
Poplar Island Map-tivity

<i>Title</i>	Poplar Island's History Mapped Out
<i>Theme</i>	Poplar Island is more than just some island in the Chesapeake Bay.
<i>Author</i>	Maggie Cavey
<i>Target Audience</i>	High school students, college students, and general public groups
<i>Setting</i>	Poplar Island tour trailer, outside of the tour trailer, or in a classroom setting
<i>Program Length</i>	60 minutes
<i>Goals</i>	Students will gain an understanding of the unique history of Poplar Island.
<i>Objectives</i>	<ol style="list-style-type: none">1. Students will interpret and discuss the map/infographic within small groups.2. Students, in small groups, will provide presentations to the class on the information they interpreted from their map/infographic.3. Students will use critical thinking skills to discuss and connect the four class presentations to tell the story of Poplar Island.
<i>Background</i>	<p>Poplar Island is a special island located in the Chesapeake Bay just off the coast of Talbot County's Tilghman Island, Maryland. In 1847, Poplar Island was surveyed for the first time, which found the island to be roughly 1,140 acres (461 hectares) in size. An acre is about the size of a football field making the island nearly 1,140 football fields large (DiFatta, 2017) (US Army Corps of Engineers, n.d.)!</p> <p>The first record of anything happening on the island was in 1627. In 1627, William Claiborne owned and named the island after his friend Richard Popeley. For some time, the island was known as Popeley's Island but over the year his name got butchered and eventually became Poplar. There are no known significant events that occurred on Poplar Island in the 18th century, but it is known that people lived on the Island and raised livestock, as well as</p>

farmed the land for corn, wheat, tobacco and other things (Hanes, 2017).

The next record of events on Poplar Island was in 1847. Charles Carroll, the grandson of the Charles Carroll that signed the Declaration of Independence, owned Poplar Island. Mr. Carroll became an entrepreneur. He somehow found out that there was a great market in China for black cat fur. Mr. Carroll started his own black cat farm on Poplar Island. He purchased black cats from people in the community for \$.02/each. Surprisingly, his black cat farm went really well until the winter. The Chesapeake Bay is rather shallow, on average only 21 feet deep, and the winter was so cold that the Bay actually froze over. The frozen Bay served as a bridge and allowed all of the cats to run back to the mainland (Hanes, 2017).

In the 1880s there was a town on the island, named Valliant; about 100 people lived on the island. There were roads, a church, a general store, a post office, a school house, and even a saw mill. The saw mill was located on the north end of the island; it was used to cut down trees to either build their homes or to clear the land for farming. Coincidentally, the 1880s is about the time when erosion of Poplar Island became noticeable. When the trees were removed, so was the root system, or the glue that held the island together. The erosion got so bad that the residents of Valliant were forced to move back to the mainland by the 1920s (Hanes, 2017).

In the 1930s, members of the Democratic Party (Democratic Club) purchased both Poplar islands and neighboring Jefferson Island. The Club built a lodge on Jefferson Island and started an exclusive, men's only hunting and fishing club. They would invite elected officials to purchase a membership to come out to Poplar on the weekends to hunt, fish, and talk politics. The two most famous people to visit Poplar were Harry S. Truman and Franklin Delano Roosevelt. Unfortunately, in 1946, the lodge burned down due to an electrical failure, which ended the Democratic Party's visits to Poplar (Hanes, 2017).

After the Democratic club left, the Bailey family lived on the

neighboring Jefferson Island and served as caretakers from the late 1940 to the early 1950s. The family was forced to move back to the mainland in the 50s because of the continued erosion of the island. Peter Bailey, the youngest of the Bailey family, currently lives in Easton and wrote a book entitled “Poplar Island: My Memories as a Boy.” After the Bailey family left Poplar, the Smithsonian Institute purchased Poplar Island. The Smithsonian used the island for research but there was no further excitement concerning Poplar Island until it was taken on by the Maryland Department of Transportation Maryland Port Administration (MDOT MPA) and the United States Army Corps of Engineers (USACE) (Hanes, 2017).

Over the course of 150 years, the island nearly eroded away entirely. Wind, waves, currents, all crashed down on the island, and slowly broke away pieces of land and washed the sediments into the Bay. This erosion was accelerated by the human activities that took place on Poplar Island for over 100 years. Natural erosion coupled with human activities, caused Poplar to shrink in size. In 1993, USACE surveyed Poplar Island again and found that the island had not only shrunk in size but it had also split apart into 4 tiny remnant islands. The 1993 survey revealed that only 5 acres remained of Poplar Island. Poplar Island virtually disappeared. In response, the USACE worked with MDOT MPA to rebuild Poplar Island back to its historical size of about 1,140 acres. USACE and MPA were able to use dredged material to rebuild the island. Dredged material is sediment that is dredged from the bottom of shipping channels to allow safe passage for large cargo ships carrying imports and exports. The material used to rebuild Poplar Island was dredged from the bottom of the shipping channels in the Chesapeake Bay (DiFatta, 2017) (US Army Corps of Engineers, n.d.).

Each year, hundreds of cargo and cruise ships travel to and from the Port of Baltimore. The navigation/shipping channels these ships use to travel require frequent dredging to maintain the channel depth of 50 feet that is required by many of today’s ships. Every year, on average, five million cubic

yards of sediment is dredged from shipping channels in the Baltimore Harbor and the approach channels in the Chesapeake Bay. MDOT MPA and USACE work together to conduct annual dredging and find placement sites for the dredged material (MDOT MPA, 2016)

The sediment in the Chesapeake Bay channels has been deposited over a long period of time. Sediment in the Chesapeake Bay consists of clay, silt, and sand. Regional geologic formations and human activities affect the character of the sediment in different areas of the Bay. Industrial activity, agriculture, and urban development are some of the activities that can impact the sediment that ends up in the shipping channels of the Chesapeake Bay. Sediment dredged from the channels is tested and managed in accordance with state and federal requirements (MDOT MPA, 2016)

Usually, material dredged from the channels is placed in a placement site which is an area enclosed by a dike. The material is placed in these sites and allowed to dry out and becomes new land. Dredging usually occurs between November and March. Dredging is conducted in the colder months for two reasons. One reason is that it is less disturbing to any species of fish that may be spawning in the Bay. The second reason is to allow the material to settle and dry during the warm, summer months (Hanes, 2017).

During the dredging season, a dredging contractor will go to the shipping channel and take what is called a clam shell bucket and dig down to a depth of about 50feet. There is specialized equipment associated with maintaining the channels at a depth of 50feet but the most important is the dredge itself. A dredge is essentially a crane on a barge. The cables of the crane are connected to the clam shell bucket and used for the excavation the channels. The dredge operator will bring a bucketful of sediment to the surface and place it into a scow, which is a large barge with an open top. Some scows can hold up to 8,000 cubic yards of sediment. Once a scow is full, it is tugged over to Poplar Island. The dredged material is rather hard to work with. To make the material easier to move, it is watered down using an

unloader. An unloader has a large, maneuverable arm that houses water cannons and a snorkel-head. The scow full of dredged material will be pushed up against the side of the unloader and the arm will be lowered into the scow and into the dredged material. The water cannons pump Bay water into the scow at a very high velocity, agitating the material into a liquid slurry. As a result, this makes the mixture about 90% water and 10% sediment, which allows for the material to be pumped hydraulically through pipes onto the island. This first major step of creating an island is known as inflow (Hanes, 2017).

The second step is known as crust management. This step focuses on getting rid of the extra water and drying out the dredged material. The Island is dewatered by using metal structures called spillways. Spillways at Poplar Island have two large pipes that run underneath the road that allow the water within the dike to be pumped out in to the Bay. Before water is released back in to the Chesapeake Bay, it is heavily monitored and tested. Inspectors on the island visit each spillway on a daily basis and test the water for turbidity, pH, and metals. Standards set by the Maryland Department of Environment (MDE) must be met before water can be released from the island. If standards are met, then inspectors will open the spillways and release the water into the Bay. If the MDE standards are not met, the water will remain within the perimeter of the dike and given time to naturally reach MDE standards and the water is continuously tested until standards are met. This step is considered crust management because it is when the material is dewatered and given time to dry out in to a crust (Hanes, 2017). These steps are repeated until the perimeter is completely filled and the material is completely dried out. At that point, tidal wetlands and upland habitats can be created and the island can be planted with native species.

Dredged material is not just used to build islands. It has also been used to restore wetlands, create upland wildlife habitat, and build new terminal space for the Port of Baltimore. Other ports around the world have used

dredged material to cap landfills and brownfields, remediate former mines, and make building materials such as aggregate (MDOT MPA, 2016). If dredging did not occur, the big cargo ships could not safely get through to the Port of Baltimore, which could cost the state of Maryland billions of dollars and thousands of jobs. Dredging the navigation channels is pertinent to the Port of Baltimore maintaining their economic competitiveness.

Historically, “open water placement” was used to dispose of dredge material, meaning the material would be placed in an unconfined manner in the Bay. Open water placement ceased in 2010 because it was mandated by law. This enabled the state to move in the direction of confined disposal and beneficial use, to do something beneficial with the dredged material by restoring lost habitat rather than placing the material back into the Bay/ocean. USACE and MDOT MPA are rebuilding Poplar Island, an island that was historically present, and restoring important habitat that was lost right in the middle of the Chesapeake Bay ecosystem. This is an example of a win-win situation: MDOT MPA is able to keep the shipping channels safe for passage, and the sediment is rebuilding habitat that was nearly lost (DiFatta, 2017) (US Army Corps of Engineers, n.d.).

USACE and MDOT MPA started construction of Poplar Island in 1998. The first 3-4 years of construction was just building the border perimeter of the island out of large armor stone. The perimeter of the island restores the historical 1,140 acre footprint. Inflow of dredged material began in 2001 and the projected completion date for the entire project is 2044 (DiFatta, 2017) (US Army Corps of Engineers, n.d.).

When the island is completed it will have two types of habitat: wooded upland habitat and intertidal wetlands. These will provide unique habitat for animals including migratory birds, ground nesting birds, diamondback terrapins, muskrats, deer, and many others. Poplar Island will remain an uninhabited, restored ecosystem for animal use (DiFatta, 2017) (US Army Corps of Engineers, n.d.).

Materials

- 4 White Boards
 - **Alternative:** Large easel pads
- Dry erase markers (assorted colors)
 - **Alternative:** Use markers, crayons, etc. on the large Post-it easel pads
- Poplar Island maps/infographics/posters
 - “Vanishing Islands of the Bay” short story
 - “Poplar Island 1914” map
 - “Poplar Island 1969” map
 - “The Port of Baltimore: How Do We Dredge?” infographic
 - “The Port of Baltimore: Economics 101” infographic
 - “What’s in Dredged Material?” handout
 - “Dredging for Safe Passage” handout
 - “Economic Impacts, Cargo and More!” video*
 - “Why is Dredging Important?” video*
 - Jar of wet dredged material**
 - “Sediment to Solutions: Channeling Innovation” infographic (front and back)
 - “Innovative & Beneficial Use” handout
 - “What is Dredged Material?” video*
 - “Other Uses for Dredged Material” video*
 - Jar of dry dredged material**
 - “Restoration of Poplar Island” poster
 - Lists of fauna observed on Poplar Island as of May 2017, which includes spiders and insects, amphibians and reptiles, birds, mammals, fish, and decapods.
 - “In Chesapeake Bay, Poplar Island is a man-made miracle” news article

**Videos can be located on the Port of Baltimore's YouTube page. Links as follow.*

- “Economic Impacts, Cargo and More!” video
<https://www.youtube.com/watch?v=iPIGNxqifvE>
- “Why is Dredging Important?” video
<https://www.youtube.com/watch?v=IRwarQxkUYQ>
- “What is Dredged Material?” video
<https://www.youtube.com/watch?v=CnjgdimzMSA>
- “Other Uses for Dredged Material” video
https://www.youtube.com/watch?v=SRv_TU54AMQ

***Jars of wet and dry dredged material can only be included in the lesson if MES Education and Outreach staff presents the lesson in a classroom or field trip setting.*

Preparation

In preparation for the activity you will need to obtain the necessary materials including white boards and dry erase markers, and print all the maps, infographics, posters, article, and short story.

Procedures

Introduction (Hook)

- Introduce the Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island and point out Poplar Island on a map of the Chesapeake Bay.
- Tell the students that instead of you talking at them about Poplar Island for 45 minutes you are going to empower the students to interpret the story of Poplar Island on their own.
- Explain that the students will be divided in to 4 groups. Maps, infographics, posters, or short stories will be provided to each group.
- These tools will be used to help each group interpret part of Poplar Island’s story.
- Add that you think they are smart enough to figure out what Poplar is

all about on their own but you or other educators can serve as a resource if the groups have questions or get stuck.

- Explain that they will have 5-10 minutes to interpret and discuss their maps, infographics, posters, or short stories amongst their group.
- Tell the students they will be using the white boards and markers (or easel pads) to prepare a 5 minute presentation about their findings that they will present to the class. The presentations can be as creative as they want but cannot go over 5 minutes.

Body (Activity)

- Break participants into four groups and provide each group with their folder of maps, infographics, posters, or short stories. Make clear their job is to interpret their tools and present back to the group what they learned. Encourage them to think beyond the information they get from the maps, infographics, posters, or short stories.
 - **Reminder:** Students are allowed to use educators as a resource if there are things they do not understand. Let students know that they don't have to be "right" but should have an educated guess.
 - Give the groups 5 to 10 minutes (depending on their interest) to review the information and prepare presentations.
 - Students will give 5 minute presentations about the information they interpreted from their clues and share with the group the important information they discovered about Poplar Island. Groups should present in order and groups 2, 3, and 4 should try to connect their presentation to the previous presentations.
 - During their presentation, groups can bring up any questions they might have had.
 - Question can either be written up on the board or be answered at the end of each presentation.
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- During presentations, fill in any gaps not addressed or misinterpretations and continue the conversation if students are interested. Below are a list of printed materials and points that should be drawn out by students. The Appendix shows a picture of each map, infographic, poster, article, and short story
 - Group 1 folder includes:
 - “Vanishing Islands of the Bay” short story
 - “Poplar Island 1914” map
 - “Poplar Island 1969” map
 - Concepts students in Group 1 should be sure to discuss:
 - Island habitat in the Chesapeake Bay is eroding away at a rapid rate. Natural erosion occurs on tidal shorelines but the rapid erosion occurring today has been exacerbated by human activity, development, and sea level rise.
 - Group 2 folder includes:
 - “The Port of Baltimore: How Do We Dredge?” infographic
 - “The Port of Baltimore: Economics 101” infographic
 - “What’s in Dredged Material?” handout
 - “Dredging for Safe Passage” handout
 - “Economic Impacts, Cargo and More!” video
 - “Why is Dredging Important?” video
 - Jar of wet dredged material
 - Concepts students in Group 2 should be sure to discuss:
 - What dredging is and why is it important/necessary.

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- Sediment dredged from the shipping channels is clean and managed safely in accordance with state and federal laws.
 - Successful dredging and dredged material management is achieved through collaboration of state agencies, citizens, and other stakeholders.
 - How does Group 2's information relate to Group 1?
This may be difficult and you can come back to this after Group 3 presents.
 - Group 3 folder includes:
 - "Sediment to Solutions: Channeling Innovation" infographic (front and back)
 - "Innovative & Beneficial Use" handout
 - "What is Dredged Material?" video
 - "Other Uses for Dredged Material" video
 - Jar of dry dredged material
 - Concepts students in Group 3 should be sure to discuss:
 - The Port of Baltimore is an economic driver for the state of Maryland.
 - Dredged material can be used in a variety of ways including site reclamation, construction material, topsoil, or environmental restoration.
 - MPA is working with other state agencies to develop regulatory framework that will facilitate opportunities for the innovative and beneficial use of dredged material.
 - Poplar Island Ecosystem Restoration Project is an international model for the beneficial use of dredged
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material to restore island habitat.

- How does Group 3's information relate to Group 1 and Group 2?
- Group 4 folder includes:
 - "Restoration of Poplar Island" poster
 - Lists of fauna observed on Poplar Island as of May 2017 which includes spiders and insects, amphibians and reptiles, birds, mammals, fish, and decapods.
 - "In Chesapeake Bay, Poplar Island is a man-made miracle" news article
- Concepts students in Group 4 should be sure to discuss:
 - Poplar Island is an exemplary example of the beneficial use of dredged material.
 - Poplar Island Ecosystem Restoration Project is a man-made island and a success.
 - The success of Poplar Island is shown by the 400+ unique species of fauna that call Poplar Island home.
 - How does Group 4's information relate back to Groups 1, 2, and 3?
- Concepts that should be discussed once all 4 groups have presented:
 - How do all 4 of our presentations connect?
 - How did we get from vanishing islands to Poplar Island exploding with biodiversity?
 - Dredging has to occur but MPA wants to make every effort to benefit the environment and the general public.

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- Island habitat is disappearing throughout the Bay, Poplar and Holland Island (mentioned in the Vanishing Island story) are not unique.

Conclusion (Wrap-up)

- Once all four groups have presented, wrap up by summarizing what the students interpreted for themselves.
- Poplar Island was on the verge of disappearing into the Bay and becoming another vanished island.
- Dredging of the shipping channels is something that occurs annually and is economically beneficial to the Port of Baltimore and Maryland as a whole. The sediment that is dredged from the bottom of the Bay must be placed somewhere.
- The Port of Baltimore has made it a priority to find innovative and beneficial ways to reuse dredged material such as rebuilding an island.
- Out of this economic need to dredge, habitats like Poplar Island are able to be restored. Poplar Island provides unique island habitat that is disappearing all over the Bay.
- This is what we call a “win-win” situation. The Port of Baltimore can remain open for business and stay competitive with other ports and vanishing island habitat is able to be rebuilt, restored, and protected for the sole purpose of wildlife use.

Evaluation

Students will be evaluated by the presentations each group provides as well as their involvement in the group discussion.

Resources

Other resources could include the Poplar Island websites (listed below) provided by Maryland Environmental Service (MES), MDOT MPA, USACE, and the Poplar Island Restoration website. There is also a short

memoir entitled “Poplar Island: My Memories as a Boy” written by Peter K. Bailey who grew up on neighboring Jefferson Island. Another option is to have an Outreach and Education specialist from MES come to your classroom and provide additional lessons.

- <http://www.menv.com/pages/outreach/poplar.html>
- <http://www.mpa.maryland.gov/greenport/Pages/dmmp.aspx>
- <http://www.nab.usace.army.mil/Missions/Environmental/Poplar-Island/>
- <http://www.poplarislandrestoration.com/>

Follow-up Opportunities

Poplar Island provides free tours that are open to school groups, community organizations, and individuals. Tours and activities can be adapted to suit your needs and interests. Generally, tours and educational programs at Poplar Island focus on details related to the beneficial use of dredged material to create remote island habitat.

You can have an environmental specialist visit your classroom and teach your students about the Port of Baltimore and habitat creation at Poplar Island! Groups can also visit MPA’s other sites: Hart-Miller Island (another beneficial use site) as well as Masonville and Cox Creek Dredge Material Containment Facilities (DMCF) for educational programming.

References

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Appendix:
The maps, infographics,
posters, article, and short story.

*All originals of maps, infographics,
posters, article and short story can be obtained
by contacting Maggie Cavey at mcave@menn.com.*

Group 2 folder should include:

1. "The Port of Baltimore: How Do We Dredge?" infographic
2. "The Port of Baltimore: Economics 101" infographic
3. "What's in Dredged Material?" handout
4. "Dredging for Safe Passage" handout
5. "Economic Impacts, Cargo and More!" video
6. "Why is Dredging Important?" video
7. Jar of wet dredge material

The Port of Baltimore: How Do We Dredge?

- 1 "DREDGING"**
a clamshell bucket removes dredged material from the bottom of shipping channels
- 2 "SCOW"**
dredged material is placed in a special, flat-bottomed boat, called a "scow," so it can be transported
- 3 "SLURRY"**
dredged material is mixed with water from the Chesapeake Bay, creating a "slurry"
- 4 "INFLOW"**
the slurry can be easily pumped or sprayed into a special placement site for dredged sediment
- 5 "DEWATERING"**
after settling, the water from the slurry is pumped off or drained off the top of the dredged material
- 6 REPEAT!**
maintenance dredging occurs frequently to make sure that channels remain deep enough for large ships to pass

The Port of Baltimore: Economics 101

THE PORT OF BALTIMORE GENERATES:

- 33,900+ MD jobs
- \$2.9 billion in wages annually
- \$310 million in state and local tax revenues annually

HOW DOES THE PORT BENEFIT MARYLAND AND THE U.S.?

THE PORT OF BALTIMORE CONNECTS THE U.S. TO INTERNATIONAL PORTS IN COUNTRIES AROUND THE WORLD.

BALTIMORE RANKS #1 IN:

- autos and light trucks
- roll-on and roll-off heavy equipment
- imported sugar

BALTIMORE RANKS #2 IN:

- exported coal
- imported salt and aluminum

2017 IMPORTS

Country	Value (\$B)
China	1.1
Germany	0.8
France	0.7
Spain	0.6
Italy	0.5
U.S.	0.4

DRAFT
50 ft
Cargo ships can have a draft (the part of the ship that is underwater) of up to 50 feet.

CHANNELS
Ships must use shipping channels as they navigate the Chesapeake Bay and enter Baltimore. These channels are dug to a depth of 50 feet through dredging.

DREDGING
Sediment enters shipping channels throughout the year. Periodic dredging must occur to keep shipping channels usable, and the Port accessible.

SEDIMENT CONTINUOUSLY WASHES INTO THE CHANNELS OF THE CHESAPEAKE BAY FROM EROSION THROUGHOUT THE WATERSHED.

SEDIMENT IS DREDGED, OR REMOVED, FROM SHIPPING CHANNELS YEARLY TO MAINTAIN A SAFE DEPTH FOR LARGE VESSELS.

WHAT DOES THE PORT NEED TO BE SUCCESSFUL?

What's in Dredged Material?




- Runoff from all over the Chesapeake Bay watershed carries **sediments** that end up in the shipping channels
- Dredged material is **clay, sand, and silt** sediment removed from the shipping channels
- Geologic and human activities (industrial activity, agriculture, and urban development etc.) influence the character of the sediment




Is Dredged Material Safe?

- Characteristics of dredged material have been studied and monitored for a long time
- In general, dredged material does not contain pollutants at levels that could cause human or environmental harm, and is not classified as hazardous
- The US Army Corps of Engineers samples sediment from the shipping channels for chemical analysis every three years










Dredging for Safe Passage

IN THE CHESAPEAKE BAY & BALTIMORE HARBOR



Quick Facts

- Major shipping channels in the Chesapeake Bay and Baltimore Harbor are maintained at a 50-foot depth; other channels are maintained at a 35-foot depth
- Approximately five million cubic yards of dredged material are cleared from the channels every year
- Laws govern the safe placement and use of dredged material
- No negative effects on water quality
- Successful dredging and dredged material management results from collaboration among agencies, citizens, and other stakeholders

Every year, cargo vessels and cruise ships travel to and from the Port of Baltimore. Many of the water routes they travel require frequent dredging to maintain the 50-foot depth required by many of today's ships. On average, almost five million cubic yards of sediment is removed from shipping channels in the Chesapeake Bay and Baltimore Harbor every year. The Maryland Department of Transportation Port Administration (MDPA) and the US Army Corps of Engineers work together to conduct dredging and find placement sites for the dredged material. Dredging usually occurs in the fall and winter.

Sediment Quality

Sediment in the Chesapeake Bay and its rivers has been deposited over a long period of time, and the process continues today. Sediment consists of clay, silt, and sand. The geologic formations in the region as well as human activities affect the character of the sediment in different locations. Industrial activity, agriculture, and urban development have all left their mark. Sediment dredged from the navigation channels is tested and managed safely in accordance with state and federal requirements.

Placement and Use of Dredged Material

Dredged material is generally placed in a specially designed area enclosed by a dike, called a placement site. Over time, the sediment dries and becomes new land. Dredged material is also used to restore eroded wetlands, create upland wildlife habitat, and build new terminal space for the port. Other ports have demonstrated that dredged material can be used to cap landfills and brownfields, remediate former mines, and make building materials such as aggregate. The MPA conducts a planning process to ensure that the Maryland always has 20 years of dredged material placement capacity. Advisory committees, state and local agencies, and elected officials participate in the dredging program and ensure that communities and stakeholders have information and access to the decision-making process. The MPA and the Baltimore District Corps of Engineers are studying the feasibility of widening channels in the Baltimore Harbor and Chesapeake Bay to maintain economic competitiveness. For more information, visit www.marylandports.com/greenport.



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Group 3 folder should include:

1. “Sediment to Solutions: Channeling Innovation” infographic (front and back)
2. “Innovative & Beneficial Use” handout
3. “What is Dredged Material” video
4. “Other Uses for Dredge Material” video
5. Jar of dry dredge material

Front



Back





Innovative & Beneficial Use

DREDGED MATERIAL AS A VALUABLE RENEWABLE RESOURCE

Quick Facts

- 5 million cubic yards (mcy) of sediment are dredged annually throughout the Bay, an amount that would fill the Ravens' stadium 2.6 times.
- 1.5 mcy of sediment is dredged from the Baltimore Harbor each year.
- The goal is to recycle 500,000 cy of material annually.
- Many options are available to safely use dredged material, including:
 - Mine reclamation
 - Restoration of eroded islands and wetlands
 - Roadway and construction materials
 - Manufactured topsoil
 - Land restoration
- An interagency regulatory workgroup is underway.

Dredging maintains safe passage for vessels making their way through the shipping channels of the Port of Baltimore and supports a key economic driver for waterborne commerce in Maryland. Removing sediment annually from the channels not only ensures the safety of our marine highway, but helps business at the Port of Baltimore continue to thrive.

Innovative Reuse is the recycling of dredged sediment in place of (or in combination with) other raw materials for manufacturing, construction and reclamation projects. Beneficial Use can benefit the environment by restoring wetlands and eroded shorelines and islands, with the potential to mitigate the effects of sea level rise. Innovative and beneficial use can spur innovation, benefit the environment, and contribute to the growth of Maryland's economy.

Currently, dredged sediment is transported to dredged material placement sites or used for beneficial projects like the restoration of Poplar Island. All of these activities are permitted by environmental regulatory agencies, such as the Maryland Department of the Environment. Years of testing and sampling data demonstrate no adverse impacts.

New Solutions Needed

The Port of Baltimore is in critical need of placement capacity for dredged material. It is difficult to find locations for new placement sites because property adjacent to the port is densely populated and developed. New approaches to the management of dredged material are needed, so the Maryland Department of Transportation Port Administration (MDA) is looking for innovative solutions to recycle dredged sediment.

Making Innovative & Beneficial Use a Reality

The MPA has set a long-term goal to recycle 500,000 cy of dredged material each year. The MPA has also recently convened an interagency workgroup to recommend policy changes that will establish a clear and transparent regulatory framework that will enable opportunities for the successful reuse of sediment in a variety of ways. Close coordination with key partners will help to ensure that projects are safe to human health and the environment. Private sector, local governments, citizens and industry leaders are providing important feedback throughout this process, helping to promote the safe and economic use of dredged material.

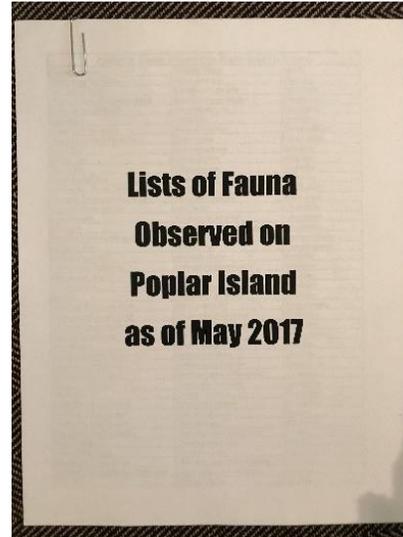
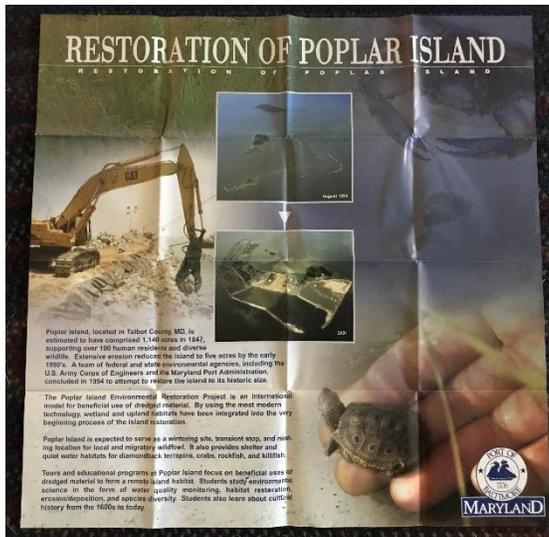


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Group 4 folder should include:

1. "Restoration of Poplar Island" poster
2. Lists of fauna observed on Poplar Island as of May 2017 which includes spiders and insects, amphibians and reptiles, birds, mammals, fish, and decapods.
3. "In Chesapeake Bay, Poplar Island is a man-made miracle" news article



<https://www.maryland.gov/our-agencies/department-of-the-environment/recreation/visiting-the-poplar-island-eco-tour.html>

In Chesapeake Bay, Poplar Island is a man-made miracle
By Anna Nason
December 26, 2013

zippering across the Chesapeake Bay. I had a hard time spotting Poplar Island. Although one end of it rises 20 feet high, much of the small island is a mere eight feet above sea level — and parts of it is even lower. There is one significant stand of oaks, but the island is covered mostly with low-growing shrubs and grasses or a nothing-but-mud-covered dirt.

The distinctive parcel may sound unimpressive, but it's nothing short of a man-made miracle that it's here at all.

That's why I headed there for a two-hour tour on a sunny September morning. When I was first surveyed, in 1642, it measured a robust 1,140 acres. The land survey in 1803 by the U.S. Army Corps of Engineers revealed that wind, waves and current had shrunk it down to a mere five acres, spread out across four small blips of unconnected land. If something wasn't done quickly, it would disappear into the depths without leaving a trace.

Working with the Maryland Port Administration, the Corps started rebuilding Poplar Island in 1998. The project was instrumental in achieving two goals simultaneously: It created a place to safely dump dredged materials in a manner that wouldn't interfere with the bay's fragile ecosystem, and it restored a crucial wildlife habitat.

They began by outlining the 1647 parameters of the island with a rock wall. After that, they divided it into cells and began filling them in with soil dredged up from the floor of the bay, a natural byproduct of creating the 50-foot clearance required for large ships accessing Baltimore Harbor. To date, they've poured in 23 million cubic yards of mucky matter. They'll use 60 million to finish the job, so they're not even halfway there. If the project is suddenly on track to be completed in 2042.

The rebuilding project has created a vibrant wildlife preserve, where 203 species of birds and 155 species of insects (including 31 butterfly species) have been spotted. On top of that, it's a nesting ground for diamondback terrapins. So the public can appreciate this natural bounty, Maryland Environmental Services offers free tours on weekdays from 9 a.m. to 4 p.m., and on weekends from 10 a.m. to 4 p.m. unless they're receiving dredge materials during the winter months, which requires round-the-clock work.

After we moored on the island's south shore, I was greeted with surprising inquiry. On one hand, there were wild birds perched on the dock's railing, flying overhead and swooping in the nearby wetlands. In juxtaposition, there was a plethora of yellow-and-black heavy-duty construction machinery and several clusters of temporary buildings for the workers and staff. No one lives on the island. Workers are shipped over daily for shifts that usually run from 7 a.m. until 10 p.m., unless they're receiving dredge materials during the winter months, which requires round-the-clock work.

<https://www.maryland.gov/our-agencies/department-of-the-environment/recreation/visiting-the-poplar-island-eco-tour.html>

Thankfully, we were here to focus on the outdoorsy elements and learn a little local history. The small site has an interesting past. In the early 17th century it was discovered by settlers and named Poppley's Island, which eventually ended over the years to become "Poplar." The British used it as a staging area for troops during the War of 1812. By the late 18th century, there was a small settlement of approximately 100 people, a post office and a sawmill. All those inhabitants left by 1920. In 1931, it became a hunting and fishing preserve for prominent Democratic politicians; presidents Franklin Roosevelt and Harry Truman both visited.

After a short introductory talk, a dozen other sightseers and I boarded an air conditioned bus for a tour of the beautiful green island. None we passed a small sandy beach, a nesting ground for diamondback terrapins. Their nests were marked with small pink flags and will later be covered with enclosures to deter predators. Last year, approximately 1,000 turtles were born on the island. Two hundred and fifty of them ended up in the "Turtle Start" program of sorts. Each Chesapeake Bay Wildlife Refuge has a different classroom around the state. Six months later, in May, they came back to the island, the size of a chessboard, according to our coordinator Megan D'Festa. They increased cull helps them avoid being gulls and laughing gulls, who usually devour many of the tiny youngsters.

During a stop at a small store canteen, I checked out a tank full of week-old turtles. Several dozen bobbed or paddled through the slightly green water while a lone terrapin swam itself in the mix of a hot lamp. Its head was halfway stuck in, probably catching a few of its white streamers. The rough concrete circles on its shell looked like small topographical renderings of a cluster of hills. Its tiny webbed feet displayed minuscule nails or rather than thumbnails.

This is only a fraction of the wildlife I saw. During the tour, we passed a number of restored wetlands, home to many types of birds. One grassy, bushy section has a plethora of cattle egrets, snowy egrets and great blue herons; another, a bounty of least terns and common terns. Nearby there's a barren dirt mound inside a small pond, where a killifish-like species comes out to feed during nesting season earlier this year. Their droppings are so acidic that they killed off almost every piece of greenery on the island within an island. Now only a fraction remain, hanging out onshore and swimming in the surrounding waters.

In a well-restored dock, a series of barges were beached to help prevent it from remaining land from washing away while crews worked to reconstruct the island. Now the rusting hulks are covered in local buckshot and some to a number of species, including osprey, which could give it priority nesting sites of birds and gulls on them. Assistant tour coordinator Chris Horneper calls the grounded ships "land o'nothin' islands."

If visitors are lucky during the winter, they might be able to see a rare snowy owl. Normally, there aren't more than a few of these birds in the area, but D'Festa likes to round up groups of ornithologists to come out. They're interested.

Nature lovers of all shades should take advantage of Poplar Island while they can. When its reconstruction is completed, all the roads, machinery and human tracks will be removed. There will be no commercial development allowed. In fact, people might not even be permitted to set foot on it. Poplar Island will be wild and tall of the sea again.