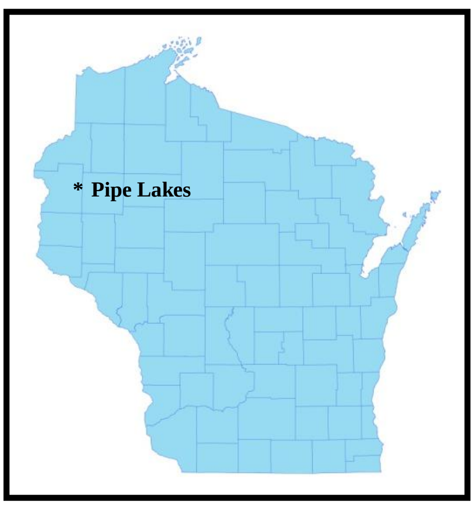
Eurasian Water-milfoil (*Myriophyllum spicatum*) Boat Landing and Meandering Littoral Zone Surveys Pipe/North Pipe Lakes - WBIC: 2490500 and 2485700 Polk County, Wisconsin

Spiny Hornwort – a Beneficial Native EWM "Look-alike" on the Lakes (Cameron 2017)

Aerial with Survey Tracks 10/8/17

Project Initiated by:

Pipe Lakes Protection and Rehabilitation District and the
Wisconsin Department of Natural Resources



View from the Boat Landing During October Survey (Berg 2017)

Landing Monitoring and Shoreline Surveys Conducted by and Report Prepared by:

Endangered Resource Services, LLC
Matthew S. Berg, Research Biologist
St. Croix Falls, Wisconsin
June-October, 2017

LIST OF FIGURES

INTRODUCTION:

Pipe Lake (WBIC 2490500- 293 acre seepage lake) and North Pipe Lake (WBIC 2485700 - 64 acre drainage lake) are located in east-central Polk County, Wisconsin in the Town of Johnstown (T35N R15W). Pipe reaches a maximum depth of 68ft in the north basin and has an average depth of approximately 27ft (WDNR 2017). The lake is mesotrophic in nature with 2017 Secchi readings averaging 14ft (WDNR 2017). The bottom substrate is predominately sand and rock along the shoreline, but this gradually transitions to sandy muck in most deep areas (Figure 1) (Busch et al. 1966).

North Pipe reaches a maximum depth of 37ft in the central basin and has an average depth of approximately 18ft (WDNR 2017). The lake is eutrophic in nature with Secchi readings in 2017 averaging 6ft (WDNR 2013). The bottom substrate is predominately sand and rock along the east/west shorelines and a nutrient rich organic muck in the north and south bays (Figure 1) (Busch et al. 1966).

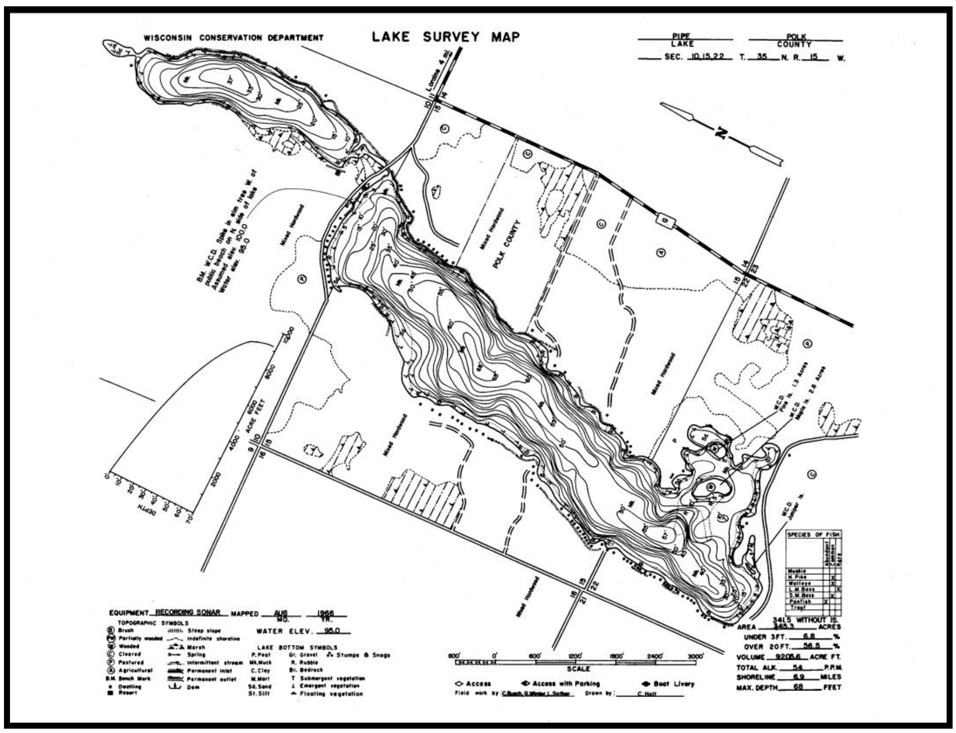


Figure 1: Pipe and North Pipe Lakes Bathymetric Map

BACKGROUND AND STUDY RATIONALE:

During the summers of 2007 and 2013, extensive point-intercept plant surveys found no evidence of Eurasian water-milfoil (*Myriophyllum spicatum*) (EWM) or Curly-leaf pondweed (*Potamogeton crispus*) (CLP) in the Pipe Lakes. However, because many neighboring lakes in Polk/Barron County have EWM infestations (Horseshoe, Echo, Beaver Dam, Kidney, Sand, Shallow, Lower Vermillion, and Duck), the Pipe Lakes Protection and Rehabilitation District decided that monthly transect surveys at the lakes' landings during the growing season would be a prudent measure. This report is the summary of our six surveys conducted from June-October, 2017.

METHODS:

During the five month growing season from June-October 2017, we conducted landing inspections at least once a month at the north boat landing and along the old southern landing on Pipe Lake (Figure 2). If conditions allowed us to see deep into the littoral zone (not raining/good water clarity/no people present swimming at the north beach), we conducted a boat survey to look for EWM. Using three 100-150m parallel transects approximately 15, 30 and 45m from shore; we motored at idle speed looking for any evidence of EWM's characteristic red growth top. Once we had finished the three transects, we returned to our starting point using a stitch pattern that crossed back and forth over all three lines to look for any plants we may have missed between the transects. As EWM primarily reproduces by shedding numerous vegetative fragments, we also walked along the north landing shoreline to look for pieces of EWM that would likely wash up if plants were present.

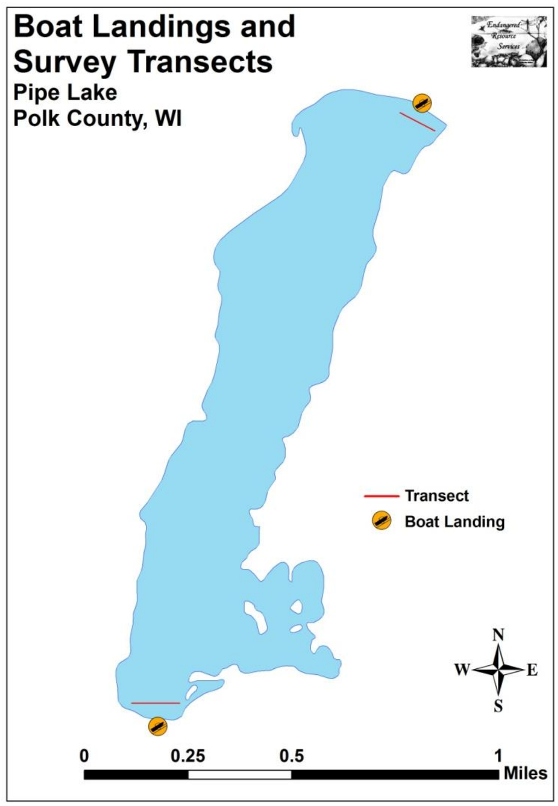


Figure 2: Boat Landings and 2017 Survey Transects

Following the boat inspection, if conditions warranted, we also surveyed using SCUBA/snorkel gear and compass along those same transects. Because Pipe Lake is essentially an elongated bowl and it was easy to do, on the first survey in June and the final survey in October, we conducted a boat survey along the shoreline of the entire lake to look for EWM in the zone of growth it would most likely be found in. We also surveyed North Pipe Lake at these times.

RESULTS AND DISCUSSION:

In late May 2015, Dick Hollar and Greg Warner – PLPRD - informed us that a boat trailer that had a considerable amount of Curly-leaf pondweed on it had launched at the north landing. As in 2015 and 2016, despite extensive looking during our initial June 13th survey, we again found **NO** evidence of CLP in the lakes. In addition to this preliminary search, we also conducted transect surveys on July 11th, August 6th, September 4th, September 16th (a training dive where we were joined by 4 other volunteers), and October 8th. We also conducted whole-lake aquatic invasive species (AIS) shoreline surveys on both Pipe and North Pipe on June 13th and October 8th (Figure 3) (Appendix I). Fortunately, we did **NOT** find any evidence of CLP, EWM or any other AIS in or adjacent to the lakes other than the previously reported Reed canary grass (*Phalaris arundinacea*). Despite concern about expansion during low water years, this species has experienced a notable decline in the wake of rising lake levels during the 2016 and 2017 growing season.

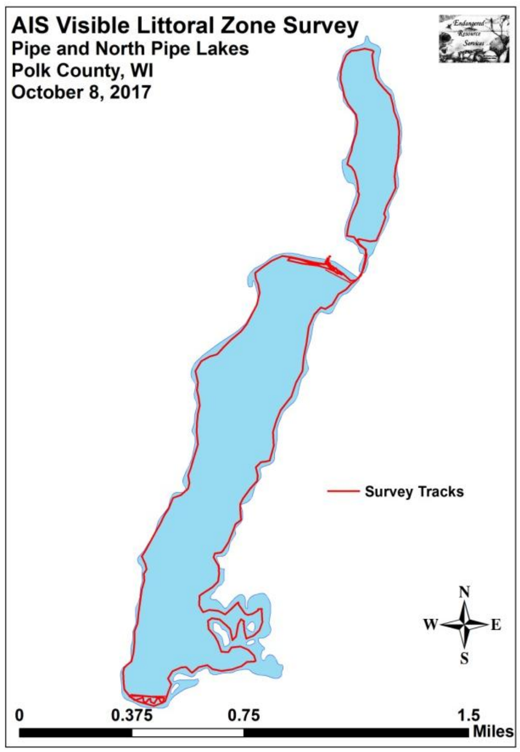


Figure 3: October 8, 2017 Visible Littoral Zone AIS Survey Tracks

As in the past, the only native milfoil we found that resembles EWM was Farwell's water-milfoil (*Myriophyllum farwellii*) – a valuable habitat producing native plant that is relatively uncommon in the state. In Pipe Lake, it grows in dense beds in the sheltered bays of the southeast corner in shallow water over thick organic muck (especially near the beaver lodge on the east side of the northeast island). Farwell's is also found scattered through North Pipe Lake, but here it is uncommon and never bed forming. Farwell's water-milfoil can be told from Eurasian water-milfoil in that it has leaves with leaflets numbering <16 whereas EWM normally has >26 leaflets (Figure 4). EWM also has an emergent flower stalk where Farwell's flowers are scattered along the stem and look like tiny nuts.

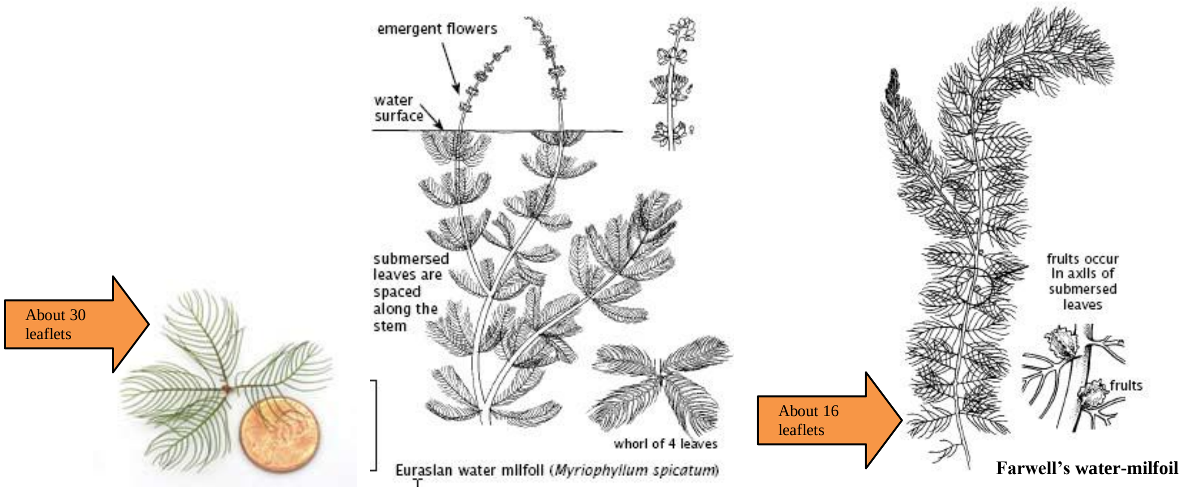


Figure 4: Eurasian and Farwell's Water-milfoil Identification
(Hill et al. in Maine's Field Guide to Aquatic Invasive Species and Crow and Hellquist 2006)

We also noted two other beneficial native species that could potentially be confused with Eurasian water-milfoil: Spiny hornwort (*Ceratophyllum echinatum*) (Figure 5) and Common bladderwort (*Utricularia vulgaris*) (Figure 6). Both species are relatively common in the lakes' bays where they primarily occur in water <1.5m over organic muck substrates. Hornwort can be told from the milfoils as it has leaflets that fork repeatedly, while bladderworts have tiny "bladders" along their forked leaflets where these carnivorous plants trap and digest minute aquatic animals like mosquito larvae.

Figure 5: Spiny Hornwort Identification **(Skawinski 2010)**

Figure 6: Common Bladderwort Identification (Skawinski 2010)

CONSIDERATIONS FOR FUTURE MANAGEMENT:

With Eurasian water-milfoil growing in nine other nearby Barron and Polk County Lakes (Sand, Beaver Dam, Kidney, Duck, Horseshoe, Echo, Lower Vermillion, Shallow, and Pike), we continue to recommend that landing inspections occur on a regular basis into the foreseeable future. Early detection of EWM provides the best chance to economically contain the plant once an infestation has occurred. As always, if lake residents or boaters discover a plant they even suspect may be Curly-leaf pondweed or Eurasian water-milfoil, we encourage them to immediately contact us (Matthew Berg, ERS, LLC Research Biologist) at 715-338-7502 saintcroixdfly@gmail.com and/or Pamela Toshner or Alex Smith, Regional Lakes Management Coordinators in the Spooner DNR office at 715-635-4073 for identification confirmation. Ideally, a fresh specimen, JPG photograph, and GPS coordinates of where the specimen was obtained would aid in the identification and location of any suspect plant(s). However, even a texted picture of the plant in question held in hand is often enough to confirm identification.

LITERATURE CITED

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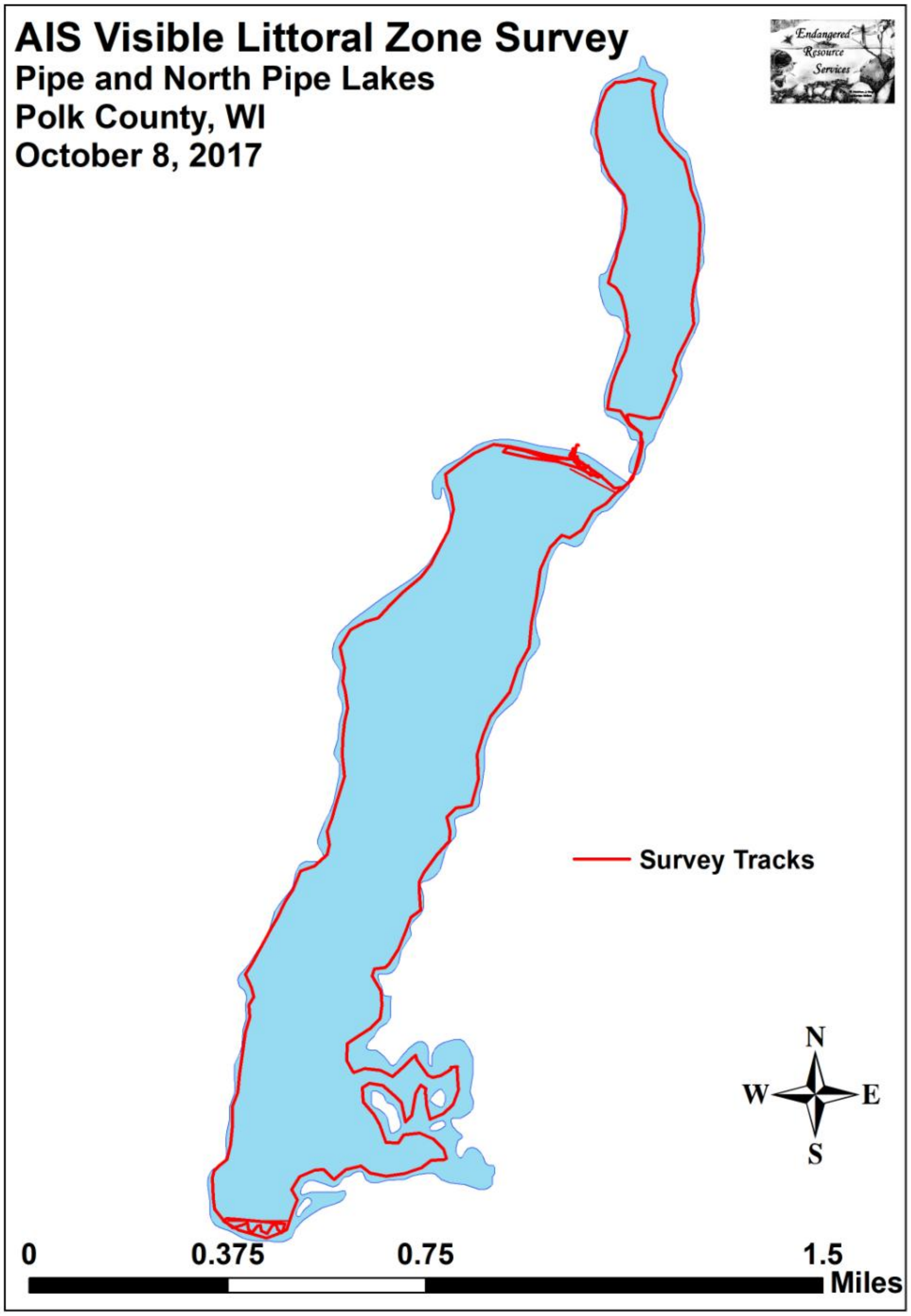
Appendix I: Pipe Lakes October Survey Tracks


AIS Visible Littoral Zone Survey
Pipe and North Pipe Lakes
Polk County, WI
October 8, 2017
Endangered Resource Services
Survey Tracks
N
W
E
S
0
0.375
0.75
1.5
Miles