planting hatchery-reared spat in hopes of increasing oyster populations."

Oyster restoration lies at the very core of the sanctuary concept, yet the Report for some cryptic reason does not adequately address it. The Department notes the wide disparity in the plantings of shell and seed among the 51 sanctuaries with some receiving as many as two million oysters planted annually in a few acres of the bottoms of major restoration sanctuaries while other sanctuaries receive few or no plantings at all.

The Department, while conducting regular Fall Surveys on the Large-Scale-Restoration Projects, has relied heavily on the monitoring efforts of "Other Organizations", comprised of various interagency members including the National Oceanic and Atmospheric Administration (NOAA), the U.S. Army Corp of Engineers, Baltimore District, the DNR, the Oyster Recovery Partnership (ORP) as assisted by other organizations including the Chesapeake Bay Foundation, The Nature Conservancy, U. S. Fish and Wildlife Services and others.

The lack of random sampling and the criticism of the monitoring methods of the NOAA/Workgroup report have been previously discussed herein. Also, their conclusion-based standards of minimum and targeted based oyster densities have not been reflected in any specific sampling data.

5. The Department's Report admittedly fails to assess the success of the Sanctuary Program in the restoration of the Bay's oyster population.

On page 6, Appendix A of the Report the Department conceded:

> "The annual planting information provides a general sense of how each sanctuary was manipulated over time. An analysis to determine if replenishment or restoration activities contributed to an increase in oyster population is beyond the scope of this report."

If the Department's comprehensive Report of 2016-2020 contains no conclusions regarding the efficacy of its sanctuary projects, then it is apparent that the Department simply does not know or have any reliable information whether the repopulation goals of the sanctuary program have ever or even can be met.

III.
THE SANCTUARIES TESTING METHODS AND SAMPLING ANALYSES

In order to assess the Department's 2016-2020, Report an understanding of the monitoring methods employed by the Department to gauge the health and viability of each sanctuary is required.

To explain the sampling methods the following excerpts from the Report, Appendix A, pages 7-10 are cited verbatim to enhance this understanding:

Annual Fall Oyster Dredge Survey

The purpose of the department's Annual Fall Oyster Dredge Survey (Fall Survey), conducted since 1939, is to assess the overall health of the Maryland's oyster population. The Fall Survey represents the longest continuous and most geographically comprehensive oyster survey in Maryland.

The Fall Survey design included the sampling of spatfall and relative oyster abundance at a subset of Maryland's oyster bars. This report utilizes Fall Survey data since 2006; a 15-year time period with standardized survey methodologies. In the fall each year, approximately 300 to 400 samples are collected. Some sanctuaries may have samples taken on multiple bars annually, some sanctuaries have only one oyster bar sampled annually, and some sanctuaries have not been sampled at all by the Fall Survey. For each sample, one or (in the case of the 43 fixed disease and biomass bars) two half bushel subsamples of material are collected by an oyster dredge. Detailed methods for the fall survey may be found in Tarnowski (2020).

For each sample collected by the Fall Survey, the number of live oysters per one bushel of material collected is counted. Oysters are classified as spat, small-sized oysters, or market sized oysters. Spat are less than one year old. Small-sized (sublegal) oysters are between one and three years old, and generally greater than 40 millimeters and always less than 76 millimeters. Market-sized (legal) oysters are always greater than 76 millimeters and generally three years and older. Changes in the number of oysters over time can provide a general sense of change in oyster abundance and age/size structure. Relative density of live

oysters can be estimated by standardizing the count of live oysters by the total volume of the sample, tow distance, width of the dredge, and a gear efficiency coefficient.

Samples taken on a fixed 43 bar subset of all the oyster bars sampled provide more detailed information on oyster sizes annually. Oyster shell height in millimeters is recorded for all oysters collected. Oyster size structure can be assessed by calculating the frequency distribution of oysters in each five mm size class.
A healthy oyster population would have a size distribution with oysters in all, or at least most, size classes from five millimeters to greater than 120 millimeters. This would indicate multiple age classes in the population.

Biomass is relative measure of how the oyster population is doing over time. It accounts for recruitment, individual growth, natural mortality, and harvesting in a single metric. In assessing the size of the population, biomass integrates both, the abundance of oyster shell height using laboratory-derived height-weight relationship. Weight is calculated in grams of dry tissue weight. Increased in biomass may reflect increases in the number of oyster and/or oyster growth.

Total Observed Mortality is an indicator of annual mortality rates of small and market sized oysters. Mortality can occur from disease or other natural factors such as freshets. Mortality is estimated based on the total count of small and market-sized live oysters and the total count of small and market-sized boxes (dead oysters with the valves still articulated).

Cultch (oyster habitat) is crucial for providing hard substrate for oyster setting as well as habitat for the myriad other organisms associated with the oyster community. For the purpose of the Fall Survey, cultch is defined as primarily both oysters (live and dead) and shell. The collection of quantitative cultch data was initiated during the 2005 Fall Survey. During a sampling tow, the distance covered by the dredge while sampling on the bottom is measured using a handheld geographic positioning system (GPS) unit with an odometer function. After the dredge is retrieved, the total volume of oysters and shell is measured in bushel units. Since tow distances vary, the volume is standardized to a 100 ft. tow by dividing 100 by the actual tow distance and multiplying the results by the total cultch volume. If the dredge is full that sample is dropped from the analysis.

Information on oyster diseases is collected from the same fixed subset of 43 bars on which shell heights are collected. Dermo (*Perkinsus marinus*) and MSX (*Haplosporidium nelsoni*) infection prevalence (the percentage of oysters infected) and intensity (the severity of infection) are measured from 30 oysters collected at each site. Disease prevalence and intensity both relate to mortality. For example, all of the oysters in a sample may be infected with a disease, but at such low intensity levels that few oysters are in danger of dying in the near future. Intensity is based on a 0 to 7 scale with values of 5 or greater representing lethal levels.

The Fall Survey data will be used to explore general characteristics of the oyster populations within those sanctuaries that were sampled in the Survey. Data presented will examine changes over time, based on the average number of oysters per a bushel of material, oyster

shell height, live oyster biomass, recruitment, mortality, cultch, and disease on oyster bottom within each sanctuary.

Patent Tong Surveys

Patent tong population surveys have been conducted by the department since the establishment of the 2010 sanctuaries, however, only surveys occurring after 2015 will be presented for each sanctuary in the appendix. These surveys use hydraulic patent tongs to obtain spatially explicit estimates of oyster density, as well as information on oyster size and the amount of cultch present. Patent tong surveys conducted by the department used a stratified random sampling design, with strata based on substrate type. The number of sampling points for each survey on each sanctuary ranged from 50 to 300, depending on the area of potential oyster habitat present in each sanctuary. Most sanctuaries have been surveyed at least once, and two sanctuaries have had two surveys conducted prior to sanctuary establishment.

The fixed area of the patent tongs (one square meter) allows for the calculation of oyster density. An average density of oysters based on all samples collected within a sanctuary can be used to derive the overall density of oyster habitat in the entire sanctuary. The patent tong surveys also measure the oyster larvae; therefore, the greater the volume of exposed shell, the greater the potential for spat set.

Comparison of Fall Survey and patent tong survey results is difficult given the difference in sampling efficiency and area between the two gear types; therefore, in this appendix the results from the two surveys are presented separately.
In this appendix oyster density and oyster shell height distribution from the patent tong surveys will be presented, where available, along with the Fall Survey information. In addition to the patent tong surveys conducted by the department, additional patent tong surveys were conducted by the Versar, Inc and the Oyster Recovery Partnership using a systematic sampling design. Results of these surveys may be referenced in this appendix.

IV.
LIST OF SANCTUARIES
DNR OYSTER MANAGEMENT REVIEW
2016-2020

The DNR's current Report (2016-2020) characterizes the Bay's oyster bottom as:

- Aquaculture – 7,593 Acres
- Sanctuaries – 253,007 Acres
- Public Shellfish Fishery Area (PSFA) – 175,836 Acres
- Remaining Historic Oyster Bottom (unproductive) – 121,761 Acres

The following list of the 51 sanctuaries described in pages 15 through 310 of the Report's Appendix are herein set forth along with comments of the Talbot Watermen's Association based on the sampling efforts of the DNR (2016-2020) and other information provided in the Report.

Section A.01 – Big Annemessex – Somerset County – Appendix A, pg. 15

- Sanctuary since 2010; 749 acres, 361 acres of historic oyster bottom
- Fall Surveys – 1 sample between 2006 – 2020 – No live oysters found in two surveys 20 years – No Fall Survey Table, patent tong survey in 2017 found no live oysters and no surface shell.
- Survey Assessment: Failure

Section A.02 – Breton Bay – N. Shore Potomac River – Appendix A, pg. 19

- Sanctuary since 2010; 3212 acres, 888 acres of historic oyster bottom
- Fall Survey 2016 – 2020; average density – market oyster decline 2016 – 2020; mortality above Bay-Wide average, no spat found and 0.1 small oysters with 0.4 market size oyster/ m^2.
- Patent Tong Survey by Dept. 2018 – No live oysters found.
- Maps. Mud Bottom predominantly
- Survey on Black Walnut Bar
- Decline – Table sampled 5/5 – 2006-10 also two out of 15, 2016-20 – live small oysters/sq. meters .1 plus or minus 0 spat/ market oysters declined .4 (2920) oyster biomass – declined – 16% mortality, culch declined.
- Survey Assessment: Failure

Section A.03 – Calvert Shore Sanctuary – Calvert County – Appendix A, pg. 27.

- Sanctuary since 2010, 2214 Acres, 673 acres of historic oyster bottoms
- Last Patent Tong Survey – 2015, Incomplete Data
- Fall Survey – 1 Bar – Flag Pond
- 2017 – 11.4 million spat on shell planted for restoration purposes – 2016-20
- Live Spat / Sq Meter .2 +/- .2-?
- Live small oysters/Sq Meter 1.9 +/- 1.1

- Market Oysters/Sq Meter 7.8 +/- 6.2
- Observed mortality per m^2 13 +/- 9
- Values per tables based on annual mean +/- standard even.
- Expansion of Oyster – small and marketable – by 2020.
  (3 years after 11.4 million spat on shell – 2017 restoration)
- Survey Assessment: Mixed Results

Sec A. 04 – Cedar Point Sanctuary – Upper St. Mary's County Appendix A, pg. 35

- 2010 – 3,473 acres, 82% is historic oyster bottom
- Patent Tong Survey – 2013 – No new surveys since
- No replenishment/restoration efforts since 2006
- Survey Assessment: Failure/Not Mentioned

Sec A. 05 – Chester River ORA Zone A Sanctuary Appendix A, pg. 38

- Created 1996, no recent replenishment.
- 6,189 acres, 184 or 3% historic oyster bottom.
- Table Graphs
  - Steady declines of small and market sized oysters per m^2 since 2016
- Observed mortality % 15 +/- 3.
  - 5 years 2016 – 2020 – 10 samples
- Cultch declined since 2017, slight increase 2020.
- Overview ignores data.
- Survey Assessment: Failure

Sec A. 06 – Choptank River Sanctuary Appendix A, pg. 43

- Created 1996 – 8,962 Acres – 236 Acres or 3% historic oyster bottom.
- Table/Graphs
  - Small and market size oysters sharp declines since 2017
  - Observed mortality – sharp decline – 3x mortality since 2016.
  - Market oyster per square meter increase by 2016-17 and declining 60% since
  - Possibly relating to spat on shell plantings 15 million since 2006.
  - Effects of major restoration – no longer evident
- Survey Assessment: Failure

Sec A. 07 – Cook Point Sanctuary Appendix A, pg. 48

- Lower Choptank Established 2001 – 17A – expanded 2010 to 81% Acres and 781 acres of 96% historic oyster bottom.
- Two bars – Cook Point – 78% - Todd Point – 3% in sanctuary.
- Fall Surveys only – No patent tong surveys 3.
- Observed mortality 2 x Bay avg 2016 and 2017.
- "Likely due to disease" -? No Data or study of mortality in adjacent bars
- Once Productive Oyster Bottom
- Extensive plantings and restoration efforts:

- From 2006-2013 – 161 million spat on shell planted, together with 309 reef balls + 196,000 Bu shell.
- Sharp declines in small (80%) and market sized (60%) oysters per m^2 from 2010/2011 to 2020.
- Survey Assessment: Failure

Sec A. 08 – Cox Creek Sanctuary Appendix A, pg. 57

- Tributary of Eastern Bay – low salinity Zone I region
- Created 2010 – 2112 Acres, 939 acres (45%) historic oyster's bottom.
- Fall Surveys 2006 & 2019
  - No Spat
  - No Table or graphs provided.
- Patent Tong Surveys – 2014, .6 oyster per m^2 | 2020, 1 oyster per m^2.
- No replenishment or restoration plantings since 2006 except "Marylanders Grow Oysters (MGO)" between 2011 and 2015
- Bottom Type – Survey – mostly mud in main channel.
- Survey Assessment: Failure

Sec A. 09 – Eastern Bay Sanctuary Appendix A, pg. 61

- Medium salinity – created 2010 – 4521 acres, 939 acres (21%) historic oyster bottoms.
- No Fall Surveys from 2014 to 2020
- Patent Tong Surveys
  - 2014, .5 oysters per m^2 | 2020, .7 oysters per m^2
- Restoration planting 20 million spat on shell (hatchery) – Map survey discloses mud bottom 65% to 1 km from shore despite such large restoration effort: no natural oysters and large areas of mud bottom.
- Survey Assessment: Failure

Sec A. 10 – Fort Carroll Sanctuary Appendix A, pg. 65

- Patapsco River, Low salinity region
- Created 1995 – 30 Acres
- Established – education purposes, living classroom programs, no samples since 2006; restorative plantings since 2006 by Living Classroom Foundation (LCF) + MGO since 2012
- No measure or study of any success by LPC and MGO plantings
- Not even limited patent tong surveys to determine whether "plantings" have been a waste of shell and spat area probably too polluted to justify plantings.
- Survey Assessment: Failure/Not Monitored

Sec. A. 11 – Harris Creek Sanctuary Appendix A, pg. 67

- Medium Salinity, Sanctuary established 2010 – 4647 acres, 1998 acres or 43% historic oyster bottom.
- 15 oyster bars; Sanctuary – "large-scale oyster restoration" under Chesapeake Bay Watershed Agreement – Initial restoration completed 2015 a list of

hatcheries spat on shell 2020 – no info about how much by volume restoration and reseeding.

- DNR:
  - No Patent Tong surveys since 2006.
  - Other organizations monitoring sanctuary patent tong and diver surveys.
  - NOAA/Workgroup multibeam bathymetric sonar-based depth reef height and diver surveys. The later methods lack the completely random sampling of a Patent Tong Survey and rely on the unmonitored judgement of the divers who are allowed to pick and choose the contents of the samples collected and then to estimate that the sampling is consistent over 30% of the reef sampled area.
  - Fall Surveys by DNR reflect 2016-2020 40% decline in small oysters and 8% decline in market size oysters since 2011-2015, despite massive plantings,
  - Fall Survey completed only 6 areas with no sampling of sites with reef base of granite.
  - Over 2.47 billion hatchery spat on shell planted from 2011-2020
  - Decreased Cultch
- Participants in Restoration
  - MDNR
  - Corps of Engineers
  - NOAA
  - Oyster Recovery Partnership
  - National Fish and Wildlife Foundation
  - Chesapeake Bay Foundation
  - Nature Conservancy
  - CSX Railroad
  - MGO "public outreach" planted oyster since 2012 at one site in sanctuary.
  - The Phillips Wharf Environmental Center est. planting
    - 750,800 oysters from 2012 to 2022, where? What results?
- With limited Fall Survey sampling. Incomplete suspect data as to monitoring by other organizations.
- Survey Assessment: Inconclusive notwithstanding the Department's claims of success. Concerns exist about limited Fall Survey sampling, incomplete/suspect data from the monitoring efforts of other organizations and a decline in the levels of cultch within the sanctuary. Finally, the massive expenditures of time, effort, and funds in the establishment and maintenance of the sanctuary defy any cost benefit analysis given the results of the Department's 2016-2020 Report.

Sec. A. 12 - Herring Bay Sanctuary Appendix A, pg.76

- Sanctuary created in 2010, 16,792 acres; 7891 (43%) historic oyster bottom – 8 bars.
- Fall Surveys – 1 bar; no oysters found 2019 – 2020 except one spat – 9 total in three previous years.
- Last PT survey 2014

- After 2010 – 19 million hatchery spat on shell planted.
- MGO plantings since 2012 – 8 years.
- Sanctuary – Complete Failure – despite extensive spat on shell plantings by State and MGO except – 9 oysters found – 2016 – 2018 – in Fall Survey
- Also, despite continuous water quality monitoring – Dermo spike – 2015 – 2019 charts – ½ sanctuary is mud.
- Survey Assessment: Failure

Sec A. 13 – Hooper Strait Sanctuary Appendix A, pg. 84

- Medium salinity: sanctuary established 2009 – 7,307 acres; 5,317 acres (73%) historic oyster bottoms.
- 15 bars in sanctuary – high mortality 2016-2020 % - 14+/- 6%
- Fall Surveys on two bars – spat density constant 2016 – 2020.
- DNR – patent tong surveys 2013 through 2020 – spat, increasing.
- Small oyster per square meter - .3, market oysters .2 pers square meter
- Of 121 samples – 85 had no live oysters.
- Between 2006 – 2008 – no plantings to enhance public fishery.
- Since sanctuary – 34 million hatchery spat on shell planted.
- Fall Surveys 2016-2020 increases small and market size oysters.
- Patent Tong Surveys 2013 and 2020 inconsistent with Fall Surveys.
- Survey Assessment: Mixed Results

Sec. A. 14 – Howell Point Sanctuary Appendix A, pg. 90

- Low salinity, Mid, Choptank Sanctuary established 2001 – 6 acres historic oyster bottoms, Fall Survey sampled since 2015 spat and small oysters higher – 2016-20 – density and market oysters lower.
- No PT surveys since 2016
- Since 2006 – 79 million spat on shell planted also MGO plantings since 2009.
- Ques. Tables – Fall Surveys – 58.4 +/- 12.8 market sized oysters per square meter for 2016-2020 due to massive plantings on small (6 acres) sanctuary.
- Survey Assessment: Success

Sec. A. 15 – Kitts Creek Sanctuary Appendix A, pg. 95

- SE Chesapeake Bay – High salinity – off Pocomoke Sound
- Manmsco Creek – Sanctuary established in 2001 – 1,181 acres, 95 or 8% historic oyster bottoms.
- Fall Surveys 2006 – 2007
- Patent Tong 2017 – Avg oyster density two per m^2
- 61 samples – 40 no oysters
- No plantings since 2006
- No tables – little monitoring; no trends
- Survey Assessment: Failure

Sec A. 16 – La Trappe Creek Sanctuary Appendix A, pg. 99

- Choptank Tributary, Sanctuary established 2010 – 377 acres; 13 or 3.5% historic oyster bottoms.
- Fall Surveys – 1 time – 2015 – no live or dead oysters found – no Patent Tong surveys since 2006.
- MGO present on the creek – planting all spat on Howell Point Sanctuary.
- Survey Assessment: Failure

Sec. A. 17 – Little Choptank Sanctuary Appendix A, pg. 102

- Created 2010 – 9,415 acres, 1713 acres or 18% is historic oyster bottom – 18 bars.
- Sanctuary selected for large-scale oyster restoration under 2014 Chesapeake Bay Watershed Agreement – initial restoration completed 2020.
- Fall Surveys 9 bars – no samples on sites of restored stone reef base.
- DNR – patent tong survey 2014 – only – none since
- "Other organizations" – monitoring restoration See N41 – NOAA Oyster monitoring reports.
- Since 2010 sanctuary received substrate and hatchery spat on shell plantings; reefs restored, stone, fossil oyster shell, clam shell.
- 2010 – 2020 – over 1.78 billion spat on shell planted on 358 acres of restored oyster bottom
- DNR Fall Survey Table reflects consistent small oyster density however 42% decline market size oysters since 2010-2015 survey. Also decline of cultch from 2.1 BU to 1.6 BU per 100 feet towed.
- Large increase in spat during 2020, naturally occurring Bay-wide.
- Survey Assessment: Inconclusive, notwithstanding Department's claims of success. Concerns exist about declines in market size oyster density and cultch.

Sec A. 18 – Lower Chester River Sanctuary Appendix A, pg. 111

- Mouth of Chester River – low salinity area
- Created 2010 – 24,147 acres; 6930 acres or 29% historic oyster bottoms.
- Also incorporated two previous sanctuaries (Strong Bay – (2003)) – 320 acres and East Neck Sanctuary – 2007 – 78 acres – Grand Total – 24,545 acres, 7,189 acres – historical oyster bottoms
- Fall Surveys 2016 – 2020 – 3 bars on Sanctuary – small and market oyster densities declined – observed mortality increased slightly above Baywide average.
- Culch decreased, last patent tong survey by DNR in 2014
- 2006 – 21 million hatchers spent on shell planted, 218,000 Bu dredged shell
- Since sanctuary – 244 mil hatchery spat or shell planted.
- Plantings reflect no result – small oysters decline 87% to .2 per m^2 – market oysters decline 40% to 6.8 per square meter.
- Survey Assessment: Failure despite massive restoration attempt.

Sec A. 19 – Lower Choptank River Sanctuary Appendix A, pg. 117

- South Shore of Choptank River Near Mouth – Castlehaven – East and West

- Medium salinity – Sanctuary established 2010 – 7172 acres, 4217 acres or 59% are historic oyster bottoms.
- Fall Surveys – 1 bar sampled – density – small oysters declined but density market oysters increased.
- Table
  - Small oyster decreased from 9.5 to 1.9/per sq meter – 80% decline.
  - Market oysters increased from 18.5 to 23.7 per sq meter.
- Small oysters have merely grown to market size.
- Mortality is 17% - increased three times in 2016-20 period.
- DNR posits – "due to disease" – no data.
- In 2011 – 35 million hatchery spat on shell, planted.
- Small oysters have grown out to market size and mortality increased; culch remain about s/avg 2006 – 2010.
- No Patent Tong Surveys.
- No Biomass data
- Survey Assessment: Mixed Results

Sec A. 20 – Lower Mainstem Sanctuary Appendix A, pg. 122

- West of Bloodsworth Island and South Marsh Island – Medium salinity
- Sanctuary established – 2010 – 38,290 Acres; 8,234 acres or 22% historic oyster bottom – 6 historic oyster bars.
- Fall Surveys – 2 bars sampled – density of spat and small oysters increased.
- Table – small oysters increased from 45.4 in 2011-15 to 71.6 in 2016-20, spat increased from 34.5 (11-15) to 59.7 (16-20) increase, and market oysters decreased from 13.4 (11-15) to 11 (16-20), cultch decreased by 1/3.
- Before sanctuary established – 88,000 Bu dredged shell planted.
- After Sanctuary established, no planting activities.
- Last Patent tong survey 2015.
- Increases without replenishment – but without patent tong surveys, not well monitored.
- Mixed results/No Patent Tung Surveys, 2016-2020

Sec A. 21 – Lower Patuxent River Sanctuary Appendix A, pg. 130

- Created 2010, 335 Acres, 315 Acres (94%) historic oyster bottom.
- No Fall Surveys since 2006; PT Survey 2015.
- No restoration or replenishment efforts since 2006
- Survey Assessment: Mixed Results, increases of small oyster and spat with some decline in market oysters and cultch.

Sec A. 22 - Magothy River Sanctuary Appendix A, pg. 133

- Sanctuary established 2010, 5607 acres; 230 acres or 4% historic oyster bottoms.
- No Fall Surveys since 2006.
- PT survey in 2018 – found 2.9 oysters per square meter – average density - .5/per square meter of 101 samples – 93 no oysters – 66 no shells.

- From 2006 – 2009, 20 million spent on shell planted – Jan 2021 – 100 reef balls placed by Magothy River Association. Also, Marylanders Grow Oysters and Magothy River Association planted since 2009.
- Survey Assessment: Failure

Sec. A. 23 – Manokin River Sanctuary Appendix A, pg.138

- Sanctuary since 2010 – 16320 acres; 11040 acres or 68% historic oyster bottoms
- Large active harvest area taken as sanctuary.
- 19 oyster bars – declared as "large-scale restoration" sanctuary.
- Fall Surveys, spat increasing last 10 years; density small oysters increased 2016-20, biomass higher.
- Patent Tong Surveys 2012, 2015, with 2017-2018 – oyster density 5.6 per square meter in 2017 and average oyster density-14.4/per square meter in 2018.
- PT Surveys 2017 and 2018 also reflect large sample with no oyster or surface shell volume.
- Since 2010 no restoration plantings
- Large scale restoration plantings set for 2021.
- Active harvest area converted to sanctuary has blossomed despite no large restoration projects.
- Oyster have increased on their own.
- Survey Assessment: Mixed results/no Patent Tong Surveys since 2018.

Sec A. 24 – Man O War Gales Lump Sanctuary Appendix A, pg. 148

- Upper Chesapeake – Sanctuary 2010 – 4,704 acres; 2310 (49%) historic oyster bottom
- Total 4747 acres, 2353 acres historic oyster bottom
- No Fall Surveys since 2006
- Patent Tong Survey – 2015-2016
  - 2015 – 2 oysters – 154 samples, 0.01 density/per square meter
- No replenishment, etc. since 2006
- Dead Zone
- Survey Assessment: Failure

Sec. A. 25 - Miles River Sanctuary Appendix A, pg. 152

- Medium salinity – sanctuary established 2010 – 3449 acres; 373 acres or 11% historic oyster bays.
- Fall Surveys – 1 bar sampled since 2015 with no spat (2016-2020) also practically no live oysters from 2016-2020 with no increases in 2020.
- 2020 – mortality rate slightly higher
- Patent Tong survey 2014 – 2020 - .09 oysters per square meter
- After Sanctuary established – 12 million spat on shell planted for restoration – MGO planted every year since 2010.
- Extremely limited oysters present despite restoration efforts.
- Bottom is mostly mud – why plantings?

- Survey Assessment: Failure

Sec A. 26 – Mill Hill Sanctuary Appendix A, pg. 161

- Eastern Bay Sanctuary established 2000 as an EPA Project.
- Remounted habitat and alternative materials.
- 295 acres; 188 acres or 64% historic oyster bays.
- Fall Surveys – 1 Bar – noting spat, small and market sized oysters in sharp declines.
- Patent Tong Surveys 2013 and 2020 the later reflecting 4.0 oysters/m2.
- 3.2 market size oyster .8 small oyster
- From 2006 to 2020 – 82 million hatchery spent on shell planted and Nature Conservancy planted 237,113 aquaculture oysters planted 2021 to help aquaculture farmers.
- Spat small oysters and market sized oysters declining despite large scale planting.
- Survey Assessment: Failure

Sec A. 27 – Nanticoke River Sanctuary Appendix A, pg. 167

- Low Salinity – sanctuary established 2010 – 16,699 Acres; 376 or 3.4% historic oyster bottoms.
- Fall Surveys "oyster abundance and biomass increased steadily since sanctuary established in 2010 due to establishment of sanctuary and no harvest and strong spat sets, observed mortality rates low.
- Replace and Restoration
  - 2006 to 2018 – 6,000 Bu, wild seed planted.
  - 2021 – Nature Conservatory planted – 571,596 aquaculture oysters
  - MGO active since 2009 – planting on one location
  - Patent tong survey 2018 – density 10.5 oys/per square meter more market oysters than small oysters
  - Planting scheduled for 2021.
- Survey Assessment: Mixed Results/Decline in cultch

Sec. A. 28 – Neal Addition Sanctuary Appendix A, pg. 177

- Middle Patuxent River – medium salinity – sanctuary established 2001 – Army Corps of Engineers Project – 7 acres.
- Fall Surveys – 1 location – spat and small oysters increased from 2016 to 2020.
- Observed mortality rate of 17% above Bay average.
- Patent Tong survey 2018 – 22.1 oyster per square meter, mostly small oysters
- From 2006 to 2020 – 10 million hatchery spat on shell planted.
- 2016-2020 – Increase in small oysters with decline I market sized oysters, no biomass data.
- Very small (7 Acres) Sanctuary with massive plantings.
- Survey Assessment: Failure

Sec A. 29 – Oxford Lab Sanctuary - Tred Avon River Appendix A, pg. 183

- Patent Tong survey – since 1961 – 36 acres Fall Survey not since 2006.
- Also, no PT surveys since 2006
- No replenishment efforts except MGO plantings annually since 2008
- No data – no measure of success or failure.
- Survey Assessment: Failure

Sec. A. 30 – Piney Point Sanctuary Appendix A, pg. 186

- St. George Creek – Lower Potomac – Sanctuary established 1986.
- 13 acres – no Fall Survey since 2006 – no PT surveys – no replenishment
- No data or measure of success or failure
- Survey Assessment: Failure

Sec A. 31 – Plum Point Sanctuary Appendix A, pg. 189

- Calvert County Shoreline Sanctuary established 1999 – 6,209 acres, 4405 Acres or 71% historic oyster bottom – No Fall Surveys or Patent Tong Surveys since 2006.
- No replenishment or restoration efforts since 2006
- No data or measure of success or failure
- Survey Assessment: Failure

Sec. A 32. – Point Lookout Sanctuary Appendix A, pg. 193

- Medium Salinity – Sanctuary expanded to 503 acres in 2010, 500 acres of historic oyster bottom.
- Fall Surveys – 2 sites/annually density-spat, small and market oysters increased 2016-20 – Table?
- Pt Surveys 2014-2020 – oyster density 5.3 per square meter, small oysters 3.1 market oysters
- Not much activity or substantial increases
- No restoration or planting since 2006
- Ques Table measures – oysters/per square meter, inconsistent with Fall Survey Table.
- Survey Assessment: Mixed Results

Sec A. 33 – Poplar Island Sanctuary Appendix A, pg. 202

- Medium Salinity – sanctuary established 2003, 7 acres – all historic oyster bottoms.
- No Fall Surveys since 2006 also no Patent Tong since 2006
- No replenishment since 2006
- No Data – Moribund
- Survey Assessment: Failure

Sec A. 34 – Prospect Bay Sanctuary Appendix A, pg. 205

- Eastern bay Sanctuary established 2010 – 1,478 acres; 1061 acres or 71% historic oyster bottoms.
- No Fall Surveys since 2006

- PT surveys 2013 and 2020 - .5 oysters per square meters – small oysters .42, market .6
- No replenishment from 2006 to 2010; one planting in 2011 with eight million hatchery spat on shell on 21 acres.
- No real progress despite planting
- Survey Assessment: Failure

Sec A. 35 – Prospect Bay Cabin Creek Sanctuary Appendix A, pg. 209

- Eastern Bay Sanctuary created 2005 by Chesapeake Bay Environment Control as pilot program. 298 acres, 128 acres or 45% historic oyster bays
- No Fall Surveys since 2006.
- Between 2006 and 2010, 6.5 million spat on shell planted and 160 reef balls deployed.
- Survey Assessment: Failure

Sec A. 36 – Ringold Survey Appendix A, pg. 212

- Upper Chester River: Sanctuary established 2001 – 120 acres; 63 acres or 52% historic oyster bottoms.
- No Fall Surveys since 2006; Patent Tong Survey – 2020 – found four market sized oysters – 100 samples – density 0.4 per square meter.
- No restoration since 2006
- Survey Assessment: Failure

Sec A. 37 – Roaring Point Sanctuary Appendix A, pg. 216

- Nanticoke River: Sanctuary established 2004 – 10 acres; zero acres of historic oyster bottoms.
- Sanctuary from old oyster lease – Chesapeake Bay Foundation
- No Fall Surveys since 2006; Patent tong survey in 2018 found 4 Samples – 0 Oysters
- MGO planted oysters annually since 2009 (11 years)
- No Data
- Survey Assessment: Failure

Sec. A 38 – Sandy Hill Sanctuary Appendix A, pg. 219

- Middle Choptank Sanctuary established 2009, 1947 acres, 1308 acres or 67% historic oyster bottoms + 10 acres old Horn Point Bottom.
- Fall Surveys – 1 location – biomass stable.
- Average size oyster – 100 mm – 61% over market oysters
- After 2009 – 93 million hatchery spat on shell planted.
- Major restoration effort
- Last Patent Tong Survey 2015
- With major planting, good bottom, why was Fall Survey sampling in one location and no PT survey since 2015 with no results listed.
- Data woefully inadequate.
- Survey Assessment: Failure

Sec. A. 39 - Severn River Sanctuary Appendix A, pg. 227

- Low salinity, Sanctuary established 2010 – 7,804 acres; 1376 acres or 18% historic oyster bottoms – 27 bars.
- Fall Surveys – 1 bar sampled - no natural spat found – 2016-20 – density of market size 0ysters declined 2016-20 from previous 5 years. High mortality
- Despite good water quality
- Last patent tong survey 2012
- From 2006-2020 – 268 million spat on shell planted.
- MGO has plantings since 2009.
- Steep decreases in small oysters (80%) and market size oysters (51%) from 2016-2020.
- Sanctuary looks like a complete failure not withstanding massive plantings.
- Survey Assessment: Failure

Sec A. 40 – Solomons Creeks Sanctuary Appendix A, pg.234

- Lower Patuxent River, Medium salinity; Sanctuary established 2010 – 617 acres, five acres or .8% historical oyster bottoms.
- No Fall Surveys or Patent Tong surveys since 2006.
- Chesapeake Bay Foundation, Coastal Conservatory and Southern Maryland Oyster Cultivation Society planted 7.2 million oysters from 2008 to 2012 – discontinued – MGO has planted oysters since 2009.
- No data despite extensive plantings 2008-12 and continued annual MGO plantings thereafter.
- Survey Assessment: Failure

Sec. A. 41 – Somerset Sanctuary Appendix A, pg. 236

- Tangier Sound – High salinity, Sanctuary established 1999 – 101 acres; six acres or 6% historic oyster bottom.
- Fall surveys – 3 locations – 2015 to 2020 – Patent tong surveys.
- Higher mortality 2016-20
- Fall Surveys 2016-2020 reflects sharp decline with small and market size/ m^2 uptick in 2020.
- PT Surveys increase in density 50.3 Oysters per square meter.
- Spat – 25 per square meter, small oyster 21.8 per square meter, market size 3.5 per square meter.
- MGO planted between 2013 and 2017.
- Survey Assessment: Failure

Sec A. 42 – South River Sanctuary Appendix A, pg. 245

- Low Salinity Sanctuary established 2000, 2327 acres, 141 acres or 6% historic oyster bottoms.
- No Fall Surveys since 2006; Patent Tong Surveys 2014 only
- No restoration plantings since 2006 – four million hatchery spat on shell.
- MGO plantings since 2009

- No Data; approx. 70% mud.
- Survey Assessment: Failure

Sec. A. 43 – St. Mary's River Sanctuary Appendix A, pg. 249

- Medium Salinity Sanctuary established 2010 – 1304 acres, 89 acres or 9% historical oyster bottom.
- 2018 sanctuary selected as fourth large-scale restoration area under 2014 Chesapeake Bay Watershed Agreement
- Fall Surveys – 2 bars are market size and small densities stable 2016 – 2020.
- Avg market and small stable but increased mortality
- Patent Tong surveys 2018 – 64 acres are oyster density 18.15 oyster per square meter.
  - St Mary's Watershed Association constructed oyster reef 603 reef balls.
  - 185 tons concrete rubble, 27000 shell in piles and 27 million spat on shell; MGO plantings since 2009, St. Mary's College
- Large scale restoration plantings set for 2021. Steep decline in small and market sized oysters in 2020.
- Survey Assessment: Failure Steep decline in oyster density, in 2020 despite massive restoration efforts, with massive die off.

Sec A. 44 – Tilghman Island Sanctuary Appendix A, pg. 259

- Medium Salinity Sanctuary established 2010, 2534 acres, 1345 acres or 53% historic oyster bottom.
- No Fall Surveys since 2006; Patent Tong survey – 2015 – No results listed.
- No replenishment
- No Data
- Survey Assessment: Failure

Sec A. 45 – Tred Avon River Sanctuary Appendix A, pg. 262

- Low Salinity Sanctuary established 2010 – 4149 acres, 1152 or 28% historic oyster bottom.
- 27 bars
- Fall Surveys – 5 bars – Density spat – small and market oysters increased.
- 2016 – 20 – Large scale restoration project. Fall Surveys do not reflect such density of oysters commensurate with massive plantings, also cultch declining.
- Department – Patent Tong survey 2012 and 2013 – Other Organizations have monitored.
- Patent tong Surveys and Diver surveys – their results = 3 years after initial restoration – 80% reefs met minimum threshold restoration criteria – 15 oyster per square meter
- From 2006-10 – 14million hatcher spat on shell planted.
- After sanctuary hatchery spat on shell – 460.4 million hatchery spat on shell from 2015-20 on 92.48 acres.
- Participated in restoration.
- Survey Assessment: Success/Massive Restoration Effect.

Sec A. 46 - Upper Chester River Sanctuary Appendix A, pg. 271

- Low Salinity Sanctuary established 2010, 9033 acres; 2365 acres or 26% historic oyster bottom.
- Total in two add 1, 9,109 acres; 2389 acres, 31 oyster bars.
- Fall Surveys – 6 bars – no natural spat or small oysters found.
- 2016-20; market oysters 10.4 +/- 2.5 – declining.
- Last Patent Tong Survey 2012
- After Sanctuary established 150 million hatchery spat on shell planted
- MGO plantings since 2010
- Survey Assessment: Failure

Sec. A. 47 – Upper Choptank River Sanctuary Appendix A, pg. 279

- Low Salinity Sanctuary established 2010 with additions – 5980 acres, 1687 acres historic oyster bottom.
- Fall Surveys – 7 bars – avg density spat and oysters both small and market sized declined 2016-20
- Also, mortality increased – 16%
- Patent Tong survey 2015, no results reported.
- 2010 – 88 million hatchery spat on shell planted.
- Survey Assessment: Failure

Sec. A. 48 – Upper Patuxent River Sanctuary Appendix A, pg. 287

- Low Salinity Sanctuary established 2010 – adds 14,470 acres, 2229 acres historic oyster bottom.
- Fall Surveys – 5 bars – oyster densities – stable 2016-20 – biomass slight decline.
- Last patent tong survey – 2012 – after 2010 – 27 million hatchery spat on shell planted.
- Survey Assessment: Success/Stable.

Sec. A. 49 – Webster Sanctuary Appendix A, pg. 296

- Medium Salinity – Som Co. – Mouth Wicomico River – Sanctuary established 1997, 554 acres; zero acres historic oyster bottoms.
- Fall Surveys not since 2006 – also no Patent Tong surveys.
- Survey Assessment: Failure

Sec. A 50 – Wicomico River Sanctuary Appendix A, pg. 299

- W. Shore – Sanctuary established 2010 – 450 acres; 272 acres or 61% historic oyster bottom.
- Fall Surveys – 1 sample – 2015 – no live or dead oysters.
- No patent tong surveys – no replenishment or restorative efforts except MGO plantings annually since 20019
- No Data: moribund – failure not even deemed fit for Fall Surveys last 6 years.
- Survey Assessment: Failure

Sec. A. 51 – Wye River Sanctuary Appendix A, pg. 303

- Medium Salinity, Sanctuary established 2010 – 3,510 acres; 1100 acres or 31% historic oyster bottoms – 23 bars.
- Fall Surveys – 5 bars – oysters increased in first five years but recent declines due to lack of spat fall and increased mortality 23%; PT Survey 2020 does not square with 2020 Fall Survey.
- PT survey 2014 and 2020 are density live oysters .5 / per square meters lower than 2014 2.3 oysters per square meter: MGO plantings since 2010. Live market size oysters dropping off in 2020.
- Cultch declining 2016-2020.
- Survey Assessment: Failure

V.
CONCLUSION

HARRIS AND BROAD CREEKS
THE OYSTER'S TALE OF TWO CITIES

As if by pure happenstance the story of the Bay's oyster restoration is played out in the Choptank River's twin sisters, Harris, and Broad Creeks. They both flow northward in a roughly parallel track from the northwestern banks of the Choptank and are separated by no more than one mile from each other by Bozman Neck, which forms the easterly bank of Harris Creek and westerly bank of Broad Creek. In addition, they share the same waters and roughly the same tides and each are each abutted on all sides by lightly populated areas of predominantly agriculture land.

Both Harris Creek and Broad Creek are homes to many historically productive oyster bars and since 2010 with the aggressive expansion of the sanctuary program, they represent widely different paths in the efforts to increase and sustain the Bay's long term oyster replenishment and restoration of its oyster stock. Their close proximity to each other and the similarity of their shared environment highlight in sharp contrast the real effectiveness of the sanctuary programs of Harris Creek compared to its sister, Broad Creek, which thrives while remaining in the public fishery. The Department's 2016-2020 Report, Appendix A, pages 67-75, for Harris Creek and Appendix B, pages 256-262, relating to Broad Creek, bring this contrast to light.

Harris Creek, the Department's flag-ship large-scale oyster restoration sanctuary has since 2010 been off-limits to public harvest. Its bottom has been heavily engineered by state and federal agencies to provide an artificial substrate bottom with the goal of creating an extensive oyster reef system. Some of the methods in the bottom enhancements of Harris Creek include: massive deposits of granite, fossil shell, mixed shell, and spat-on-shell. By various estimates, the state and federal efforts at oyster restoration in Harris Creek (not including monitoring), have cost in excess of $31 million dollars since it was designated as a sanctuary.

The 2016-2020 Fall Surveys of the DNR measuring oyster densities and biomass levels at Harris Creek and Broad Creek reveal results which are surprisingly similar.

The 2016-2020 Fall Survey Tables for Harris Creek disclose:

Live small oyster/ m^2	148.7 +/- 37.4
Live market-sized oysters/ m^2	115.9 +/- 2.2
Live oyster Biomass (weight/bushel)	357 +/- 24

The 2016-2020 Fall Survey Tables for Broad Creek disclose:

Live small oyster/ m^2	239.1 +/- 35.3
Live market-sized oysters/ m^2	77.5 +/- 12.5
Live oyster Biomass (weight/bushel)	381 +/- 19

See DNR's Report, Appendix A, page71 and Appendix B, page 258.

The accompanying graphs for 2020 show the market-sized oysters/ m^2 declining in Harris Creek and increasing to approximately 120/ m^2 in Broad Creek.

The Department's randomly conducted Fall Surveys clearly demonstrate that the oyster densities and biomass are roughly comparable between the heavily subsidized and engineered sanctuary, Harris Creek, and its proximate neighbor Broad Creek, which remains in the public fishery and is harvested on a yearly basis. If anything, the rough comparison gives the edge to Broad Creek based on its maintenance and increases in oyster density and live oyster biomass.

Ironically, Broad Creek is not heavily subsidized and remains in the public fishery. It has benefited by deposits of shell and limited spat-on-shell by the DNR and the ORP in cooperation with the Talbot County Oyster Shell Committee. The replenishment efforts of the oyster stock at Broad Creek have cost over time an estimated 1 million dollars with the majority of the funds being generated by TFL oyster licensing fees, excise and per harvest bushel taxes and other state changes and taxes, much of which are self-sustaining.

Replenishment and restoration do not have to be considered as mutually exclusive concepts. Broad Creek has demonstrated that a thoughtful and well executed approach to oyster replenishment programs can also lead to restoration of the oyster stock. Not all of the replenished oysters are harvested and enough of the balance of the spat-on-shell grown to maturity whether as a small or market size oysters will serve to restore the resource as a matter of course. There just need to be more "replenished Broad Creeks" in the public fishery, which will ensure that the fishery while maintaining itself will at the same time further the goals of the restoration and regeneration of the Bay's oysters.

SB 837 - Concerned Citizens - UNF.pdf
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Phillips Wharf
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Vernal Pool Partners


Chesapeake Beach
Oyster Cultivation Society


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MARYLAND


Advocates for Herring Bay


DOUBLE T
OYSTER RANCH


WATERFRONT
PARTNERSHIP
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Severn River
~ASSOCIATION~


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Cape Conservation Corps
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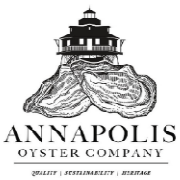
Stewardship
Pride


CHESAPEAKE BEACH
GREEN TEAM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ST. MARY'S RIVER
Watershed Association
www.SMRWA.org

Testimony before the
Senate Education, Energy, and the Environment Committee
March 4, 2025

Senate Bill 837
Oyster Restoration – Use of Federal Funds – Prohibition
Position: **OPPOSE**

Dear Chairman Feldman, Vice Chair Kagan, and Members of the Committee:

We, the undersigned organizations, respectfully request an **unfavorable** report from the Senate Education, Energy, and the Environment Committee on Senate Bill 837. This bill would prohibit the Department of Natural Resources (DNR) from using federal funding for oyster restoration projects in Maryland's oyster sanctuaries.

Federal investments have played a pivotal role in Maryland's oyster restoration success. Through the end of calendar year 2023, more than $87 million has been invested in Maryland's oyster sanctuaries by state and federal partners.[1] These investments have resulted in more than 1,000 acres of restored reef in Maryland. By all metrics, nearly every reef that has received investment is considered a success.[2] The outcomes of targeted oyster restoration efforts in Maryland and Virginia's oyster sanctuaries are widely regarded as one of the most successful outcomes to date of the 2014 Chesapeake Bay Watershed Agreement.

Maryland's state-federal partnership for oyster restoration originated with President Obama's Executive Order 13508 – Chesapeake Bay Protection and Restoration. E.O. 13508 directed all relevant federal agencies, including the National Oceanic and Atmospheric Administration and U.S. Army Corps of Engineers, to work with Bay states to restore oysters in twenty tributaries by 2025. This partnership was reinforced in the 2014 Chesapeake Bay Watershed Agreement where the goal was updated and state and federal partners committed to restoring ten tributaries by 2025. As a result of this coordinated effort and investment, Maryland is on track to meet its current oyster restoration goal by the end of the year.

Throughout 2025, Chesapeake Bay Program partners will continue to review and update metrics and outcomes for the next iteration of the Chesapeake Bay Watershed Agreement, including oyster restoration goals. Passage of Senate Bill 837 would send the message to partners that Maryland is not backing down on oyster recovery. This bill also comes at a time when Maryland is faced with a significant budget deficit and an uncertain federal outlook. To decline federal funding that has been so impactful would be ill-advised and poorly timed.

For these reasons, we urge the Committee's **unfavorable** report on Senate Bill 837.

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[1] Maryland and Virginia Oyster Restoration Interagency Workgroups of the Chesapeake Bay Program's Sustainable Fisheries Goal Implementation Team. 2023 Chesapeake Bay Oyster Restoration Update: Progress toward the Chesapeake Bay Watershed Agreement's 'Ten Tributaries by 2025' Oyster Outcome. 2024.

[2] Maryland Oyster Restoration Interagency Workgroup under the Chesapeake Bay Program's Sustainable Fisheries Goal Implementation Team. 2022 and 2023 Oyster Reef Monitoring Report: Analysis of Data from the 'Ten Tributaries' Sanctuary Oyster Restoration Initiative in Maryland. 2024.

Sincerely,

1. Advocates for Herring Bay
2. Annapolis Aquaculture
3. Annapolis Oyster Co.
4. Arundel Rivers Federation
5. Audubon Mid-Atlantic
6. Baltimore Greenspace
7. Beaverdam Creek Watershed Watch Group
8. Blue Water Baltimore
9. Building Conservation Trust
10. Cape Conservation Corps
11. Catoctin Land Trust
12. Chesapeake Bay Foundation
13. Chesapeake Beach Green Team
14. Chesapeake Beach Oyster Cultivation Society
15. Chesapeake Oyster Alliance
16. Coastal Conservation Association Maryland
17. Double T Oyster Ranch
18. Fallen Pine Oyster Co.
19. Friends of the Nanticoke River
20. Friends of St. Clements Bay
21. Hollywood Oyster Co.
22. Living Classrooms Foundation
23. Mark Street Ventures
24. Maryland Sea Grant Extension
25. National Aquarium
26. National Parks Conservation Association
27. National Wildlife Federation
28. Orchard Point Oyster Co.
29. Oyster Ninja/S.S. Shucking
30. Phillips Wharf Environmental Center
31. Severn River Association
32. Solar Oysters
33. St. Mary's River Watershed Association
34. The 6th Branch
35. True Chesapeake Oyster Co.
36. Vernal Pool Partners
37. Waterfront Partnership of Baltimore
38. Waterkeepers Chesapeake
39. Wicomico Environmental Trust

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Position: UNF

CHESAPEAKE BAY FOUNDATION

Environmental Protection and Restoration
Environmental Education

Senate Bill 837
Oyster Restoration – Use of Federal Funds - Prohibition

Date:	March 4, 2025	Position:	**UNFAVORABLE**
To:	Education, Energy, and the Environment Committee	From:	Dr. Allison Colden, MD Executive Director

Chesapeake Bay Foundation (CBF) **OPPOSES** Senate Bill 837 which would prohibit the Department of Natural Resources (DNR) from utilizing federal funds for oyster restoration in state oyster sanctuaries.

Since 2011, more than $87 million of state and federal funding has been invested in Maryland's oyster sanctuaries. By all metrics, the overwhelming majority of reefs and tributaries are considered a success, with high oyster abundance, reproducing populations, and more than 1,000 acres of high-quality oyster habitat. These restored reefs, when fully mature, are estimated to contribute more than $22 million annually to Talbot and Dorchester counties through enhanced productivity of blue crab and white perch fisheries, representing a significant return on investment for communities surrounding oyster restoration projects.

Federal investment has been key to Maryland's oyster restoration success. In addition to providing grants to state agencies, non-profit organizations, and volunteer community groups, federal partners are responsible for coordinating partners, developing restoration blueprints, conducting pre-construction surveys, and monitoring the outcomes of oyster restoration projects. Federal investments also support production of oyster larvae at the University of Maryland Center for Environmental Science Horn Point Oyster Hatchery, which is the largest producer of oyster larvae for restoration, aquaculture and the public fishery. Without these investments, all oyster sectors would suffer.

CBF urges the Committee's UNFAVORABLE report on SB 837.

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

ShoreRivers Testimony Opposition - SB837 - Prohibi

Uploaded by: Benjamin Ford

Position: UNF

Testimony in OPPOSITION of Senate Bill 837
Oyster Restoration - Use of Federal Funds - Prohibition

2/28/2025

Dear Chair Feldman, Vice Chair Kagan, and esteemed members of the Committee,

On behalf of ShoreRivers, I am writing to express our position in **OPPOSITION to SB837 - Prohibition on Federal Funds for Oyster Restoration in Sanctuaries.** As a science-based advocacy and restoration organization dedicated to protecting and restoring the waterways of Maryland's Eastern Shore, we urge the Committee to **issue an unfavorable report on SB837.**

This legislation would be a significant setback to Maryland's oyster recovery efforts, undermining long-term restoration goals and jeopardizing the progress made in restoring oyster reefs in the Chesapeake Bay.

Federal funding has been crucial to Maryland's oyster restoration success, supporting the rehabilitation of over 1,000 acres of reef with a remarkably high success rate. Collaborative efforts between federal partners—including NOAA and the U.S. Army Corps of Engineers—alongside state agencies, scientists, and conservation groups have made Maryland a national leader in oyster restoration. These initiatives have led to measurable improvements in oyster density, biomass, and reef health, as confirmed by the 2022-2023 Interagency Workgroup Monitoring Report.

A resident of Bozman, on the Harris Creek oyster sanctuary, has this to say about the efficacy of oyster restoration. "*I've lived at this location since 1986. Oysters in the flats are larger, forming more clusters, and standing. In the past, regular strip mining of the shallows by commercial harvesters kept most oysters around the 2-4" range. Oysters 5" (and larger to 7") are very prevalent today. Spat on the riprap are more prevalent as well, though this past ice has scraped them off a bit. See attached pictures, taken 12/6/24.*".

ShoreRivers
Isabel Hardesty, Executive Director
Annie Richards, Chester Riverkeeper | Matt Pluta, Choptank Riverkeeper
Ben Ford, Miles Wye Riverkeeper | Zack Kelleher, Sassafras Riverkeeper

shorerivers.org | 443.385.0511 | info@shorerivers.org

However, this work is far from complete. Oyster reefs provide vital ecological benefits, including improving water quality, supporting marine life, strengthening coastal resilience, and boosting the local economy. Cutting off funding at this critical stage would not only halt progress but could also reverse the gains achieved through years of investment, research, and community engagement.

In 2023, **1.7 billion juvenile oysters** were planted on sanctuary and public oyster reefs in the Chesapeake Bay, surpassing an ambitious annual goal and setting a new record. This milestone brings the total number of oysters planted to nearly **7 billion since the state launched its large-scale oyster restoration strategy in 2014**, in collaboration with numerous partners, including those at the federal level.

Oysters for the five large-scale restoration tributaries are primarily grown at the **University of Maryland Center for Environmental Science's Horn Point Laboratory oyster hatchery** in Cambridge. As one of the largest hatcheries on the East Coast, it produces oyster larvae for research, restoration, aquaculture, and educational initiatives. **Restricting federal support would severely impact key institutions like UMCES Horn Point Oyster Hatchery, driving up prices and demand for oyster larvae and spat-on-shell for all sources.**

With Maryland already facing a budget deficit, the state cannot afford to reject essential federal resources that have been instrumental in achieving restoration goals.

For these reasons, I urge you to oppose **SB837** and continue supporting Maryland's leadership in oyster restoration. Thank you for your time and consideration.

Sincerely,

Benjamin Ford, Miles-Wye Riverkeeper, on behalf of ShoreRivers

WET-FNR_OPP_SB0837.pdf
Uploaded by: Bradley Stevens
Position: UNF

Testimony in Opposition to SB0837
House Energy and Transportation Committee
March 4, 2025

The Wicomico Environmental Trust and The Friends of the Nanticoke River **oppose** HB 1022 for numerous reasons:

1. Thriving oyster populations are critical components of the Chesapeake Bay ecosystem. They provide valuable ecological services including water filtration, sediment stabilization, nutrient reduction, carbon cycling, and shoreline protection, and provide habitat for juvenile fish, crabs, and other organisms.

2. Oyster populations have been severely depleted by over a century of overfishing, disease, and mismanagement, and are now at about 1% of historic levels.

3. Restoration of oyster habitats will provide improved ecological services as stated above. In addition, spawning of oysters on restored beds will improve spat settlement on adjacent oyster beds that are open to commercial fishing.

4. Oyster restoration efforts in the Chesapeake Bay are the largest such programs in the world, covering hundreds of acres. The results to date have been highly successful. Post-restoration monitoring has shown that 85% to 97% of the restored reefs met at least the minimum criteria for oyster density and biomass that were established in 2011. The scale of oyster restoration exceeds the State's ability to support it, so federal funds are necessary for this critically important work.

5. Federal funds support the State's three main goals for oyster restoration, which include:

    a. Improving the public fishery (via hatchery-produced spat on shell).
    b. Conserving oyster brood stock in sanctuaries as a source for adjacent grounds and future production.
    c. Supporting growth of the oyster aquaculture industry, which is the fastest growing segment of Maryland seafood production.

6. In addition to direct restoration, federal funding indirectly supports world-class research on the effects of restoration, such as understanding ecosystem services and nitrification cycles associated with restored oyster beds.

7. The hatchery at Horn Point currently supplies over 50% of spat-on-shell production for all sectors of the industry – restoration, aquaculture, and the public fishery. They put more spat-on-shell into public fishing areas than sanctuary areas and cannot meet the demand for spat production.

8. Negative impacts of this bill are widespread:

    a. The Horn Point oyster hatchery is largely supported by federal funding; loss of this funding would terminate its ability to produce spat, as well as support multiple research projects associated with restoration work.
    b. It would block use of $10M in NOAA funding already received for planned future restoration efforts in Herring Bay, the Nanticoke River, and Hooper Strait.
    c. The oyster industry includes harvest, aquaculture, and restoration. Jobs, income, and tax revenue in all of these sectors would be impacted.
    d. The term “oyster restoration” is not defined in the bill and could be misinterpreted as applying to shoreline protection programs such as at Poplar Island.

9. Oyster restoration as currently practiced in Maryland is the result of many years of research, development, and planning, and amounts to the “Best Practice” that can be implemented for the industry and the resource. Improvements can be achieved by including input from all sectors of the industry. Placing limits on how oyster restoration is accomplished would impede progress and obstruct future options.

For all of the reasons listed above, the proposed legislation is short-sighted and not in the best interest of the public or the oyster industry. We respectfully urge the Committee to report **unfavorably** on this bill.

SB837 UMCES Fed Funds Prohibition Oyster Restorati

Uploaded by: david nemazie

Position: UNF

SB837 Oyster Restoration - Use of Federal Funds - Prohibition

Education, Energy, and Environment Committee
Chair: Senator Brian Feldman; Vice-Chair: Senator Cheryl Kagan

Testimony from
Dave Nemazie, Chief of Staff, University of Maryland Center for Environmental Science

Chair Feldman and members of the Education, Energy, and Environment Committee thank you for allowing me to provide this testimony in opposition to SB837 on behalf of the University of Maryland Center for Environmental Science (UMCES).

Since its founding in 1925, UMCES has been leading the way toward better management of Maryland's natural resources and the protection and restoration of the Chesapeake Bay. It's often referred to as "the institution of the environment for the state of Maryland."
This bill seeks to prohibit the Department of Natural Resources (DNR) from using federal funds for "oyster restoration" from July 1, 2025 through June 30, 2030, with the exclusion of five sanctuaries in Maryland waters.

The UMCES oyster hatchery is located at its Horn Point Laboratory in Cambridge, MD. The oyster hatchery produces billions of oyster larvae and hundreds of millions of spat-on-shell for restoration purposes such oyster sanctuaries, public bars, and aquaculture ventures. Currently the majority of funding UMCES receives from the Department of Natural Resources to support sanctuaries are through a grant from the National Oceanic and Atmospheric Administration (NOAA). Should this bill pass, funding UMCES for the production of oyster larvae and spat-on-shell would be in jeopardy for additional oyster sanctuary development not listed in the bill.

This bill may also preclude UMCES partnering with DNR on other oyster-related projects funded by the federal government that directly and indirectly include restoration such as assessing public bars, enhancing coastal resilience through green infrastructure, ecological programs, genetic assessments, and disease mitigation and prevention, among others.

Finally, not only will this bill disrupt oyster production it would also reduce the number of fulltime jobs for well-trained, highly skilled UMCES employees located in Cambridge. Additionally, it would significantly impact the summer student programs we have that target undergraduates interested in coastal sciences and aquaculture. After this bill expires it would take years to rebuild the staff capacity, expertise, and programs that currently run at the hatchery.

UMCES opposes SB837 and seeks the Committee's unfavorable report.

SB0837_DNR_OPP_EEE_3-4-25.pdf
Uploaded by: Emily Wilson
Position: UNF

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

March 4, 2025

BILL NUMBER: **Senate Bill 837 – First Reader**

SHORT TITLE: **Oyster Restoration – Use of Federal Funds – Prohibition**

DEPARTMENT'S POSITION: **OPPOSE**

EXPLANATION OF DEPARTMENT'S POSITION

The Department opposes Senate Bill 837. The agency uses federal funding for a variety of activities ranging from $800,000 on larvae production at the Horn Point Laboratory to $10 million on restoration projects in areas like Hoopers Strait.

The bill would put in jeopardy those grants as those funds have already been approved and the agency is proceeding. This would impact all sanctuary projects, as well as some oyster industry projects and some aquaculture businesses due to a severe decline in larvae production and spat production. This would impact all sanctuary projects, as well as some oyster industry projects and some aquaculture efforts due to a severe decline in larvae production and spat production.

Federal funding is a critical part of combating the decrease in oyster populations. Without the ability to receive funds, many of the critical functions related to oyster production, restoration, and aquaculture could be negatively impacted.

BACKGROUND INFORMATION

None.

BILL EXPLANATION

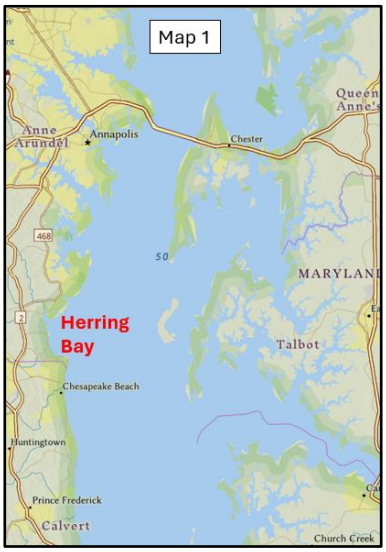
The bill would prevent the Department from July 1, 2025 to June 30, 2030 from receiving federal funds for restoration in sanctuaries, except for those listed under Natural Resources Article, Section 4-1014.

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

SB837-AHB-Oppose-Feb2025.pdf
Uploaded by: Kathleen Gramp
Position: UNF

Testimony of the Advocates for Herring Bay (AHB)[1]
Regarding SB 837 – Oyster Restoration – Use of Federal Funds – Prohibition
Submitted by Kathleen Gramp, February 28, 2025

Oppose



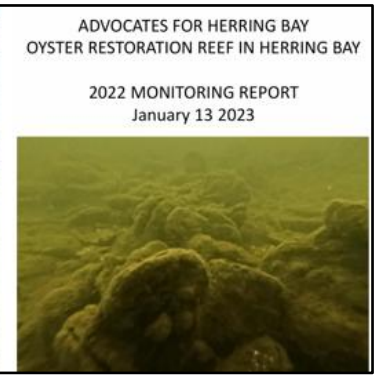
Herring Bay is a sub-bay on the western shore of the Chesapeake that has a rich history of aquatic abundance (see Map 1). Given its ecological potential and protected status as an Oyster Sanctuary, the Advocates for Herring Bay (AHB) launched a collaborative effort in 2019 to kick-start the revival of oysters in the Sanctuary. Over the last five years, community volunteers have raised money and invested hundreds of hours hauling, planting, and monitoring the progress of juvenile oysters in the Sanctuary.

The good news: oyster restoration works in Herring Bay. In 2022, the number of live oysters on our small reef was well above restoration targets, averaging 236 per square meter compared to a goal of 50.[2] Those oysters are forming three-dimensional structures that will provide habitat for crabs and fish, species important to Herring Bay's commercial crabbers and recreational fishing industry. The Smithsonian Environmental Research Center confirmed the reef's progress in their review of underwater imagery taken in 2023 (see Attachment 1).

That success has been a springboard for new restoration initiatives:

- last year, we launched a "Happy Oysters, Happy Bay" fundraising campaign to plant several million more juvenile oysters in the Herring Bay Sanctuary in 2025, and
- in October 2024, Maryland's Oyster Advisory Committee selected Herring Bay as one of the next sites for large-scale restoration by state and federal partners. Their decision reflects Sanctuary's extensive, high-quality oyster bottom; relatively low risk of disease; adjacency to the mainstem of the Bay; and other conditions suitable for successful restoration.

SB 837 seeks to arbitrarily cut off federal funds for Maryland's oyster restoration projects for the next five years. At a time of fiscal austerity, we need to leverage all available resources to guarantee continued progress toward sustaining oysters and other living resources in the Chesapeake Bay. We urge you to stay steadfast in your commitment to Marylanders' shared goal of a healthy Chesapeake. **Please reject SB 837 and issue an unfavorable report on the bill.**



[1] The Advocates for Herring Bay (AHB) is a community-based environmental group in Anne Arundel County.
[2] See AHB Oyster Monitoring Report, January 2023.

Advocates for Herring Bay
Testimony on SB 837
Attachment 1

OYSTER CAM

2023 OYSTER REEF MONITORING REPORT

PREPARED FOR: ADVOCATES FOR HERRING BAY

Project Summary

Oyster Cam is a participatory science project that aims to provide community-based organizations a qualitative approach for monitoring restored oyster reefs. This method uses underwater video to offer a non-destructive and cost-effective alternative to traditional monitoring methods. Habitat scores assessed from the videos provide reliable information about oyster reef characteristics, such as oyster presence, percent cover, and reef height. These characteristics are used to determine a habitat score, which can provide insights into restoration success.

Decoding Habitat Scores

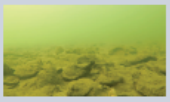
Habitat Score	Percent Cover	Reef Height	Meets Metrics?*
0	0%	N/A	✗
1	<50%	<One oyster	?
2	>50%	<One oyster	?
3	>50%	>=One oyster	✓

*Oyster restoration success metrics related to oyster density, biomass, and presence of multiple generations of oysters.

Habitat Score 0

Habitat Score 1

Habitat Score 2

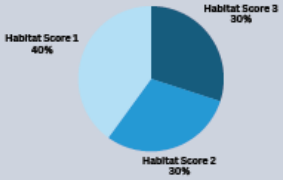


Habitat Score 3

Fairhaven Results

Survey Date: 10/27/2023

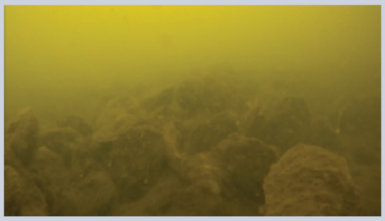
Score Breakdown



Reef Status

Meets oyster metrics

Example image from reef



Ten sites were surveyed in the Fairhaven restoration planting in fall of 2023. Of those, three had a habitat score of 3, three had a habitat score of 2, and four had a habitat score of 1. Thus, in at least 30% of the sites, the percent cover was greater than 50% and the reef height was taller than the height of one oyster. Fairhaven bar does meet the Chesapeake Bay restoration metrics for oyster density and biomass, indicating that oyster restoration efforts have been successful at this particular bar.

Survey Location

Points indicate survey sites

SB 837 Oyster Restoration - Use of Federal Funds -

Uploaded by: Michelle Dietz

Position: UNF

The Nature Conservancy
Protecting nature. Preserving life.

The Nature Conservancy
Maryland/DC Chapter
425 Barlow Pl., Ste 100
Bethesda, MD 20814

tel (301) 897-8570
fax (301) 897-0858
nature.org

Tuesday, March 4, 2025

TO: Brian Feldman, Chair of Education, Energy and the Environment Committee, and Committee Members
FROM: Michelle Dietz, The Nature Conservancy, Director of Government Relations; Amy Jacobs, The Nature Conservancy, Chesapeake Bay Director
POSITION: Oppose SB 837 Oyster Restoration - Use of Federal Funds - Prohibition

The Nature Conservancy (TNC) opposes SB 837 offered by Senators Mautz, Bailey and Hersey. 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 837 would prohibit the use of federal funds to be used by the Maryland Department of Natural Resources (DNR) for any oyster restoration project in Maryland outside of the oyster sanctuaries identified in the 2014 Chesapeake Bay Watershed Agreement. As written, this could prohibit DNR from the use of federal appropriations, Congressionally Directed Spending, and federal grant program funding for oyster reef restoration in the state outside of these previously defined tributaries.

TNC supports the oyster industry across the state. We have a history of working across sectors to leverage private, state and federal funding for its benefit. Harvesting and restoration efforts must be balanced in order to realize the many benefits oysters provide to the Chesapeake Bay, including improving the Bay's health, strengthening our state and local economies, and enhancing Maryland's culture. Sanctuaries improve recreational and commercial fishing in the Bay by providing persistent habitat for blue crabs, striped bass, white perch and other important finfish species. Oysters within sanctuaries can produce larvae that benefit areas beyond the sanctuary, including adjacent public fishery areas. In this way, oyster restoration work also increases harvest opportunities.

Oysters provide critical ecosystem services across the Bay, ranging from cleaning water to enhancing fish populations to producing and exporting oyster larvae to help support oyster harvests across the Bay. As the Chesapeake Watershed Agreement Beyond 2025 is revised and renewed in the coming months, we are likely to see changes to oyster restoration goals. Limiting funding opportunities from the federal government before the Agreement is finalized is a preemptive step to hinder potential conservation efforts. The Chesapeake Bay program and partner organizations will need to invest in areas outside of the five sanctuaries to achieve these outcomes. As agencies across the state look towards tighter budget years, limiting what types of funding can and can't be used for restoration could impact restoration efforts in smaller sanctuaries. This approach fails to consider the impact of restoration efforts on broader habitat and ecosystem health in the Bay.

The Nature Conservancy strongly opposes putting limitations on funding for oyster restoration work across the Chesapeake Bay through the methods proposed in SB 837, which could undermine ongoing restoration efforts and potentially hinder recommendations from the Chesapeake Watershed Agreement Beyond 2025 goals.

Therefore, we urge an unfavorable report on SB 837.