Incorporating citizen science in a study of invasive watermilfoil

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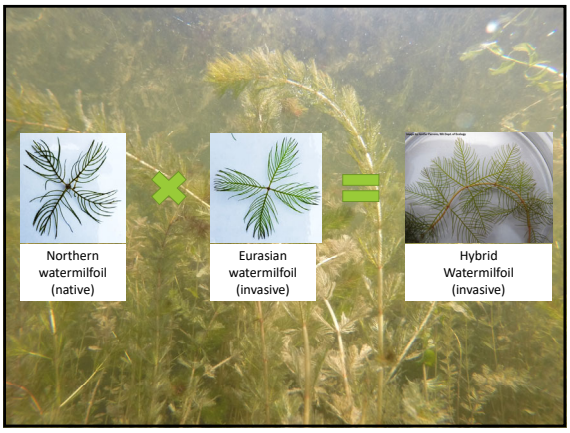
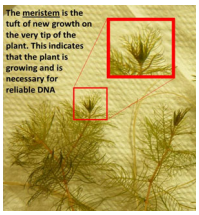
MICHIGAN STATE UNIVERSITY
MONTANA STATE UNIVERSITY
GRAND VALLEY STATE UNIVERSITY

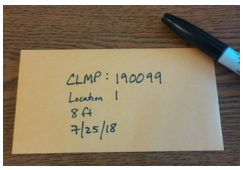
Michigan Inland Lakes Convention, September 2020

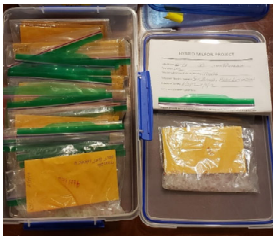


Michigan Invasive Species Grants Program

MiCorps Cooperative Lakes Monitoring Program



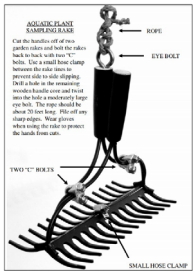




Equipment Checklist:

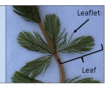
- These instructions*
- Hybrid Milfoil Project data sheet*
- Paper towels – for blotting plants dry*
- Zip-top bags with paper envelopes and silica gel beads – for containing and d
- Empty Zip-top bags – for briefly holding individual plant samples until they ca envelopes (optional)*
- Map of lake showing sample collection locations
- Pencil or indelible marker (e.g., Sharpie) for labeling envelopes
- Plant sampling rake (see image instructions below)
- Clipboard
- Global po latitude/l

*Included in your ppt



Quick Watermilfoil Identification:

- Feather-like underwater leaves
- Leaves have a straight midrib with many slender leaflets attached (see image)
- Leaves are whorled or alternate on stem

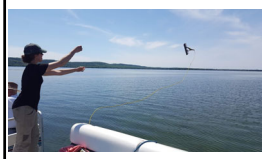


Common look-alikes:

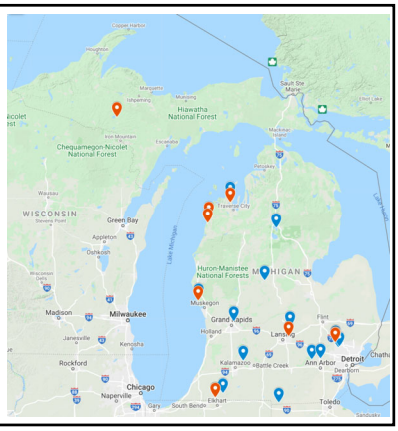
Look-alikes also have finely divided leaves, but they are not feather like. Instead the leaves can look like wishbones or are heavily branched as you see in the bladderworts.

Coontail

Bladderworts



Lake	County
Birch	Cass
Cass	Oakland
Coldwater	Isabella
Crystal	Benzie
Diane	Hillsdale
Dollar	Oakland
Duck	Muskegon
Eagle	Cass
Ellen	Iron
Gull	Kalamazoo
Higgins	Roscommon
Lamberton	Kent
Leelanau	Leelanau
Little Portage	Livingston
Lotus	Oakland
Maceday	Oakland
Otter	Oakland
Ovid	Clinton
Park	Clinton
Upper Herring	Benzie
White	Muskegon
Whitmore	Washtenaw



2019 Milfoil Genetic Analysis Summary for Lotus/Maceday Lake, Oakland County.

No. of samples analyzed	13
Total Eurasian watermilfoil	3
Total hybrid watermilfoil (Eurasian x Northern)	9
Total Northern watermilfoil	0
Total Variable watermilfoil	1
Total Whorled watermilfoil	0
Total Failed analyses	0

Map of Lotus/Maceday Lake, Oakland County, MI with 2019 milfoil genetic analysis results.

Outcomes for participants

100%

Shared results

- With lake association (69%)
- With consultant (31%)
- With neighbors or officials (19% each)

38%

Took action

- Incorporated into lake management plan (3)
- Treated (2)
- Monitoring (1)

Research results

Eurasian watermilfoil, including its hybrids, is genetically diverse

- Some strains can be found in more than one lake.
- Some lakes have only a single strain; some have multiple strains

Strains differ in growth, spread, impacts, and herbicide response.

Strain information is vital to management

- Data collection allows prioritization of the most widespread strains for testing

Genetic diversity and differentiation in populations of invasive Eurasian (*Myriophyllum spicatum*) and hybrid (*Myriophyllum spicatum* × *Myriophyllum sibiricum*) watermilfoil

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