Indicator Webpage Updates

Developing Watershed Management Plans and Oysters

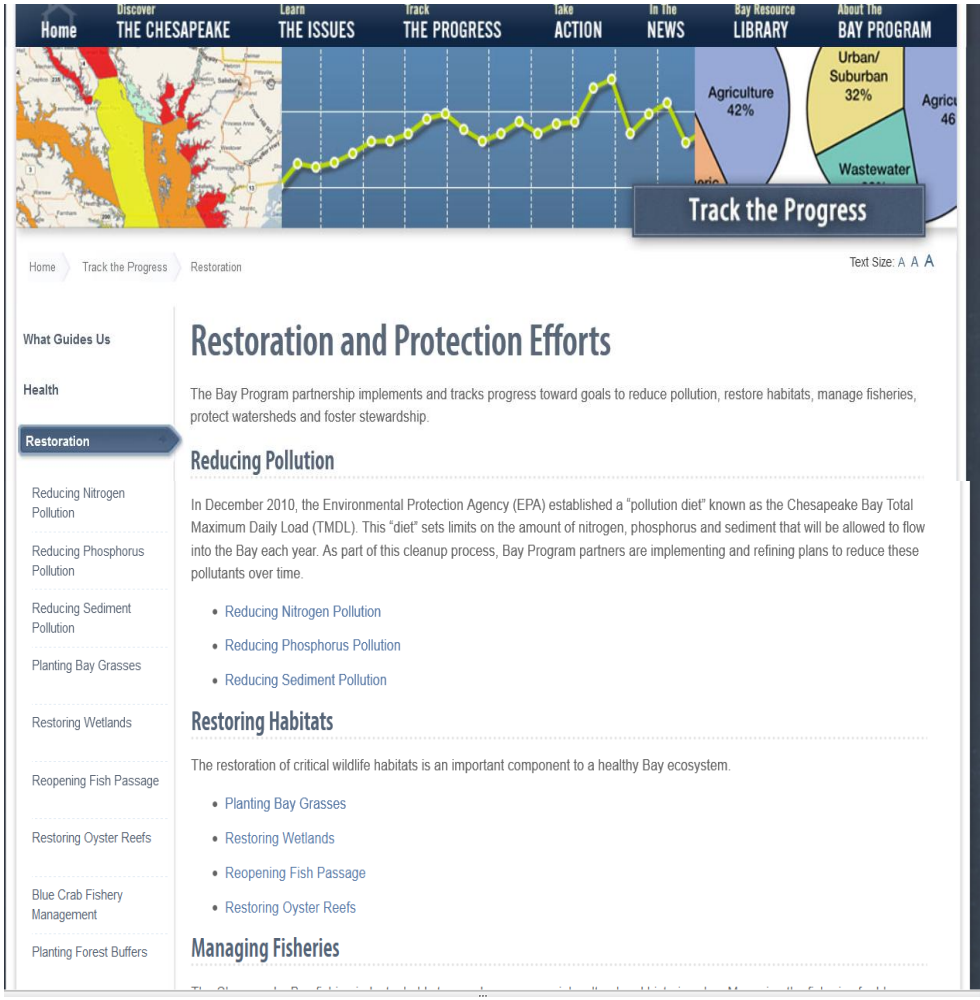
March 2014

Nita Sylvester, Chair, STAR's Indicator Workgroup

Indicators now show up in 2 places/ways on the web:

LISTED ALPHABETICALLY

LISTED TOPICALLY OR BY ACTIVITY



EXAMPLE: Current Indicator

What Guides Us

Health

Restoration

- Reducing Nitrogen Pollution
- Reducing Phosphorus Pollution
- Reducing Sediment Pollution
- Planting Bay Grasses
- Restoring Wetlands
- Reopening Fish Passage
- Restoring Oyster Reefs
- Blue Crab Fishery Management
- Planting Forest Buffers
- Developing Watershed Management Plans
- Protected Land
- Public Access
- Education and Interpretation

Tracking Tools

Developing Watershed Management Plans

In 2010, watershed management plans were developed for 54,018 acres in Maryland. Plans have been developed for a total of 14 million acres in Maryland, Pennsylvania, Virginia and the District of Columbia, which is almost 62 percent of the goal.

Annual | Videos

Analysis & Methods (58 KB)

Download Data (45.5 KB)

Importance

Protecting local watersheds is a complicated and challenging task. Watershed management plans are strategic guides that help local communities protect and restore streams, forest buffers, wetlands, parks and other natural areas. Watershed plans preserve not only ecological health, but also the quality of life in communities.

Goal

The Bay Program has a goal to develop and implement watershed management plans for two-thirds of the total watershed acreage in Maryland, Pennsylvania, Virginia and the District of Columbia (22.7 million acres) by 2010. The total watershed acreage of Maryland, Pennsylvania, Virginia and the District of Columbia is estimated to be 34 million acres.

Developing Watershed Management Plans Background

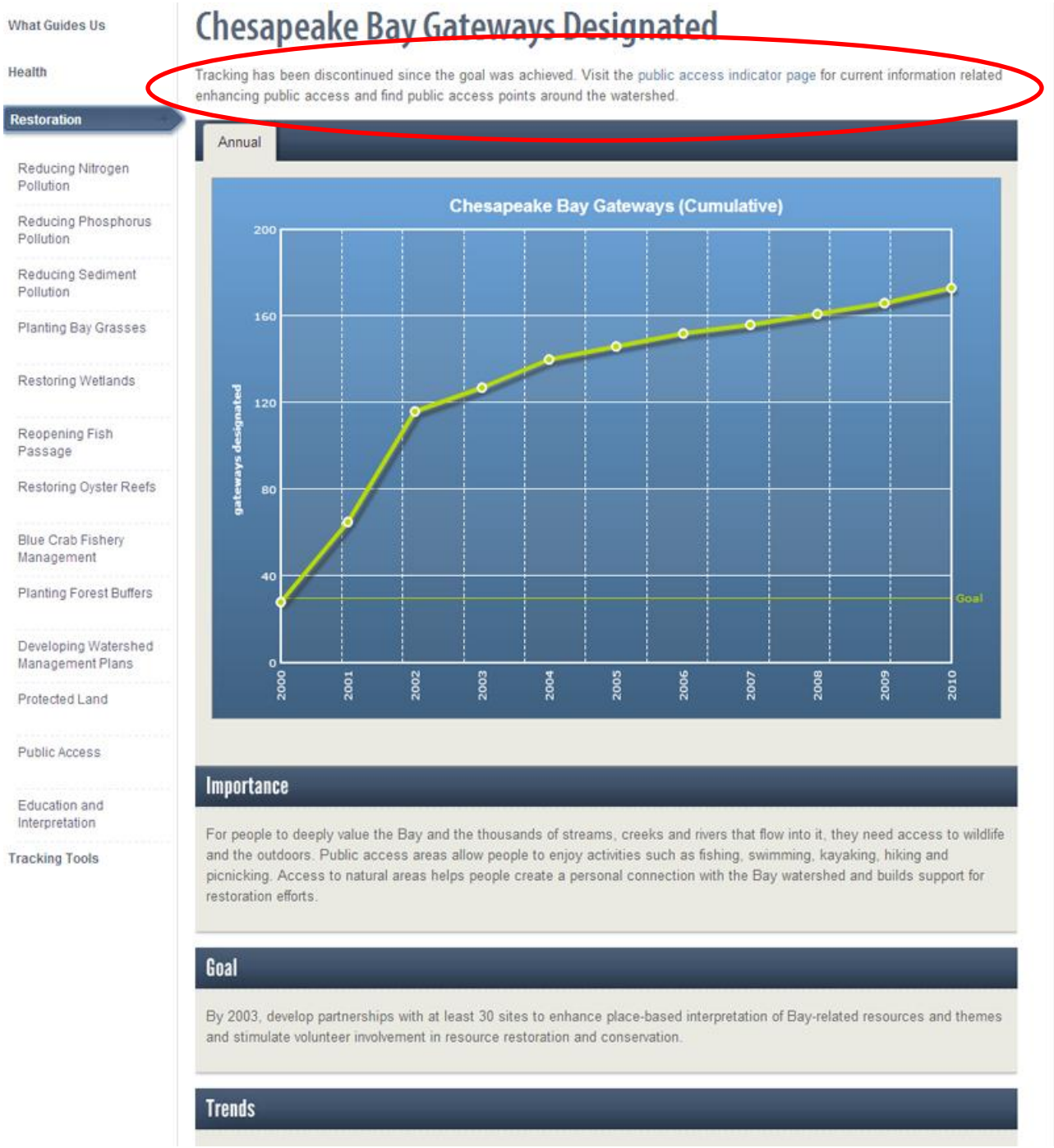
1. STAR recommended indicator removal: tracking discontinued; not essential to support adaptive management of GITs' strategies

2. Management Board disagreed: keep indicator page and, if possible, revise to indicate tracking has been discontinued since goal has been achieved (similar to decision for Gateways and Water Trail indicator webpages).

3. No new data was provided for the indicator; goal achievement remains at 62%

4. MB reiterated that the webpage should be maintained but revised to indicate that tracking has been discontinued due to change in focus (and provide links to WIPs).

Revisions – Part 1: Similar to what was done to Gateways and Water Trails indicators …



Revisions – Part 1: … revise intro. text, but keep rest of page "as is" (to maintain record of accomplish-ments under previous goal).

What Guides Us

Reducing Phosphorus Pollution

Reducing Sediment Pollution

Planting Bay Grasses

Restoring Wetlands

Reopening Fish Passage

Restoring Oyster Reefs

Blue Crab Fishery Management

Planting Forest Buffers

Developing Watershed Management Plans

Protected Land

Public Access

Education and Interpretation

Tracking Tools

Developing Watershed Management Plans

Tracking has been discontinued due to focus on implementing plans to reduce pollution. Visit the Watershed Implementation Plans section of the Bay "Pollution Diet" website and the Reducing Nitrogen, Phosphorus and Sediment Pollution indicator pages for current information.

Analysis & Methods (58 KB)

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Revisions – Part 2: Keep it here "Track Our Progress" alphabetical listing AND ….

The Chesapeake Bay fishing industry holds tremendous commercial, cultural, and historic value. Managing the blue crab, oyster, striped bass, shad, and menhaden fisheries is also critical to restoring and protecting these species and their important place in the ecosystem. (Read More)

Bottom Habitat

The Bay's bottom is home to many small creatures such as worms, clams and tiny crustaceans. These creatures, called benthic macroinvertebrates, live on or in the bottom sediments. Benthic macroinvertebrates are especially sensitive to increases in chemical contaminants and decreases in oxygen. Since they cannot move to avoid poor environmental conditions, the health of benthic macroinvertebrates is an excellent indicator of the Bay's health. The Benthic Index of Biotic Integrity makes a good integrator of long-term environmental conditions because benthic organisms have limited mobility and their responses to stress are well documented. (Read More)

Chemical Contaminants

Chemical contaminants such as metals and polychlorinated biphenyls (PCBs) can be found in the Chesapeake Bay's fish and bottom sediments. Toxic chemicals can harm the Bay ecosystem and human health. Toxins tend to accumulate in predatory species at the top of the food web. These contaminants have the potential to affect humans who eat contaminated fish. By analyzing the tissues of specific types of fish, scientists can estimate the overall presence of contaminants in the Bay ecosystem. (Read More)

Chesapeake Bay Gateways Designated

For people to deeply value the Bay and the thousands of streams, creeks and rivers that flow into it, they need access to wildlife and the outdoors. Public access areas allow people to enjoy activities such as fishing, swimming, kayaking, hiking and picnicking. Access to natural areas helps people create a personal connection with the Bay watershed and builds support for restoration efforts. (Read More)

Chesapeake Bay Watershed Population

The way people use the land has a major effect on the Bay and its local waterways. Natural areas like forests and wetlands have a positive effect on the Bay's health, whereas developed lands generally contribute more pollution. The Chesapeake Bay's decline is directly linked to the rise in the number of people that live in the watershed. Since 1950, the Bay watershed's population has more than doubled. (Read More)

Developing Watershed Management Plans

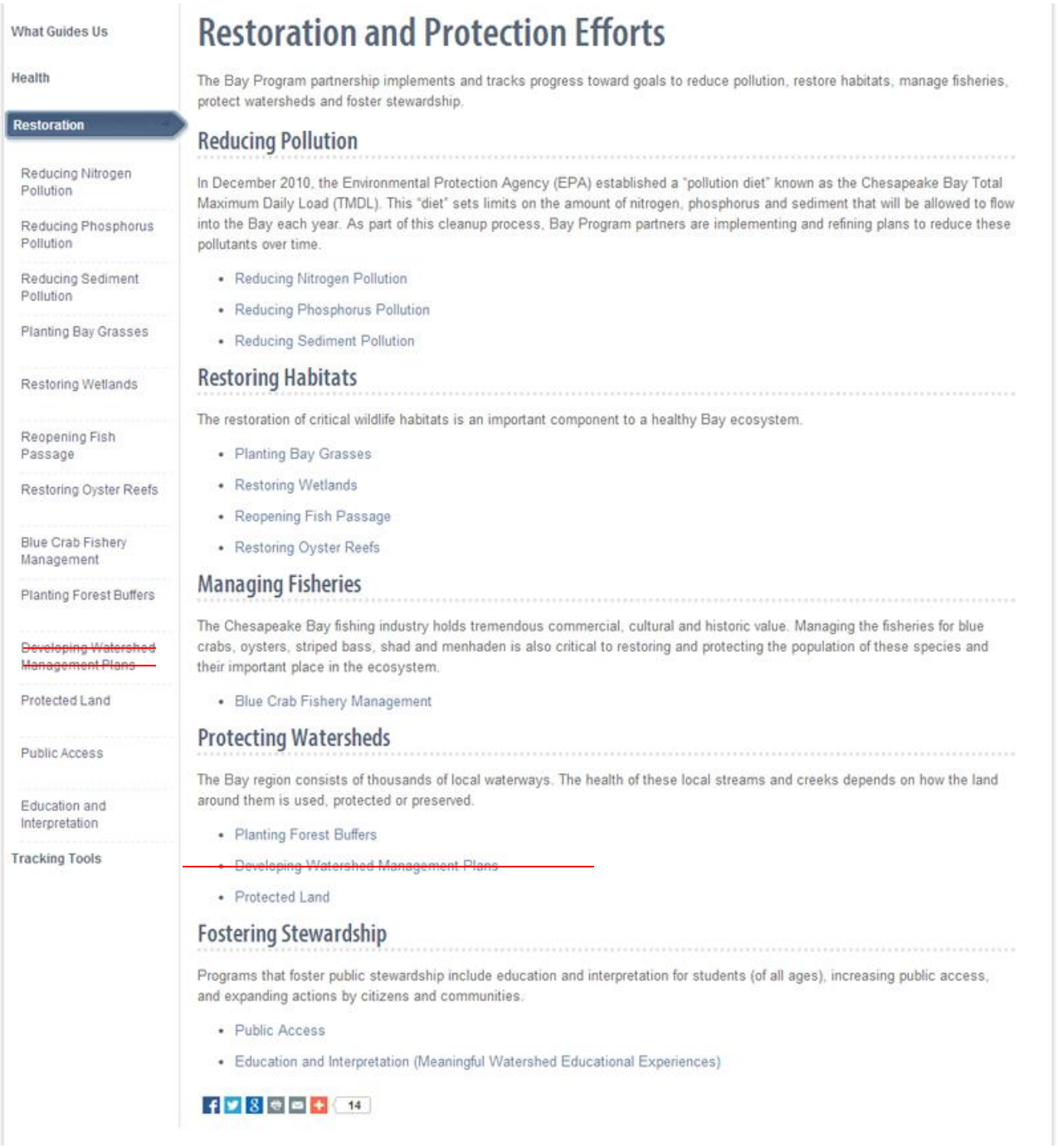
Protecting local watersheds is a complicated and challenging task. Watershed management plans are strategic guides that help local communities protect and restore streams, forest buffers, wetlands, parks and other natural areas. Watershed plans preserve not only ecological health, but also the quality of life in communities. (Read More)

Dissolved Oxygen (Volume Assessment)

Just as is the case for animals on land, oxygen is essential for all aquatic plants and animals to survive. In water, oxygen is present in a dissolved form. Adequate concentrations of dissolved oxygen in water are necessary for healthy ecosystem function; without the required amounts of oxygen in the water to support healthy ecosystem function, the Bay's ability to support aquatic life is compromised. The necessary amount of dissolved oxygen varies by aquatic species, season and location within the Bay. Generally, aquatic animals need higher oxygen levels in shallow waters during spring spawning season. Slightly lower oxygen levels are acceptable during other times of the year, particularly in deeper waters. Concentrations of dissolved oxygen are also an important indication of levels of nutrient pollution in the Bay. Low dissolved oxygen levels are primarily the (Read More)

Revisions – Part 2:

…remove here "Restoration and Protection Efforts"



What Guides Us

Health

Restoration

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- ~~Developing Watershed Management Plans~~
- Protected Land
- Public Access
- Education and Interpretation

Tracking Tools

Restoration and Protection Efforts

The Bay Program partnership implements and tracks progress toward goals to reduce pollution, restore habitats, manage fisheries, protect watersheds and foster stewardship.

Reducing Pollution

In December 2010, the Environmental Protection Agency (EPA) established a "pollution diet" known as the Chesapeake Bay Total Maximum Daily Load (TMDL). This "diet" sets limits on the amount of nitrogen, phosphorus and sediment that will be allowed to flow into the Bay each year. As part of this cleanup process, Bay Program partners are implementing and refining plans to reduce these pollutants over time.

- Reducing Nitrogen Pollution
- Reducing Phosphorus Pollution
- Reducing Sediment Pollution

Restoring Habitats

The restoration of critical wildlife habitats is an important component to a healthy Bay ecosystem.

- Planting Bay Grasses
- Restoring Wetlands
- Reopening Fish Passage
- Restoring Oyster Reefs

Managing Fisheries

The Chesapeake Bay fishing industry holds tremendous commercial, cultural and historic value. Managing the fisheries for blue crabs, oysters, striped bass, shad and menhaden is also critical to restoring and protecting the population of these species and their important place in the ecosystem.

- Blue Crab Fishery Management

Protecting Watersheds

The Bay region consists of thousands of local waterways. The health of these local streams and creeks depends on how the land around them is used, protected or preserved.

- Planting Forest Buffers
- ~~Developing Watershed Management Plans~~
- Protected Land

Fostering Stewardship

Programs that foster public stewardship include education and interpretation for students (of all ages), increasing public access, and expanding actions by citizens and communities.

- Public Access
- Education and Interpretation (Meaningful Watershed Educational Experiences)

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Oyster Indicators Background

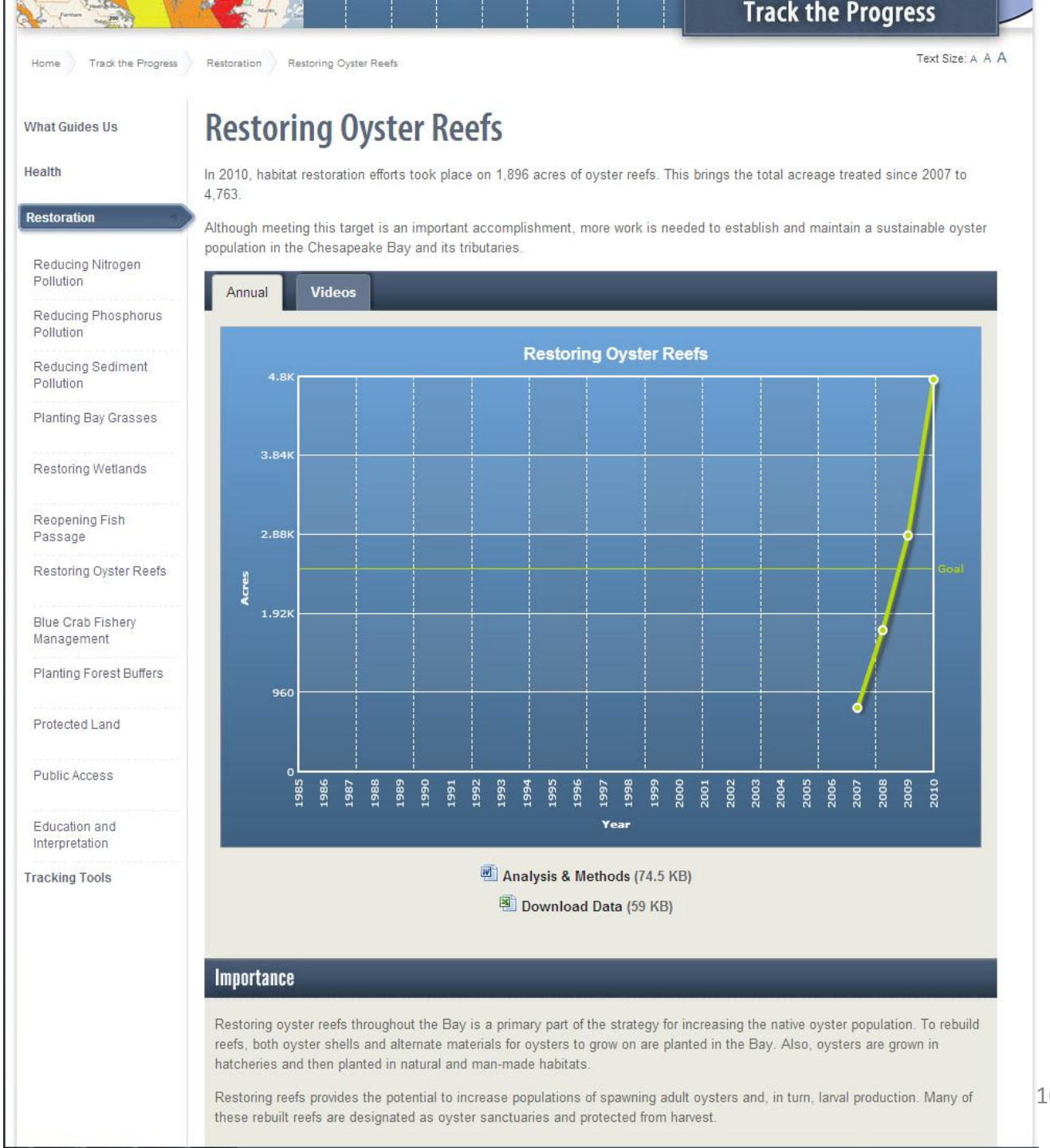
1. Oyster biomass & reef restoration indicators no longer tracked

2. New outcome being tracked by the Fisheries GIT

3. GIT recommended remove/replace old information on indicator webpages.

4. Management Board agreed with GIT and asked to see how the current indicator pages will be revised to track the new outcome.

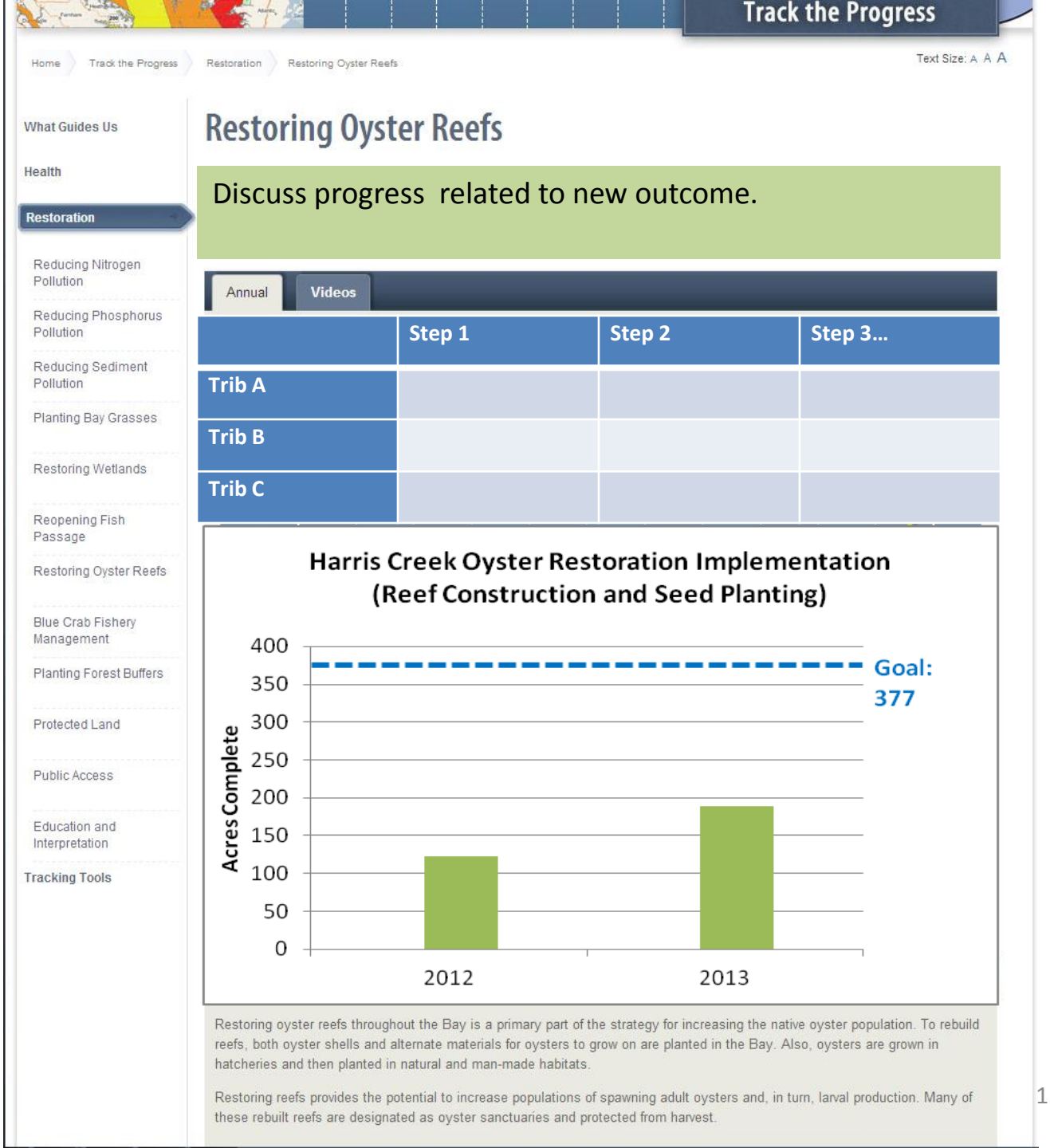
Current Oyster Restoration indicator page



Revisions to Oyster Restoration page:

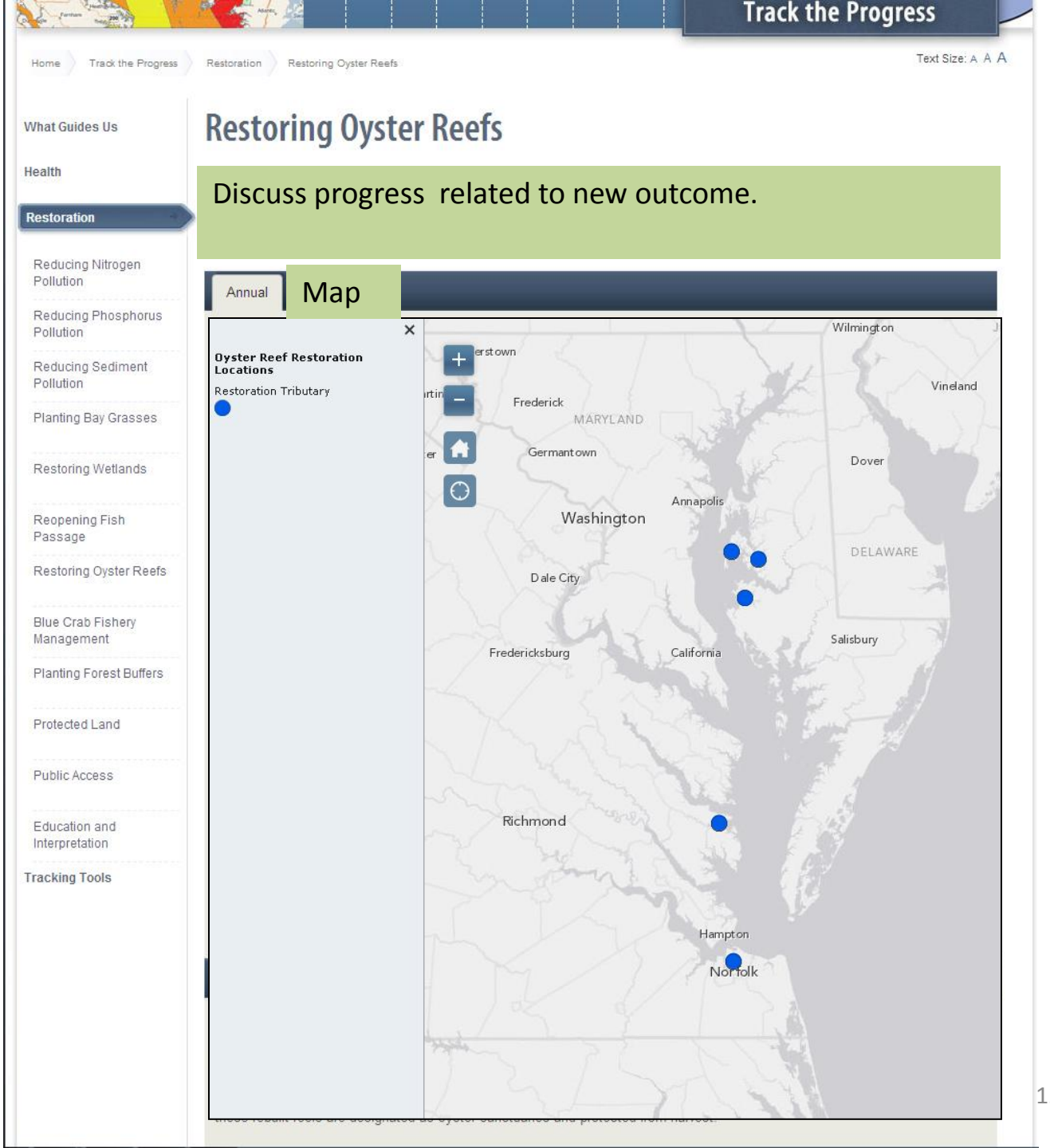
… revise all text to relate to new outcome;

replace chart and …



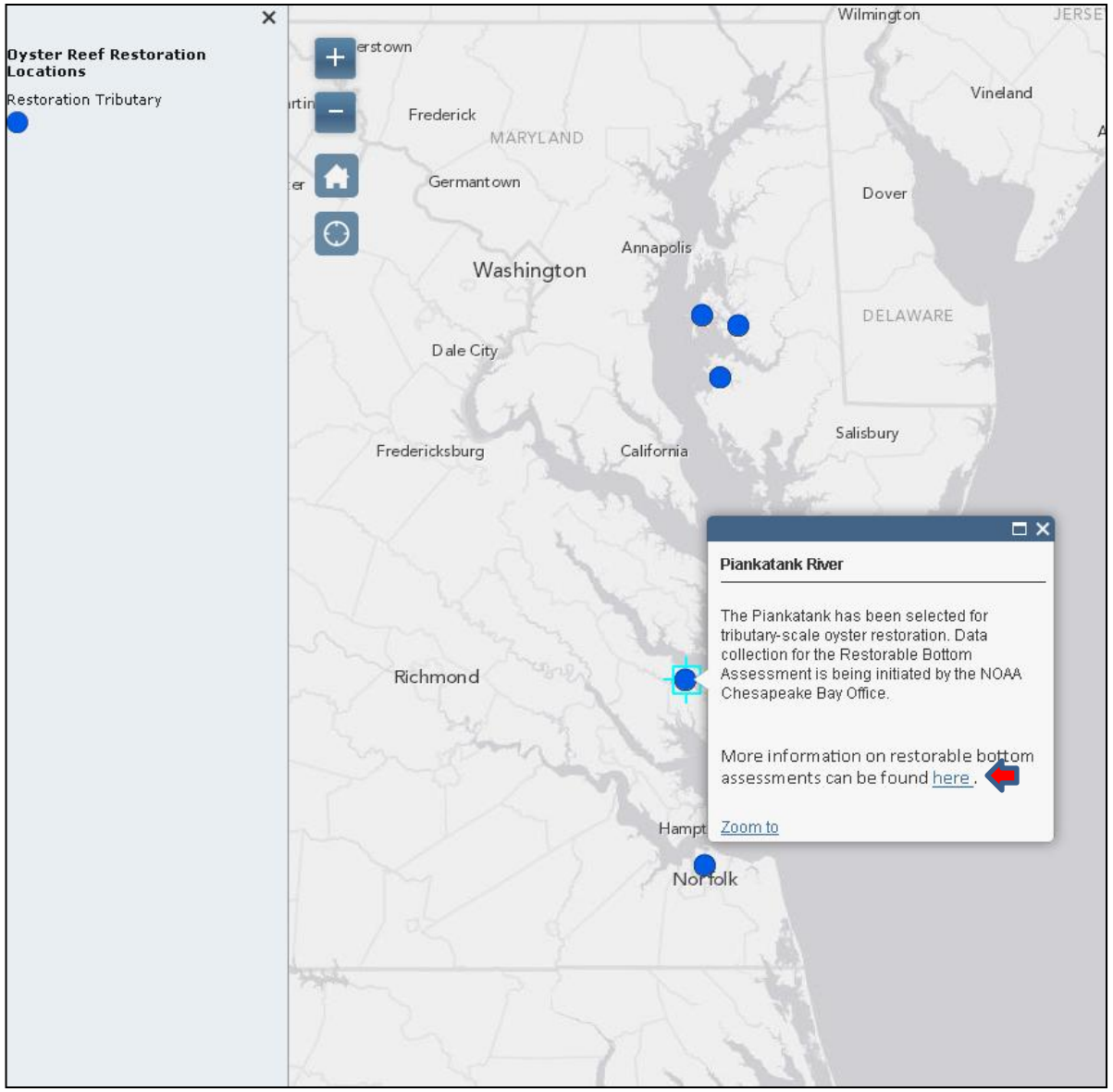
Revisions to Oyster Restoration page:

… feature new map.



Bay-wide view with Restoration Tributaries shown by circles

Piankatank Popup



Link from Piankatank popup

NOAA CHESAPEAKE BAY OFFICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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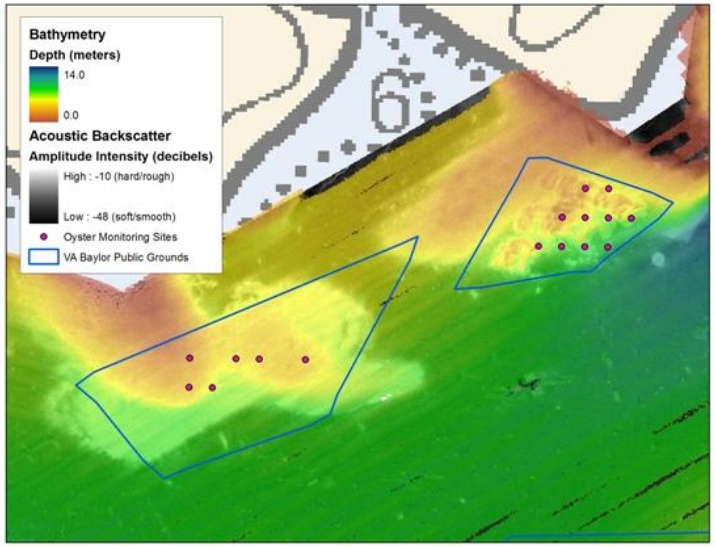
Oyster Restoration Mapping Support

Native oyster restoration in the Chesapeake Bay focuses on creating hard surfaces (reefs) for larval oysters to settle on and planting hatchery-raised juvenile oysters (called spat) that are attached to oyster shells. Acoustic seabed surveying systems are used to identify oyster habitat and planting locations that will maximize the survival of spat-on-shell. Preferable restoration sites are hard, geologically stable terraces, of generally uniform depth, of moderate to high rugosity (a measure of surface irregularity), with sand or oyster shell as the base. Sites are typically located on historic oyster bottom.

The NOAA Chesapeake Bay Office provides Maryland and Virginia oyster restoration partners with Geographic Information System (GIS)-ready acoustic mapping products that identify current distribution, structure and quality of oyster habitat.



Composite image of backscatter and partially transparent bathymetry data collected by the NOAA Chesapeake Bay Office with historic oyster boundaries and recent monitoring sites in the Great Wicomico River, Virginia.

In Maryland, NOAA has teamed wth the Maryland Geological Survey to provide the Oyster Recovery Partnership with mapping products and suggested boundaries for restoration sites. Boundaries are derived from side-scan sonar imagery, sub-bottom profiling, single beam seabed classification, and bathymetry data.

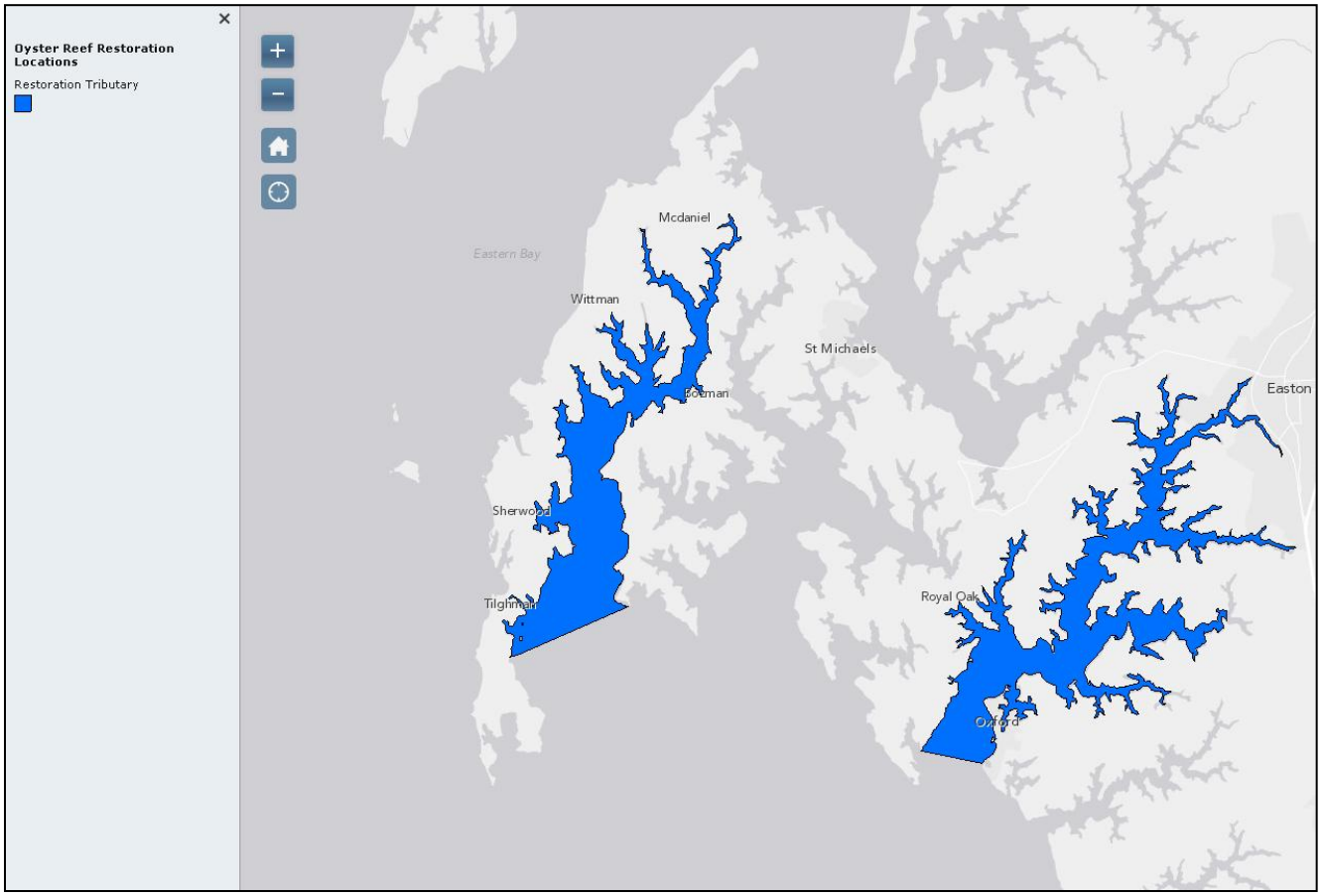
Related NOAA Resources

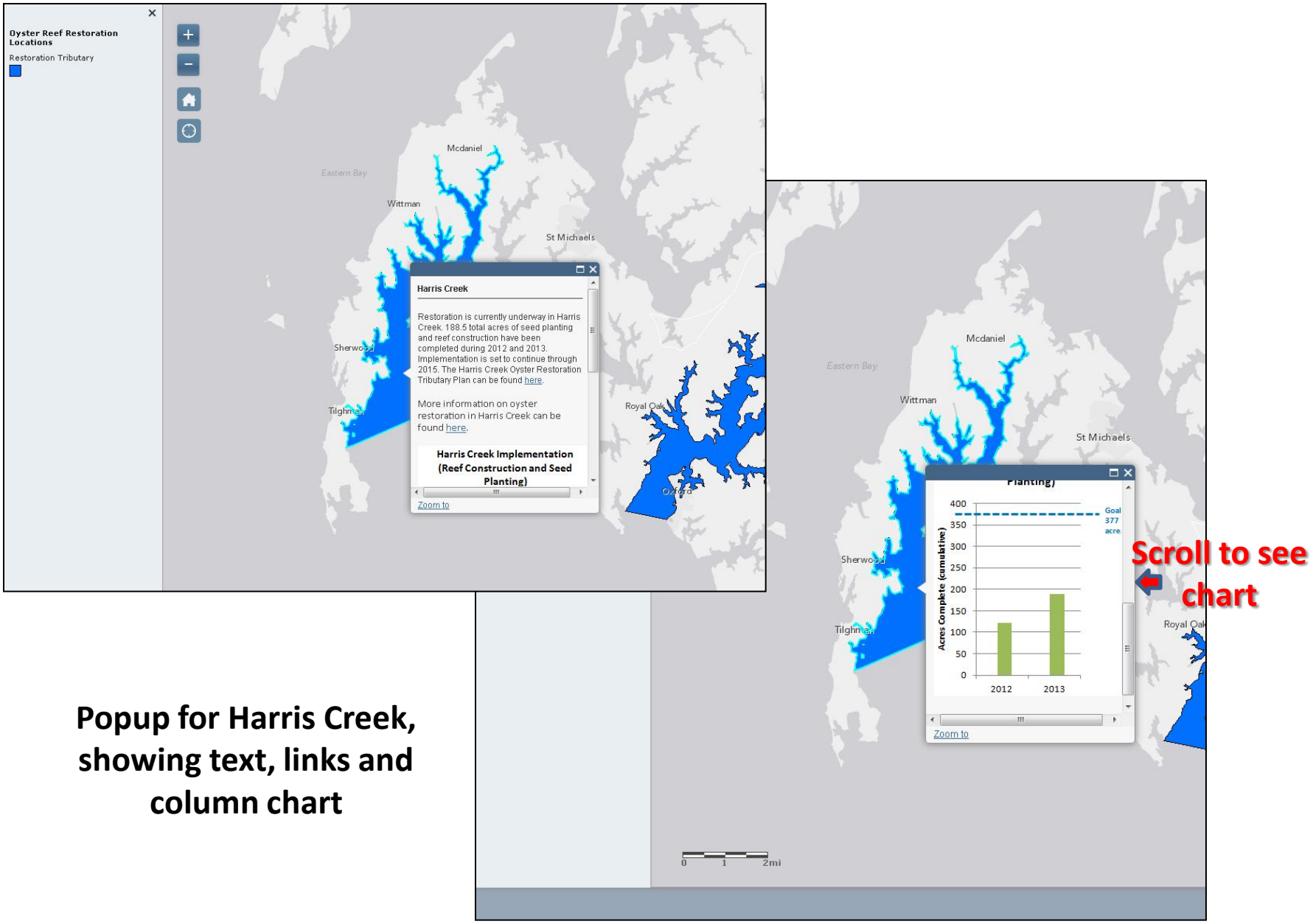
- NOAA Chesapeake Bay Office Acoustic Seafloor Mapping

Also of Interest

- Maryland Geological Survey
- Oyster Restoration Partnership

When zoomed in, tributary circles are replaced by polygon boundary for tributary

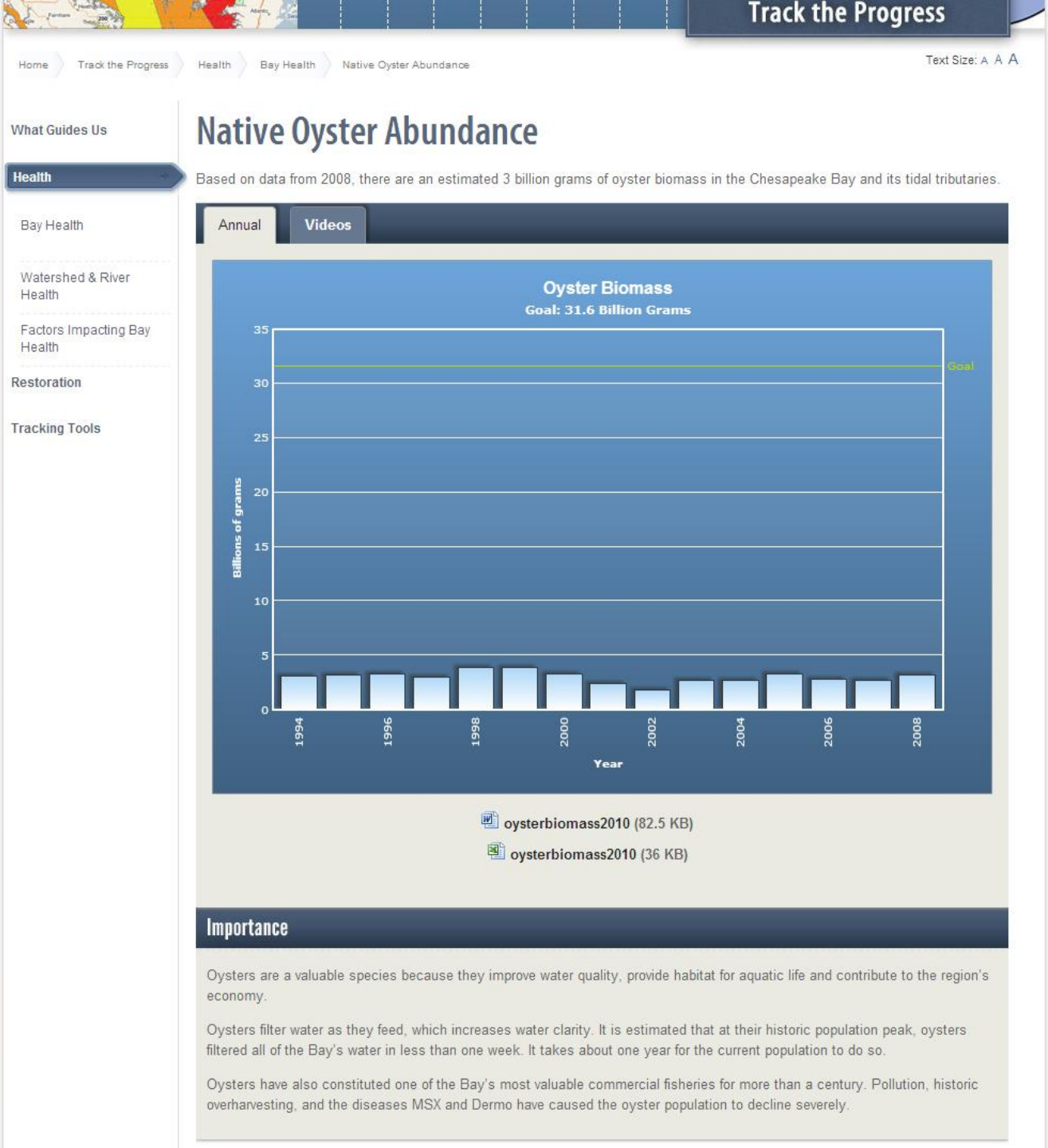




Scroll to see chart

Popup for Harris Creek, showing text, links and column chart

Current Oyster Abundance indicator page

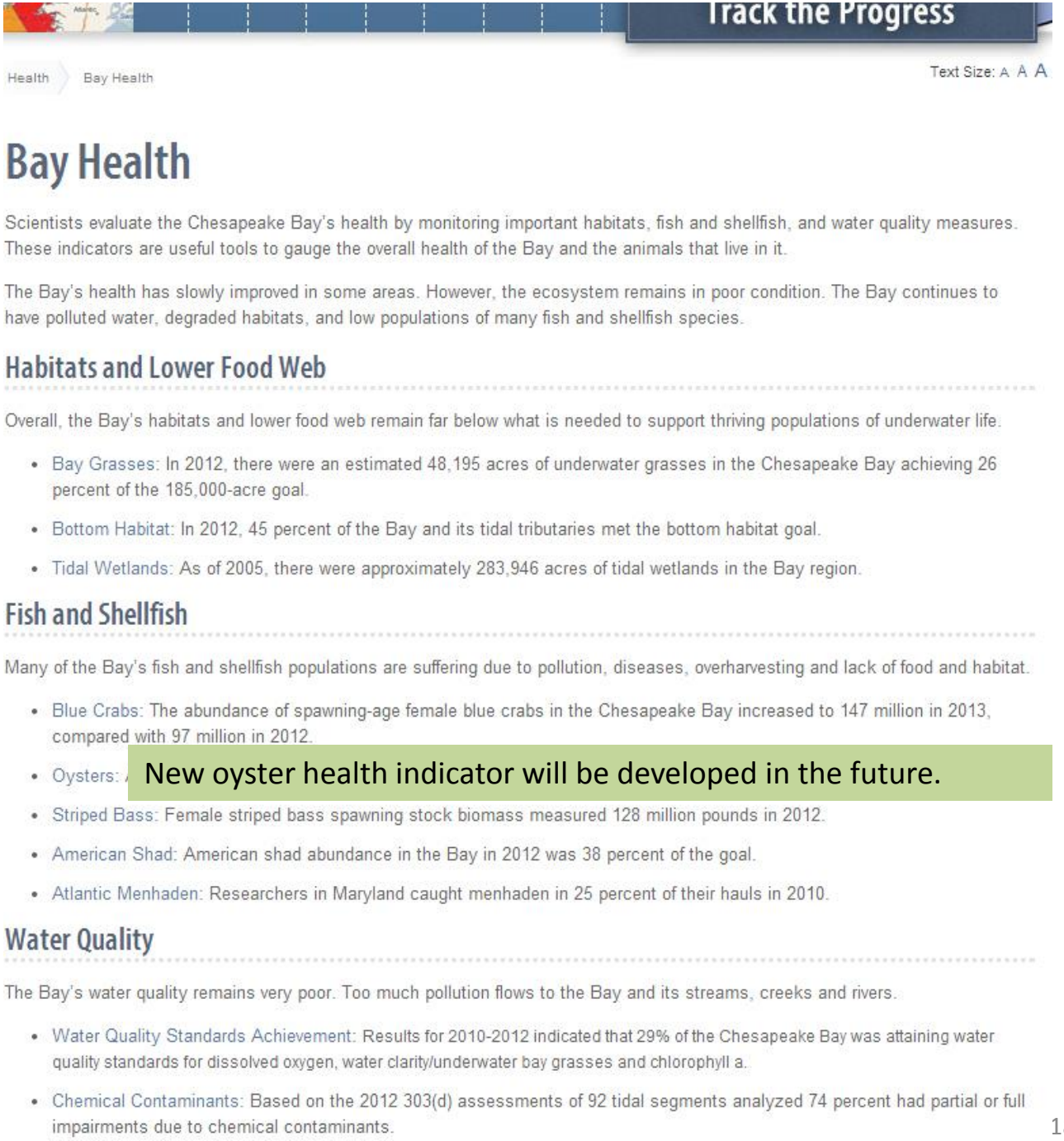


Revisions:

Keep in bulleted list but link to restoration page;

change bullet text;

remove old ind. page (maintain tracking of old bay agreement commitments separately)



Track the Progress

Health > Bay Health

Text Size: A A A

Bay Health

Scientists evaluate the Chesapeake Bay's health by monitoring important habitats, fish and shellfish, and water quality measures. These indicators are useful tools to gauge the overall health of the Bay and the animals that live in it.

The Bay's health has slowly improved in some areas. However, the ecosystem remains in poor condition. The Bay continues to have polluted water, degraded habitats, and low populations of many fish and shellfish species.

Habitats and Lower Food Web

Overall, the Bay's habitats and lower food web remain far below what is needed to support thriving populations of underwater life.

- Bay Grasses: In 2012, there were an estimated 48,195 acres of underwater grasses in the Chesapeake Bay achieving 26 percent of the 185,000-acre goal.
- Bottom Habitat: In 2012, 45 percent of the Bay and its tidal tributaries met the bottom habitat goal.
- Tidal Wetlands: As of 2005, there were approximately 283,946 acres of tidal wetlands in the Bay region.

Fish and Shellfish

Many of the Bay's fish and shellfish populations are suffering due to pollution, diseases, overharvesting and lack of food and habitat.

- Blue Crabs: The abundance of spawning-age female blue crabs in the Chesapeake Bay increased to 147 million in 2013, compared with 97 million in 2012.
- Oysters: New oyster health indicator will be developed in the future.
- Striped Bass: Female striped bass spawning stock biomass measured 128 million pounds in 2012.
- American Shad: American shad abundance in the Bay in 2012 was 38 percent of the goal.
- Atlantic Menhaden: Researchers in Maryland caught menhaden in 25 percent of their hauls in 2010.

Water Quality

The Bay's water quality remains very poor. Too much pollution flows to the Bay and its streams, creeks and rivers.

- Water Quality Standards Achievement: Results for 2010-2012 indicated that 29% of the Chesapeake Bay was attaining water quality standards for dissolved oxygen, water clarity/underwater bay grasses and chlorophyll a.
- Chemical Contaminants: Based on the 2012 303(d) assessments of 92 tidal segments analyzed 74 percent had partial or full impairments due to chemical contaminants.

Fall Back Option:

keep page;

revise title;

revise intro. text;

feature video;

link to MD and VA oyster surveys

What Guides Us

Health

Bay Health

Watershed & River Health

Factors Impacting Bay Health

Restoration

Tracking Tools

Native Oyster Health

New oyster health indicator will be developed in the future.

Annual | Videos

July 22, 2011

Oysters are one of the most recognizable species in the Chesapeake Bay, and one of the most important to the health of its ecosystem. Don "Mutt" Meritt from the University of Maryland explains the environmental role that oysters play and describes what scientists are doing to restore the iconic bivalve. Learn more about blue crabs in the Chesapeake Bay Program's online Field Guide.

Produced by Steve Droter
Stock Footage: University of Maryland Center for Environmental Science, Horn Point Oyster Hatchery
Music: "A Moment of Jazz" by Ancelin

Importance

Oysters are a valuable species because they improve water quality, provide habitat for aquatic life and contribute to the region's economy.

Oysters filter water as they feed, which increases water clarity. It is estimated that at their historic population peak, oysters filtered all of the Bay's water in less than one week. It takes about one year for the current population to do so.

Oysters have also constituted one of the Bay's most valuable commercial fisheries for more than a century. Pollution, historic overharvesting, and the diseases MSX and Dermo have caused the oyster population to decline severely.

Links to MD and VA oyster surveys