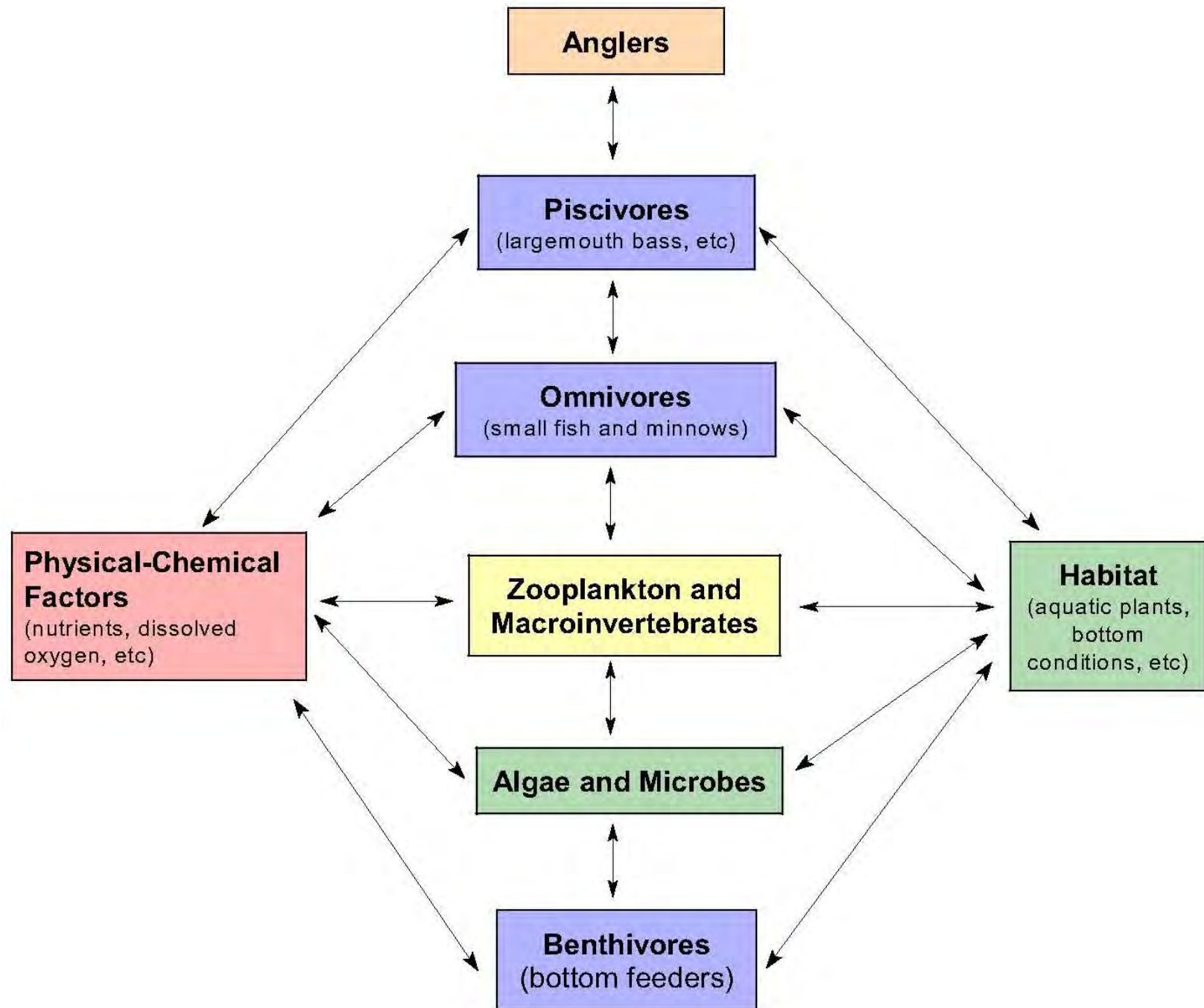


Overview of the Briggs Chain of Lakes

Steve McComas
Blue Water Science

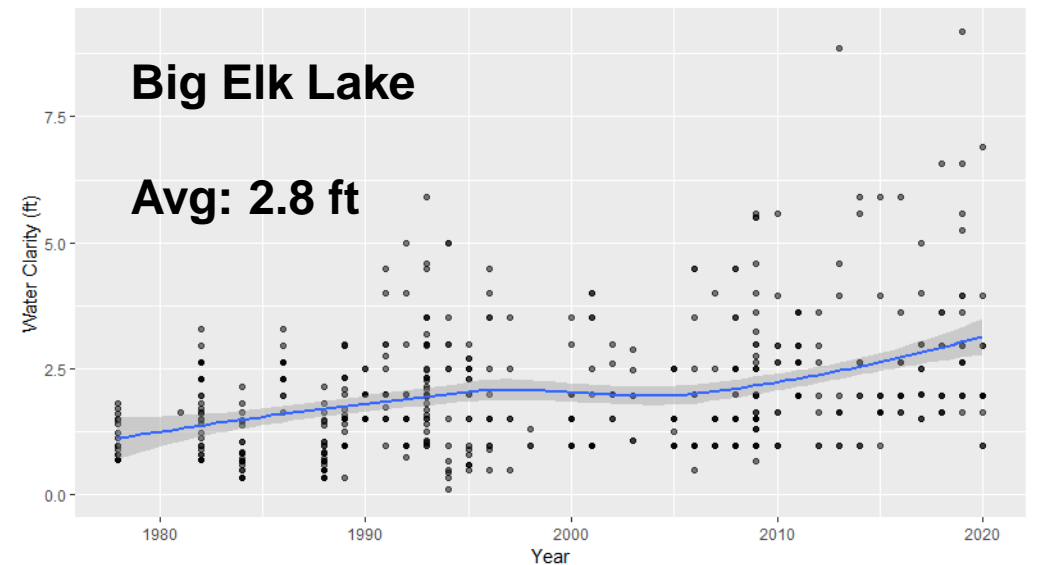
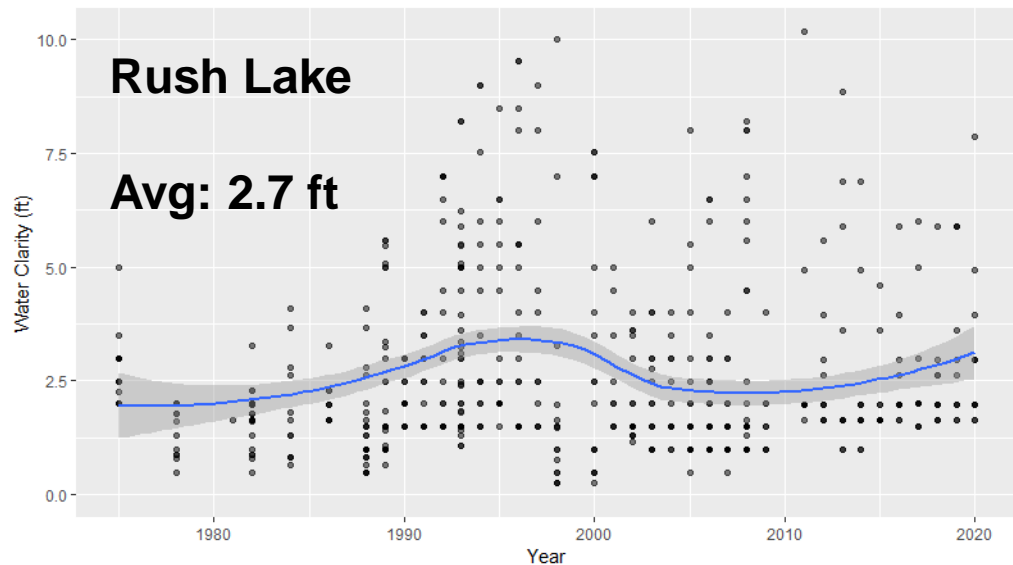
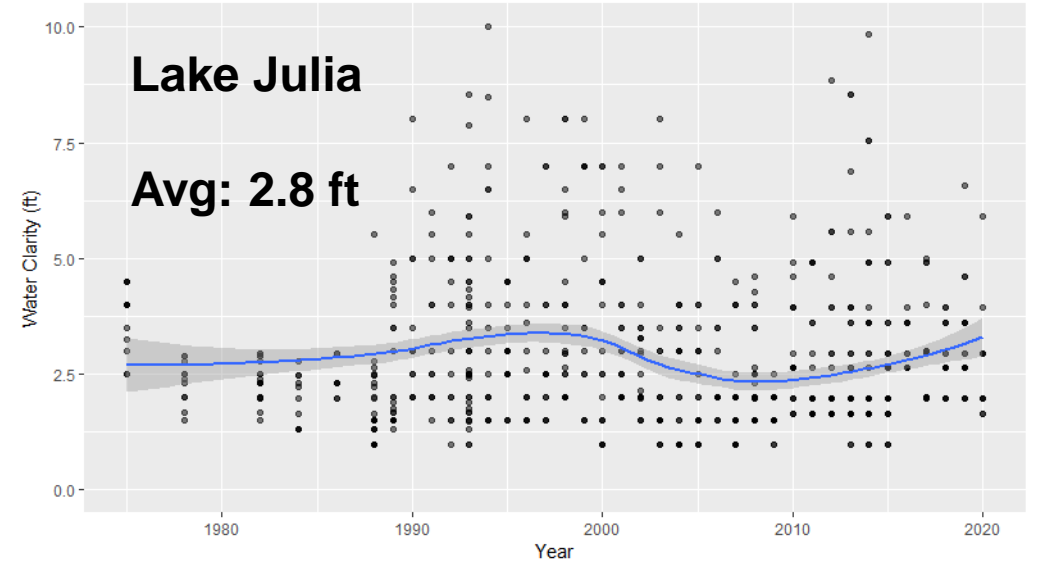
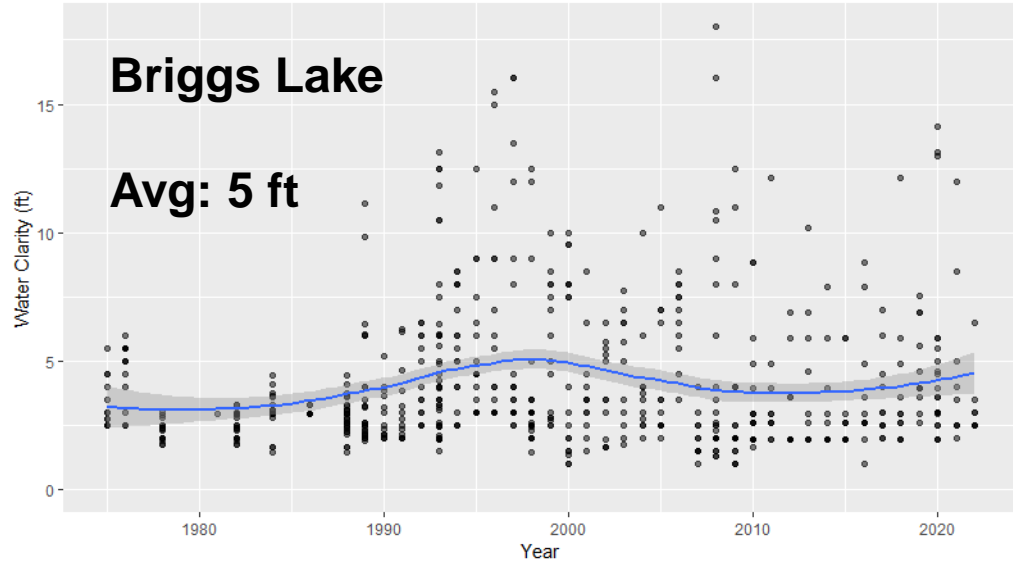
September 12, 2023

How a Lake Works



Web of Interactions

Lake Clarity of the Briggs Chain

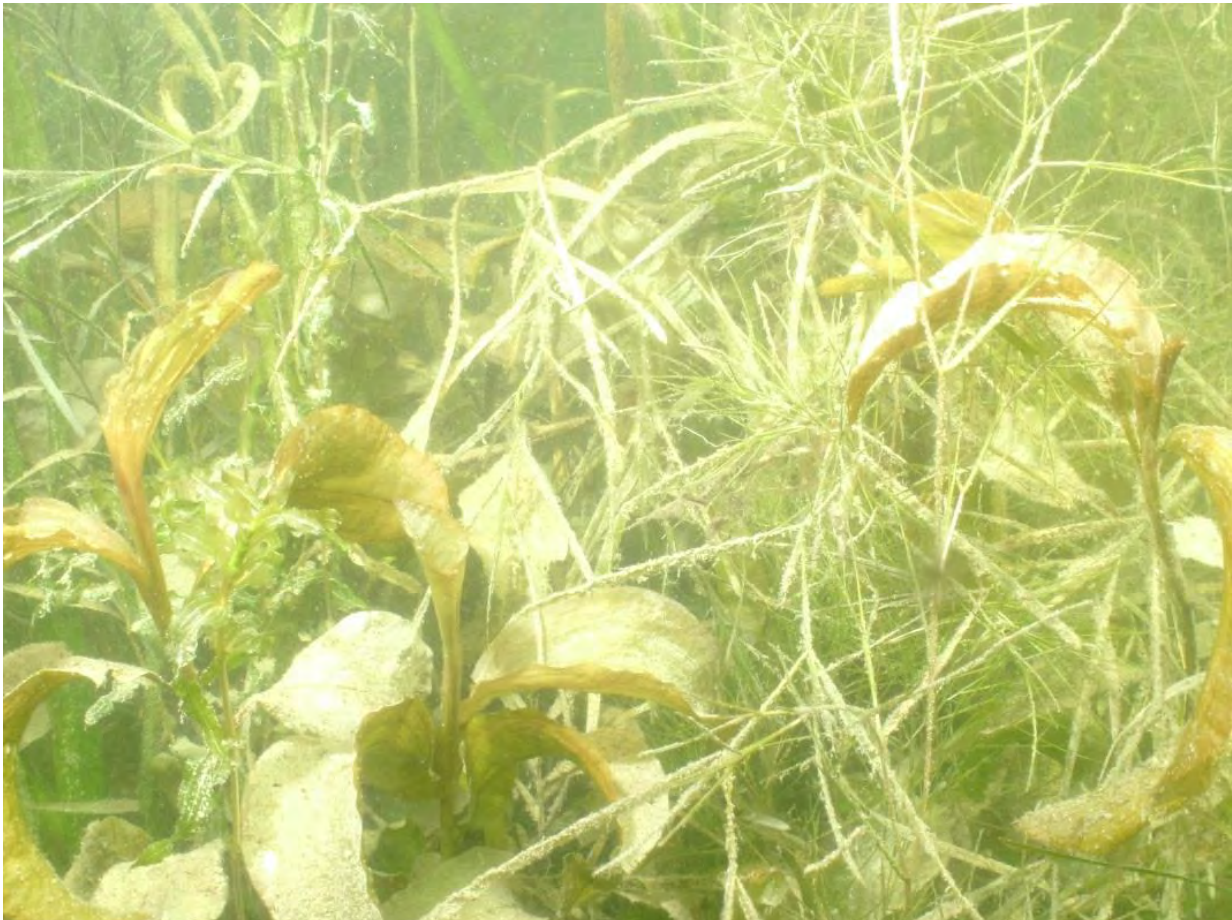


Lake Water Quality Chart

Lake	Clarity (Secchi disc) (meters)	Algae (chlorophyll a) (ppb)	Nutrients (phosphorus) (ppb)
Briggs	1	47	95
Julia	1	24	58
Rush	1	55	106
Big Elk	1	57	144
Ecoregion Values Shallow Lake	>1.0	<20	<60
Ecoregion Values Deep Lake (Briggs)	>1.4	<14	<40

Native Aquatic Plants Are Key to Clarity

(Use the 40% Rule)



Algae: Good (single cells) and Bad (Cyanobacteria)



If clarity <3 ft caution.

Filamentous Algae (non-toxic)



Filamentous Algae

While this algae may affect enjoyment of the lake it does NOT pose any health risks



Source: Comfort
Lake/Forest Lake
Watershed District

Aquatic Invasive Species in Briggs Chain

Present

- Curlyleaf pondweed
- Eurasian watermilfoil
- Golden clam
- Carp

Not Present

- Starry stonewort
- Zebra mussels

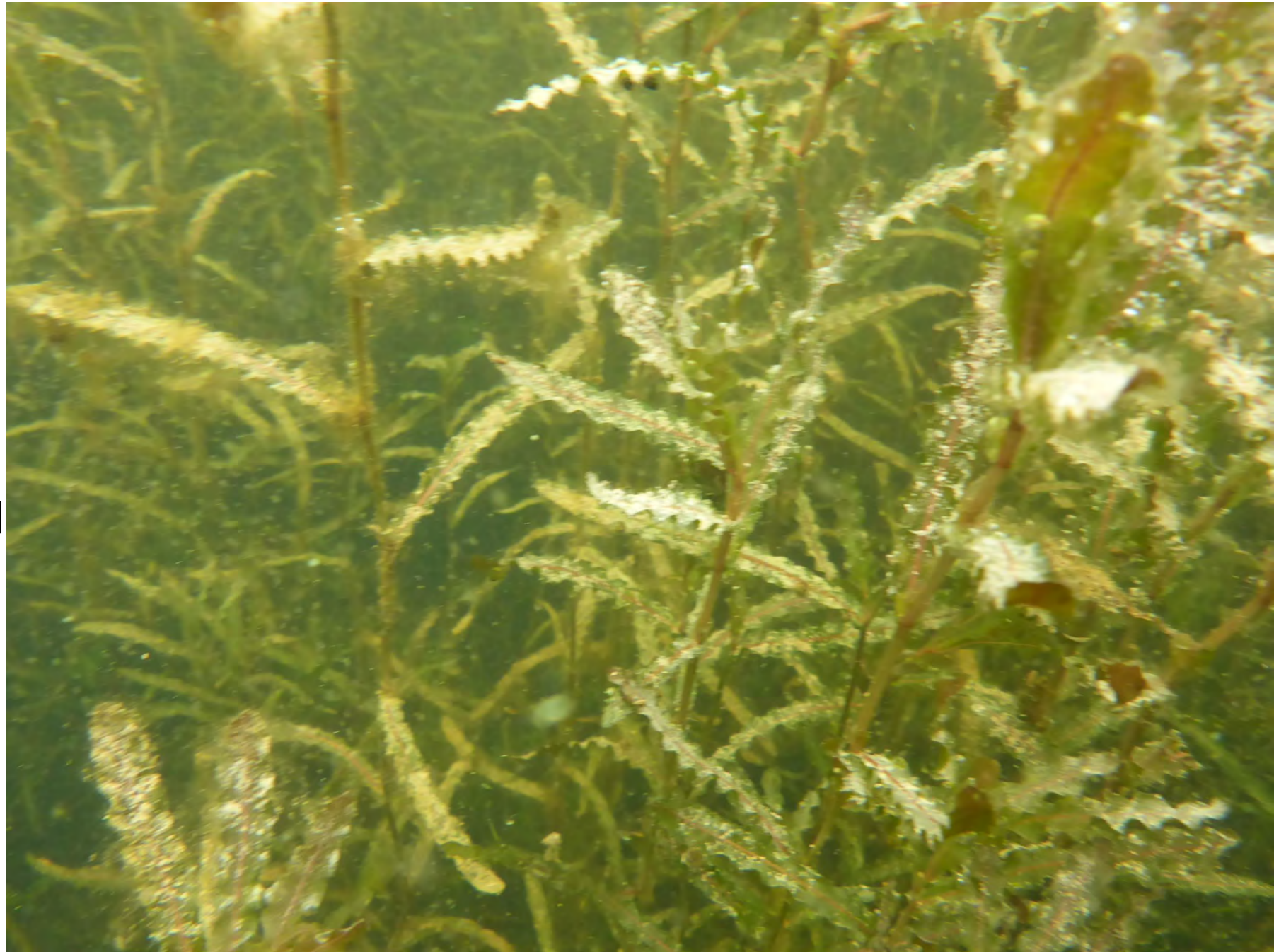
Curlyleaf Pondweed

41 acres treated in 2023.

Herbicides are registered
and approved by EPA.

In over 800 lakes in
Minnesota.

Sediment pH and iron
are important for growth.



Eurasian Watermilfoil

10 acres in Big Elk
(2022).

EWM is in 415 lakes in
Minnesota.

High nitrogen specialist.



Golden Clam

Exterior Features



In 3 lakes in Minnesota.

True clam. Doesn't do well in cold water.

Periostracum

Growth Ridge

Color: Light tan or brown colored shell, but color can vary.

The shell has thick elevated concentric growth rings.

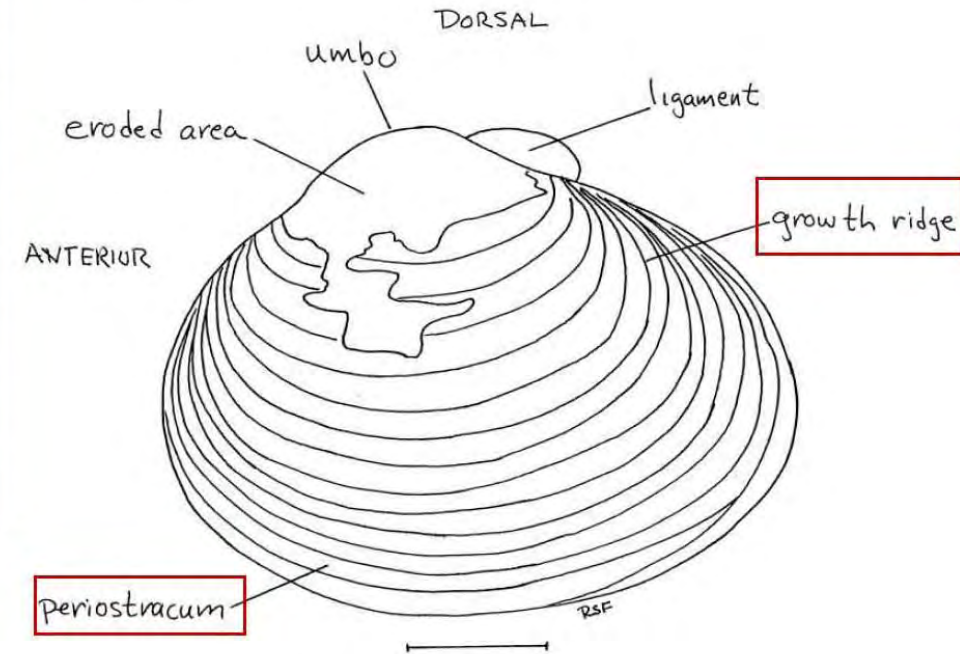


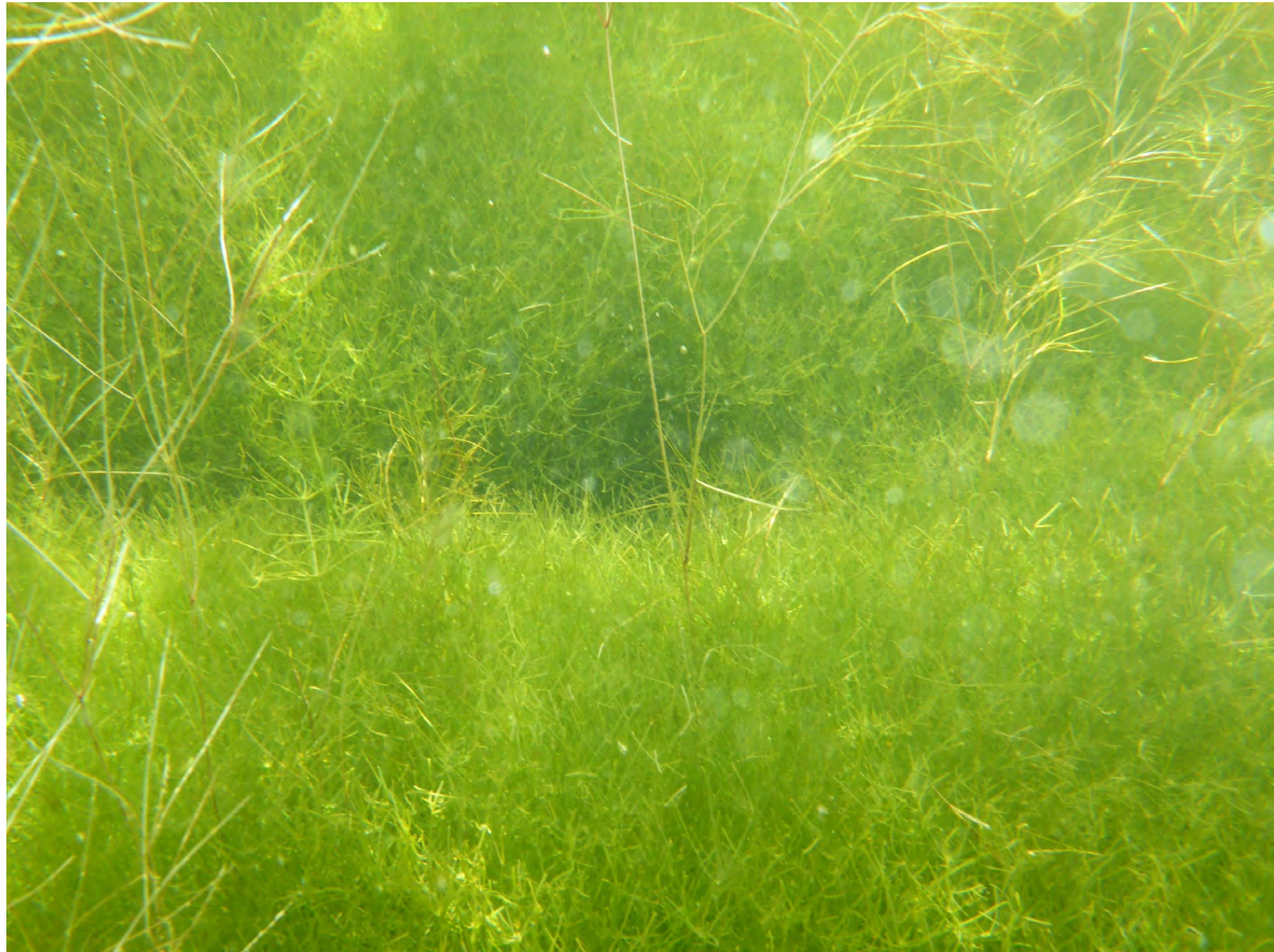
Figure 1. *Corbicula fluminea*. Exterior of left valve.

Starry Stonewort

Not in Briggs Chain.

In 25 lakes in
Minnesota.

Related to chara.



Zebra Mussels

Not in Briggs Chain.

In 593 lakes in
Minnesota.

Conditions not
optimal in Briggs
Chain.



Lake Management Projects

- Large Scale
and
- Small Scale

Large Scale: Carp Removal



Large Scale: Watershed Projects

- No-till field



Soybeans grown into corn stalks in a no-till field in Union County, Iowa (USDA)(Washington Post)

Large Scale: Alum Sediment Treatment

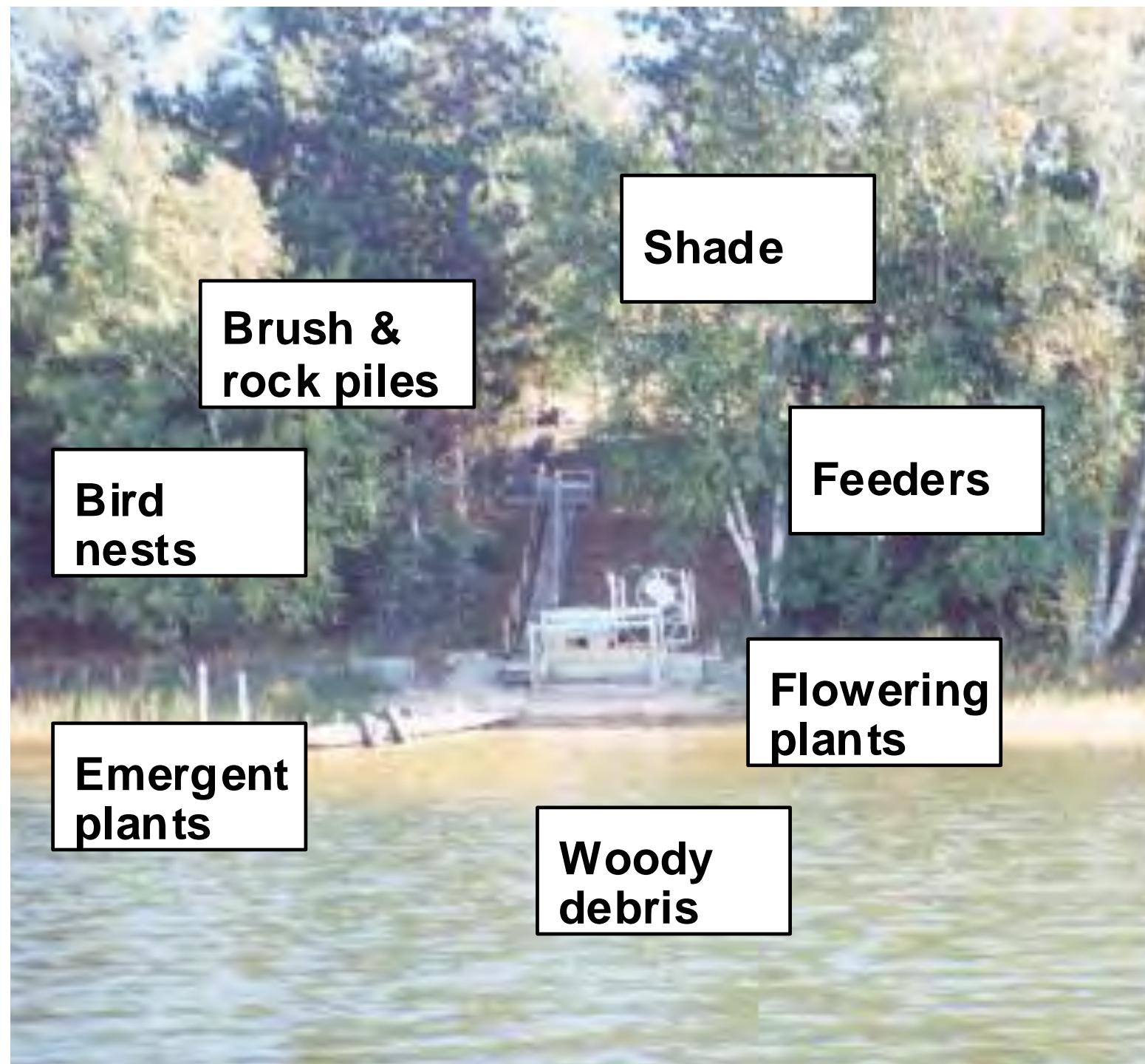
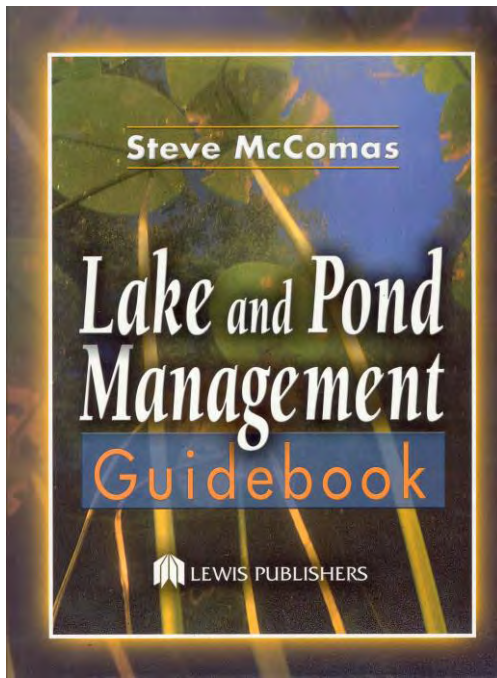
Phosphorus Release from Sediments



ALUM APPLICATION

Small Scale Projects

- Native Landscaping
- Hand removal of aquatic plants (2,500 sq ft)
- Aqua Thruster



Aqua Thruster

Don't need a permit if used correctly.

Source: MnDNR

CONSIDERING A HYDRAULIC JET?

KNOW THE RULES

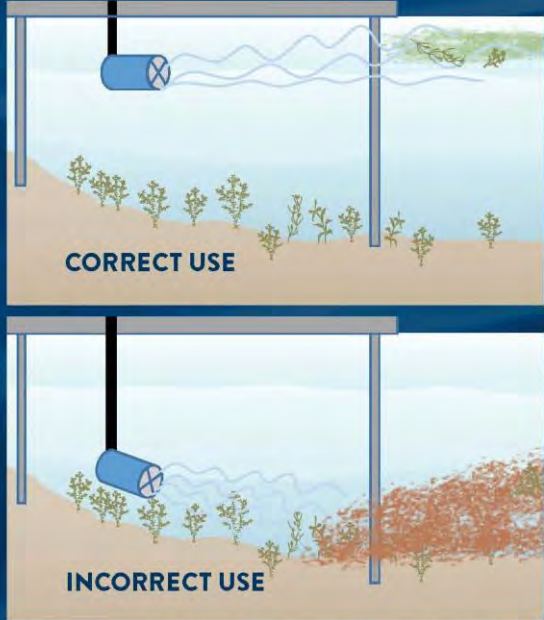
- **Legal:** Blowing away floating surface debris and algae, if lake bottom is not disturbed. No permit is needed.
- **Not legal:** Using a hydraulic jet in any way that disturbs the lake bottom or uproots aquatic plants. Illegal use of hydraulic jets may result in a citation, restoration order or both from a state conservation officer.

CONSIDER FISH, WATER QUALITY AND NEIGHBORS

- **Illegal use:** Destroys fish habitat and clouds the water.
- **Improper use:** Creates mats of vegetation and unnatural sediment berms that reduce enjoyment of the lake.

Hydraulic jet brand names examples include: HydroSweep Pro, Aqua Thruster, Aquasweep and Aqua Blaster.

PLACEMENT IS CRITICAL ←



CORRECT USE

INCORRECT USE

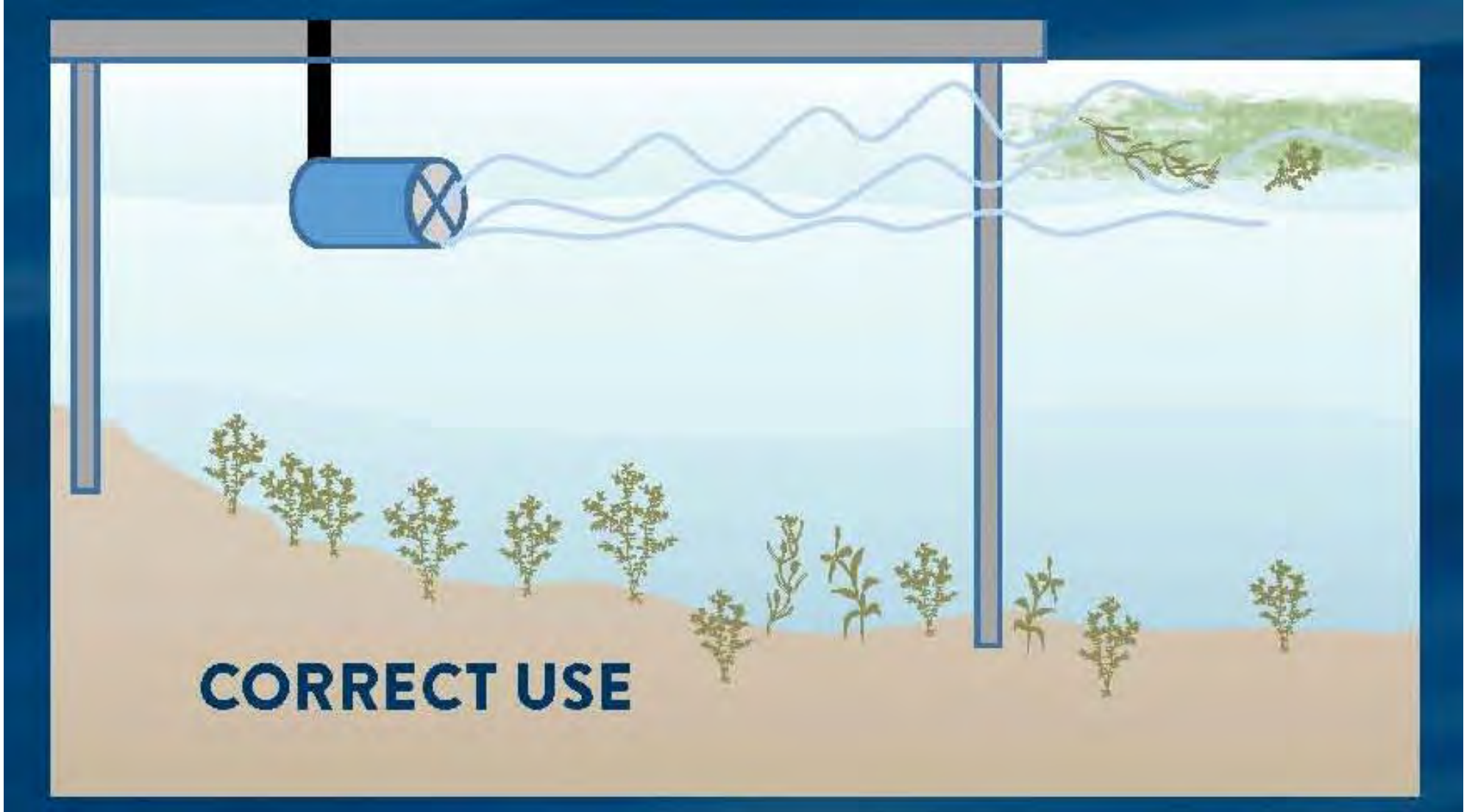
Some shallow sites with soft sediment may not be suitable for a jet no matter the orientation.

m DEPARTMENT OF NATURAL RESOURCES

FISH AND WILDLIFE
500 Lafayette Road, St. Paul, MN 55155-4036

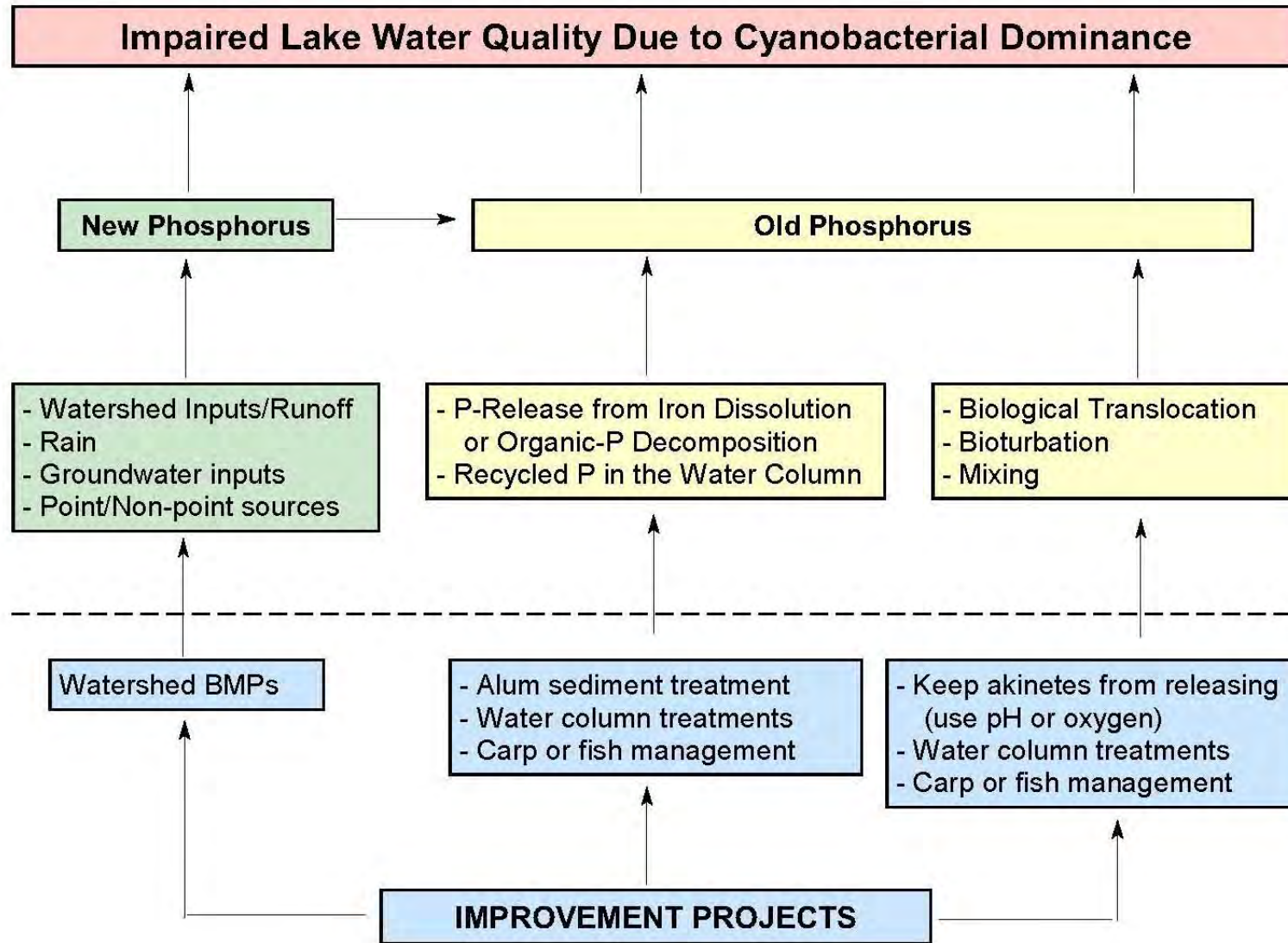
Call us, new longer hours.
M-F 8 a.m.-8 p.m., Sat. 9 a.m.-1 p.m.
888-MINNDNR www.dnr.state.mn.us

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CORRECT USE

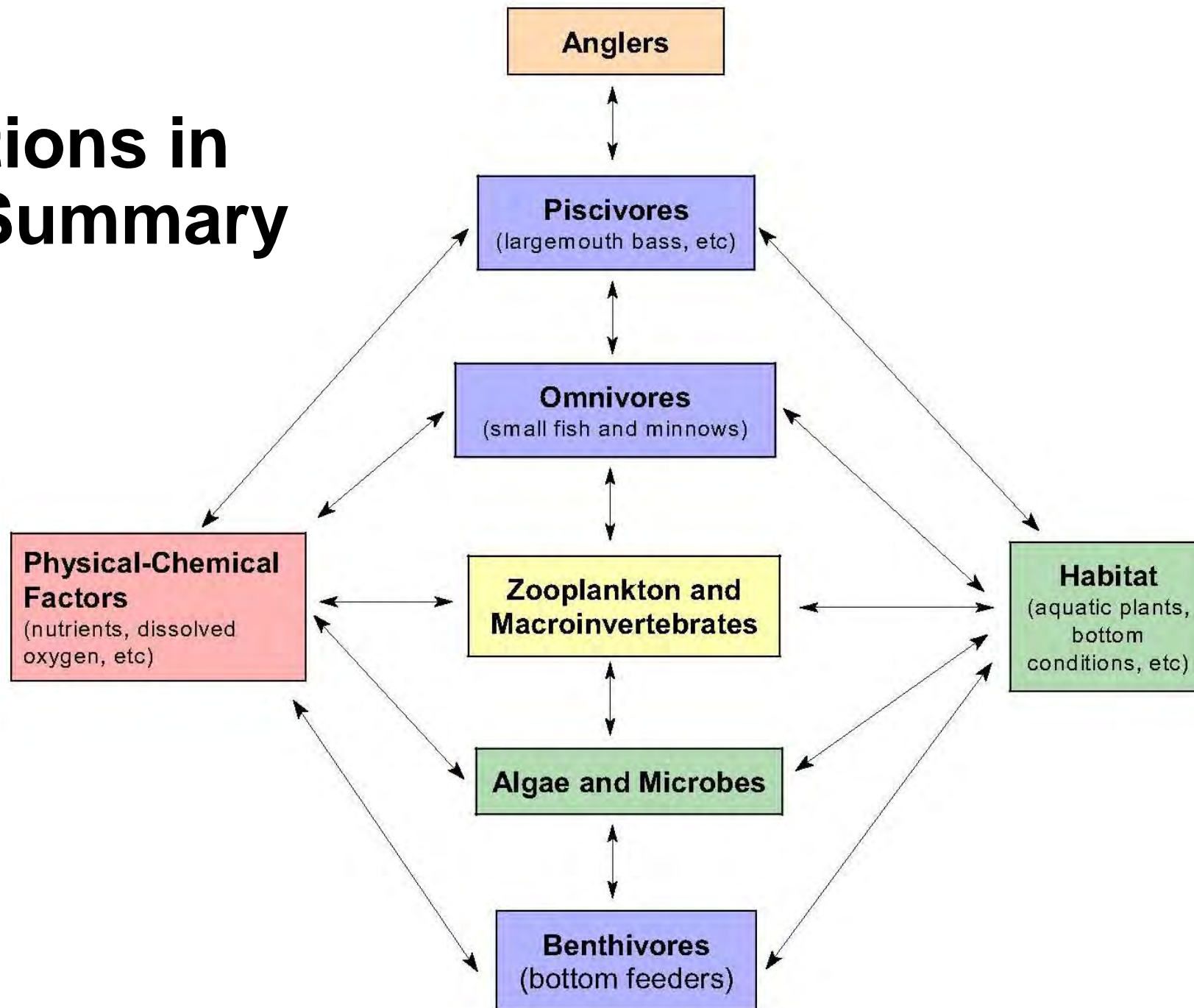
What Can We Do For Water Quality Improvements?



What Can We Do for AIS Management

- Herbicides/Algaecides
- Harvesting
- Small-scale hand pulling
- Sediment amendments

Interactions in Lakes Summary



Lakes Are Fun

EATON'S CAMP AND COTTAGE BOOK

1940



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