

# OYSTER BEST MANAGEMENT PRACTICES FOR PRIVATE OYSTER AQUACULTURE

## Nitrogen and Phosphorus Reduction Effectiveness Recommendations from Expert Panel

Following the Chesapeake Bay Program's Best Management Practice (BMP) Review Protocol, a 13-member Oyster BMP Expert Panel coordinated by the Oyster Recovery Partnership, is assessing the nutrient and suspended sediment reduction potential of oysters for use as BMPs to help meet the water quality goals established by the Chesapeake Bay Total Maximum Daily Load (TMDL), a pollutant clean-up plan required through the Clean Water Act. The Chesapeake Bay Program and its partners have approved the panel's first report consisting of recommendations on the nitrogen and phosphorus reduction effectiveness from harvested oyster tissue by private oyster aquaculture practices. These are the first shellfish BMPs approved for use in cleaning up the Chesapeake Bay! The report can be found at [oysterrecovery.org/oyster-bmp-first-report](http://oysterrecovery.org/oyster-bmp-first-report).

### OYSTER-ASSOCIATED REDUCTION PROTOCOLS EVALUATED IN FIRST REPORT

- **Nitrogen Assimilation in Oyster Tissue**
- **Phosphorus Assimilation in Oyster Tissue**

These protocols quantify the amount of nitrogen and phosphorus stored in the oyster tissue as a result of oysters filtering and consuming organic matter, mostly algae, from the water column.

### QUALIFYING CONDITIONS FOR TMDL USE

- Only eligible in tidal waters.
- Only includes oysters that are removed moving forward from the time the BMP is approved/implemented.
- Oysters had to have been grown from initial sizes < 2.0 inches shell height.
- Oysters have to be alive when removed.
- States must report the number of oysters harvested or pounds reduced annually.

### APPLICABLE PRIVATE OYSTER AQUACULTURE PRACTICES

- **Off-Bottom Culture:** with gear, such as near bottom cages or floating rafts, using hatchery-produced oysters.



- **Bottom Culture:** no gear using hatchery-produced oysters (oysters are planted directly on the bottom).
- **Bottom with Substrate Addition:** placing oyster shell or alternative substrate, such as granite, on the bottom to build habitat to support wild oysters.



(Private refers to designated oyster aquaculture areas where public fishing is not allowed.)

The Oyster BMP Expert Panel determined the nutrient reduction effectiveness of diploid (2 chromosome) and triploid (three chromosome) oysters at different size classes based on the oyster's biomass and percent nitrogen and phosphorus content in the tissue from existing scientific data and research. Using a conservative approach to address variability in the data, it was determined that the tissue assimilation capacity of various class sizes of diploid and triploid oysters ranged from **110-1,477 pounds of nitrogen and 22-154 pounds of phosphorus per one million oysters**, respectively.

**NEXT STEPS:** The Oyster BMP Expert Panel will continue to meet throughout 2017 to evaluate additional reduction effectiveness protocols on the nitrogen and phosphorus reduction from oyster shell and enhanced denitrification related to oyster aquaculture and restoration practices. This evaluation may result in more nutrient reduction values associated with oysters, and if approved, could be added to the already approved reduction effectiveness.

More information on the Oyster BMP Expert Panel and recommendations can be found at [oysterrecovery.org/water-quality-improvement](http://oysterrecovery.org/water-quality-improvement) or contact Julie Reichert, Oyster BMP Panel Coordinator; at [jreichert@oysterrecovery.org](mailto:jreichert@oysterrecovery.org).

Visit [chesapeakebay.net](http://chesapeakebay.net) for more information on BMPs and the Chesapeake Bay Program.



**OYSTER RECOVERY  
PARTNERSHIP** | ORP