



Reducing Nutrients in the Chesapeake Bay through Oyster Restoration

Grantee: Oyster Recovery Partnership
Grant Amount: \$10,000

1. Overview of Projects Accomplished with 2016 MGPUB Funds

The Oyster Recovery Partnership (ORP) had a successful 2016 planting season in part due to the grant funds received from the MGPUB. The funds enabled ORP to plant 12.29 million spat on shell (SOS), exceeding the grant deliverable of three million oysters. These oysters were planted on 1.87 acres on the restoration site SO_09 (Figure 1, Table 2) in the Little Choptank River, ORP's primary focus area for the 2016 deployment season. Since ORP has partnered with MGPUB, we have deployed 51.2 million oysters.

Grant funds were also leveraged to enable ORP to collect shell from local restaurants through ORP's Shell Recycling Alliance (SRA). The demand, price and scarcity of oyster shell has increased in Maryland over the years, and 2016 was no exception. Because Maryland hatcheries use only oyster shell in the production of SOS, it is a vital part of the restoration process. In 2015 SRA collected 26,066 bushels, about one third of the shell ORP acquired that year. This year, we have currently recycled 28,000 bushels of shell and anticipate surpassing 30,000 bushels by years end. Shells collected through this recycling program are aged, cleaned and then reused as substrate for juvenile oysters that are deployed back into the Chesapeake Bay.

The 2016 MGPUB grant funds supported ORP staff, supplies and other costs associated with the recycling of shell and the production and planting of the spat on shell at ORP's field facility on the campus of the University of Maryland Horn Point Oyster Hatchery in Cambridge, MD. ORP has promoted MGPUB as a partner via its social media channels in 2016 and on signage at ORP events.

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3. Restoration on Site SO_09 in the Little Choptank River

On July 18, 2016, ORP's vessel the *Robert Lee* planted 12.29 million spat on shell on a 1.87 acre site, SO_09, in Little Choptank. The production of spat on shell is an involved process that includes a multi-week effort to clean and position the shell, as well as working with the UMD Horn Point Hatchery, which produces the oyster larvae and operates the juvenile oyster setting tanks.

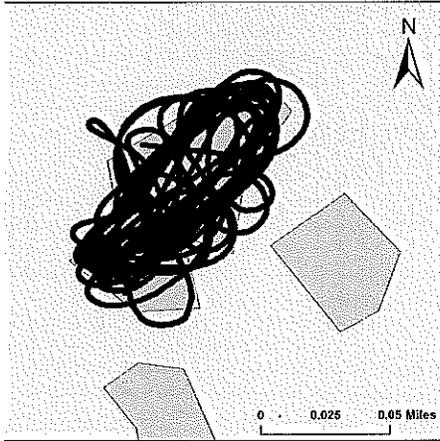


Figure 1. Site SO_09 in Little Choptank. The black line is restoration vessel track line, orange polygons are sites that will have spat on shell deployed onto them in the future.

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|-------------------------|------------------|---------------------------|------------------|
| Site Number: | | SO_09 | |
| Deployment Date: | | 7/18/2016 | |
| Bottom Type: | | Spat on shell only | |
| Depth: | | 12.5 ft. | |
| Water Quality | Temp (C°) | Salinity (ppt) | DO (mg/L) |
| Surface: | 29.55 | 14.10 | 6.41 |
| Bottom: | 29.29 | 14.18 | 6.18 |
| Area Planted: | | 1.87 | |
| Amt. Planted: | | 12.29 million SOS | |
| GIS File Name: | | SO_09_Little_Choptank.shp | |

Table 2. Water quality and other spat on shell deployment information for the site SO_09.

4. Impact of Oyster Restoration and Little Choptank River Progress

The 2014 Chesapeake Bay Agreement calls for five Maryland and five Virginia tributaries to be restored with oysters by 2025, deemed '10 Tributaries by 2025'. Currently, Harris Creek, the Little Choptank River and Tred Avon River, all on Maryland's Eastern Shore, are designated for restoration by a coalition of partners. Harris Creek was the first targeted tributary, and preliminary restoration was completed there in 2015; over two billion oysters were deployed onto 350 acres between 2012 and 2015. The first comprehensive monitoring for survivorship occurred in fall 2015, and the results were positive; all restoration sites met or exceeded established success criteria (NOAA 2016). The next tributary of focus is the Little Choptank. ORP began deploying spat on shell there in 2014, continued in 2015, and in 2016 the majority of ORP's restoration resources were concentrated there.

ORP partners with National Oceanic and Atmospheric Administration (NOAA), which develops tributary blueprints, living map documents of sites selected for optimal restoration conditions for each area restoration is occurring in. The Little Choptank blueprint (NOAA, 2015) identified 440 acres to be restored with 1.9 billion spat on shell. By concurrently conducting various recovery efforts in historically productive rivers and monitoring their performance, it is anticipated that the local oyster populations will increase, and as a result reductions in nutrients such as nitrogen and phosphorus will be observed. Oysters also provide three-dimensional habitat and food sources to Chesapeake Bay organisms of environmental, commercial and recreational importance.

To better quantify the nutrient removal capacity of oysters, ORP is supporting the U.S. EPA Chesapeake Bay Program (CBP) in coordinating an Oyster Best Management Practice (BMP) Expert Panel

to evaluate and quantify the effectiveness of oyster practices to reduce nutrients and sediment from the water column. ORP believes this effort will be an important milestone for the commercial sector as well as restoration projects. The first expert panel report was released in September 2016, and focused on oyster aquaculture practices and their capacity to remove nutrients (Reichert et al. 2016).

5. Project Summary for Promotional Purposes

The Maryland Grain Producers Utilization Board has partnered with the Oyster Recovery Partnership (ORP) during the 2016 calendar year to fund two projects associated with enhancing the Chesapeake Bay's oyster population. In 2016, 12.29 million juvenile oysters were deployed onto a designated oyster restoration site in the Little Choptank River, one of the tributaries included in the '10 Tributaries by 2025' project, which stems from an oyster goal in the 2014 Chesapeake Bay Watershed Agreement. In addition, the project supported ORP's Shell Recycling Alliance which collects oyster shells from over 300 regional restaurants, hotels, caters and seafood distributors. Oysters are a keystone species to the Chesapeake Bay and provide vital water column filtering as well as habitat for reef dwelling and reef associated fishes, crabs, mussels, and other marine life. For more information, visit <http://www.oysterrecovery.org> or contact Emily French at efrench@oysterrecovery.org.

6. References

- Analysis of Monitoring Data from Harris Creek Sanctuary Oyster Reefs. 2016. National Oceanographic and Atmospheric Administration, Chesapeake Bay Office, Annapolis, MD.
- Little Choptank River Oyster Restoration Tributary Plan. 2015. National Oceanographic and Atmospheric Administration, Chesapeake Bay Office, Annapolis, MD.
- Reichert, J., French, E., Slacum, H., Cornwell, J., Bricker, S., Fegley, L., Hudson, K., Kellogg, L., Lacatell, A., Luckenbach, M., Moore, C., Parker, M., Paynter, K., Rose, J., Sanford, L., Woninski, B. 2016. Panel Recommendations on the Oyster BMP and Suspended Sediment Reduction Effectiveness Determination Decision Framework and Nitrogen and Phosphorus Assimilation in Oyster Tissue Reduction Effectiveness for Oyster Aquaculture Practices. Oyster Recovery Partnership, Annapolis, MD.