



Oyster Management Review: 2010-2015

5 Year Oyster Review Report Results



Purpose of the Report

“The department has committed to reviewing the effectiveness of the locations of sanctuaries, public shellfish fishery areas, and aquaculture areas every 5 years and to propose changes where needed.”

Preamble in the 2010 proposed oyster regulation in the Maryland Register, Vol 37, Issue 14, p. 943. Friday July 2, 2010



Definition of Management Areas

- Sanctuaries – Areas permanently closed to oyster harvest. Some sanctuaries have been targeted for extensive oyster restoration projects to potentially accelerate the recovery of oyster populations within the sanctuary, increase their environmental benefits, and contribute to enhancement of populations outside the sanctuary.
- Public Shellfish Fishery Areas (PSFA) – Areas where shellfish are harvested for commercial purposes. Oyster aquaculture leases are not allowed in these areas unless a petition to declassify a specific area is approved.
- Aquaculture – Areas where aquaculture leases are issued by the state to individuals for private aquaculture.



Objectives of Management Areas

Effectiveness is defined relative to the original management objectives in the 2010 proposal: to restore the ecological function of oysters and to enhance the commercial fishery for its economic and cultural benefits. The management plan adopted in 2010 sought to resolve the dual goals of ecological and fishery restoration by creating distinct management areas each with their own objectives.

Sanctuary

- Protect half of the “best bars” and investigate why these areas remain productive;
- Facilitate development of natural disease resistance
- Provide essential ecological functions
- Serve as reservoirs of reproductive capacity
- Located in all salinity zones
- Increase ability to protect sanctuaries from illegal harvesting

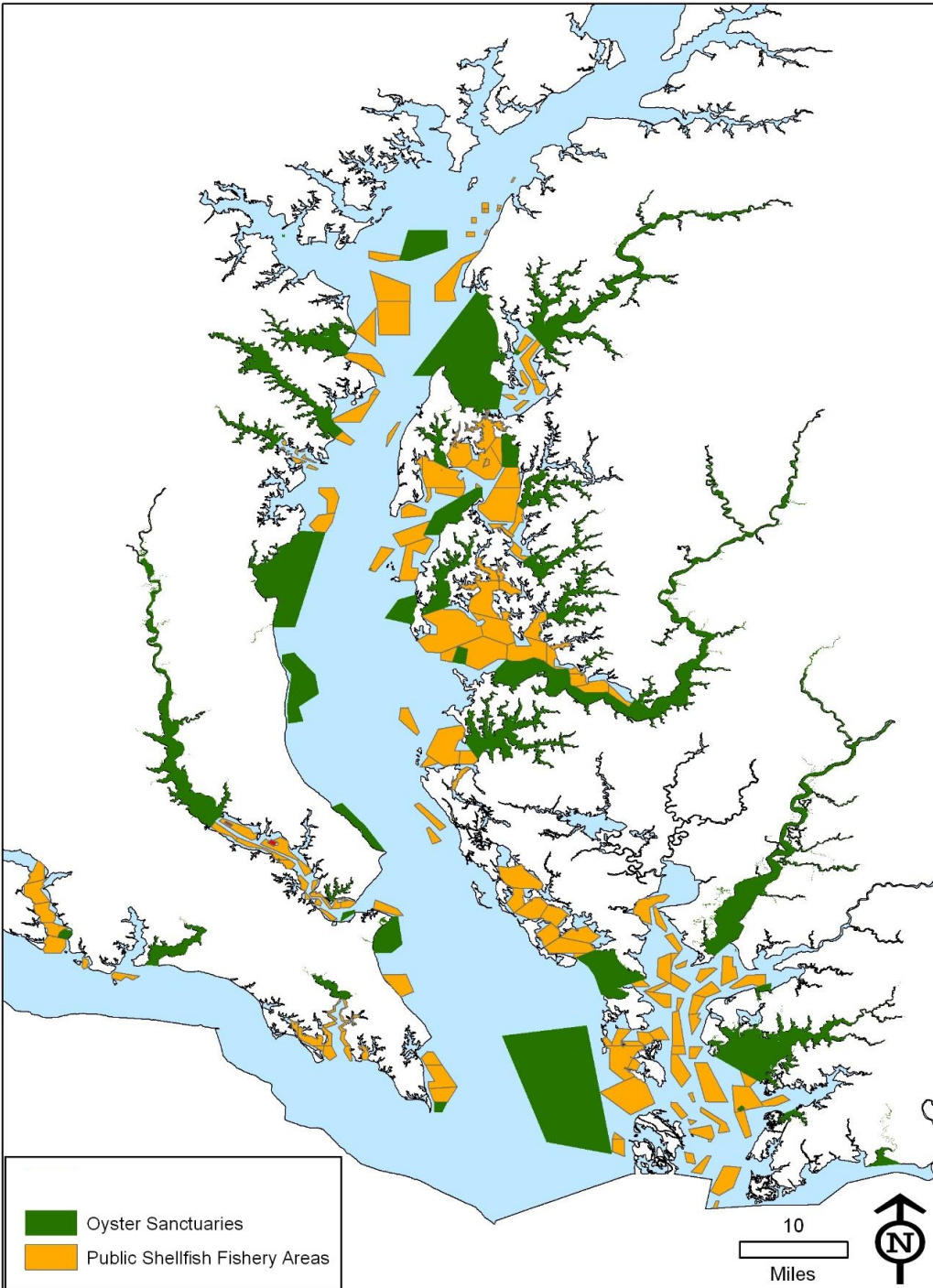
Public Shellfish Fishery Areas

- Retain 168,000 acres of natural oyster bars including 76% remaining productive oyster habitat
- Protect half of the “best bars” as for the benefit of licensed oystermen
- Implement a more targeted and scientifically managed wild oyster fishery.

Aquaculture

- Streamline the regulatory process for aquaculture
- Open new areas to leasing to promote shellfish aquaculture industry growth
- Provide alternative economic opportunities for watermen

Location of Sanctuaries and PSFAs





Management Area Acreage

Management Type	Total Area (acres)	Area of Historic Oyster Bottom (acres) ¹	Productive Oyster Bottom (acres) ²	Permitted Activities
Sanctuaries	252,285	78,520	9,000 (24%)	Shellfish restoration, clamming in some sanctuaries ³
Public Shellfish Fishery Areas (PSFAs)	179,943	142,006	27,000 (76%)	Commercial and recreational harvest of oysters. No aquaculture.
Aquaculture Areas	5,660	-	-	Aquaculture (includes both on-bottom and water column leases)

¹ Historic oyster bottom as charted in the Yates Oyster Survey from 1906 to 1912 plus its amendments. There is an additional 109,676 acres of historic oyster bottom that is neither in sanctuaries nor in a PSFA, but is open to the public oyster fishery.

² Productive oyster bottom as defined in the U.S. Army Corps of Engineers, Norfolk District. 2009. Programmatic Environmental Impact Statement for Oyster Restoration in Chesapeake Bay Including the Use of a Native and/or Nonnative Oyster.

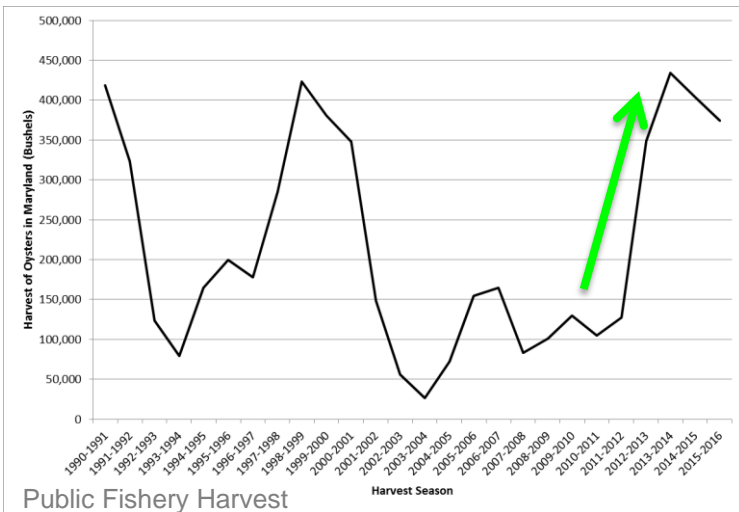
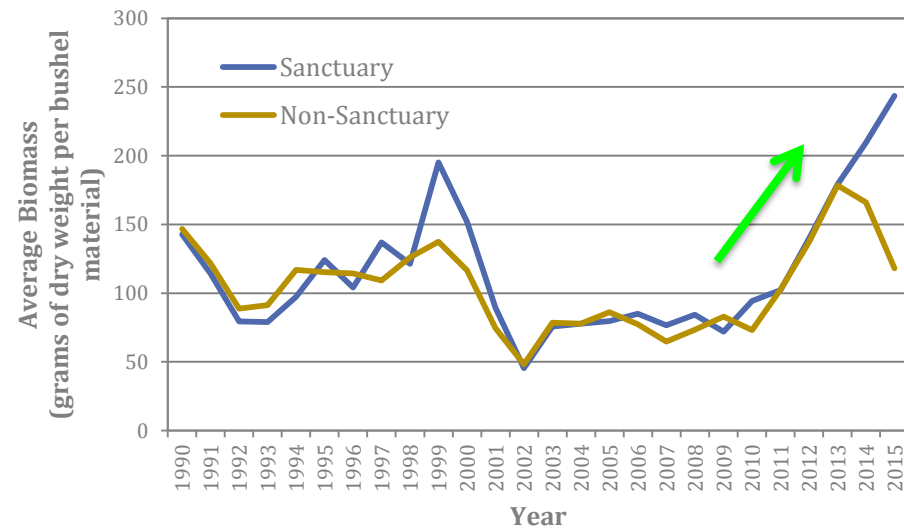
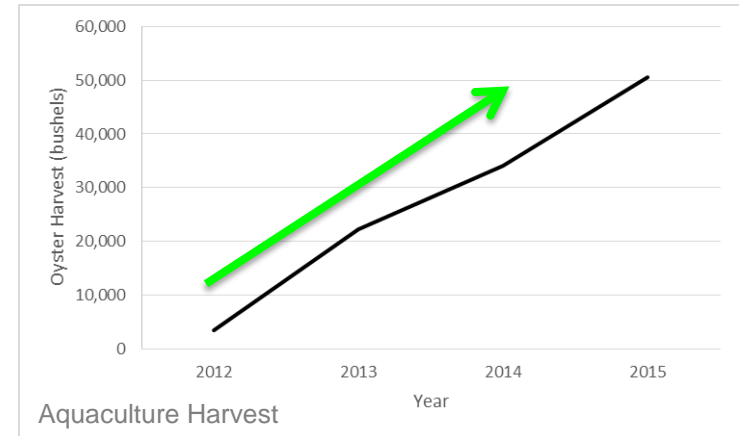
³ Clamming is permitted only in sanctuaries established in 2010.



Characterization of Management Areas

How are the management areas doing?

- Low disease mortality
- Two good years of reproduction (spatfall) in 2010 and 2012.
- Oyster biomass has increased
- Aquaculture and public fishery harvest have increased
- Appendices A and B individually examine each of the 51 sanctuaries and 39 NOAA Code harvest areas

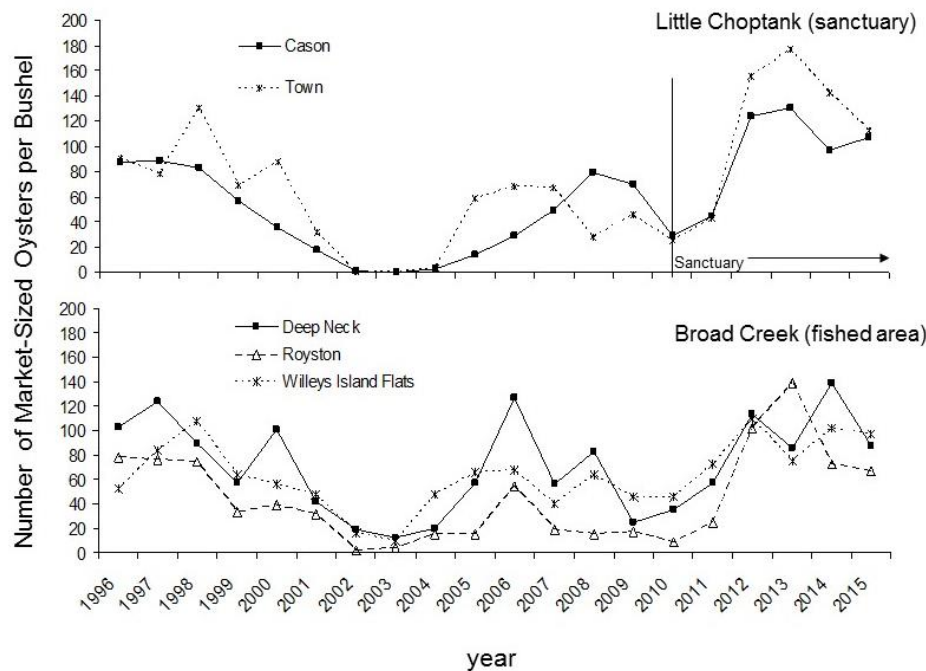


Evaluation of Sanctuary Objectives



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. [Jones and Rothschild 2009 'Best Bars' Analysis]

- 9 of the 17 'best bars' within a sanctuary (53%)
- 26% of 'best bar' historic oyster bottom area is within sanctuaries
- Investigation on why these areas are productive has not been completed - recommend 2009 'best bar' analysis should be updated



Evaluation of Sanctuary Objectives



Objective #2: Facilitate development of natural disease resistance.

- Objective remains under evaluation
- Too early to know whether the absence of harvest can result in a significant population of oysters that is resistant or tolerant to disease
- Continue to collect and analyze disease information



Objective #3: Provide essential natural ecological functions that cannot be obtained on a harvest bar.

- Objective remains under evaluation
- Studies underway to examine ecological services from sanctuaries
- Report used proxy indicators of oyster survival, abundance, biomass, and size structure
- Proxy indicators have generally shown stable or increasing trends



Objective #4: Serve as a reservoir of reproductive capacity.

- Objective remains under evaluation
- Reproductive potential has increased - increased number of larger, older oysters

Evaluation of Sanctuary Objectives



Objective #5: Provide a broad geographic distribution across all salinity zones.

- Objective met.

Salinity Zone	Total Acres	% Acres	Total Historic Oyster Bottom Acres*	% Acres
Low (5-11 ppt)	172,408	68%	43,953	56%
Medium (12-14 ppt)	54,229	21%	17,827	23%
High (> 14 ppt)	25,648	10%	16,729	21%

* Historic oyster bottom as charted in the Yates Oyster Survey of 1906 to 1912 and its amendments.



Objective #6: Increase ability to protect sanctuaries from illegal harvesting.

- Objective met.
- Larger sanctuary areas including inter-connecting non-oyster bottom
- Implementation of MLEIN - radar monitoring & video surveillance by NRP
- Ability to suspend licenses administratively with the points system for multiple sanctuary violations
- Poaching still an issue

Evaluation of PSFA Objectives



Objective #1: Retain 168,000 acres of natural oyster bars including 76% (27,000 acres) of the remaining 36,000 acres of remaining productive oyster habitat identified in the Programmatic Environmental Impact Statement (PEIS).

- Objective met.
- 179,943 acres are classified as PSFAs where aquaculture is prohibited
- Since 2010, 24 acres of PSFA have been declassified in order to allow leasing.
- 27,000 (76%) acres of productive bottom in areas open to public fishery



Objective #2: Include half of Maryland's consistently most productive oyster grounds (Jones and Rothschild 2009 'best bars') for the benefit of licensed oystermen.

- Objective met.
- 8 of the 17 'best bars' are open to public fishery (47%)
- 74% of 'best bar' acreage (historic oyster bottom) are open to public fishery

Evaluation of PSFA Objectives



Objective #3: Maintain a more targeted and scientifically managed public oyster fishery.

- Objective is incomplete.
- DNR will conduct a stock assessment by December 2018 that will provide guidance for the development of biological reference points for the management of the oyster population.
- The fishery has been limited (targeted) to select bottom via the sanctuary program vs its prior baywide scope.
- Fall Survey data guide plantings and management actions.
- Harvest reporting system was improved.
- Hatchery seed are more frequently used to replenish harvest areas.

Evaluation of Aquaculture Objectives



Objective #1: Streamline the regulatory process for aquaculture.

- Objective is met.
- Legislation passed in 2009 and 2011 removed many impediments to shellfish aquaculture in Maryland and streamlined the regulatory process
- Currently working with USACE to quicken approval time



Objective #2: Open new areas to leasing to promote shellfish aquaculture industry growth.

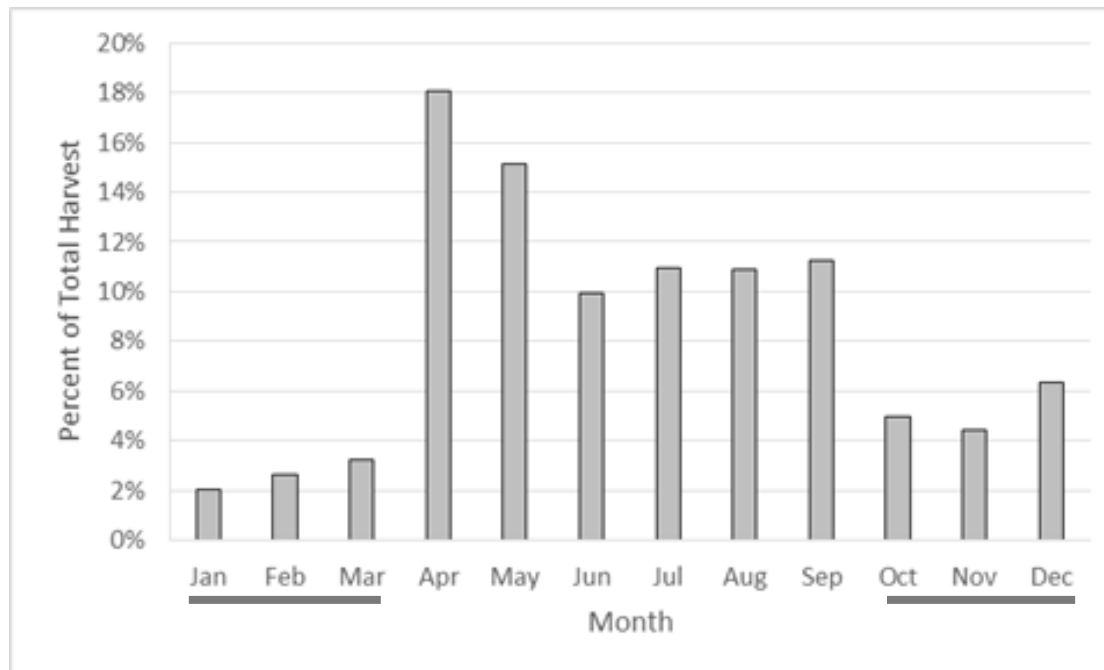
- Objective is met.
- Legislation removed moratoria on leasing within specific counties; opened thousands of acres to leasing that previously could not be leased
- Leaseholders required to actively plant and use leases; many inactive leases reverted back to the state and made available to others interested in leasing

Evaluation of Aquaculture Objectives



Objective #3: *Provide alternative economic opportunities for watermen.*

- Objective is met.
- 50% of leaseholders are commercial licensed watermen in Maryland
- Aquaculture average price per bushel = \$56 (in 2014)
- Public fishery average price per bushel = \$44 (in 2014-2015 season)
- Leaseholders selling oysters in months outside of the public fishery season (Oct to March)





Effectiveness Tiers & Future Management Alternatives

Four Effectiveness Tiers

- Tiers are based on data that reflect relative oyster productivity of the areas
- Productivity based on :
 - Average number of market-size oysters per bushel of material
 - Total number of live oysters per bushel of material
 - For sanctuaries only, oyster density based on the Patent Tong Population Survey (data not available for NOAA Codes)
 - For PSFAs – average biomass (insufficient data were available to use this for sanctuaries)
 - For PSFAs - harvest
- 176 PSFAs were grouped in the 39 NOAA Code harvest areas
- 51 Sanctuaries

Future OAC meetings will discuss these results

