



On-Site Lake Evaluation Record

Lake Name: Duck and Green Lakes

County: Grand Traverse

Evaluated by: Casey Shoaff Reviewed by: Bre Grabill Date: 8 Aug 2019, 11 Sept 2019

Purpose of evaluation: End of season Survey

Evaluations Performed

Aquatic Vegetation Evaluation

- Aquatic vegetation survey
- Aquatic vegetation brief check

Water quality sampling

- On-site (Temperature, DO, Secchi disk)
- Water samples collected for _____ analysis

Vegetation evaluation methods

- Visual evaluation
- Sample collection with rake
- Sonar profiling
- GPS-mapped sample locations

GPS data collection

- Depth survey
- Shoreline mapping
- Reference point location

Other _____

Overall Condition of Lake

- excellent (no problems or developing problems noted)
- very good (Continue current program)
- fair (management required soon)
- poor (management needed as soon as possible)
- very poor (management action past due—IMMEDIATE response required)

Problems Noted

- Growth of exotic plants
 - Eurasian watermilfoil - Duck Lake
 - Phragmites
 - Starry stonewort
- Excessive growth of native plants (note plant species and mark locations on map)
- Excessive filamentous algae growth (mark location on map)
- Poor water clarity
- Blue-green algal blooms



PLM Lake & Land Management Corp.

Northern Division

P.O. BOX 424 Evart, MI 49631
800-382-4434 ext. 2200 (o) 231-372-5900(f)
www.plmcorp.net

RECOMMENDATIONS

- X Monitoring Program:
Continue monitoring program next season: Yes, No
- X Herbicide application: Continue Program Next Season
Need for herbicide treatments next season: urgent, serious, moderate, slight

SUMMARY

Duck Lake was surveyed and treated throughout 2019 for control of Eurasian watermilfoil. Our spring survey documented very little EWM growing throughout Duck Lake. On June 11, we treated 3.3 acres of EWM. We then surveyed again in July, and treated following the survey (about 1.5 acres). Our AVAS survey was completed 8 August 2019 and found 16 acres of EWM that was then treated on 26 August 2019. A spring survey will be completed to see what areas will be in need of treatment next year.

Management of EWM is an annual requirement and using systemic herbicides to attack the root system of the EWM can assist in providing longer term control. Previous infestation beds need to be monitored regularly for annual new growth, in addition to surveying the entire lake for any new infestations. EWM can pop up quickly and spread quickly, so it is important to stay on top of the plants within Duck Lake.

Phragmites was found in a few areas on the lake as well. Invasive Phragmites should be targeted for control in the future. Chemical spraying is known as the most appropriate control measure for Phrag.

Native plants were abundant throughout the lake and diversity was good. The treatment areas were heavily infested with native plant growth both pre and post treatment, evidence of the selectivity of EWM treatments. It is recommended to promote native plant diversity throughout the lake. Native plants are required for a healthy and thriving lake ecosystem and are encouraged as part of this management program. If natives do become a nuisance, management efforts should include raking beaches when possible or very isolated, minimal herbicide treatments can also be an option. There are a few areas on Duck Lake with native plants at nuisance levels.

Green Lake was surveyed in September 2019. This annual survey was done to identify any exotic plants in the lake as well as to track native plants. The survey found no EWM or other submersed exotic plants, but did find a few areas of Phragmites as well. The native plant community was thriving and numerous species were found throughout the lake. It is recommended to survey Green Lake annually to stay on top of any new introduction. In addition to the annual AVAS, it is recommended to have riparian eyes keep a look out on Green Lake and Duck Lake!

Please feel free to contact me with questions on your survey results of Green & Duck Lakes. Thank you for choosing to work with PLM!

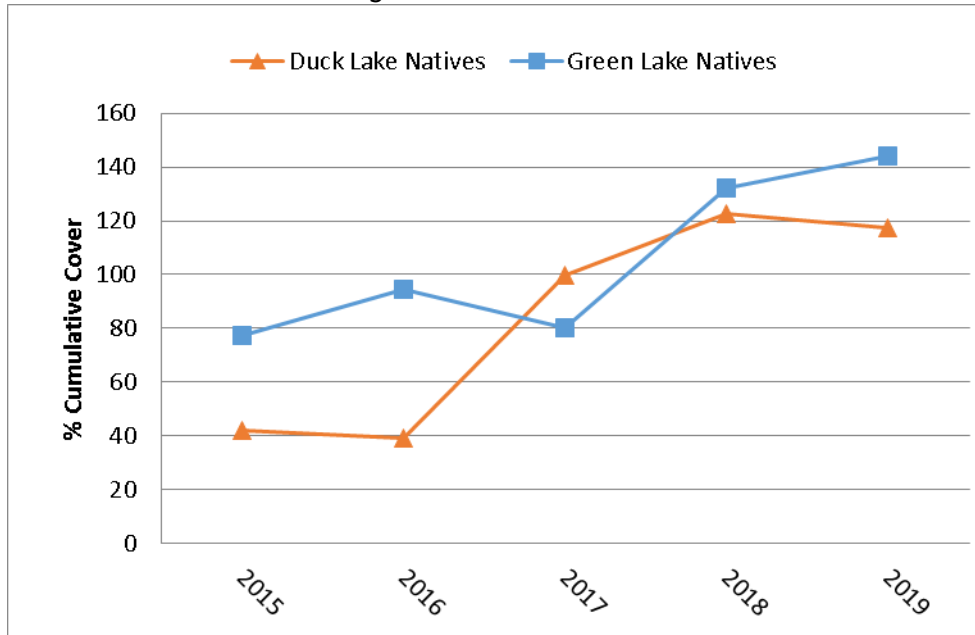
Respectfully,

A handwritten signature in cursive script that reads "BreAnne Grabill".

BreAnne Grabill, Environmental Scientist
Northern Lakes Manager
PLM Lake & Land Management Corp. North
breg@plmcorp.net

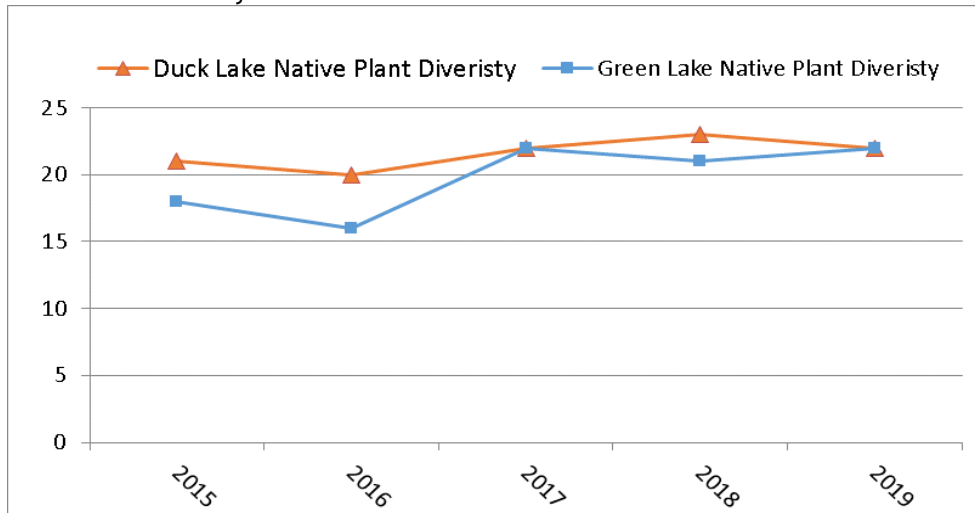


Graph 1: Native Plant Cumulative Coverage of Duck and Green Lakes



Native Plant populations are healthy and thriving in both lakes. Successful EWM treatments remove exotic species while promoting and maintaining native plant communities, which was successfully done in 2019.

Graph 2: Native Plant Diversity



Native Plant diversity in both lakes is very good. As many native species as possible will benefit your lakes. Native plants can help defend against new exotic species and they promote a healthy fishery. Both lakes had 22 native submerged/emergent species.