MARYLAND DEPARTMENT OF NATURAL RESOURCES

2020 YEAR IN REVIEW

DEEP CREEK LAKE, MARYLAND

The following is a summary of activities conducted by the Maryland Department of Natural Resources in support of the management of Deep Creek Lake, Maryland. Only a small portion of the department's efforts are highlighted here. This newsletter is usually generated twice a year (winter and summer) but due to COVID-19 limitations during 2020, the Summer 2020 Newsletter was not completed. As such, this update covers the full year's efforts.

Record year for Launch Steward Program inspections and interceptions

If the 2020 boating season seemed exceptionally busy…. rest assured it actually was! The Deep Creek Lake launch stewards inspected nearly 6,000 boats during the 2020 boating season. This is roughly 2,000 more than a typical boating season. Additionally, there were more vessels found carrying aquatic invasive species (AIS) in 2020 than found in all previous years combined (see table). The department would like to thank the launch stewards for their efforts this past year and acknowledge their keen ability to catch the numerous potential AIS introductions, from juvenile zebra mussels to hydrilla.

Of note were the number of boats (29 in total) found carrying zebra mussels, which were first found on the 4th of July weekend and continued through Labor Day 2020. Boats carrying zebra mussels were found nearly every weekend from July 4th to Labor Day weekend. Most boats seemed to be originating from the Ohio River in Pittsburgh, Pennsylvania, however boats with zebra mussels were found coming from Ohio and as far west as Indiana. It is expected, part of this can be attributed to the COVID-19 pandemic, with more people vacationing locally. However, AIS introductions continue to expand nationally, as boats are seen moving all over the country, making communicating the CLEAN, DRAIN, and DRY message so important.

Pictured Above: Juvenile and smaller adult zebra mussels found attached to boats over the 4th of July 2020 holiday week. Boats were intercepted by DCL Launch Stewards and cleaned by local marinas.

The launch steward program represents a partnership between Garrett College's Natural Resource and Wildlife Technology (NRWT) program and DNR's Maryland Park Service. The program remains one of the department's best lines of defense against aquatic invasive species (AIS) at Deep Creek Lake and certainly a big part of the AIS educational effort.

Year	Number of Launch Stewards	Number of Vessels Inspected	Number of vessels with organic matter	Number of vessels carrying AIS	% of total vessels inspected carrying organic matter
2013	NA	NA	NA	NA	NA
2014	2	1066	23	not specified	2.20%
2015	5	2256	41	not specified	1.80%
2016	6	3824	22	9	0.50%
2017	5	3866	127	13	3.30%
2018	4	3682	115	4	3.10%
2019	4	3841	185	5	4.80%
2020	4	5814	409	29	6.90%

Table above summarizes launch steward inspection data from 2014-2020

Lake water quality monitoring continues; continuous monitoring efforts focus on North Glade Cove and Pawn Run Cove in 2020

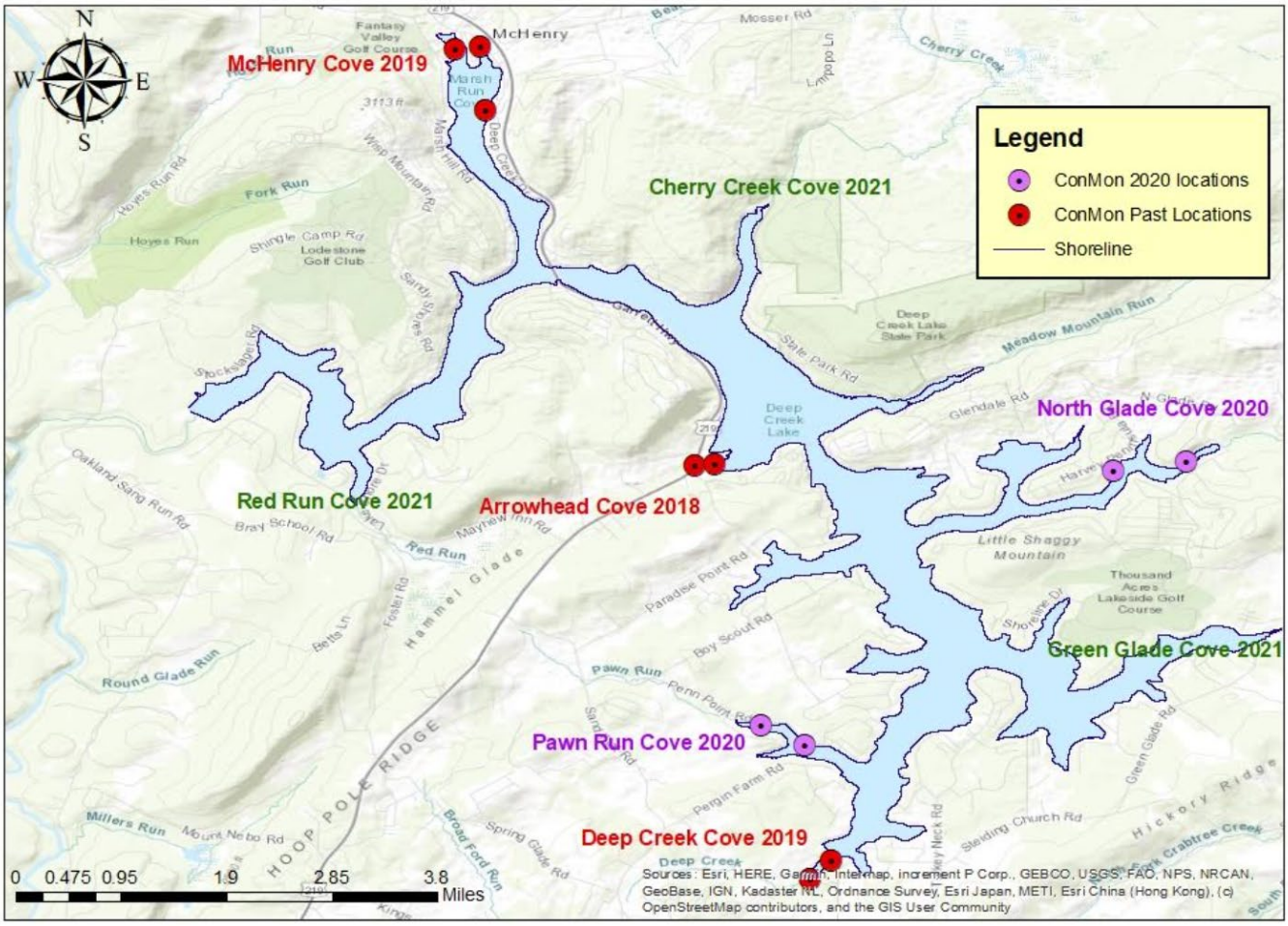
Lake water quality monitoring continued during the 2020 sampling season with monthly sampling taking place from June through October. Due to restrictions related to the COVID-19 pandemic, the department was not able to begin water sampling until June 2020. In a normal year, water quality sampling normally begins in April and runs through October.

Continuous water quality monitoring (using automated water quality meters) also took place during a similar time frame (July-October 2020). Again, sampling was delayed a bit due to issues related to COVID-19, however staff was able to deploy meters in the field, collecting data by July 2020. Continuous monitoring efforts this year focused on two coves in particular, North Glade and Pawn Run coves. Two meters were placed in each of these coves from July-October 2020, one close to the tributary/stream and the other in the cove in an effort to try and monitor impacts from the watershed as well as those originating in the lake (i.e. boat traffic etc.).

This data will be analyzed and compared to previous years monitoring data from other coves in the lake. It is hoped that within the next few years, the department will have enough water quality meters to have sampled all 10-12 coves of particular interest. Due to the incomplete nature associated with the 2020 sampling season, it is anticipated that DNR will revisit efforts in North Glade Cove and Pawn Run Cove so that data from a FULL sampling season (April-October) can be collected. Results of both efforts have

not fully been analyzed yet. The sampling year will likely prove interesting given precipitation amounts over the course of the summer months were more typical and not as wet as previous years.

DNR Continuous Water Quality Monitoring Locations



Pictured above: Map showing locations of continuous water quality meters; 2020 monitoring locations are denoted by purple circles; 2021 tentative cove sampling locations shown in green

On a side note, the Deep Creek Watershed Foundation has been working with the department over the past few years and plans to support the department's continuous water quality monitoring effort by providing equipment. Additionally, the Deep Creek Watershed Foundation worked with the department in late 2019-early 2020 to develop an educational video highlighting the water quality monitoring effort on-going at Deep Creek Lake. The video was sponsored by the Deep Creek Watershed Foundation and can be viewed on their website HERE.

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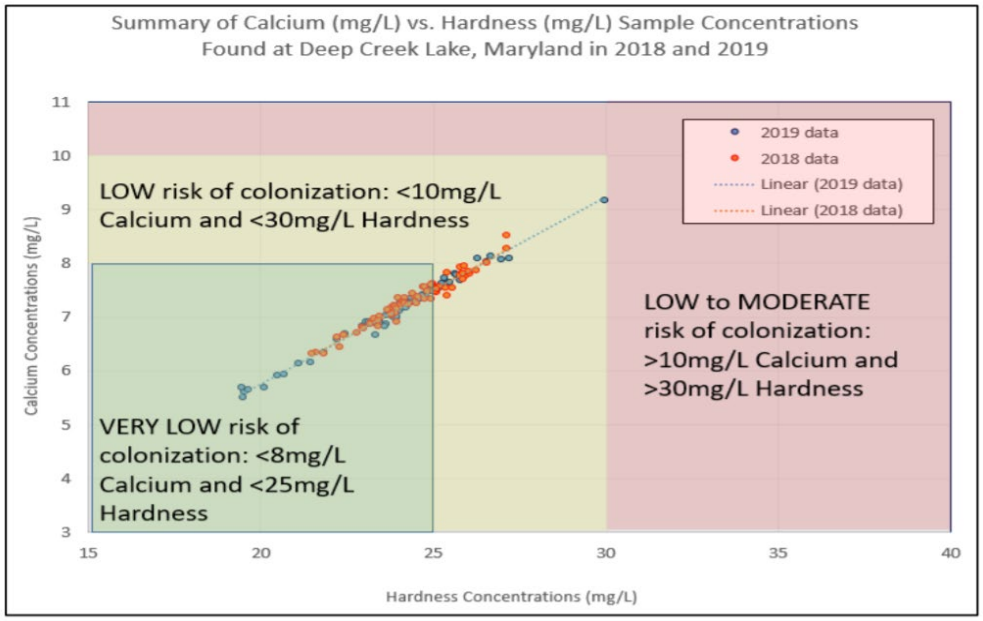
Aquatic Invasive Species Update

Zebra mussel habitat suitability monitoring continues with limitations

Additional water quality monitoring, in support of the zebra mussel habitat suitability monitoring, also took place this summer thanks to financial support from the Deep Creek Watershed Foundation. Calcium and water hardness sampling took place in June, July, and October 2020. Results of the 2018 and 2019 sampling season can be seen summarized in the below graph. To read the full report, you can go to the Eyes on Deep Creek Lake webpage or click here. The 2020 sampling season represents the third consecutive year of this effort, with the 2020 sampling season likely providing results more typical of a normal to slightly drier precipitation year. The 2018 and 2019 sampling seasons were very wet summers compared to the 2020 season, which will likely provide some balance. Based on data from the 2018 and 2019 sampling seasons, it appears as though water quality parameters important for zebra mussel growth (calcium and water hardness) are in the low to very low risk category. This does not mean zebra mussels could not survive in the lake, but rather that the calcium and water hardness concentrations observed in Deep Creek Lake (7-8mg/L average calcium levels) are lower than levels thought to be necessary to support North American populations of zebra mussels at minimum of 10mg/L calcium. This suggests conditions In Deep Creek Lake are less than ideal for zebra mussel growth.



Above: Graph displaying DCL calcium and hardness concentrations 2018-2019

Due to COVID-19 restrictions and limited funding for the 2020 sampling season, no visual surveys were done specifically to check for the presence of zebra mussels in the lake. Zebra mussel monitoring plates were deployed in June and retrieved in Sept./October and no evidence of zebra mussels were found on any of the monitoring plates. The department hopes to revisit the underwater surveys for the early detection of zebra mussels again in 2021 if funding and COVID-19 restrictions allow. As of 2020, no evidence of zebra mussels being present in Deep Creek Lake have been found. A cautionary note, biologists do know that zebra mussels are present in nearby waterbodies in Morgantown, West Virginia and in Pittsburgh, Pennsylvania and parts of the Chesapeake Bay, making AIS education and prevention activities extremely important.

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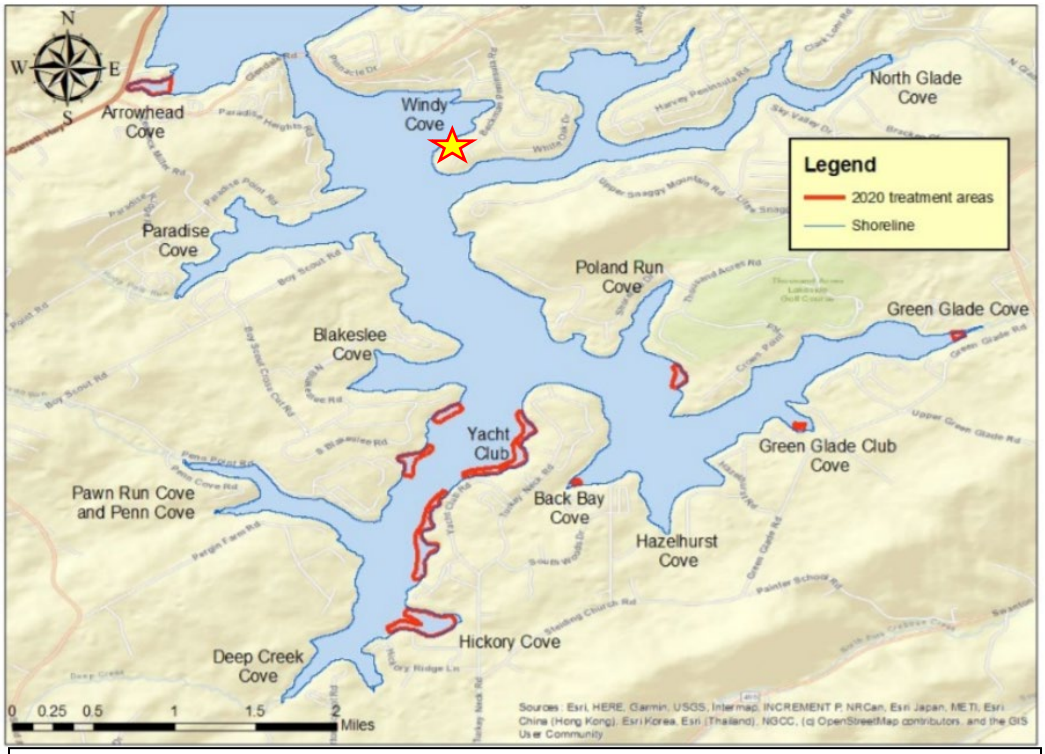
Hydrilla herbicide treatment and monitoring activities

Hydrilla control activities continued in 2020 to include herbicide treatment of infected areas. Hydrilla is another invasive aquatic plant that was first found in Deep Creek Lake in 2013 and biologists and resource managers have been successfully controlling the population in the lake with herbicide treatments from June to August. The herbicide treatment activities continued to be effective and no live hydrilla was found in any of the treatment zones at any point in 2020. Unfortunately, a new bed of hydrilla was found in Windy Cove in September 2020 (see adjacent map). The bed was successfully treated with herbicide one week after the discovery to control the growth of the plant and improve the ability of managers to limit further spread. This bed will be added to the 2021 herbicide treatment plan.

2020 DNR Hydrilla Herbicide Treatment Locations at Deep Creek Lake, Maryland



Above map shows locations of 2020 hydrilla herbicide treatment denoted by red polygons; yellow star shows new hydrilla bed found September 2020

Based on the biology and reproductive nature of hydrilla, experts suggested areas infected with hydrilla would need to be successfully treated with herbicide for 8-10 years before it could be considered eradicated from that area. The 2021 summer season will represent the eighth consecutive year of herbicide treatment. Since 2014, a total of 15 locations, or treatment zones, have been found to have hydrilla and treated with herbicide. Based on the success of previous years' efforts, managers expect to only treat 9 of the 15 locations with herbicide in 2021, citing no hydrilla has been found at the other 6 locations for at least 3 years. This is good news for biologists and managers, however the new findings of hydrilla in Windy Cove in 2020 and Arrowhead Cove in 2017 underscore the need to prevent future introductions of hydrilla and continue to impress upon boaters and lake users the importance of CLEANING, DRAINING, and DRYING boats and gear that move from one water body to another.

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Underwater plant monitoring continues

Despite COVID-19 limitations on field work in 2020, biologists and department staff were able to complete the annual submerged aquatic vegetation (SAV) monitoring efforts. These efforts include SCUBA diver monitoring plants at eight locations around the lake as well as completing a shoreline survey of the entire 68 miles of shoreline by boat, documenting what species of plants occur where in the lake. Both efforts are part of the long-term monitoring efforts established in 2010 to monitor the diversity and abundance of SAV in the lake. SAV, along with water quality, are good indicators as to the health of the lake as SAV provide important habitat for fish and other organisms in the lake and serve many ecological functions that help keep the lake healthy. The plants help absorb excess nutrients in the water, filter out sediments from the water column, and absorb and diminish wave energy. The 2020 SAV report is expected to come out in late Spring 2021 and should summarize findings from 2010-2020. To view past reports go to the Eyes on Deep Creek Lake webpage.

Despite the importance of SAV to lake health, some lake front property owners have expressed concern about the abundance of plants in the lake and especially in the shallower areas around docks. One species in particular, broadleaf pondweed (*Potamogeton amplifolious*), seen below with floating leaves visible at the surface, has been the cause of many calls to the department over the past few years. It is a native species, but new to the lake in 2013 and can survive year round in the lake. Longer growing seasons (caused by warmer temperatures in the spring and fall), higher water levels in the summer months, winter draw- down levels, and ice cover and depth in the winter months are among the many factors that can influence what plants are found where in the lake. The biology and reproductive strategy of certain species of plants can also affect the survivability of plants in an area year after year. That said, biologists and resource managers are tasked with managing the SAV community to provide for recreational use and ecological

Pictured above: Broadleaf pondweed near the Sky Valley swim area

sustainability and work diligently to educate stakeholders and lakefront property owners as to the importance of these plants in maintaining a healthy lake ecosystem. Lakefront property owners can contact department staff if they have questions or concerns about the plants around their area of use or what activities are permitted to control plants in their area of use. As many of the lake's SAV species actively spread from cuttings or fragments, it is critically important that lakefront property owners contact department staff **before** undertaking any activities intended to control growth. In addition to not wanting to contribute to the spread of a native or invasive plant, it is also important for property owners to understand what they are legally allowed to do under COMAR (Code of Maryland Regulations) law. For more information, call the Lake Management Office at 301-387-4112.

State Lakes Protection and Restoration Fund enters third year of funding

Almost all of Maryland's state lakes are 50 years old, or older, and are typically filled with nutrient-enriched sediments. As our lakes become shallower due to sedimentation, they become colonized by native and non-native submerged aquatic vegetation (SAV) and begin to experience more abundant algae and sometimes even harmful algae blooms. The funding provided through the State Lakes Protection and Restoration Fund has been instrumental in many important projects, especially at Deep Creek Lake, where we will be working on the third year of funding projects beginning in July 2021.

Deep Creek Lake continues to receive a significant amount of the annual $1 million in the Governor's appropriation to the Fund. As Maryland's largest lake and the economic driver for western Maryland, it is critical to fund projects that help protect and preserve one of our most treasured resources. Projects at DCL include:

- Direct funding to stakeholders to offset some of the costs for shoreline stabilization projects;
- Funding for hydrilla herbicide control treatments that have been successful in eradicating this invasive species in many Deep Creek Lake coves;
- Funding to improve fish habitat, thereby increasing the recreational value of the lake.

Although the third and final year of the appropriation will end after this fiscal year (July 1, 2021 - June 30, 2022), there is current legislation (State Bill 0618/House Bill 0833) to remove the sunset and increase the appropriation amount from $1 million to $3 million dollars each year for the next 5 years. Should these bills pass, they will benefit not only Deep Creek Lake, but all 16 state owned lakes in Maryland.

Upcoming DCL Public Meetings: The next meeting of the Deep Creek Lake Policy and Review Board will be held on July 26, 2021. For meeting information, go to the DCL NRMA website or click HERE.

Contact Information: For more information concerning the Department of Natural Resources monitoring activities at Deep Creek Lake, contact Julie Bortz at Julie.bortz@maryland.gov. Julie is a local Natural Resource Biologist who represents DNR on the Administrative Council.