



Maryland State Lakes Protection and Restoration Fund

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Maryland Department of Natural Resources – Tidewater Ecosystem Assessment

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Background: the Invasive Hydrilla

- Hydrilla Discovery Timeline
 - 2013: Hydrilla discovered in Deep Creek Lake; likely introduced through recreational boating.
 - 2014: the department initiated 5-7 years of herbicide treatments for hydrilla control and a voluntary launch steward program to inspect vessels launching at the Deep Creek Lake State Park.
 - 2019: Ongoing herbicide treatments and launch steward program.



Background: Maryland House Bill 860

House Bill 860 (2015)

- Aquatic Invasive Species (AIS) – Inspection and Decontamination of Vessels (State Lakes Invasive Species Act of 2015)
 - After April 1, 2017, it would be illegal for the owner of a vessel to launch in Maryland waters unless the owner has cleaned the vessel and removed all visible organic material.
 - Violators subject to fines of up to \$2,500 for introducing Aquatic Invasive Species.
 - Department required to convene a workgroup to evaluate actions that reduce the spread of AIS from vessels placed in 16 lakes owned and/or managed by the state.

House Bill 860 Workgroup

- Convened Summer 2015. **Outcomes:**
 - Recommended actions to reduce the spread of aquatic invasive species from vessels placed in lakes that are owned or managed by the state.
 - To continue the voluntary vessel inspection and education and outreach effort.
 - Lake management units would identify the most appropriate aquatic invasive species options to implement at each lake.
 - Conducted baseline survey of all 16 state lakes.
 - Provided a written report to the legislature by December 31, 2015.

Background:

Survey of Aquatic Invasive Species in Lakes

- To establish a baseline, in the summer of 2016 DNR biologists visited each state lakes and gathered data on submerged aquatic vegetation, mollusks, and algae.
- 29 species of submerged aquatic vegetation and six species of floating or emergent plants were documented during this survey. Invasive species were found in 11 of the 16 reservoirs.
- Results are summarized in a report available online:
<https://dnr.maryland.gov/Invasives/Documents/Aquatic-Invasive-Reservoir-Summary.pdf>



Background: Senate Bills 396 & 501

Senate Bill 396 (2017) -Protection and Restoration of State-owned Lakes

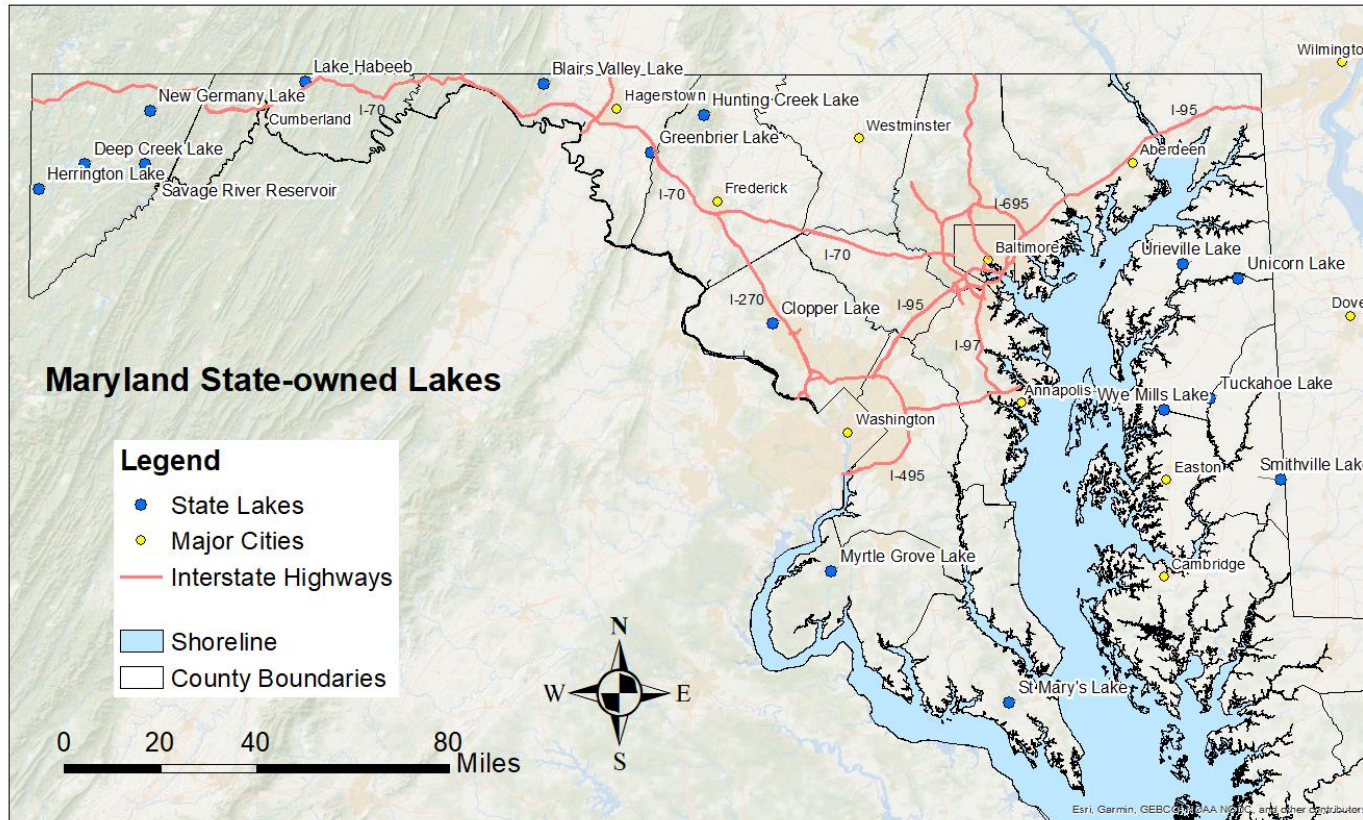
- Established the State Lakes Protection and Restoration Fund as a special, non-lapsing fund.
- Specified the **purpose of the fund is to protect and restore state-owned lakes.**
- Required the Department of Natural Resources (DNR) to develop a specified budget.
- Requiring DNR, in coordination with local governments, organizations, and citizens, to develop an annual work plan that prioritizes and details projects that will receive funding from the fund.

Senate Bill 501 (2018)- State Lakes Protection and Restoration Fund

- The governor approved the plan on May 15, 2018.
- Established funding of \$1,000,000 annually beginning in Fiscal Year 2020 and each following fiscal year for a total of three years.
- Purpose of the fund is to protect state-owned or state managed lakes by:
 - Removing sediment
 - Treating contaminated sediment
 - Preventing the spread of invasive species
 - Improving ecological and recreational value
 - Taking any other action the department deems necessary



16 State-Owned Lakes



Name	County	Type of State Land
Blairs Valley Lake	Washington	Wildlife Management Area
Clopper Lake	Montgomery	State Park
Deep Creek Lake	Garrett	State Park
Greenbrier Lake	Washington	State Park
Herrington Lake	Garrett	State Park
Hunting Creek Lake	Frederick	State Park
Lake Habeeb	Allegany	State Park
Myrtle Grove Lake	Charles	Wildlife Management Area
New Germany Lake	Garrett	State Park
Savage River Reservoir	Garrett	State Park
Smithville Lake	Caroline	Fisheries Management Area
St Mary's Lake	St. Mary's	State Park
Tuckahoe Lake	Caroline	State Park
Unicorn Lake	Queen Anne's	Fisheries Management Area
Urieville Lake	Kent	Fisheries Management Area
Wye Mills Lake	Queen Anne's	Fisheries Management Area

Status of Maryland Lakes

“Lakes” of Maryland

- No naturally-formed lakes
- Hundreds of artificial water bodies: lakes, ponds, reservoirs, etc.
- Popular for outdoor recreation: fishing, swimming, boating, etc.
- State-owned lakes managed by three DNR units:
 - Maryland Park Service
 - Fishing and Boating Service
 - Wildlife and Heritage Service.

Challenges to the “Aging” Lakes

- Almost all 50 years old or older.
- Often filled with nutrient-bearing sediments, grow shallower, and colonized by native and non-native submerged aquatic vegetation – ecologically beneficial, but can impede recreation.
- More abundant algae (naturally important in lake ecosystems) as lakes become eutrophic with excess nutrient pollution. Harmful/toxic algal blooms occur in some lakes.
- Most state-owned lakes aren’t used for drinking water and are not a focus for nutrient sampling. Historically, there has been little water quality monitoring in most of Maryland’s lakes.

Potential Lake Enhancements



Dredging to increase water depth



Invasive species removal: fisheries



Invasive species removal:
Aquatic plants



Fish stocking



Aquatic habitat enhancement:
In-water structures

Potential Future Lake Enhancements



Water quality monitoring



SAV monitoring



Native SAV restoration



HAB assessment



Herbicide Treatments



Launch steward program

Other ideas:

- Spawning area improvements: in-water grading, gravel installation
- Angler access improvements: docks, ramps, trails
- Stream habitat improvement
- Shoreline stabilization

Monitoring to Improve Maryland's Lakes

- Chesapeake Bay and streams have dedicated monitoring programs vs. No such monitoring for lakes
- Except for Deep Creek Lake, most lakes haven't been ecologically monitored for ~25 years
- Basic information is needed to effectively manage the lakes and identify the projects that will enhance ecosystem values.

Lake monitoring: cost-effective way to maximize ecological and recreational value.

With targeted monitoring, lake managers can make more informed decisions to improve ecological and recreational values of lake resources.

Lake monitoring could assess:

- Shoreline conditions and lake-wide bottom depths
- Lake bottom sediments and benthic invertebrate conditions
- Fish populations and fishability
- Water quality of lake and feeder streams
- Algal community, including harmful algae
- Underwater plant abundance and community composition
- Presence of invasive plants and fish



Harmful Algae Monitoring in 2019

- Summer 2019: 8 lakes sampled
 - Eastern Shore (Smithville, Tuckahoe, Unicorn, Urieville, Wye Mills)
 - Central Maryland (Clopper, Hunting Creek, Greenbriar)
- No harmful algae detected in Tuckahoe or Greenbriar.
- Potentially toxic cyanobacteria found in 6 lakes:
 - Low microcystin found at 3 lakes
 - Smithville, Wye Mills, Clopper
 - Anatoxin below detection limits
 - Unicorn, Clopper and Hunting Creek
 - Filamentous algae mats produced toxins
 - Unicorn, Smithville and Wye Mills (*Lyngbya*, *Microseria wollei*)
 - Urieville (saxitoxin results not back from lab)

Clopper Lake – scum formed near fishing area.



Smithville Lake – scum formed near dam.



Timeline

The Maryland Department of Natural Resources held four open houses around the state in October, 2019. Suggestions and comments will be reviewed.

The department will prepare a work plan and budget in 2020 that outline the projects to be completed with the second \$1 million.

Second round of funding will be available July 1, 2020.

Projects are projected to end June 30, 2022.

Questions from the webinar registration:



Open Online Q&As Session:

Please either type your questions/comments or request to unmute the speaker and talk into the microphone!



Submit a comment!

If you have thought of issues we have missed or potential solutions that would help us meet our goals, please provide us with your comments. You can submit your comments in two ways:

1. Write your comments down and mail them to us:

**DNR- Tidewater Ecosystem Assessment
State Lakes Comment
580 Taylor Ave. D-2
Annapolis, MD 21401**

2. Submit your comments by e-mail to:

**Yishen Li, Natural Resources Biologist
at
yishen.li@maryland.gov**

To learn more about the State Lakes Fund, please visit our website at:

<https://dnr.maryland.gov/Pages/state-lakes.aspx>

[NOT PRESENTED. FOR POTENTIAL REFERENCE ONLY.]

Algal Toxins low in 2019

- Toxin levels well below the recreational contact threshold (10 ppb microcystin)
 - Microcystin 0.81- 2.67 ppb
- Toxin in benthic mats
 - Microcystin 3.2 to 5 ppb
- Three 'Animal Safety Alerts' were issued.
 - Clopper, Wye Mills, Smithville
 - Pets, especially dogs, more likely exposed to toxins by drinking the lake water directly and/or licking their coats after swimming in bloom water.
 - Do not let your pets in cyanobacteria blooms!
- Nov. 2019: 680 ppb in Hunting Creek (drinking water in season)

Bloom Level $>50,000$ cells/ml, *Microcystis*
 $>100,000$ cell/ml, total potentially toxic species
World Health Organization Microcystin Threshold = 10 ppb

