Harris Creek Oyster Restoration Tributary Plan Implementation Update

March 2013

This document is intended to describe progress made in implementing the Harris Creek Oyster Restoration Tributary Plan, available at www. chesapeakebay.noaa.gov/images/stories/habitats/harriscreekblueprint1.13.pdf

In the Harris Creek Oyster Restoration Tributary Plan, 377 acres are targeted for oyster restoration. In 2012, major achievements on implementing the plan include:

- 22 acres of new oyster reef constructed
- 450 million spat-on-shell produced and planted onto 97 acres of reefs
- Construction and seeding is now complete for more than one-quarter of the reefs targeted in the Plan. It is projected that well more than half of the construction and seeding will be completed by fall 2013.

Policy Context

In May 2009, President Obama issued Executive Order 13508, "Chesapeake Bay Protection and Restoration."

The oyster outcome associated with this Executive Order is the restoration of oyster populations in 20 Chesapeake Bay tributaries by 2025. In 2009, Maryland rolled out its new oyster strategy, establishing new oyster sanctuaries and calling for restoration of oyster populations. In 2012, the U.S. Army Corps of Engineers unveiled their native oyster restoration plan for Chesapeake Bay, establishing guidelines for site selection and restoration. The similarity of the state and federal agencies' oyster restoration goals led the Chesapeake Bay Program's Sustainable Fisheries Goal Implementation Team to convene interagency workgroups in Maryland and Virginia to plan restoration work in each state, in consultation with appropriate partners.

The Maryland Oyster Restoration Interagency Workgroup, in consultation with restoration partners, selected Harris Creek as the first target tributary for intensive restoration. In 2012, the workgroup developed a tributary plan (available at www.chesapeakebay.noaa.gov/images/stories/ habitats/harriscreekblueprint1.13.pdf). Per the Executive Order goal to restore oyster populations in 20 tributaries by 2025, the multiagency Oyster Metrics Team, advised by scientists and academics, developed clear definitions of a "restored oyster reef" and a "restored tributary,"











Oyster Recovery Partnership | orp (at www.chesapeakebay.noaa.gov/images/stories/fisheries/keyFishSpecies/oystermetricsreportfinal.pdf). The tributary plan lays out what will be required to bring Harris Creek up to the oyster metrics' definition of a restored tributary. This document is a progress report on implementation of the plan to date.

2012 Implementation Progress

2012 Reef Construction and Seeding

- The Harris Creek Oyster Restoration Tributary Plan targets 377 acres for restoration work (indicated as polygons on the map).
- Using 9,537 cubic yards of granite and 25,599 cubic yards of mixed shell, the U.S. Army Corps of Engineers' Baltimore District (USACE) constructed 22 acres of oyster reefs in the lower part of Harris Creek (red areas on map). The substrate work started May 23, 2012, and continued intermittently through the end of July 2012. The \$1.5 million contract was performed by Argo Systems, LLC, of Glen Burnie, Maryland.
- The Oyster Recovery Partnership (ORP), with funding from NOAA and the Maryland Department of Natural Resources (MD DNR), planted a total of 450 million hatchery-produced spat-on-shell on 97 acres of reefs in Harris Creek (pink-shaded areas on map). Of this, 5 acres were the newly constructed USACE reefs. The spat-on-shell was produced at the University of Maryland's Horn Point Oyster Hatchery.
- In 2012, partners spent \$3.73 million on reef construction and seeding. The Harris Creek Oyster Restoration Tributary Plan originally estimated a total project cost of about \$31 million to restore 377 acres. There is reason to believe this estimate is high. MD DNR now intends to construct some reefs at a height of 6 inches, rather than the initially planned 12-inch height. This will likely result in substantial cost savings. The 2012 natural spat set on Harris Creek may mean some reefs will require fewer hatchery-produced seed oysters than originally planned, which may also result in cost savings.
- A summary of the activities accomplished to date is provided in the table below.

Description of Activity per Harris Creek Tributary Plan Completed* as of December 2012				
Total Acres Targeted for Restoration (acres)		377		
Acres Already at Restored Density		3		
Acres Planted with Substrate + Seed		102		
Acres Planted with Substrate Only (not seeded in 2012)		17		
Total		122		
Tributary Plan Requirements			Progress to Date	
Seed Required	2,093,000,000		Seed Planted	530,000,000
Total Substrate Required (cubic yards)	350,000		Total Substrate Placed	35,136
*Additional seeding may be required on some areas to maintain target oyster densities, depending on seed survival rates.				

2012 Monitoring Activity

- In March and August 2012, respectively, NOAA completed detailed pre- and post-construction sonar surveys for all sites on which substrate was planted in 2012 (red-shaded areas on map). These will be resurveyed in 2014 and 2017 for comparison to determine whether the reefs are persisting in terms of height and spatial extent.
- In July 2012, MD DNR installed a vertical profiler in Harris Creek to obtain continuous water-quality data throughout the water column. See http://mddnr.chesapeakebay.net/eyesonthebay/profiler.cfm for location and data.
- ORP, in partnership with Paynter Labs, monitored all spat-on-shell planted in Harris Creek in 2012 to collect initial data on planting density and survival.

Natural Spat Set in Harris Creek in 2012

- In 2012, Harris Creek saw a natural spat set (which means that wild juvenile oysters were observed on reefs in the creek). This natural set is good news for the creek, and may reduce the number of hatchery-produced seed oysters needed to implement the restoration plan. Using fewer hatchery-produced oysters would lower implementation costs.
- Such natural sets depend on salinity and other factors. The dry summer of 2012 likely contributed to high larval survival and settlement.
- MD DNR, using NOAA funding, intends to survey the reef sites slated for 2013 seeding to determine whether there are sufficient wild juvenile oysters present to allow for reduced seeding in 2013.
- This natural set, as well as the hatchery-produced oysters planted into Harris Creek in 2012, may serve as broodstock for future generations for oysters. This increased broodstock may increase the intensity of future spat sets.

2013 Implementation Outlook

2013 Reef Construction and Seeding

- USACE Baltimore District has contracted with Argo Systems to construct 34 acres of reefs in Harris Creek in 2013 (green-shaded areas on map). These will be constructed from granite and shell similar to the 2012 substrate placement. Thirteen sites throughout Harris Creek will receive an estimated 32,000 and 17,000 cubic yards of granite and mixed shell, respectively. Placement is expected to occur in the March to May timeframe.
- ORP, with funding from NOAA and MD DNR, is slated to produce and plant 300 million spat-onshell into Harris Creek in 2013. This will include planting seed onto the 34 acres of reefs USACE will construct in 2013, and 17 acres constructed by USACE in 2012 that have not yet been seeded.
- MD DNR has \$7 million for use in placing new substrate for reef restoration in Harris Creek. This will allow for construction

allow for construction of approximately 100 acres of reefs. However, much of the remaining acreage in Harris Creek that is suitable for reef construction is in areas too shallow to allow for the currently permitted 8 feet of navigational clearance above the reef. MD DNR is working through the permit modification process to allow for 5 feet of navigational clearance. (See related information below.)



Spat-on-shell being placed by the Oyster Recovery Partnership. (Photo courtesy Oyster Recovery Partnership)

• Post-construction,

NOAA will use sonar to survey all newly constructed reefs to ensure material is placed to specifications and to collect initial data on reef structure.

2013 Monitoring Activity

• NOAA has performed detailed pre- and post-construction sonar surveys on all sites slated for substrate placement in 2013 (green-shaded areas on map). These will be resurveyed in 2015 and 2018 for comparison to determine whether the reefs are persisting in terms of height and spatial extent.

- ORP, in partnership with Paynter Labs, plans to monitor all spat-on-shell planted in Harris Creek in 2013.
- The workgroup plans to designate three sentinel sites in Harris Creek for intensive monitoring for water quality and oyster populations parameters.

2013 Related Information

- Permit Issue: Currently, MD DNR holds a permit allowing construction of reefs only in areas where 8 feet of navigational clearance can remain above the reef. To fully implement the Harris Creek tributary plan, reefs must be constructed in areas that will allow only 5 feet of navigational clearance. MD DNR has submitted an application for a permit modification to allow such construction in shallower water. Without this permit modification, it will be impossible to restore Harris Creek to the agreed-upon definition of a "restored tributary" under the oyster metrics report.
- Funding: Implementation of the plan is contingent upon funding.
 For calendar year 2013, MD DNR intends to expend \$7 million on the construction of new reefs in Harris



Young oysters along the shoreline on Harris Creek. (Photo courtesy Drew Koslow)

Creek, pending the receipt of the necessary permit modification (see permit issue above). USACE Baltimore District intends to spend as much as \$4 million constructing new reefs. NOAA has awarded \$1 million to MD DNR, who, in partnership with ORP and the University of Maryland, will produce 300 million seed oysters and plant them in Harris Creek.

- Little Choptank River: The next tributary slated for intensive oyster restoration focus is the Little Choptank River. The workgroup, in consultation with restoration partners, intends to create a similar tributary plan for that river in 2013.
- Additional Tributaries: In spring 2013, the workgroup will consult with Bay scientists and resource managers on the next tributary for restoration focus, beyond Harris Creek and Little Choptank River.

The Harris Creek Oyster Restoration Tributary Plan Implementation Update was compiled by the Maryland Oyster Restoration Interagency Workgroup:

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