# Eurasian water-milfoil (Myriophyllum spicatum) **SCUBA Dive Monitoring Survey**

**George Lake - WBIC: (2465700) Bayfield County, Wisconsin** 



Eurasian water-milfoil (*Myriophyllum spicatum*)

Jellyfish among Water Marigold and Small Pondweed (Berg 2016)

Project Initiated by: The Wisconsin Department of Natural Resources and the Town of Barnes - Aquatic Invasive Species Committee





Large-leaf Pondweed Bed (Berg 2016)

Surveys Conducted by and Report Prepared by: Endangered Resource Services, LLC Matthew S. Berg, Research Biologist St. Croix Falls, Wisconsin September 3, 2016

# TABLE OF CONTENTS

	Page
LIST OF FIGURES	ii
INTRODUCTION	1
METHODS	2
RESULTS	2
DISCUSSION AND CONSIDERATIONS FOR MANAGEMENT	3
LITERATURE CITED	3

# LIST OF FIGURES

	Page
Figure 1: George Lake Bathymetric Map	1
Figure 2: Sterile Flats in North Bay/Low Density High Diversity Native Beds Along the South Shoreline (with Jellyfish Photo Bomb)	2
Figure 3: Water Marigold – EWM Look-alike	3

## **INTRODUCTION:**

George Lake (WBIC 2465700) is a 50 acre seepage lake on the west-central edge of Bayfield County, Wisconsin in the Town of Barnes (T45N R9W S18 SE SW). It reaches a maximum depth of 50ft at the southwest end of the southern basin and has an average depth of approximately 16ft (WDNR 2009). The lake is oligotrophic bordering on mesotrophic in nature with Secchi readings from 2000 to 2016 averaging 13.0ft (WDNR 2016). This good to very good water clarity produced a littoral zone that extended to over 25ft in September of 2016. The bottom substrate is predominately sand along the shoreline, but this gradually transitions to sandy muck at most depths over 6ft (Figure 1) (Sather et al. 1971).

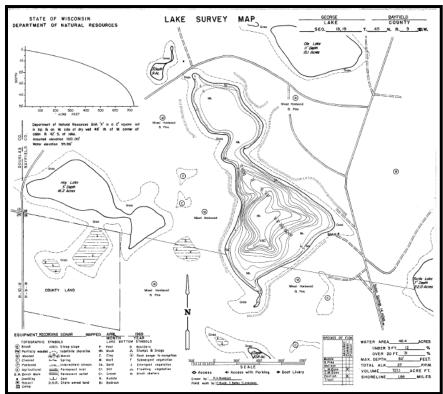


Figure 1: George Lake Bathymetric Map

Eurasian water-milfoil (*Myriophyllum spicatum*) (EWM) is an exotic invasive plant species that is a growing problem in the lakes and rivers of northwestern Wisconsin. Present in nearby Tomahawk and Sandbar Lakes since 2004, EWM was first found in George Lake in July, 2011. Because of this discovery, the Town of Barnes (TOB) – Aquatic Invasive Species Committee and the Wisconsin Department of Natural Resources (WDNR) authorized a lakewide systematic point-intercept macrophyte survey on August 4<sup>th</sup>, 2011. This survey was used to help plan an herbicide treatment on June 5<sup>th</sup>, 2012. Although volunteers have searched the lake many times since that treatment, they have been unable to locate any surviving EWM. Follow-up point-intercept surveys in 2013 and 2015, and dive surveys in 2013, 2014, and 2015 also failed to locate any surviving EWM. In 2016, to make sure EWM had not reappeared, the TOB requested a single SCUBA transect survey in the south basin. This report is the summary analysis of that field survey which occurred on September 3<sup>rd</sup>.

## **METHODS:**

# **EWM SCUBA Survey:**

We used SCUBA to look for EWM plants around the south basin; especially focusing on the southeastern shoreline where EWM was the most abundant prior to the herbicide treatment. Joined by Ingemar Ekstrom – TOB volunteer, we swam transects parallel to shore throughout the littoral zone. On the way to and from this area, especially in the north bay where EWM was well established before the 2012 treatment, we looked for any evidence of EWM's characteristic red growth top.

## **RESULTS:**

# **EWM SCUBA Survey:**

The initial boat survey throughout the north bay, the neck, and the eastern and southern shorelines failed to turn up any evidence of EWM – either rooted or floating fragments. Plant growth in general was much reduced compared to years past, and we saw no evidence of canopied submergent plants anywhere in the lake other than a few scattered lilypads in the south bay.

During the SCUBA transects, we could see approximately 15ft in each direction which allowed us to follow the 5 and 15ft bathy rings. Similar to the majority of the north bay, many areas ringing the south basin were a sterile muck with little to no plant growth (Figure 2). However, there were patchy islands of vegetation scattered in water between 5 and 10ft that tended to have high richness and diversity, but only low to moderate density. We again turned up nothing to suggest that EWM was still present anywhere in the lake. Water marigold (*Bidens beckii*), the lake's only near EWM look-alike, was common in a band from approximately 6-8ft (Figure 3). Although it was more common than at any point in the past, it never canopies on the lake and is generally not bed forming.





Figure 2: Sterile Flats in North Bay Low Density High Diversity Native Beds Along the South Shoreline (with Jellyfish Photo Bomb)



Figure 3: Water Marigold – EWM Look-alike

#### DISCUSSION AND CONSIDERATIONS FOR MANAGEMENT:

That no Eurasian water milfoil has been found since the 2012 treatment continues to be an unexpected and encouraging development. It appears a seed bank was never established in the sediment, and, after finding no evidence of EWM for four years, we believe that it is possible and perhaps likely that the plant has been eradicated from the lake. With this in mind, and with no EWM to treat or pull, it seems the most likely course of action is to simply continue visible littoral zone monitoring on an annual or perhaps only biennial basis if at all.

If EWM plants are found again in the future, we believe working to immediately control them will continue to be the best policy. With that in mind, any suspicious looking plants should be investigated to determine species. If any lake resident or boater discovers a plant they even suspect may be EWM, they are invited to contact Matthew Berg, ERS, LLC Research Biologist at (715) 338-7502 <a href="mailto:saintcroixdfly@gmail.com">saintcroixdfly@gmail.com</a> and/or Pamela Toshner/Alex Smith, Regional Lakes Management Coordinators in the Spooner DNR office at 715-635-4073 for identification confirmation. If possible, a specimen, a jpg, and accompanying GPS coordinates of the location it was found at should be included.

## LITERATURE CITED

Burnkrant, R. A., C. Busch, C. Belter, and S. Johannes. [online]. 1969. George Lake Bathymetric Map. Available from <a href="http://dnr.wi.gov/lakes/maps/DNR/2465700a.pdf">http://dnr.wi.gov/lakes/maps/DNR/2465700a.pdf</a> (2016, September).

WDNR. [online]. 2016. Wisconsin Lake Citizen Monitoring Data for Bayfield County. Available from <a href="http://dnr.wi.gov/lakes/CLMN/Station.aspx?id=043152">http://dnr.wi.gov/lakes/CLMN/Station.aspx?id=043152</a> (2016, September).