Aquatic Plants and Management in Valley Branch Watershed District (VBWD) Lakes

DNR-VBWD Meeting

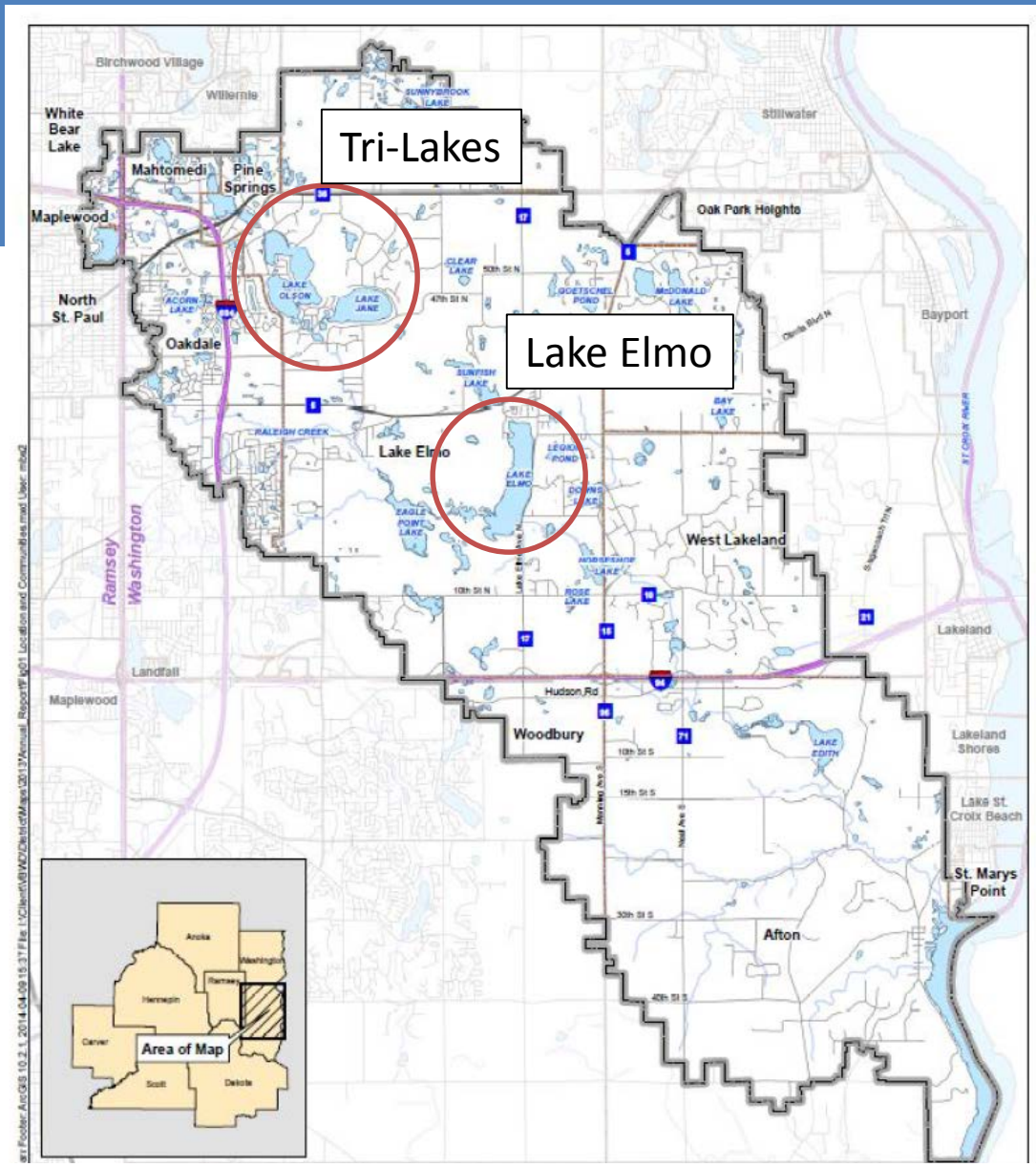
February 13, 2017

Goals

- Goals
  - Gain consensus whether there is a problem with aquatic plants (particularly Eurasian watermilfoil and native plants) in the Tri-Lakes (Lake DeMontreville, Lake Olson, and Lake Jane) and Lake Elmo
  - If there is a problem, obtain management recommendations from the DNR

Presentation Overview

- Background
- 2014-2016 Eurasian watermilfoil (EWM) Management Efforts in Tri-Lakes and Lake Elmo
  - Acreage Changes of EWM
  - Frequency Changes in Native Plant Species in Tri-Lakes
  - Water Quality
  - Fisheries
- Discussion and Recommendations



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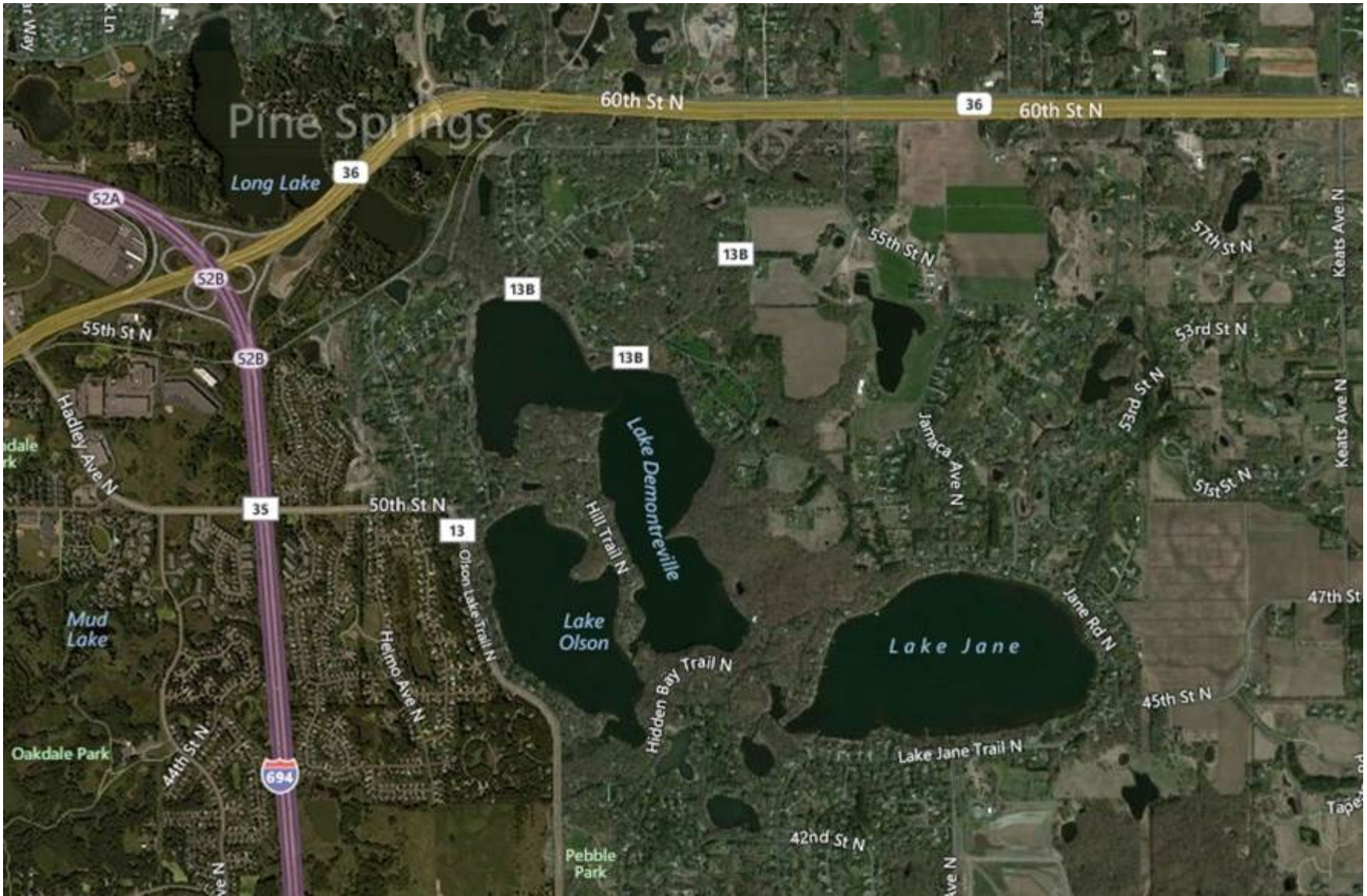
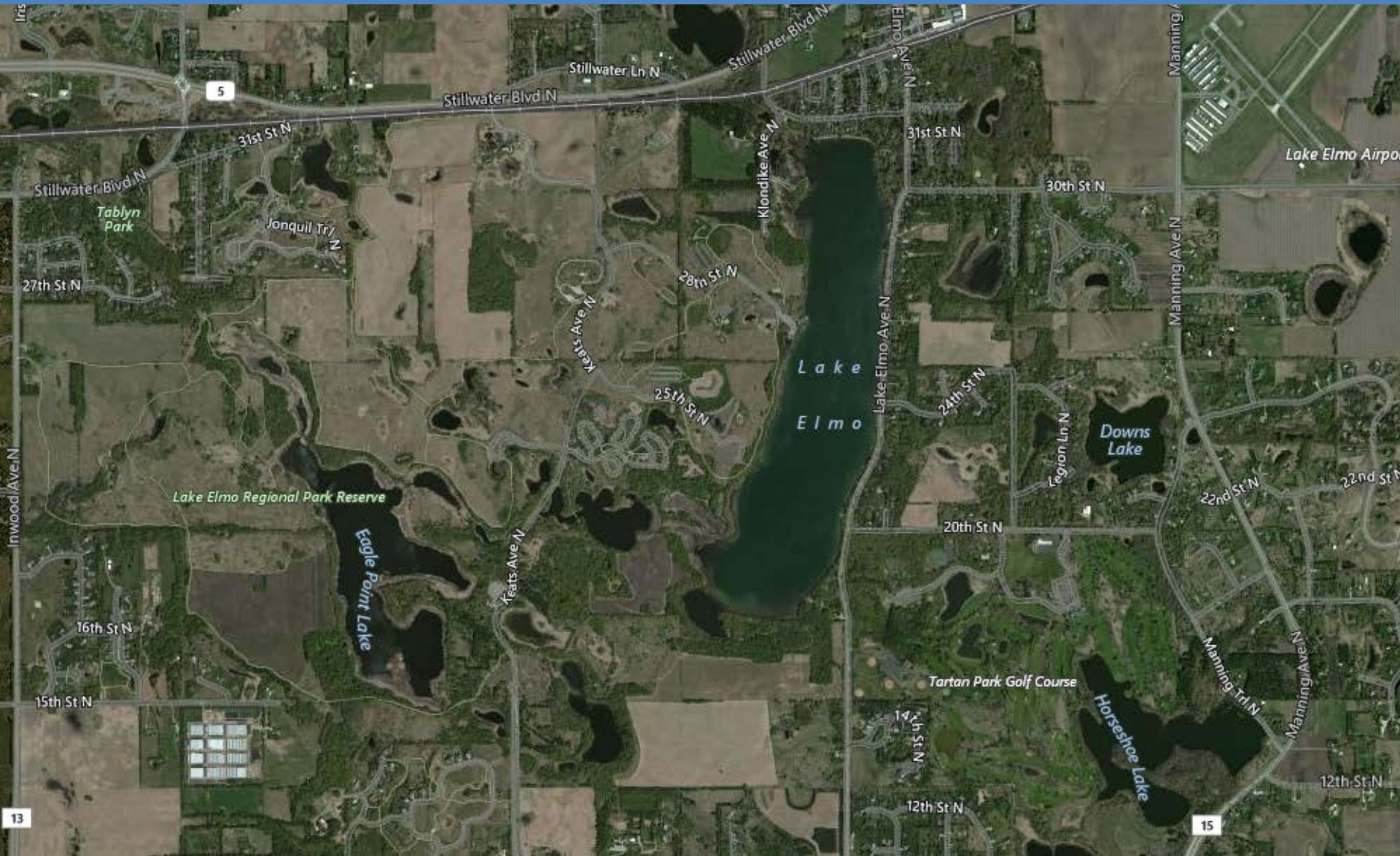
Tri-Lakes – Lake DeMontreville, Lake Olson, and Lake Jane



Lake Elmo


Stillwater Ln N
Stillwater Blvd N
5
31st St N
Stillwater Blvd N
Tablyn Park
Jonquil Trl N
27th St N
Klondike Ave N
28th St N
Keats Ave N
25th St N
Lake Elmo
Lake Elmo Ave N
31st St N
30th St N
Manning Ave N
Lake Elmo Airpo
24th St N
Legion Ln N
Downs Lake
22nd St N
20th St N
Lake Elmo Regional Park Reserve
Eagle Point Lake
Keats Ave N
16th St N
15th St N
Tartan Park Golf Course
Manning Trl N
Horseshoe Lake
14th St N
12th St N
12th St N
13
15

Background

- 2012-2014 – VBWD plant surveys documented rapid expansion of EWM in the Tri-Lakes and dense EWM beds in Lake Elmo
- VBWD supported lake associations in managing EWM

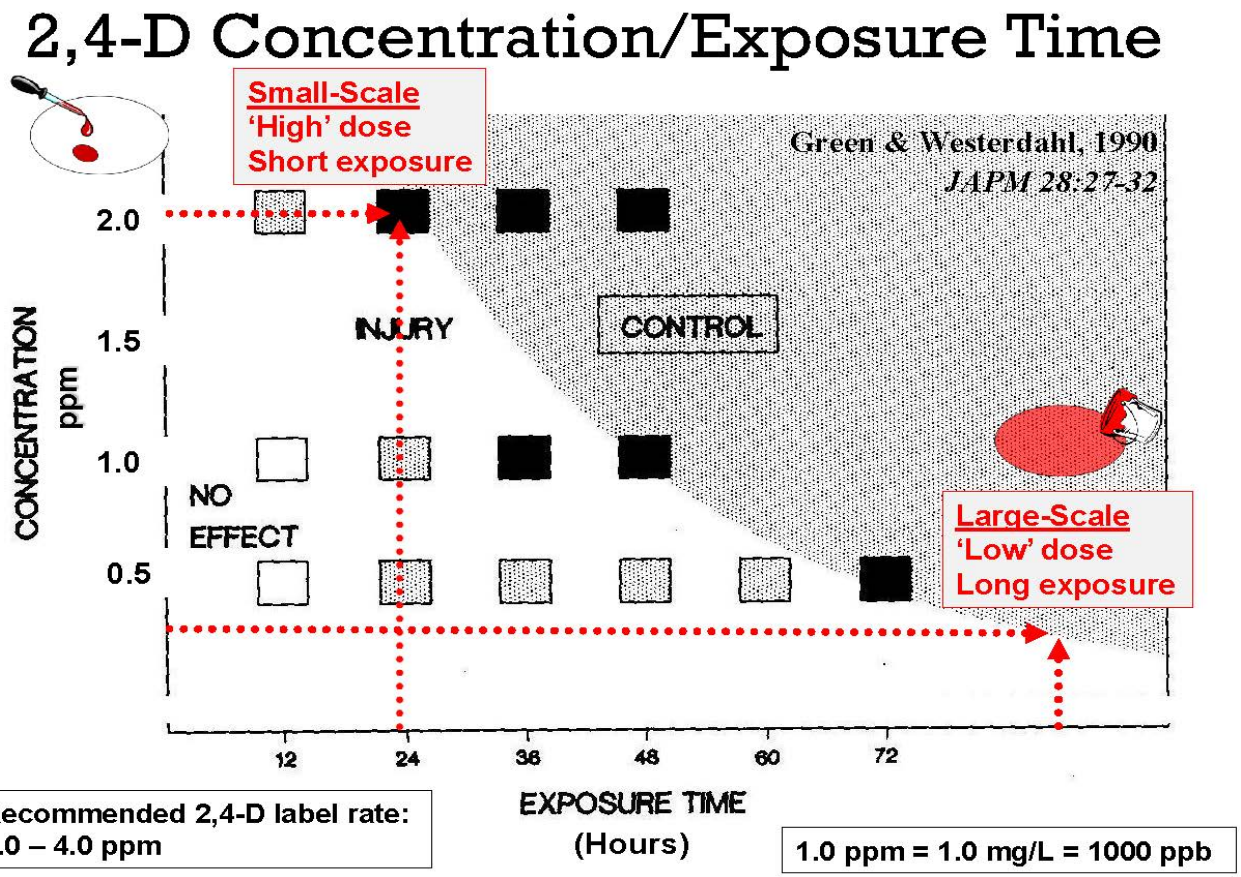
EWM Management Efforts: Mechanical/Manual EWM Removal

- Lake Elmo (lake area 284 acres, littoral area 66.38 acres)
  - 2015: <1 acre – manual removal by Scuba divers
  - 2016: 10 acres – mechanical harvesting and removal

EWM Management Efforts: Herbicide Treatment with 2,4-D

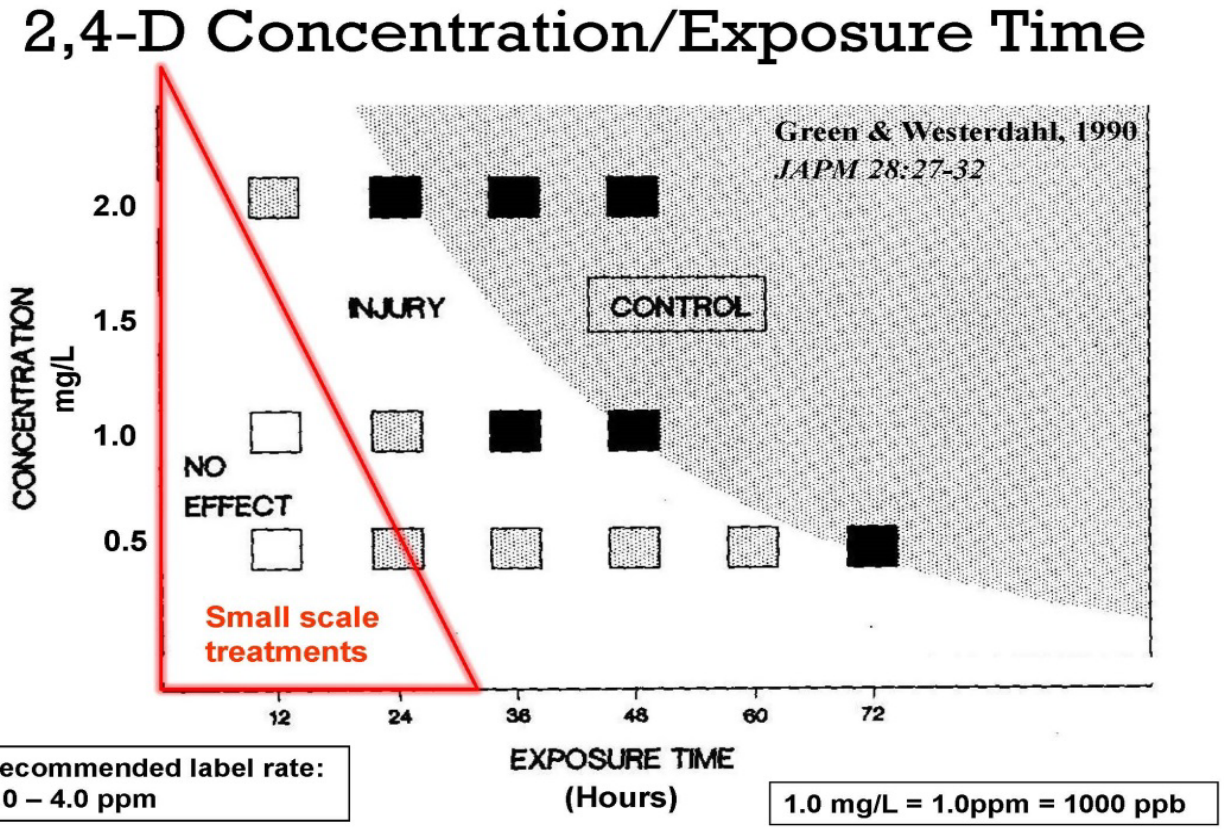
- Lake DeMontreville (lake area 160 acres, littoral area 142.6 acres)
  - 2014 – 4.3 acres
  - 2015 – 14.3 acres
  - 2016 – 14.3 acres
- Lake Jane (lake area 155 acres, littoral area 109.71 acres)
  - 2015 – 7.9 acres
- Lake Olson (lake area 89 acres, littoral area 87.4 acres)
  - 2014 – 4.7 acres
  - 2015 – 7.0 acres
  - 2016 – 6.85 acres

DNR permits:
Treat identified areas at 2,4-D label rate



Slide Credit: Nault, Michelle and John Skogerboe. 2014. *Scientific Evaluation of Efficacy and Selectivity of Herbicide Treatments in Wisconsin Lakes*. Presentation at UMISC – October 22, 2014 in Duluth,Minnesota

DNR permits:
Treat identified areas at 2,4-D label rate



Nault, Michelle and John Skogerboe. 2012. *Evaluation of Herbicide Applications for Control of Aquatic Invasive Species*. Presentation at Workshop Aquatic Plant Management in the Ceded Territories at LCO Convention Center on December 5, 2012.

Changes in EWM *Extent:* Lake DeMontreville

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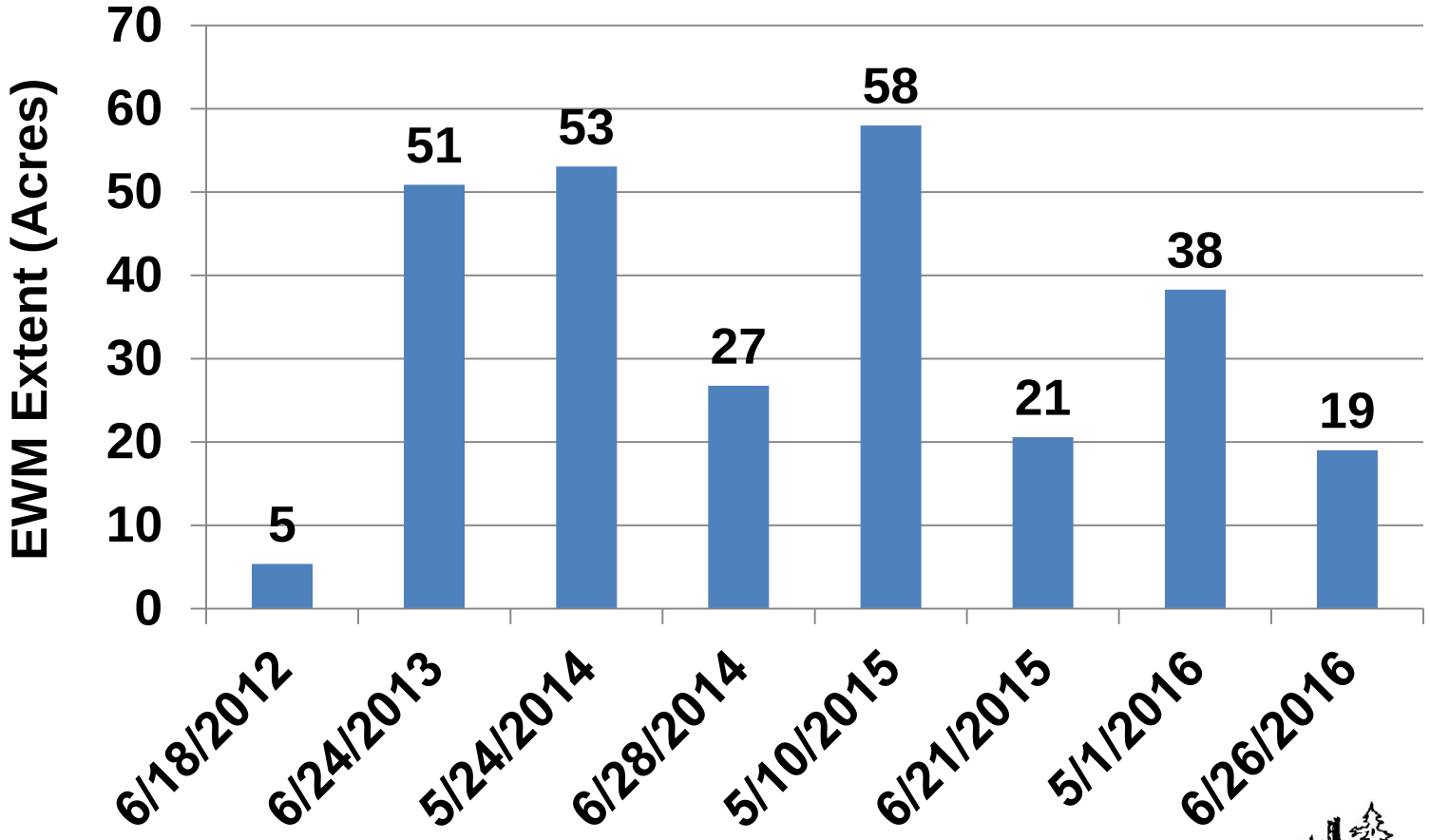

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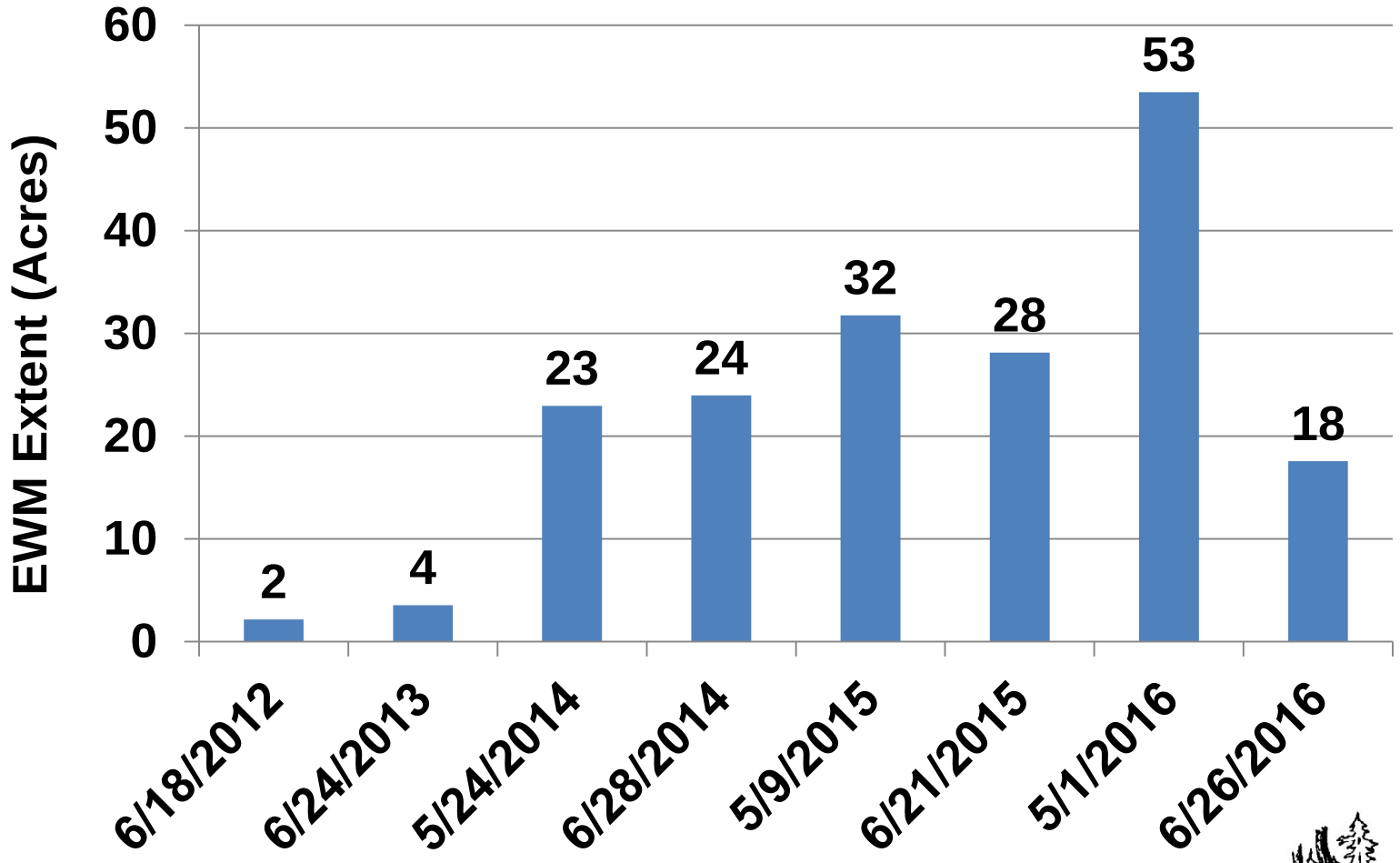
Changes in EWM *Extent:* Lake Olson



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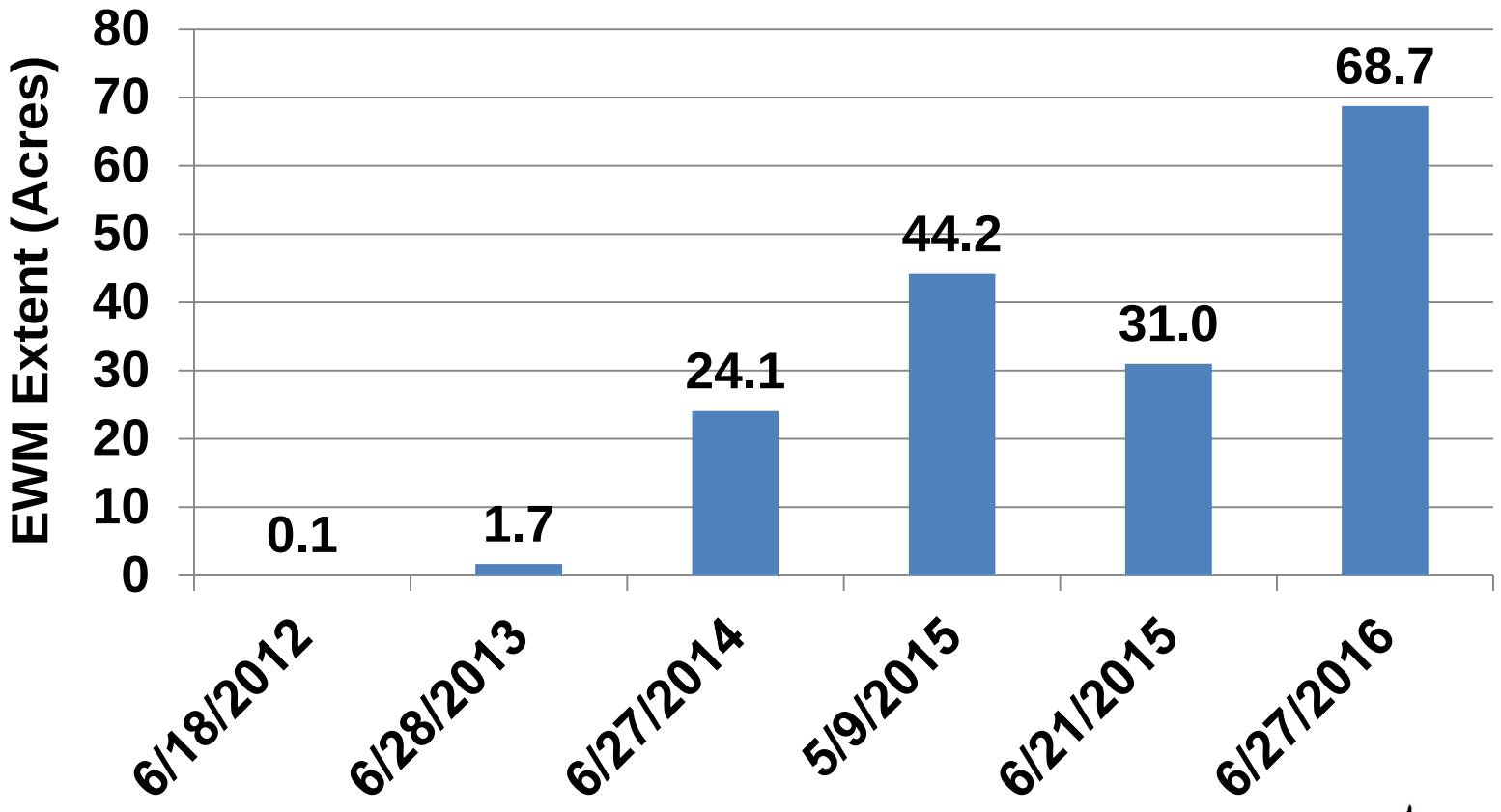
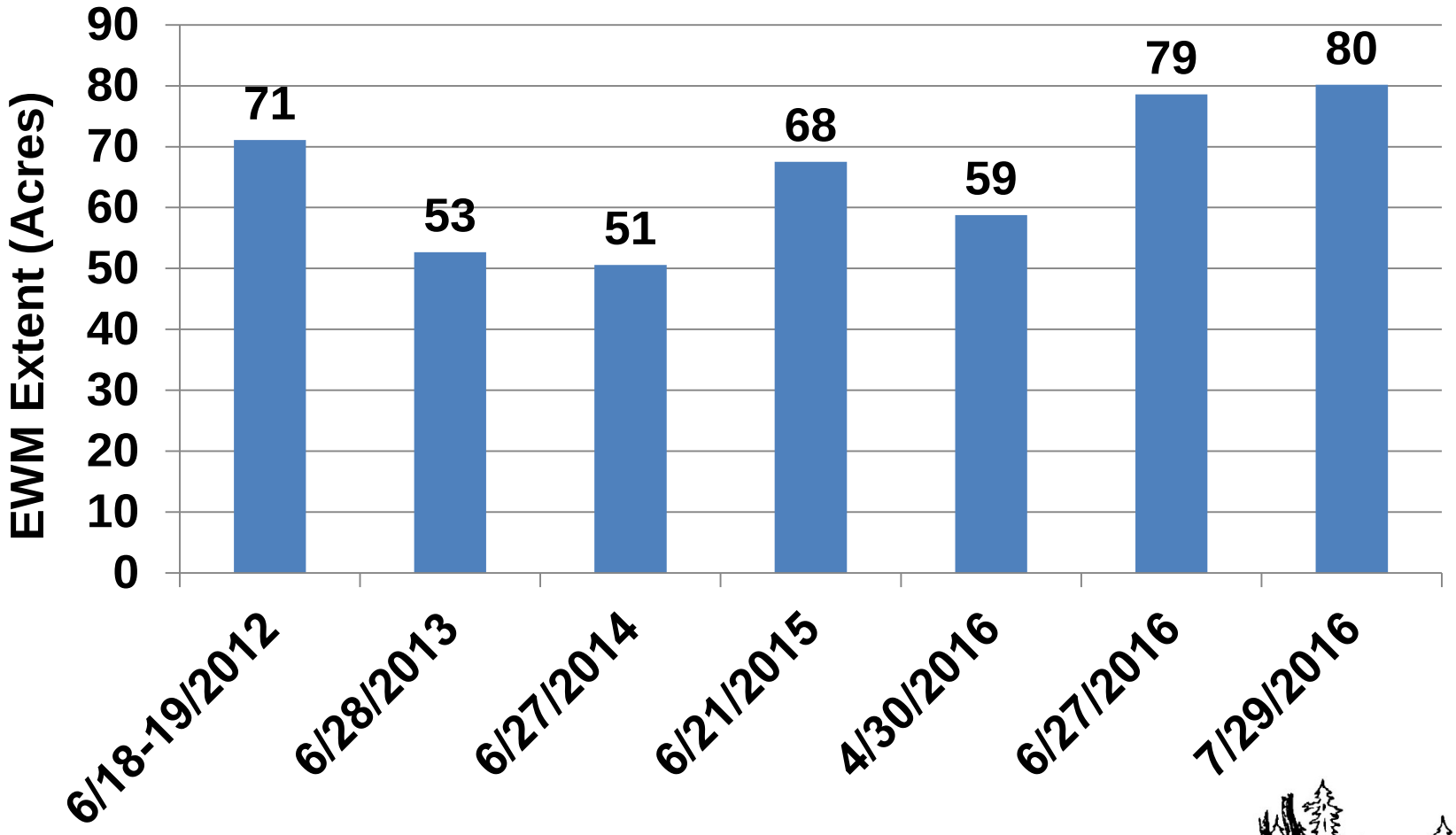
Changes in EWM *Extent:* Lake Jane



Changes in EWM *Extent:* Lake Elmo



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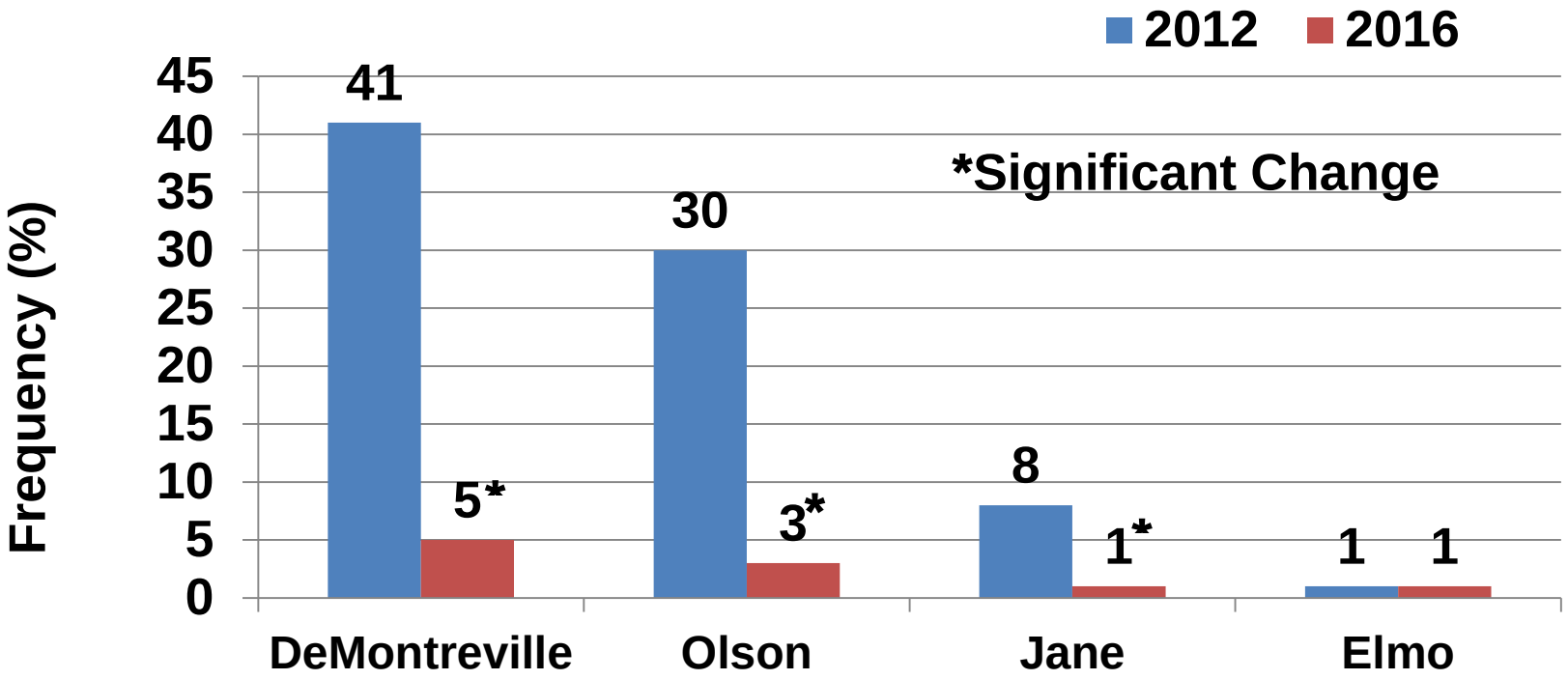
Response of Native Species to EWM Increase

- In general, Aquatic Invasive Species rapidly increase in extent and displace native species in the process
- During 2012-2016, EWM extent increased rapidly in Tri-Lakes
- VBWD Data: Documented significant declines in the frequency of several native species in Tri-Lakes
- EWM has been prevalent in Lake Elmo for many years. Although EWM extent increased during 2014-2016, the native plant community has remained relatively stable

Potamogeton pusillus (Small Pondweed)

- Significant decline between 2012 and 2016 in Tri-Lakes
- Value – food source and cover for fish; food source for waterfowl and other animals

Potamogeton pusillus (Small Pondweed) Frequency in Tri-Lakes and Lake Elmo



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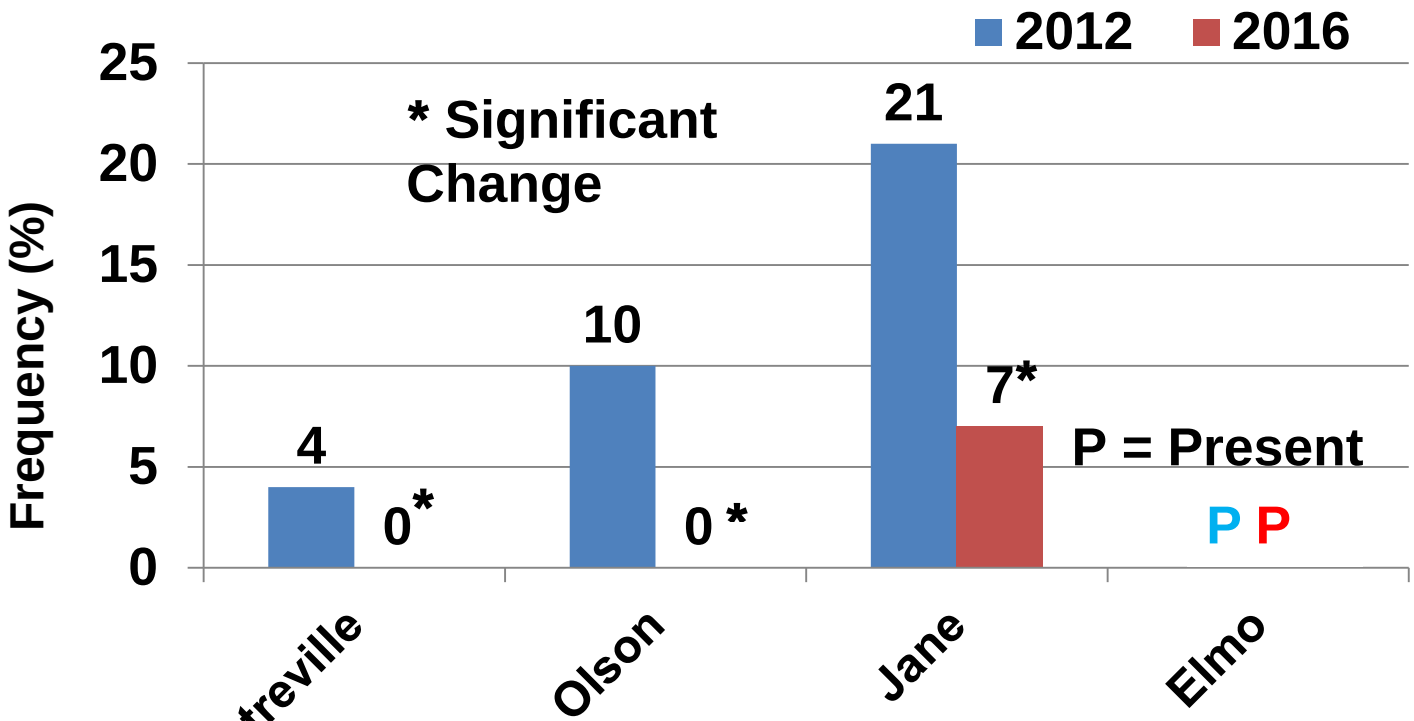
Potamogeton amplifolius (Large-leaf Pondweed)

- Significant decline between 2012 and 2016 in Tri-Lakes
- Value – Provides foraging opportunities for fish, provides invertebrate habitat, and the foliage and fruit may be grazed by waterfowl.

Potamogeton amplifolius (Large-leaf Pondweed) Frequency in Tri-Lakes and Lake Elmo



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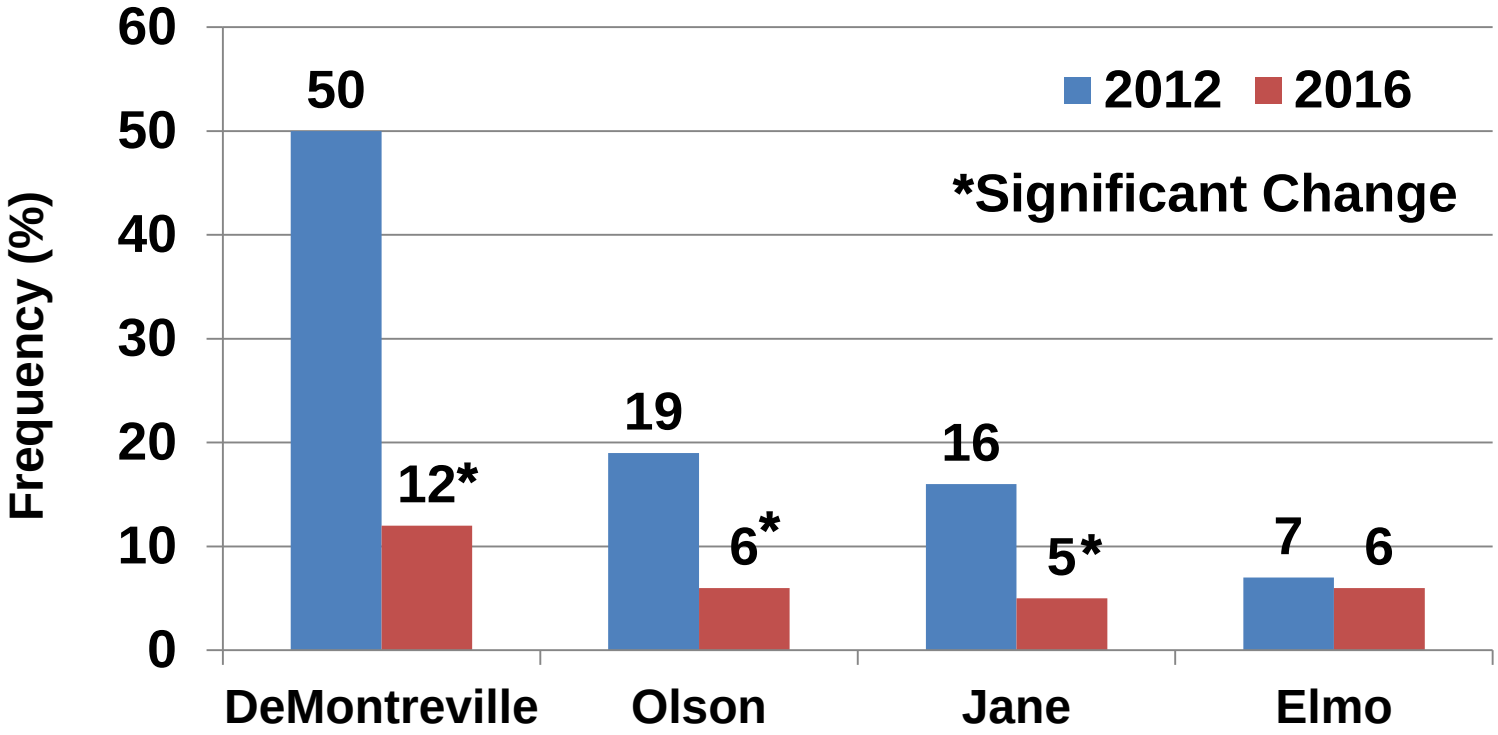
Potamogeton zosteriformis (Flat-stem Pondweed)

- Significant decline between 2012 and 2016 in Tri-Lakes
- Value – Food source and cover for fish and invertebrates; food for waterfowl and other animals.

Potamogeton zosteriformis (Flat-stem Pondweed) Frequency in Tri-Lakes and Lake Elmo



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Myriophyllum sibiricum (Northern watermilfoil)

- Significant decline between 2012 and 2016 in Tri-Lakes
- Value – Provide shade, shelter, and foraging opportunities for fish; invertebrate habitat; food for waterfowl

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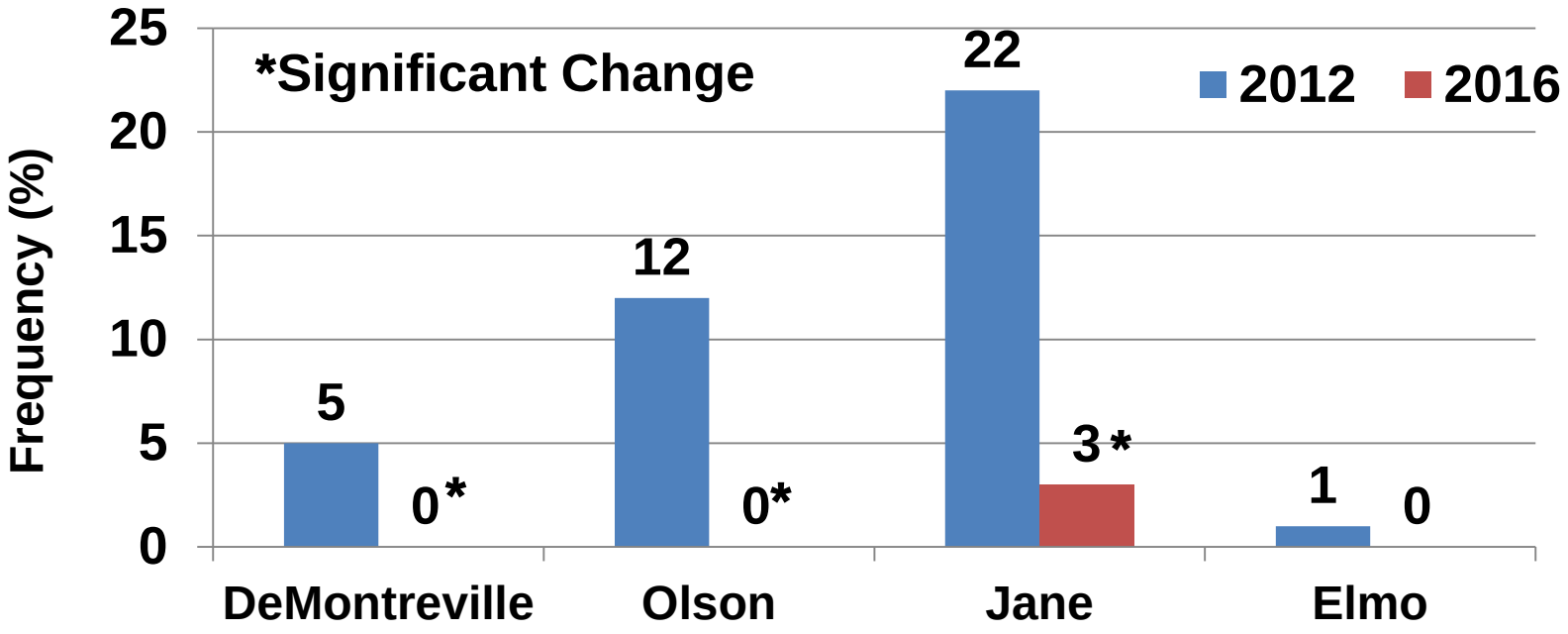
Myriophyllum sibiricum (Northern watermilfoil) Frequency in Tri-Lakes and Lake Elmo



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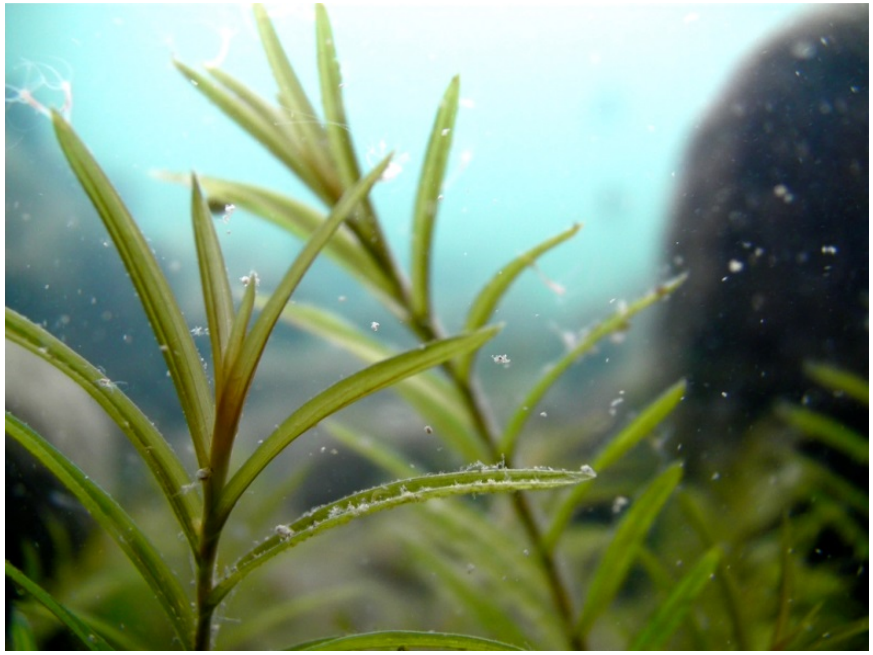
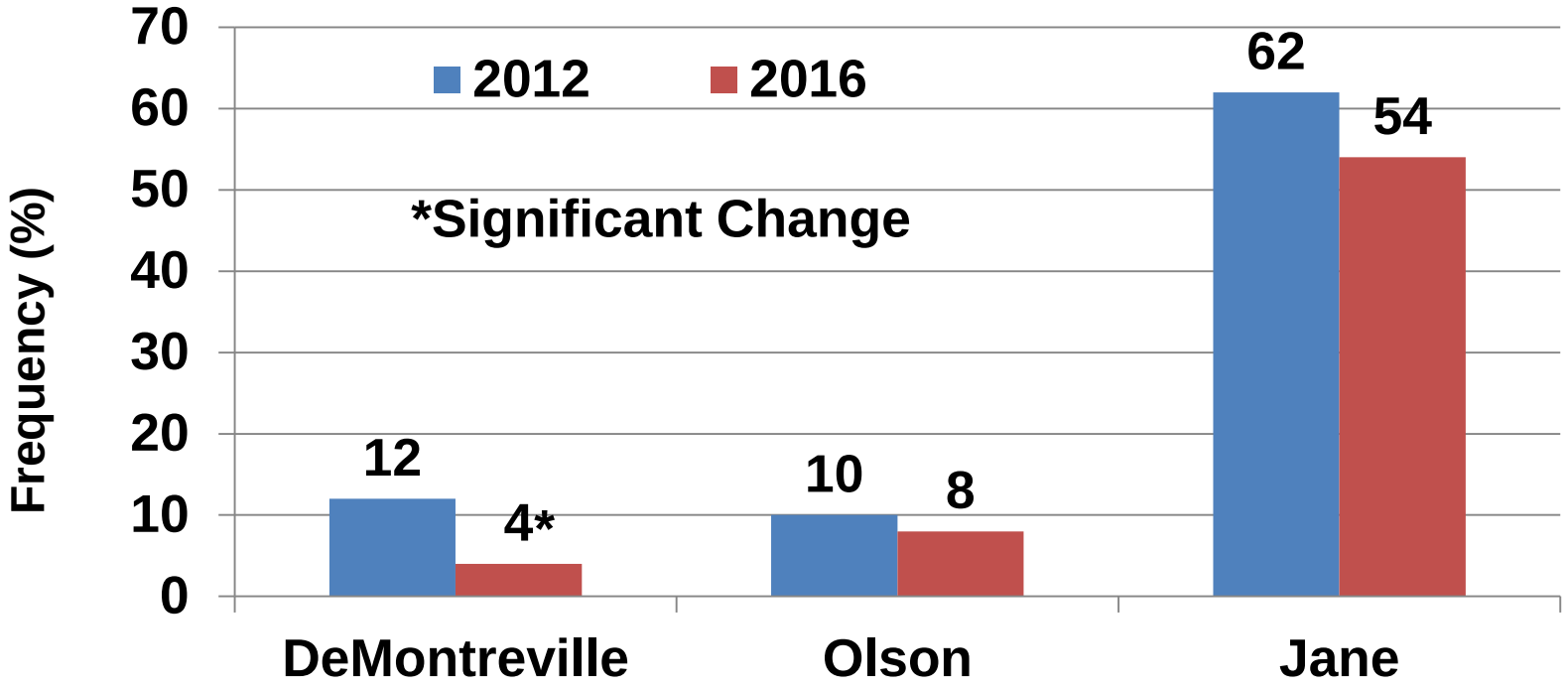
Potamogeton robbinsii (Fern pondweed)

- Significant decline between 2012 and 2016 in Lake DeMontreville
- Value – Good cover and foraging opportunities for fish; habitat for invertebrates; grazed by waterfowl



Potamogeton robbinsii (Fern Pondweed) Frequency in Tri-Lakes (Not Observed in Elmo)



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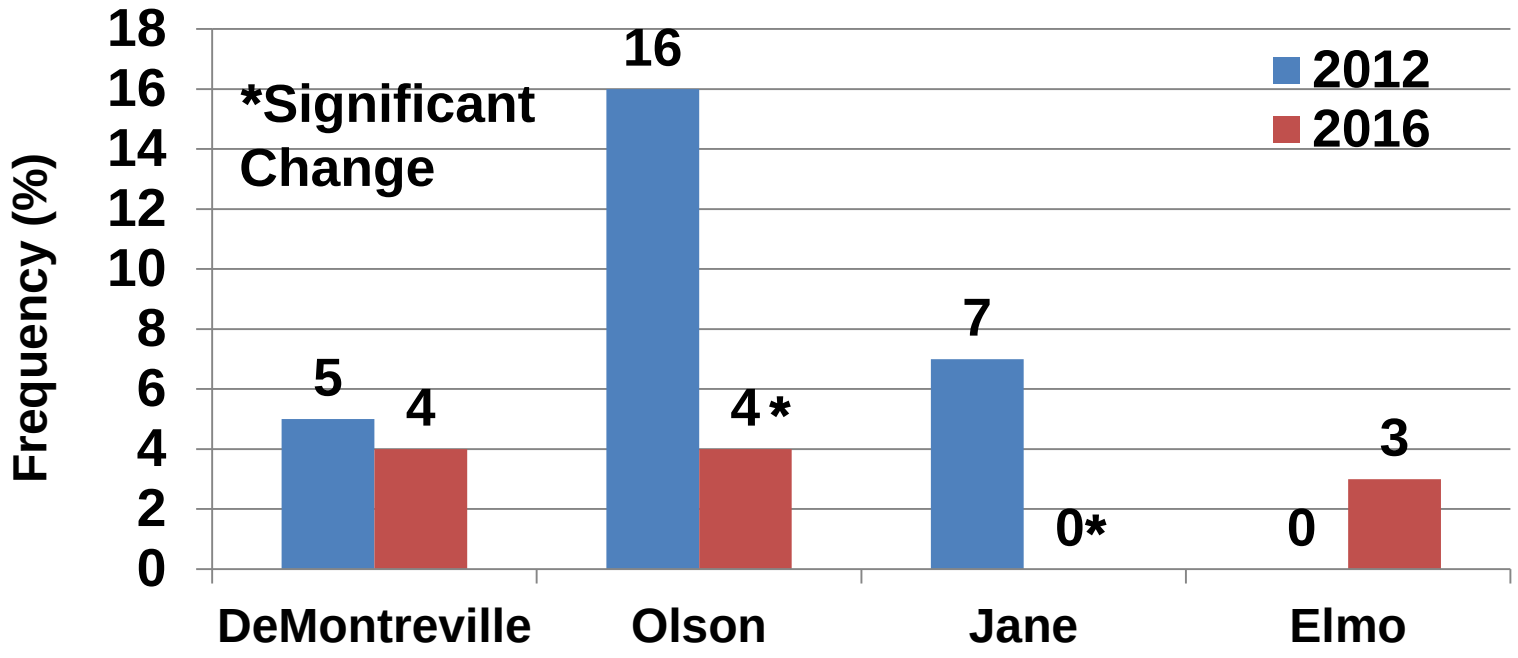
Heteranthera dubia (Water Star-grass)

- Significant decline between 2012 and 2016 in Lake Olson and Lake Jane
- Value – Good cover and foraging opportunities for fish; important source of food for geese and ducks.

Heteranthera dubia (Water Star-grass) Frequency in Tri-Lakes and Lake Elmo



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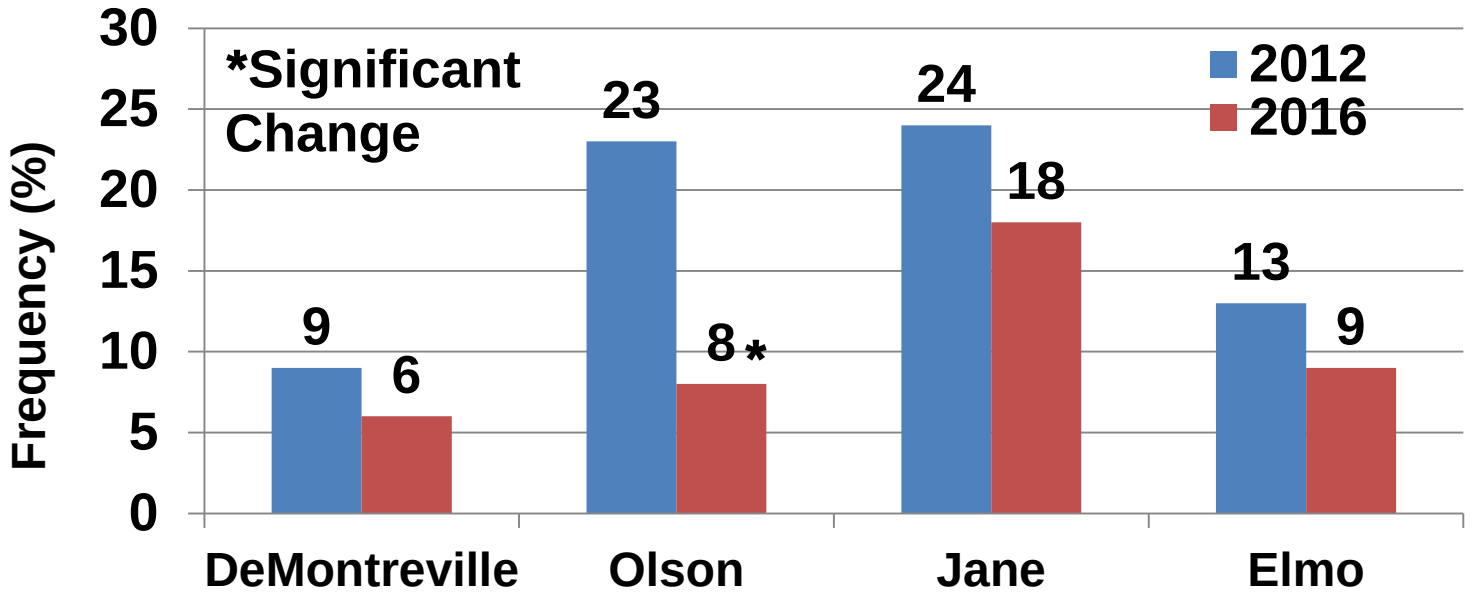
Potamogeton illinoensis (Illinois Pondweed)

- Significant decline between 2012 and 2016 in Lake Olson
- Value – Excellent shade and cover for fish; good surface area for invertebrates; food for ducks, geese, and other animals

Potamogeton illinoensis (Illinois Pondweed) Frequency in Tri-Lakes and Lake Elmo



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Ranunculus aquatilis (White Water Crowfoot)

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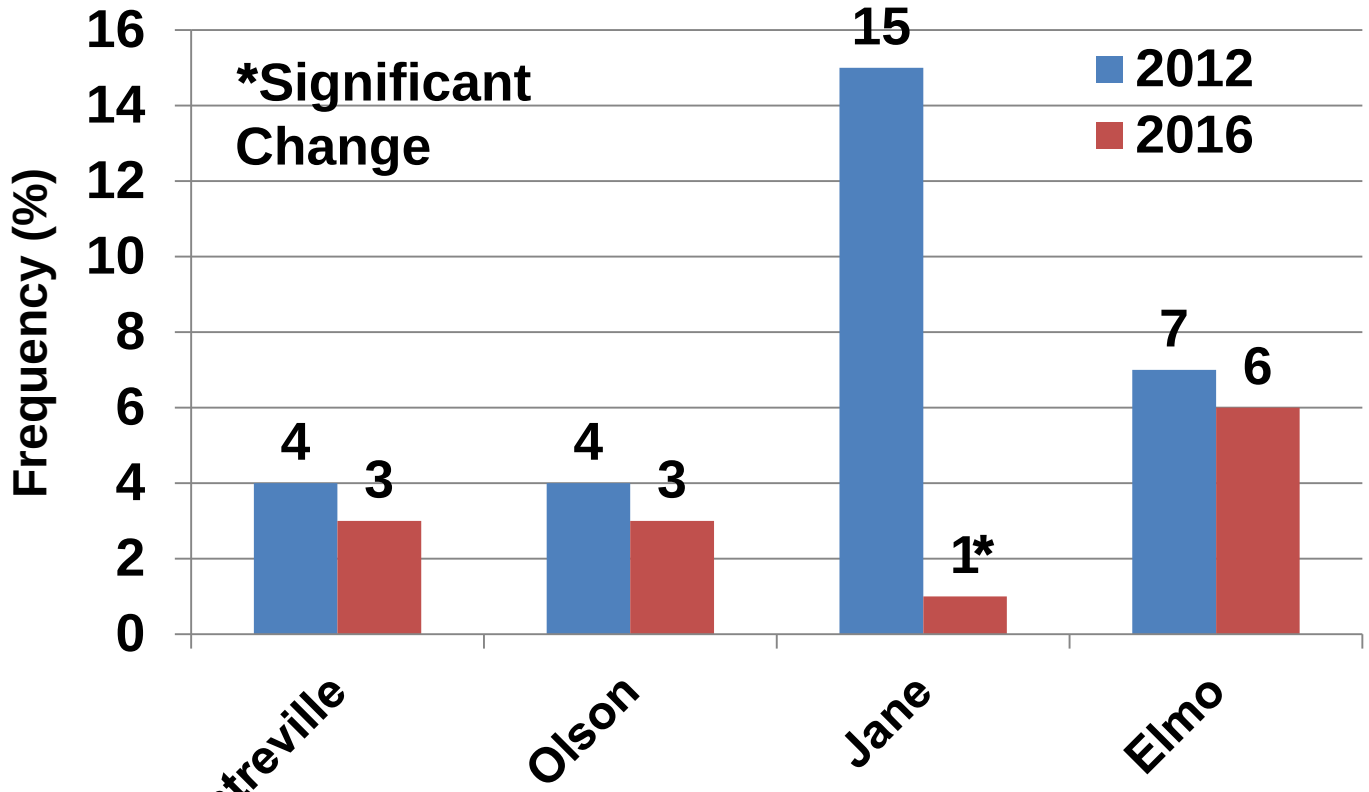
- Significant decline between 2012 and 2016 in Lake Jane
- Value – Valuable invertebrate habitat; food for waterfowl

Ranunculus aquatilis (White Water Crowfoot) Frequency in Tri-Lakes and Lake Elmo



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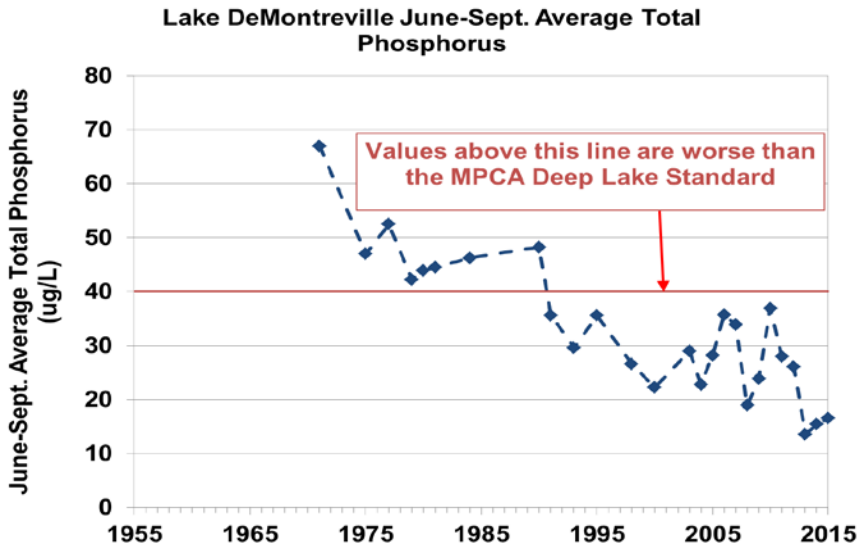
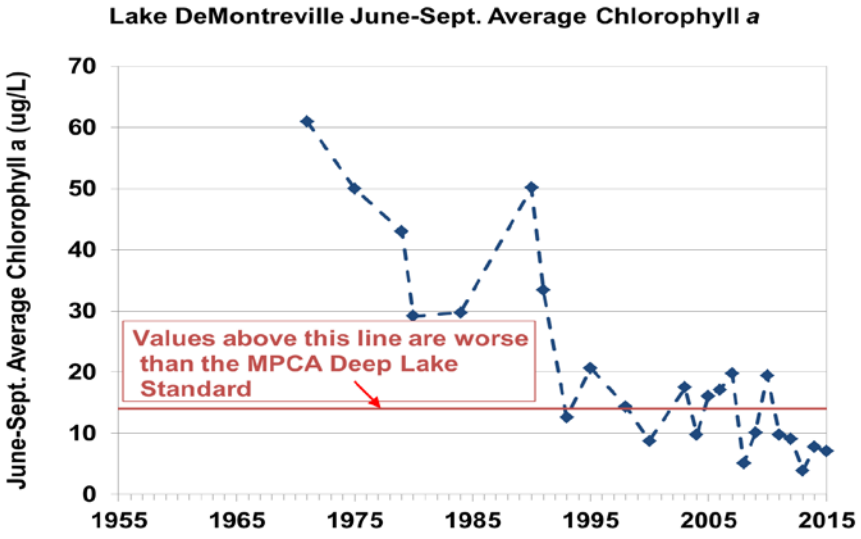
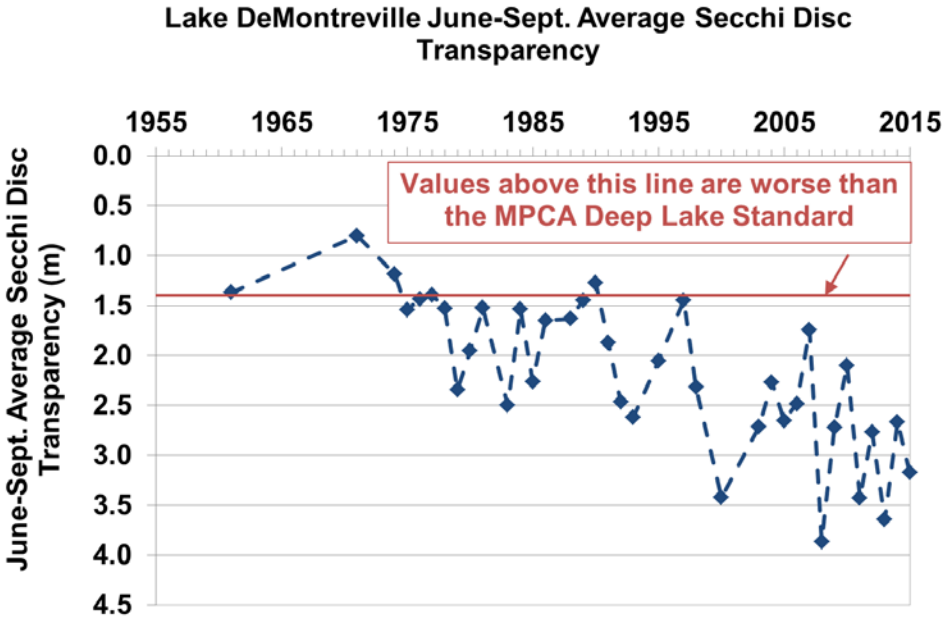
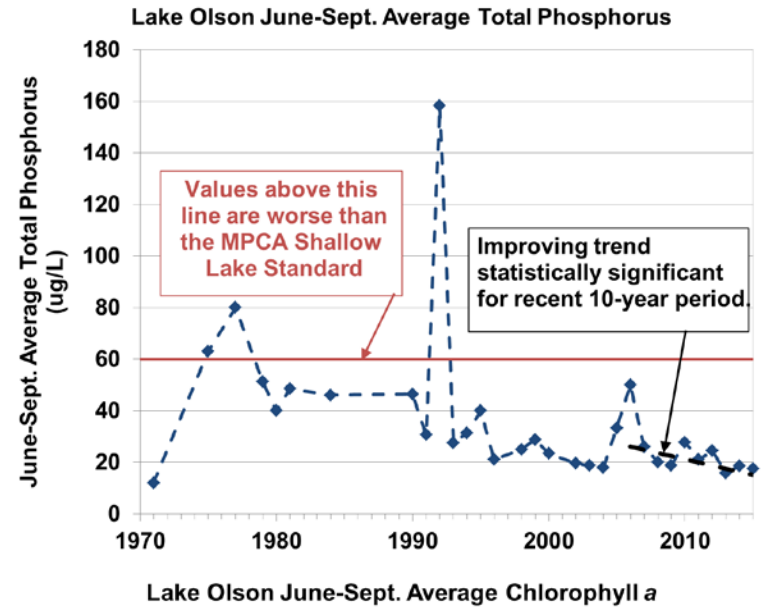
Water Quality: Lake DeMontreville

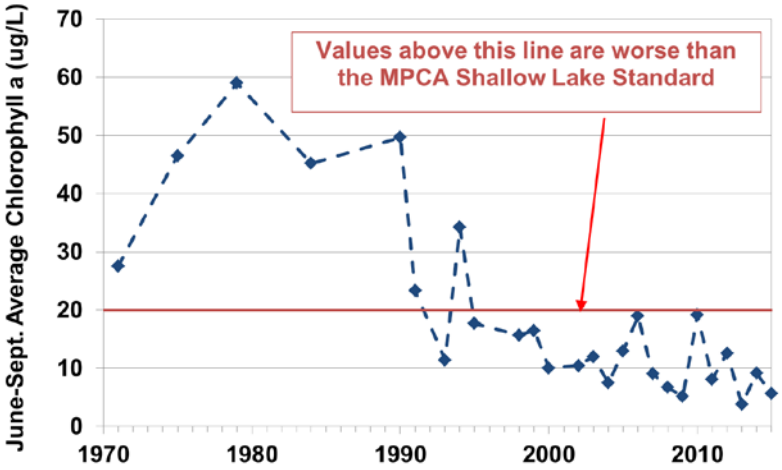


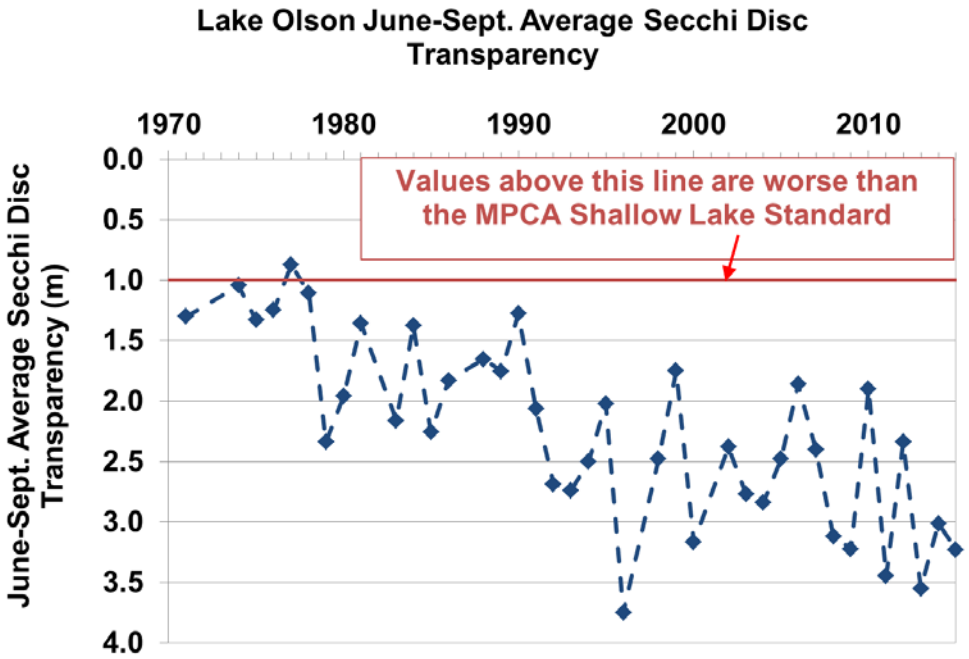




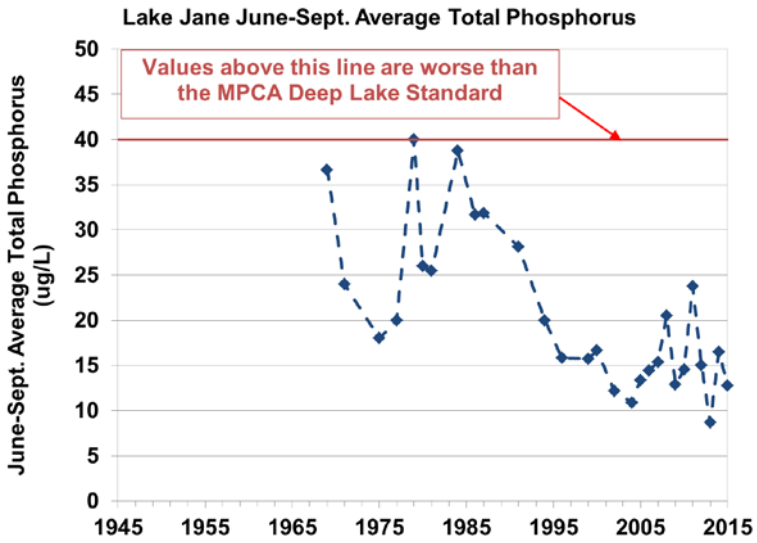
Water Quality: Lake Olson

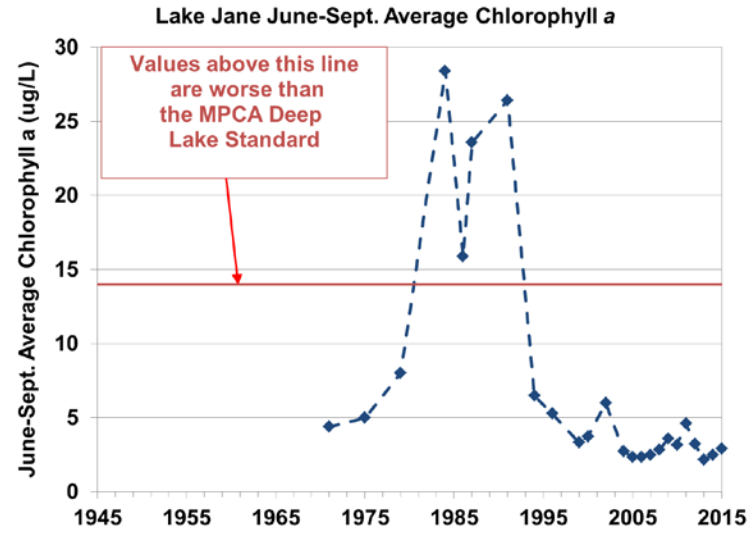


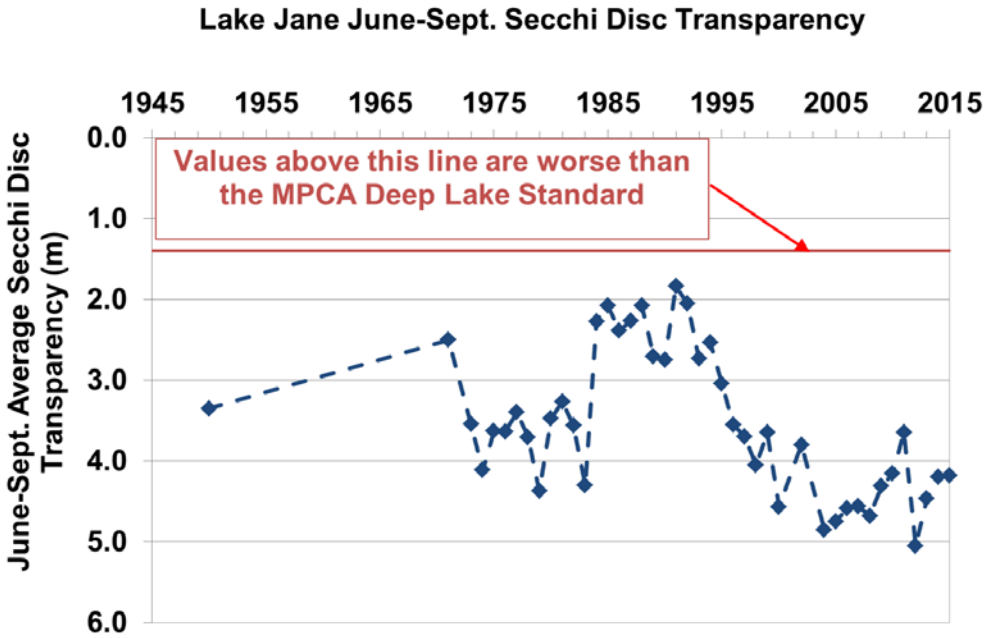




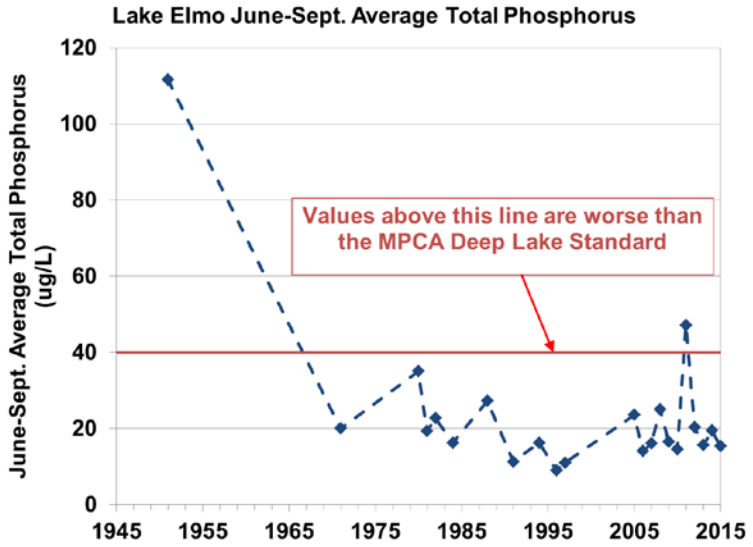
Water Quality: Lake Jane

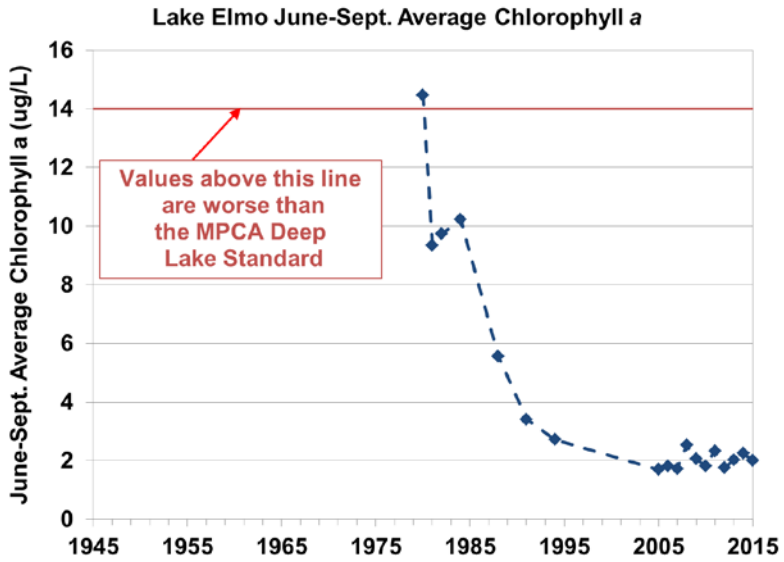


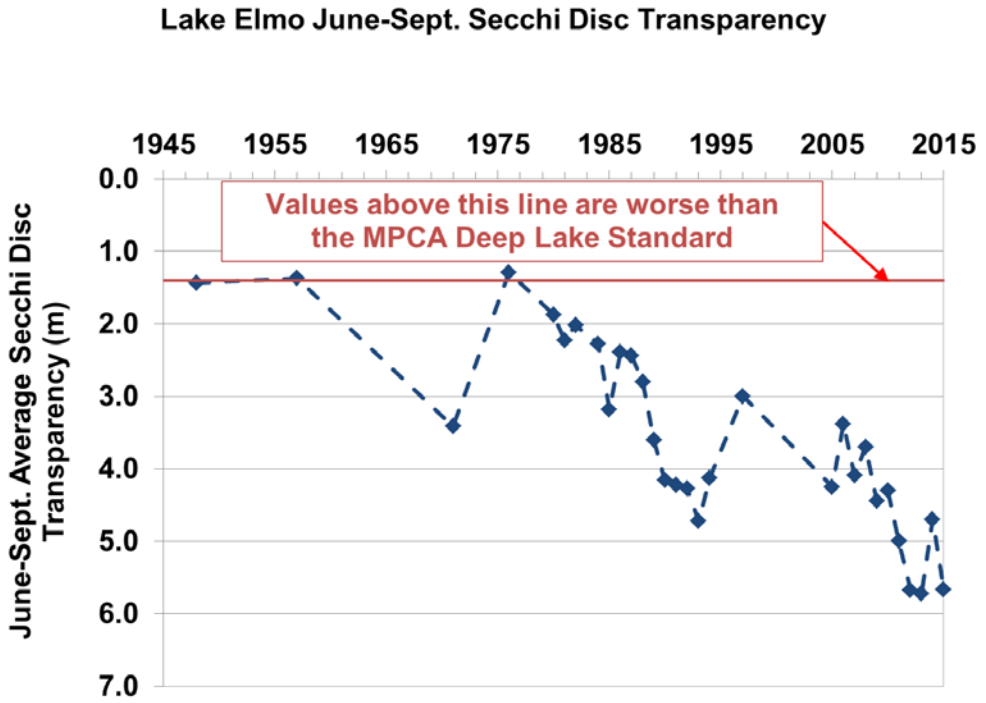




Water Quality: Lake Elmo







Water Quality: Summary

- Tri-Lakes and Lake Elmo were meeting water quality goals prior to EWM management and continue to meet water quality goals

Fisheries: Lake DeMontreville

- Two DNR fish surveys in 2011 and Fish IBI scores of 39 and 28; close to the shallow lakes impairment threshold of 36; next fish survey in 2019 to decide whether Lake DeMontreville is impaired for fish
- No reports that the EWM treatments have affected the fishery

Fisheries: Lakes Olson and Jane

- Olson: Most recent DNR fish survey in 2011
- Jane: Most recent DNR fish survey in 2013
- No IBI scores
- No reports that aquatic plant treatments have affected the fishery in either lake

Fisheries: Lake Elmo

- DNR fisheries survey in 2014; Fish IBI score of 53, which indicates the fishery is not impaired. The lake impairment threshold is 45; scores below this threshold suggest impairment.
- No reports that the EWM management affected the fishery

Summary

- Lake DeMontreville
  - 2014-2016 herbicide treatments provided EWM seasonal relief, but rapid expansion of EWM doubled extent between treatments

Summary

- Lake Olson
  - Rapid EWM expansion between 2015 and 2016 treatments nearly doubled extent
  - 2016 herbicide treatment provided EWM seasonal relief

Summary

- Lake Jane
  - Rapid EWM expansion increased extent from 0.1 acres in 2012 to 68.7 acres in 2016
  - 2015 herbicide treatment provided EWM seasonal relief, but rapid expansion of EWM more than doubled extent between 2015 and 2016

Summary

- Lake Elmo
  - EWM extent has increased annually during 2014-2016, from 51 acres in 2014 to 80 acres in 2016

Summary

- Since 2012, significant declines in *Potamogeton pusillus, P. amplifolius, P. zosteriformis, and Myriophyllum sibiricum* in Tri-Lakes
- Since 2012, significant decline in *Heteranthera dubi*a in Lake Olson and Lake Jane

Summary

- Since 2012, significant decline in *Potamogeton robbinsii* in Lake DeMontreville
- Since 2012, significant decline in *Potamogeton illinoensis* in Lake Olson
- Since 2012, significant decline in *Ranunculus aquatilis* in Lake Jane

Discussion

1. Is there a problem with aquatic plants (particularly Eurasian watermilfoil and native plants) in the Tri-Lakes (Lake DeMontreville, Lake Olson, and Lake Jane) and Lake Elmo?

2. If so, how should we:
   A. Curtail EWM expansion
   B. Stabilize native plant communities in the Tri-Lakes to prevent additional significant declines in native species