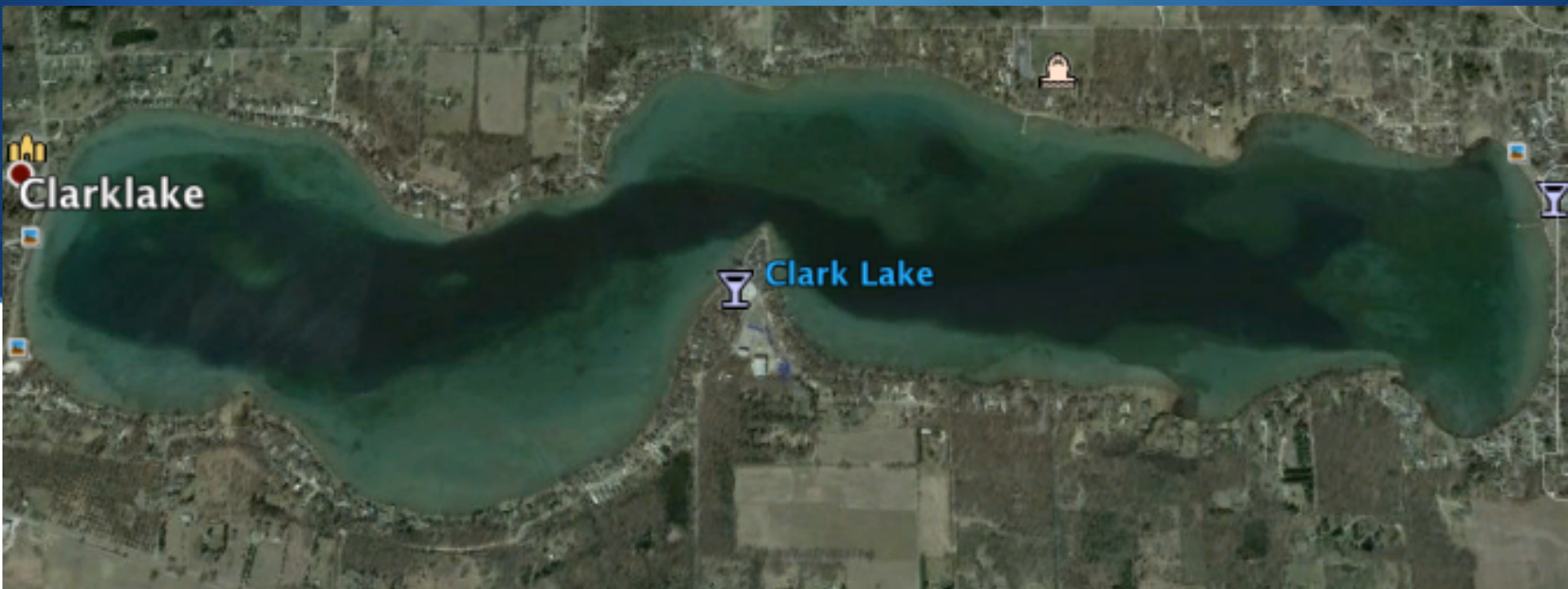
Clark Lake
Invasive Milfoil
Public Informational Meeting



Carley Kratz
River Raisin Watershed Council

- B.S. from University of Michigan specializing in botany
- Ph.D. from Michigan Technological University focusing on soils
- Program Director of the watershed council
  - Non-political organization dedicated to supporting education, monitoring, recreation and preservation
  - Clark Lake is our headwaters

www.riverraisin.org

What is Milfoil?

- An aquatic plant that spreads by fragmentation and underground runners
- Grows in nutrient rich sediment, muck
- Invasive species form dense mats
  - Grows earlier and more quickly than native plants
  - Has more leaflets than native milfoils
  - Hybrids between Eurasian and Native milfoil exist, and are also invasive

Identification

Coontail leaves are branched and spined. This plant is very lightly rooted or floating in the water column. It is very common in shallow, marsh-like areas and in older ponds.

Eurasian watermilfoil is a serious and rapidly spreading invader. This plant typically has more than 10 leaflet pairs per leaf, whereas native milfoils have fewer than 10. There are four leaves per node.

Inset diagrams show individual leaves.

Negative Impacts

- Dense mats compete with native plants
- Reduces biodiversity
  - Less habitat for native plants
  - Decreases diversity of macroinvertebrate “bugs”
  - Less food for fish
- Can inhibit recreation
  - Swimming, boating, fishing
- May cause property values to decline

How Milfoil Spreads

- Boats
  - Proper washing of boats and trailers between lakes
- Waterfowl
  - It's not their fault, but don't encourage them
  - Don't feed the wildlife!
- Education about preventing the spread of milfoil and other invasive plants is the most important factor

HELP STOP AQUATIC HITCHHIKERS!

To avoid spreading aquatic invasive species

BEFORE launching ... BEFORE leaving:

- Remove aquatic plants and aquatic animals
- Drain lake or river water away from landing
- Dispose of unwanted live bait in the trash

It's the Law... Do not:

- Transport aquatic plants, zebra mussels, or other prohibited species on public roads
- Launch a watercraft or place a trailer in the water if it has aquatic plants, zebra mussels or other prohibited species attached
- Transport water from infested waters

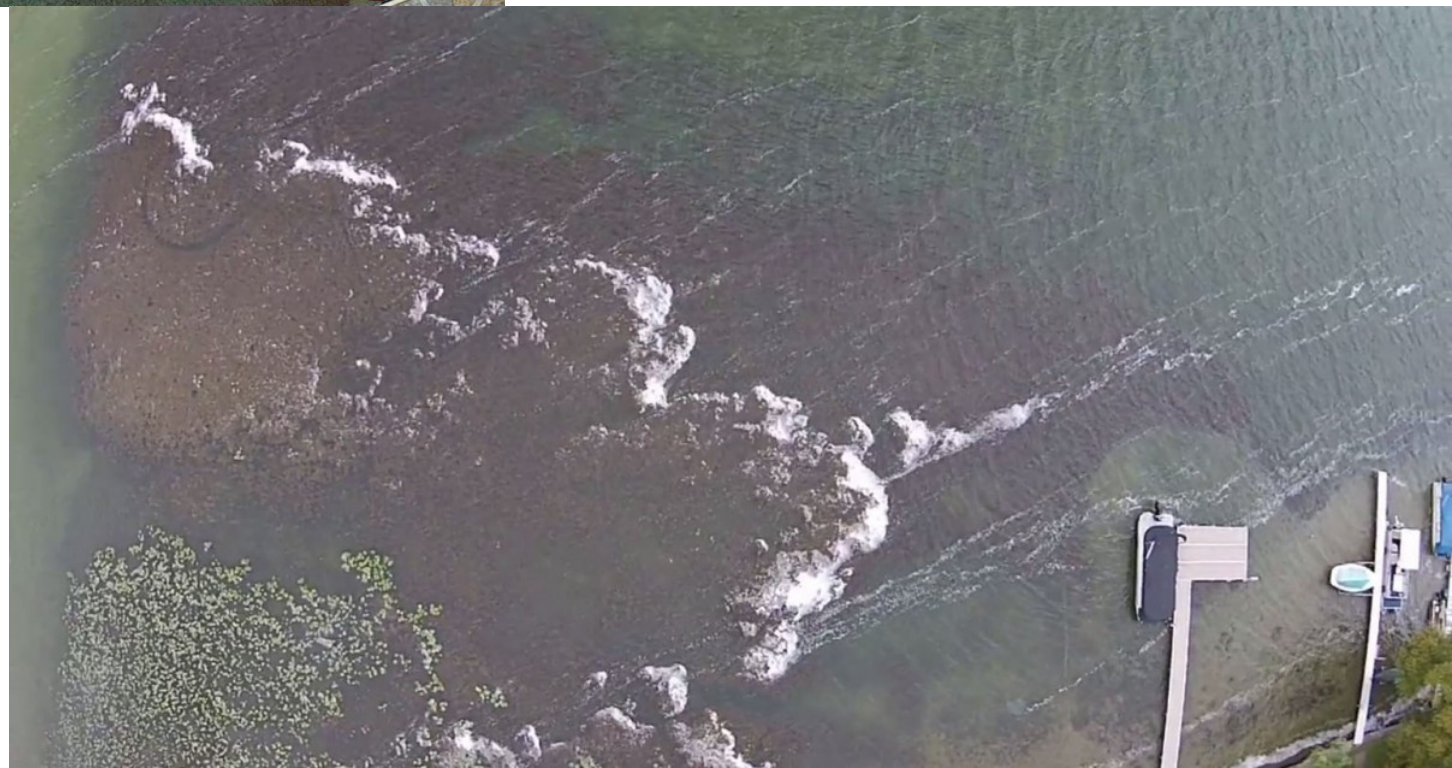
Michigan Department of Natural Resources

Invasive Milfoil at Clark Lake

- Presence of the invasive hybrid milfoil and Eurasian milfoil was determined by DNA analysis of plant tissues at Grand Valley State
  - Impossible to identify hybrid by appearance alone
- Aquatic Vegetation Assessment Survey (AVAS) conducted by Professional Lake Management (PLM) this fall
  - Over 20 acres of Clark Lake contain invasive milfoil

Spring
2013

Fall
2014



Management Plan

✓ 1. Conduct vegetative survey

2. Pros and Cons of each treatment option must be considered
3. Establish expectations
4. Apply treatment
5. Monitor vegetation and water quality before and after

Treatment Options

- Mechanical
  - Harvesting (with or without suction)
  - Mats
  - Bubblers
- Biological
  - Milfoil Weevil
- Chemical
  - Herbicides

Harvesting

Pros

Removes biomass by cutting top of plant

Stunts growth

Fragments can be carefully removed with suction or by hand

Cons

Creates fragments that can spread and take root

One fragment can great 250 million new plants in one year

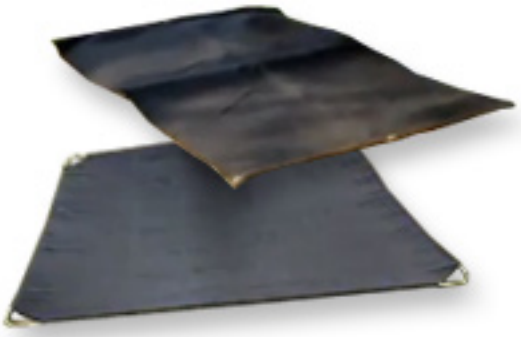
Must be done repeatedly

Benthic Mats

Pros

Kills all plants by blocking sunlight

Useful in small & shallow areas



Cons

Also kills native plants

Can move with waves

May be caught by propellers and fish hooks

Must be cleaned to prevent muck build up

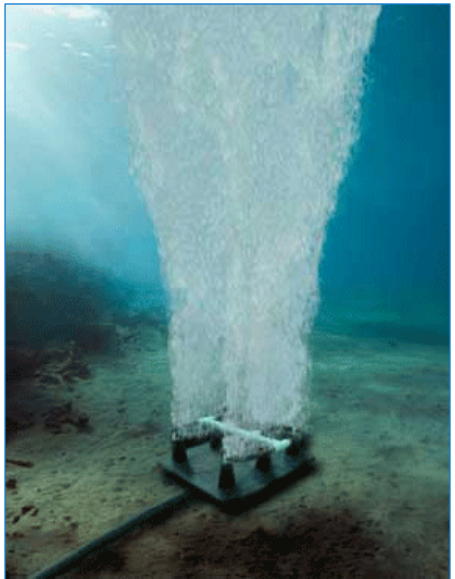
Costs $62k/acre

Permitting issues

Aeration Bubblers

Pros

Has worked to control milfoil in some shallow lakes



Cons

High electrical costs ($500/ acre)

Difficult to cover large area

Not practical in deep waters

DEQ is concerned about negative impacts—Permitting may be impossible

Biological Control

Pros

Weevils have been successfully used in some cases

Cons

Expensive ($2.4k/acre)

May be more effective on native milfoil than invasive varieties

Native fish eat weevils

Company that sells weevils may be going out of business

Herbicide

Pros

Kills milfoil without spreading it further

Granular formula sinks to bottom of lake and targets milfoil not other plants

Permit process is straight forwards

Cons

Must be reapplied periodically with new introductions

Hybrid milfoil may require higher doses, increasing cost ($450-750/acre)

Permitting for Herbicides

- Permits from the DEQ must be applied for 3 months before treatment
- Spot treatments require a less complicated permitting process vs. whole lake treatment

Herbicide Chemistry

- triclopyr, or Renovate is frequently used
- No harm to swimmers, pets, fish & other wildlife
- Granular formula decreases risk for drifting
- Follow-up water testing
- 24 hour restriction near treated area for irrigation of landscaping with lake water

Other Herbicides

- 2,4-D
  - Synthetic plant hormone
  - Cheaper than Renovate
  - Used in whole lake treatments
  - 2,4-D is NOT agent orange
- Round-up, or Glycophosate
  - Inhibits protein production in broadleaf plants
  - Used on lawns and in agriculture

Treatment History in Other Irish Hills Lakes

- Round Lake attempted biological control
  - Weevils died over the winter
- Devil's Lake has attempted to harvest milfoil
  - Caused milfoil to spread
- 13 lakes have used herbicides to treat hybrid milfoil

	Name of Lake	Aquatic Permit
1	Columbia	PLM
2	Devils	PLM
3	Dewey	Association responsible
4	Evans	Aquatic Services
5	Iron	Aquatic Enhancement
6	LeAnn	PLM
7	Loch Erin	Association responsible
8	Mud	PLM
9	Round	PestPatrol
10	Sand	PLM
11	Somerset	PLM
12	Vineyard	PestPatrol: Canal only
13	Wamplers	PLM

Pilot Project

- Shallow water, drifting fragments
- Pilot project will treat a few areas with herbicides
  - Eliminate dense milfoil for visiting swimmers
  - Test effectiveness of herbicides with vegetative surveys and water quality monitoring
  - Estimated cost $2,100-$2,700

Pilot Project

Moving Forward

- Education
  - Early Detection & Rapid Response
  - Prevent new introductions
- Management
  - Limit social, economic and ecological harm
  - Changing treatment methods overtime once milfoil population growth is controlled

Donate to Enhance the Lake

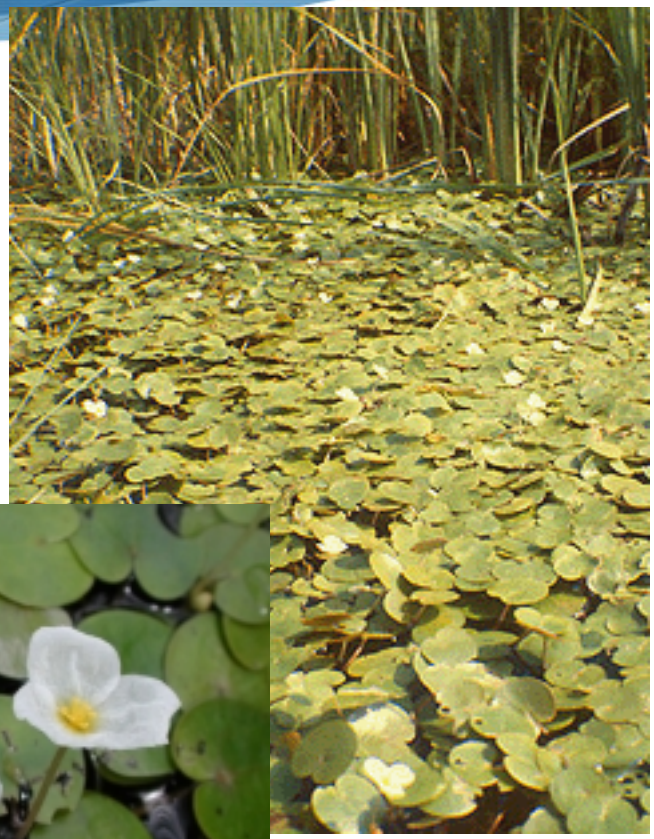
Tax deductible donations are being accepted by the Clark Lake Sprit Foundation for pilot project and future management

www.clarklakespirit.com

Clark Lake Spirit Foundation
PO Box 224
Clark Lake, MI 49234

Keep an Eye Out for European Frogbit

- Small leaves about the size of a quarter
- Looks like a lilly pad
- Small white flowers



Keep An Eye Out for Starry Stonewort

- Looks much like Chara
- Found in nearby lakes
- Feels oily
- A type of filamentous algae
- Has small white flowers on clear “strings” and redish brown bulbs on leave axes