

**PAUL S. SARBANES ECOSYSTEM RESTORATION  
PROJECT at POPLAR ISLAND  
ANNUAL UPDATE  
January-December 2019**

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**Poplar Island Researchers** - Please send any updates, findings, or occurrences of note that you have gathered from your monitoring project to Claire Ruark (MES) at [cluark@menv.com](mailto:cluark@menv.com) or call 410-770-6505 so the information can be shared in the update. Also, due to limited boat capacity, when you schedule a site visit, please call ahead of time with the number of people in your party so transport arrangements can be made.

**Operations and Expansion Update:**



**Figure 1. Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island**

Throughout 2019, MES Operations raised the Cells 2A and 2B dikes to +30 feet and the Cell 2C dikes to +28 feet, as part of the project's vertical expansion (Figure 1). MES constructed the vertical lifts in segments, increasing the elevation of each segment at one-foot increments. The Cell 2A dike raising was completed in July and the Cells 2B and 2C dike raisings were completed in September. Cell 2AX dike raising was completed in July of 2018. Following the raisings, the interior and exterior dike faces were hydroseeded to avoid leaving them exposed for long periods of time (the exception being the northwest corner of Cell 2C where tern nesting prevented MES from seeding within the allowable growing window). MES removed the stone notches that were constructed for use during the 2018/2019 maintenance material inflow season in order to raise all of the Cell 2 crossdikes to an elevation of +28 feet. Operations staff completed the Cell 6 lower bench raising in July which brings the dike elevation to +25 feet. The newly raised portion was also hydroseeded.

Inflow of maintenance material began on December 11, 2018 and concluded on March 6, 2019. The USACE contractor, Norfolk Dredging Company, placed approximately 2.67 million cubic yards (mcy) of material into Cells 2 and 6 (Table 1). Approximately 972,000 cy of material was placed in the south end of Cell 2A, with an additional approximate 192,000 cy inflow into Cell 2AX. Cell 6 received approximately 1,400,000 cy at the cell's north end and approximately 105,000 cy at the southeast corner to fill a low spot that has hindered discharge at Spillway 16.

**Table 1. Inflow Maintenance Dredged Material 2018/2019**

<b>Inflow Point</b>	<b>Location</b>	<b>Project</b>	<b>Total Material Deposited (cy)</b>
1	Cell 2AX	Baltimore Approach Channels	~192,000
2	Cell 2A		~972,000
3	Cell 6		~1,505,000

**Total Material: ~2.67 mcy**

In preparation for the 2019/2020 inflow season, MES Operations staff constructed five stone weirs on the Cell 2 crossdikes. The weirs allow the effluent water to flow from the inflow points toward Spillway 1 at the north end of the cell, where it can be discharged through the spillway. The elevation of the weir on the southernmost crossdike (Cell 2AX/2A) is at the highest elevation +25 feet, and decreases to +24 feet at the Cell 2A/2B crossdike, and then to +22 feet at the Cell 2B/2C crossdike. In Cell 6, MES coated the sand dike slopes with a layer of dredged material approximately 2 feet thick in order to help prevent erosion.

Inflow of maintenance material for the 2019/2020 inflow season was awarded to the USACE contractor, Great Lakes Dredge and Dock Company (GLDD). A total of 2.15 mcy of material is expected to be placed; 1.2 mcy of material is to be placed into Cell 2 and 950,000 cy of material is to be placed into Cell 6.

Throughout the reporting period (2019), MES Operations managed the Cells 1D and 4 sand stockpiles for use in dike raising. They also conducted trenching and crust management in Cells 1D, 2, 4, 5CD, and 6. In December, MES began windrowing and reclaiming sandy material (formerly considered unsuitable) in Cell 2C. They also began repairing slope erosion areas on the benches of Cells 8, 9, and 10.

During the reporting period, multiple USACE contractors continued work related to the construction of the project's expansion. The Wesson Group constructed the toe dikes and perimeter dikes along wetland Cells 8, 9, and 10 and excavated the haul road on the west side of the embayment, constructing the partial opening through three breakwaters (Figure 1). H&L Contracting, LLC began constructing the toe dikes and perimeter dikes along upland Cell 11. Work included the placement of fabric, stone, and sand to construct perimeter dikes, the embayment dike, interior crossdikes, and the management of sand in Cells 1D and 7. Additionally, between January 12 and April 11, 2019, Cottrell Contracting Corporation inflow construction sand dredged from the Northern Borrow Area into Cell 7 and Cell 1D. McLean Contracting Company began construction work for the expansion structures contract. This included the installation of a sheet pile cofferdam that will be used to dewater the Spillway 17 construction site and allow for the contractor to install a concrete pad that will serve as the foundation for the spillway structure. Under the Poplar Island Expansion's (PIE) Tidal Wetlands License (#15-0131[R]), turbidity and noise monitoring associated with the construction of wetland Cells 8, 9, and 10 dikes, upland Cell 11 dike, installation of the sheet piles for Spillway 17, and the embayment breakwaters was conducted.

**Monitoring Update:**

MES continues to implement the Maryland Department of the Environment (MDE) guidance on monitoring procedures. Discharge this reporting period was associated with rainfall accumulation, the 2018/2019 inflow of maintenance dredged material into Cells 2AX, 2A, and 6, and the inflow of sand material for the PIE project into Cell 1D. There were four noncomplying events in 2019. Three events were related to elevated metals and one event was related to sampling error.

MES Environmental staff continued collecting nutrient load data for Poplar Island throughout the reporting period. Nutrient data is collected on a monthly basis from representative spillways and inlets, and daily from all spillways during times of discharge. The data will serve as a management tool to assist in development of Best Management Practices (BMPs) when Total Maximum Daily Load (TMDL) allocations are assigned for Poplar Island.

Additionally, mass balance nutrient monitoring, to determine whether development of the Poplar Island project sequesters nutrients from the dredged material, was introduced during the 2014/2015 inflow season and continued during the 2018/2019 inflow season. As part of mass balance monitoring ammonium, total nitrogen, total phosphorous, dissolved total nitrogen, dissolved total phosphorus, and total suspended solids (TSS) are monitored during periods of discharge from cells receiving inflow. Gahagan & Bryant Associates (GBA) collected sediment samples analyzed for grain size, total nitrogen, and total phosphorus after settlement of the inflowed material.

**Vegetated Wetland Cells:**

**Table 2. Vegetated Wetland Cells Development Timeline**

Wetland Cell	Cell 4D	Cell 3D	Cell 1A	Cell 1C	Cell 1B	Cell 3A	Cell 3C	Cell 5AB	Total Acres of Wetland
Last Dredged Mat. Inflow (month, year)	NA	Jan. 2003	Mar. 2006	Mar. 2006	Mar. 2006	Apr. 2007	May 2010*	Jan. 2012	
Opened to Tidal Flow (month, year)	Apr. 2003	Mar. 2005	Mar. 2009	Jan. 2011	Feb. 2012	Oct. 2014	Sep. 2015	Nov. 2017	
Completed Planting (month, year)	Aug. 2003	Jun. 2006	Sep. 2009	Jun. 2011	May 2012	Jun. 2015	Jul. 2016**	Jun. 2018	
Date Last Monitored (month, year)	NA	April 2016	April 2016	April 2016	April 2016	April 2018	May 2019	Ongoing	
Acreage	24	32	45	40	36	55	57	83	372

\*2010 inflow of sand from Poplar Harbor channel dredging.

\*\*12 acres damaged by bird predation replanted in 2018.

**Framework Monitoring Update:**

From May through October, algae samples were collected at all spillways with ponded water and were analyzed for species identification by the Maryland Department of Natural Resources/Resource Assessment Service/Monitoring and Non-Tidal Assessment (DNR/RAS/MANTA) lab or the Morgan State Estuarine Research Center. As per the monitoring plan, from May through October, MES conducted weekly monitoring for signs of the establishment of a Harmful Algal Bloom (HAB) in Cell 6. MES conducted weekly monitoring at Spillway 16, including the use of a handheld fluorometer to measure the concentration of phycobilin, a unique pigment found in blue-green algae. During the reporting period, algae samples contained concentrations of *Dolichospermum circinale* and *Synechocystis salina*, both

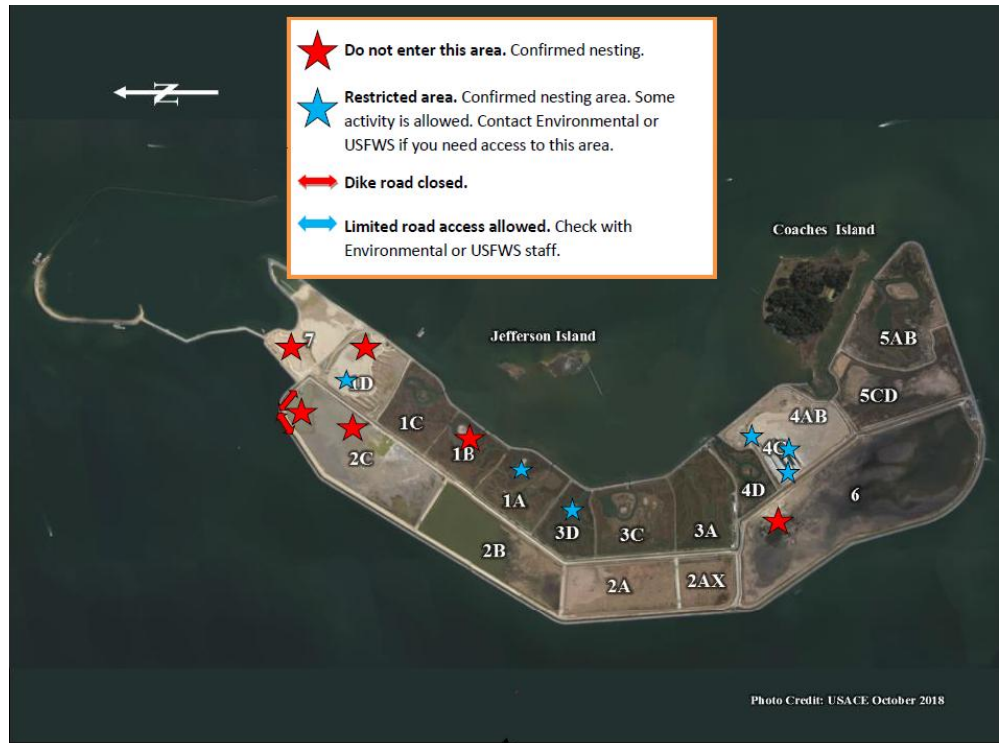
harmful algal species; however, toxin levels were either low or non-detect for all follow-up toxin analyses.

MES and the United States Fish and Wildlife Service (USFWS) responded to an avian mortality event which occurred from July to October. It is likely that the event consisted of two sub-events, one in Cell 2 in July, and the other in Cell 6 from August-October. A total of 261 affected birds were documented, with over 50 found alive and over 200 found deceased. There were 25 species affected, with the majority being waterfowl and gulls. The species most affected by the mortality event were Mallards. Seven specimens (six Mallards and one Northern Shoveler) were sent to the National Wildlife Health Center (NWHC) for necropsy. Results of the necropsies showed that the primary cause of the mortality event was avian botulism, but avian paramyxovirus and low-path avian influenza (H4N6) were also confirmed.

This season, the United States Geological Survey (USGS), with the USFWS' assistance, continued conducting surveys of Poplar Island's target nesting bird populations (Figure 2). Nesting pair counts were higher for Common Tern (317) and lower for Least Tern (239) this year compared to last year (307 and 330 in 2018, respectively). Most of the Common Tern nests were located in the northwest corner of Cell 2C. Most of the Least Tern nests were located in the Cell 7 sand stockpile; the contractor was able to delay construction activity in an area of Cell 7 to allow for terns to nest safely. The USFWS actively deterred nesting activity from the Cell 2 historic nesting site (northeast corner of Cell 2C) and attracted them to the northwest corner, to allow for ongoing construction activity related to the PIE. For the seventh year, the USGS conducted a banding and resighting program to better document tern fledging success; 424 Common Tern chicks and 262 Least Tern chicks were banded in 2019.

In order to continue accessing PIE construction sand, bank swallow nesting activity was also carefully managed. USFWS advised MES and USACE contractors to manage the sand stockpiles by sloping edges instead of leaving sheer cliffs (in which bank swallows will nest). This season, a few areas within the Cells 1D and 4C stockpiles were set aside as bank swallow nesting areas, while the rest of the stockpile was actively managed without nesting issues.

The USGS and the USFWS surveyed nesting populations of Osprey, Snowy and Cattle Egrets, and Double-crested Cormorants (DCCO) on and just offsite. Counts show that the site's colonial nesting waterbirds continue to nest successfully on Poplar Island; 24 Osprey pairs nested on Poplar Island and in Poplar Harbor in 2019 (2018 had 28 pairs), and Snowy and Cattle Egrets had their highest nesting numbers since monitoring began (an estimated 176 and 233 pairs, respectively).



**Figure 2. 2019 Poplar Island Bird Nesting Map**

MES continued bimonthly bird surveys for the entire site and confirmed 26 nesting species onsite for the 2019 season with eight more suspected (species whose behaviors have indicated breeding or a possible nest nearby, but no nests or young were found). Onsite nesting species include Canada Goose, Northern Shoveler, American Black Duck, Mallard, Double-crested Cormorant, Little Blue Heron, Snowy Egret, Cattle Egret, Black-crowned Night-Heron, Glossy Ibis, Virginia Rail, Osprey, Common Gallinule, Killdeer, Black-necked Stilt, Willet, Herring Gull, Great Black-backed Gull, Common Tern, Least Tern, Tree Swallow, Bank Swallow, Seaside Sparrow, European Starling, and Red-winged Blackbird. Outstanding bird occurrences included a high count of Whimbrels (37) for the site, an early record for Hudsonian Godwit (April), and a Northern Shoveler nesting in Cell 1A, the only recorded nest of that species in Maryland in 2019. Also of note, a banded Piping Plover (3rd site record) was sighted in Cell 1D in July, a state high count of American Avocets (356) was observed in Cell 6 in September, the second site record of a Ruff (observed in Cell 5AB in November), and first site records of Brown Booby and Least Flycatcher. Bird censuses performed at Poplar Island during the reporting period had daily bird counts that ranged from 787 birds utilizing the site during a March survey to 10,444 birds onsite during a May survey.

USFWS and DNR are tracking Black Rail presence in the state and on the east coast of the United States. The species is being considered for listing under the Endangered Species Act. As part of this initiative, USFWS deployed Autonomous Recording Units (ARUs) in all of the Poplar Island wetland cells from May to June, which record from before sunset to after sunrise with playback calls playing at 10 minute intervals throughout. Part of the recordings (only the part immediately following the call) were analyzed by DNR and only Virginia Rails, no Black Rails, were detected. The rest of the footage remains to be analyzed.

In September, USFWS and DNR installed a Motus/Cellular Tracking Technologies (CTT) tower in order to track the movement and behavior of flying animals affixed with digitally-encoded radio transmitters. These transmitters broadcast signals several times each minute, and these signals are detected 24 hours a day, 365 days a year. The tower will record any bird fitted with a Motus or CTT tag that flies within

approximately 15 km; the Poplar Island array fills a coverage gap on the Chesapeake Bay. So far, five species have been recorded on the Poplar Island Motus station, including: Tree Swallow (tagged in Montezuma NWR, NY), Rusty Blackbird (tagged in Dixville Notch, NH), Wood Thrush (tagged in Paulsboro, NJ and Newton Square, PA), Sora Rail (tagged in Patuxent River Park, MD), and American Woodcock (tagged in Powdermill Nature Reserve, PA).

During May, July, and September, USFWS conducted seasonal monitoring of submerged aquatic vegetation (SAV) in Poplar Harbor and reference areas. Most monitored sites experienced a decline in SAV percent coverage from the previous year, with Poplar Harbor averaging 9% coverage across three sampling events. However, SAV in Poplar Harbor was only observed during the May sampling event (no SAV was observed in July or September). A probable contributor to decreased SAV coverage was the high annual rain total which led to a record high freshwater flow into the Chesapeake Bay this water year (average of 130,750 cubic feet/second from October 2018 – September 2019), leading to higher turbidities (average Secchi depth was lower at most sites in 2019 compared to 2018). There was also a large contingent of clamming dredgers present in the harbor from late spring through summer, with as many as 20 vessels present at one time. Widgeon grass was observed in Cell 4D on an extreme low tide in early October.

Poplar Island was registered as a Monarch Waystation in 2016. Since then, USFWS has monitored both butterfly and milkweed presence in each developed wetland cell in the summer and early fall. In 2019, a continued monarch tagging effort was conducted to provide data on sex ratios, migration patterns, weather influence, and mortality rates. During the 2019 season, 1,013 monarchs were tagged onsite.

The University of Maryland Center for Environmental Science (UMCES) continued collecting rod-Surface Elevation Table (SET) data in order to track accretion rates within the marshes. Data collected and analyzed from sediment, porewater, and vegetation samples continues to be used by UMCES to assist in determining the cause of periodic vegetation die-back within the developed wetland cells, as well as monitoring the overall health of the site's restored marshes.

UMCES conducted a carbon budget analysis for Cell 1B, in order to determine how nutrient rich restored marshes affect carbon fluxes, including carbon sequestration, how they keep pace with sea level rise (SLR), and the implications of these impacts on restoration design. The results show that Poplar Island has a relatively high rate of carbon sequestration with a calculated burial rate of  $182 \text{ g C m}^{-2} \text{ y}^{-1}$ . The carbon burial rate converts to an estimated vertical accretion rate of  $\sim 6 \text{ mm y}^{-1}$ , with approximately equal contribution from the roots and shoots. The dredged material marshes of Cells 3D, 1A, and 1C have an average measured vertical accretion rate of  $7.4 \text{ mm y}^{-1}$ , suggesting that the  $\sim 6 \text{ mm y}^{-1}$  of organic matter inputs are the significant source of material for vertical accretion. Overall, Poplar Island marshes have shown that fine-grained, nutrient-rich dredged material can be used successfully in marsh restoration, and that their accretion rates are keeping pace with SLR. This limited study seems to indicate that much of the Poplar Island marshes' vertical accretion rates are directly related to the wetlands limited export of plant biomass which is likely assisted by the site's containment dikes.

Vegetation studies for UMCES in 2019 planned to include a controlled burning trial in Cells 1A and 1B but the burn was delayed until 2020 due to weather and scheduling conflicts. Pre-burn monitoring occurred in 2019 in the designated plots to document conditions before and after the burn, in both treatment and control (non-burned) areas. The pilot study showed that the increase in plant production following the burn more than offsets the loss of aboveground biomass during the burn. The burn will be conducted to better understand how removal of standing dead vegetation may impact stem-boring insect populations and other issues such as fungal infections that may be having an effect on the overall vegetation health within Poplar Island marshes.

The National Oceanic and Atmospheric Administration (NOAA) was onsite in April, July, and October, continuing studies of nekton use of Poplar Island's developed wetland cells. NOAA reported that results from 2017-2019 monitoring show higher abundances of nektonivorous, non-nektonivorous, and total fish within restored wetland cells that have a large pond close to the inlet (such as Cells 3A, 3C, and 5AB) when compared to cells that do not have a pond (Cells 1A, 1B, and 1C).

In early spring of 2019, Ohio University (OU) collected and processed 67 overwintering terrapin hatchlings. Along with the 624 hatchlings that were processed in fall 2018, a total of 691 hatchlings were tagged, measured, and marked for the 2018 nesting season. Between March and June 2019, there were 148 terrapin yearlings released on Poplar Island as part of the Headstart program, where Maryland school children raise the hatchlings collected on Poplar Island in the fall and winter then release them onsite the following spring. OU reported a total of 232 nests for the 2019 diamondback terrapin nesting season. OU collected and processed 940 hatchlings in fall 2019 with 150 included in the Headstart program. Eighteen nests were left to overwinter to spring 2020.

#### **Wildlife and Invasive Vegetation Management:**

Under a Federal Fish and Wildlife Depredation Permit, certain species continue to be managed on Poplar Island. Management of wildlife is conducted to ensure the project's target species and their habitats are protected. In an effort to protect the site's vital waterbird nesting area, the USFWS controlled for 78 adult DCCO in Cell 3D. Poplar Island's returning DCCO nesting colony diminished significantly this year with a count of only nine nesting pairs on the Cell 1A habitat island; down from 393 pairs in 2018. The cause of the steep decline is unknown; DNR has noted that DCCO populations throughout the region are stable and would not be characterized as declining. Gull control also occurred during this season, with the removal of 39 adults and the oiling of eggs in 267 nests throughout the site. One Great Horned Owl was removed from Coaches Island, with no evidence of nesting. In an effort to minimize disturbance to newly planted species in Cell 5AB, USFWS removed 16 muskrats from that cell and an adjacent cell.

MES Environmental staff continued annual invasive control of bull and Canada thistle, tree of heaven, mile-a-minute vine, and *Phragmites australis* throughout the site. *P. australis* control in newly planted Cell 5AB was considered a high priority. Early season Habitat® herbicide was used to treat *P. australis* in Cell 5CD. An aerial spray to control *P. australis* was conducted on October 10 and was applied to approximately 45 acres across the site.

During the 2019 season, MES continued to monitor mosquitoes on an as needed basis. No aerial mosquito sprays were conducted by the Maryland Department of Agriculture (MDA) this season.

#### **Safety:**

As discussed at the Poplar Island Working Group meetings, to ensure that all activities occurring on the project site are coordinated and everyone is following the appropriate safety procedures, it is required that all guests contact the site to inform staff of a visit at least one day in advance. This would also be the appropriate time to set up any transportation that is needed. Advanced coordination should also be made for those with their own boat transportation. Everyone must sign in when they arrive onsite.

For those researchers who are at the site during off-peak times, please contact the site to let them know when you will be onsite; a sign in sheet and safety vests will be provided for your use during those times. For safety reasons, if you are by yourself, you will need to be accompanied by an MES employee for the time you are on the island. While visitors are welcome, normal operations duties may make it necessary to postpone certain visits if enough notice is not provided.

#### **Tours:**

During the 2019 tour season, Poplar Island was visited by 1,599 members of the general public, 1,107 students, and 227 birders, for a total of 2,933 visitors. To schedule a tour please send an email to [poplartours@menv.com](mailto:poplartours@menv.com) or call 410-770-6503.

### **Meetings, Media, and Noteworthy:**

Site Operations meetings were held approximately every two weeks throughout the period including the USACE, the Maryland Department of Transportation Maryland Port Administration (MDOT MPA), MES, and GBA.

The Poplar Island public website is now live; the URL is [www.poplarislandrestoration.com](http://www.poplarislandrestoration.com). Features of the website include project goals, media highlights, photos and maps, current newsletter, link to the onsite weather station, wildlife link to Ebird.org, social media links for USACE, MDOT MPA, and MES, all documents, work cited for any articles, papers, or conferences related to Poplar Island, and a contact page that links directly to MES tour staff to schedule a tour. Document files are in the process of being uploaded.

The annual Habitat Subgroup meeting was held at the MES headquarters annex building on February 27, 2019. The Poplar Island semiannual Working Group meetings were held onsite on June 12, 2019 and at MES headquarters annex building on November 19, 2019. Please check the project website [www.poplarislandrestoration.com](http://www.poplarislandrestoration.com) documents list or contact Andrew Blair with MES at [ablair@menv.com](mailto:ablair@menv.com) if you would like a copy of the meeting summaries.

The following articles and presentations relating to Poplar Island were published and conducted throughout the reporting period:

- In January, February, June, July, October, and November, Rachael Gilde (MES), Lauren Carroll (MES), Kristina Motley (MES), and Ryland Taylor (MES) each presented “Poplar Island an international model of innovative reuse” to multiple groups including the Annapolis Sail & Power Squadron, Hood College Environmental Club, Essex-Middle River Fishing Club, Chesapeake Area Professional Captains Association, Kent Narrows Sail & Power Squadron, and University Park Women’s Club.
- In January, Lorie Staver (UMCES) gave a talk titled “Ecological Implications of Habitat Restoration with Dredged Material in Chesapeake Bay: Experiences from Poplar Island” as part of a workshop sponsored by the MDOT MPA on Use of Dredged Material to Protect Low-Lying Areas of the Chesapeake Bay.
- Also in February, Peter McGowan (USFWS) presented “Spoil to Splendor: A story of Island Restoration in the Chesapeake Bay” as part of the monthly lecture series at the United States Department of the Interior in Washington, D.C.
- The *Dorchester Star* published an article on February 19 titled “Christmas Spirit Sails to Poplar Island” that described the placement of recycled Christmas trees on the island for additional wildlife habitat.
- Lorie Staver presented in February, “Dredged Material for Tidal Marsh Restoration: Lessons from Poplar Island” at the Marsh Resilience Summit organized by the Chesapeake Bay Sentinel Site Cooperative.
- On March 4, the *Chesapeake Bay Magazine* also featured the recycling of Christmas trees on Poplar Island in their Bay Bulletin segment titled “Old Christmas Trees Get New Life on Poplar Island”.
- Also in March, Poplar Island was mentioned in the new book *Birds of Maryland, Delaware, and the District of Columbia* as a good birding site in the region. Particularly notable bird sightings onsite were referenced and multiple photographs by Tim Carney (MES) were featured in the book.



- On April 22, the *Star Democrat* published an article titled “Poplar Island commemorates Earth Day with butterfly garden” that covered the Earth Day planting of the new pollinator garden, which was attended by distinguished guest, Representative John Sarbanes.
- Also in April, Peter McGowan presented “Osprey: Life history and threats (past and present) in the Chesapeake Bay” to the Cliff Dwellers Garden Club as part of their lecture series.
- Lorie Staver presented “Putting Ecological Theory into Practice: 15 Years of Tidal Marsh Restoration at Poplar Island” to the Zoology Department of the University of Maryland in College Park as part of their spring seminar series.
- In May, the *National Aquarium Waterblog* had a post called “Terrapins in the classroom: release at Poplar Island” that was a short feature on their Terrapins in the Classroom program where the terrapins are released back on Poplar Island at the end of the school year.
- Also in May, at the Society for Wetland Scientists annual meeting in Baltimore, MD, several presentations were given including the following:
  - Lorie Staver gave a talk titled “Including Ecology in Ecological Restoration: Design Considerations for Tidal Marsh Restoration with Fine-Grained Dredged Material”
  - Jeff Cornwell (UMCES) gave a talk titled “Wetland Soils Derived From Estuarine Sediments: Geochemical Observations”
  - Lorie Staver presented a poster titled “Methane Generation in the Restored Tidal Marshes at Poplar Island”
- In June, Chris Gilbert (USGS) presented “A comparison of direct and indirect survey methods for estimating colonially nesting waterbird populations” at the Maryland Ornithological Society Annual Meeting in Chestertown, MD.
- In July, media referencing Poplar Island included the following:
  - The USACE released a news story on July 26 titled “Twenty-five years of work at Poplar Island brings improved habitat, expanded use of dredged material” that covers the history of the island and its current trajectory.
  - *Dredging Today* published an article titled “Rebuilding Poplar Island with clean dredged material” that described the history and scope of the Poplar Island project.
- Also in July, Willem Roosenburg (OU) presented “Using K-12 Classrooms to Head-start Diamond-backed Terrapins and Evaluate Differences in Growth due to Temperature and Behavior” at the annual Joint Meeting of Ichthyologists and Herpetologists in Snowbird, UT.
- On August 21, *The Star Democrat* published an article titled “Terrapins get head start” that featured the Terrapin Education and Research on Poplar (TERP) program and documented a terrapin release trip.
- Also in August, Riggs et al. published a paper in *Northeastern Naturalist* titled “Eviction Notice: Observation of a *Sterna hirundo* (Common Tern) Usurping an Active *Sternula antillarum* (Least Tern) Nest.”
- In September, the Chesapeake Bay Program blog wrote a post titled “Poplar Island restoration gives Chesapeake a new life” that shared the story of Poplar Island and its current progress.
- Also in September, McGowan et al. published an article in *Ecological Restoration* titled “Promoting Change in Common Tern (*Sterna hirundo*) Nest Site Selection to Minimize Construction Related Disturbance.” The article highlighted USFWS’ successful attempt to pair attraction and deterrent methods in order to facilitate the relocation of a Common Tern breeding colony in Cell 2C.
- In October, Willem Roosenburg presented “Manipulating life histories: turtle speed ahead” at The 8<sup>th</sup> Symposium on the Ecology, Status, and Conservation of the Diamondback Terrapin in Wilmington, NC, as well as at the Ohio University Department of Biological Sciences for the Rakowski Award Presentation Seminar.
- In November, several presentations were given at The Waterbird Society annual meeting in Salisbury, MD, including the following:

- Diann Prosser (USGS) presented “Estimating hatching and fledging success of Common Terns at an environmental restoration site”
- Gwen Zeckowski (USGS) presented “A Comparison of Direct & Indirect Survey Methods for Estimating Colonially Nesting Waterbird Populations”
- Jeffery Sullivan (USGS) presented “Assessing Nest Attentiveness of Common Terns (*Sterna hirundo*) via Video Cameras and Temperature Loggers”
- Also in November, Lorie Staver gave a talk titled “Striking a balance between competing goals in tidal marsh restoration: habitat value versus resilience to sea-level rise” as part of a workshop on Concepts and Controversies in Tidal Marsh Ecology for the Coastal and Estuarine Research Federation.
- Lorie Staver gave another talk titled “The influence of high nutrient availability on the carbon balance in restored marshes: an example from Poplar Island, Maryland in Chesapeake Bay” at the Coastal and Estuarine Research Federation annual conference in Mobile, AL.
- On December 5, *What’s Up Magazine* wrote an article titled “A home made from the holidays” that told the story of Poplar Island and highlighted the use of recycled Christmas trees into habitat.