

Citizen Lake Monitoring Network

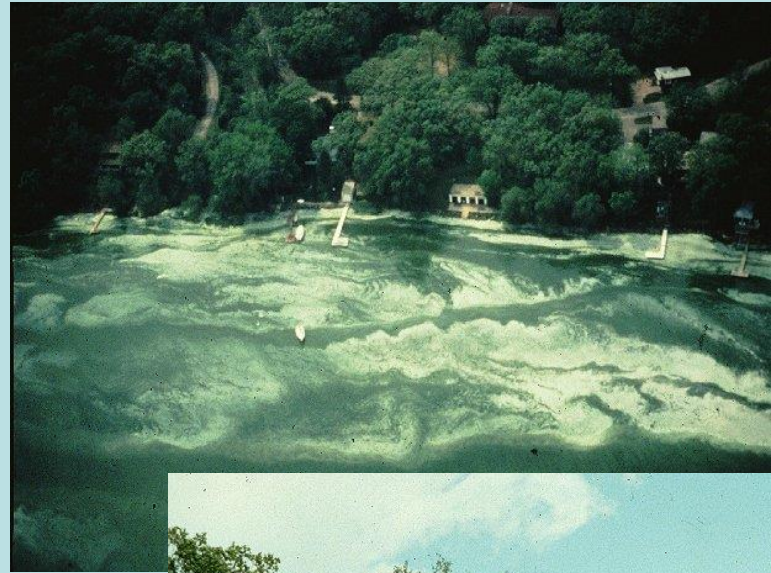


Wisconsin's Lakes are Changing Faster than Ever:

Algae blooms
(phosphorus pollution)

Destruction of
shoreline habitat

Invading plants and animals



Citizen Lake Monitoring Network

1986 – 126 volunteers collecting secchi data on 113 Lakes

1990 – expansion – 25 lakes for

**Secchi, total phosphorus, chlorophyll, temperature
and dissolved oxygen**

1991 – 2005

**Secchi, total phosphorus, chlorophyll, temperature,
and dissolved oxygen with some regions having
volunteers collect data on Aquatic Exotics**

2006 - Statewide effort to monitor for Aquatic Invasives

**2007 – Statewide effort to have Trainers teach Secchi and
AIS monitoring**

2009 – Additional AIS added

Aquatic Invasive Species Monitoring

We are after

- **Better state coverage**
- **More volunteers**
- **Consistency**
- **Approved protocols**
- **More species**

What do we want to help you do?

- Become familiar with common native aquatic plants & animals in your lake.
- Monitor for the more common non-native aquatic invasive species that could get into your lake.
- Communicate findings from your lake monitoring efforts to others.

Why are we concerned about Aquatic Invasive Species?

- **Negatively impact our water resources**
 - Destroy, disrupt, or change natural habitat
 - Disrupt food chains
 - Out-compete and replace native plants and animals
 - Impact lake quality and water quality
 - Interfere with recreational use of lakes and rivers
- **Nearly impossible to eradicate or remove once present creating a new, likely permanent & often expensive, course for management**

Why conduct AIS monitoring?

- Protect your property value
- Protect your lake
- Cost savings – catch the invasive species early and save money controlling that invasive
- Protect neighboring lakes
- Because you can!!

Manual components

- Contacts
- Section 1 – Getting Started
- Sections 2-11 monitoring by Species
 - Overview of each species
 - ID tips
 - Monitoring protocols by species
 - Data entry
 - Herbarium labels & equipment building directions as needed
 - Reporting forms

What other equipment/materials will I or might I need?

- A rake, either one or two sided, on a rope or on a pole.
- An underwater view scope
- Waders or hip boots
- Snorkeling gear
- A boat
- Crayfish traps, nets, zebra mussel substrate sampler, beetle rearing materials, weevil sampling gear
- Identification & information pamphlets

Setting up a monitoring team

- Designate a contact person**
- Obtain a map**
- Divide up the work**
- Report the findings**

Contact person

- **Coordinates monitoring**
 - **Makes sure entire lake is covered**
 - **Checks on volunteers to see how monitoring is going**
 - **Vouchers plants**
 - **Takes “suspect” plants in to LWCD, UWEX, or DNR**
 - **Compiles data**

Obtain Lake Maps

- DNR**
- Fishing Hot Spots**
- Bait Shops**
- Web sites**

Divide up the Work (examples)

- **Have volunteers monitor 1-mile of shoreline**
 - **Shoreline Weed Action Team (SWAT)**
- **Have volunteers monitor specific species**
- **Volunteers without boats can do beach monitoring or zebra mussel monitoring**
- **Bring in Bait Dealers to “store” plants**
- **Maps for lake users to mark where they found suspect plants**

Report Findings

- **Let people know what your results are**
 - **Newsletters**
 - **News articles**
 - **County Land & Water Conservation Dept.**
 - **DNR, UWEX, GLIFWC**
 - **Surface Water Inventory Management System (SWIMS)**

When to monitor

- **Native plants – June through August**
- **Eurasian water-milfoil – May through October**
- **Curly-leaf pondweed – May through July**
- **Purple Loosestrife – July and August**
- **Rusty crayfish – June through August**
- **Zebra mussels – Ice out to ice on**
- **Mystery snails – Ice out to ice on**
- **Waterfleas – June through September**
- **Freshwater jellyfish – Aug. through Sept.**
- **Hydrilla – May through October**
- **New Zealand mudsnail – Ice out to ice on**

Where to look

- Beaches**
- Launches**
- Marinas**
- Camps**
- High use private landings**
- Inlets**
- Entire Lake**

Eurasian Water-milfoil

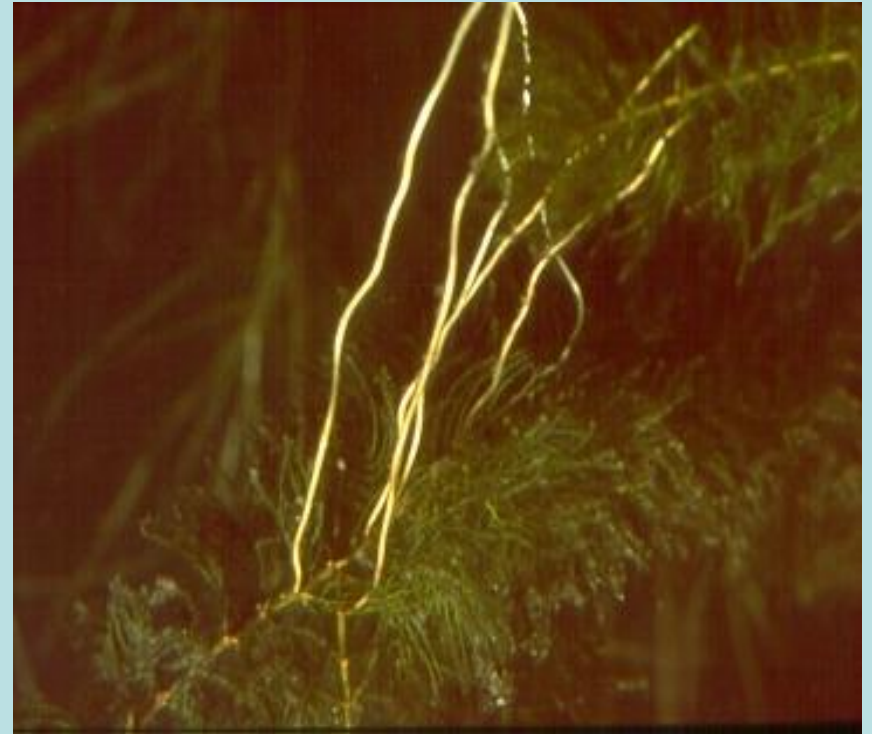


Exotic Eurasian Water-milfoil

- 11 Native Species of Water-milfoil in USA
- 7 Native Species of Water-milfoil in WI
- EWM Native to Asia and Europe
- EWM Arrived in US in 1942 & WI in 1960s

Out Competing Native Plants

- Reproduces by seeds, runners & fragmentation
- Begins to grow at colder temperatures and lower light levels
- Possesses canopy growth pattern
- Not susceptible to native pathogens





EWM

- Early spring – late fall
- Fast grower
- Up to 20 feet tall
- Distance between whorls
- Lower leaflets same length
- 12-21 leaflet pairs
- Pink coloring at tip
- NO WINTER BUDS

Non-native



NATIVE





Eurasia water-milfoil will form monoculture stands. Plants can be 20 feet tall



**AUTOFRAGMENTATI
ON**

UGA1624031



**Native milfoils form
turions**







232 MADE IN USA



WAVE TOP



**Northern water-
milfoil on left**



**Eurasian water-
milfoil on right**

Eurasian Water-milfoil
Little Saint Germain Lake
June 30, 2003

A photograph of a Eurasian Water-milfoil plant specimen. The plant has thin, reddish-brown stems and dense, feathery green leaves. Three black arrows point from the text 'Advantageous roots' to three separate, thin, light-brown roots extending downwards from the main plant structure.

Advantageous roots

This sample was found free floating



**Map the milfoil
beds.**

**•Is it an isolated
bed?**

**•Is it over the entire
lake**

2008 – Pilot study

Refined & statewide in 2009

Eurasian water-milfoil Weevil Monitoring ***Euhrychiopsis lecontei***

- Weevils are native to the US
- Weevils eat native water-milfoils but prefer EWM
- They may produce several generations in a season
- Weaken EWM growth and vigor, often causing it to collapse in the lake
- Overwinter in undisturbed shorelines.





















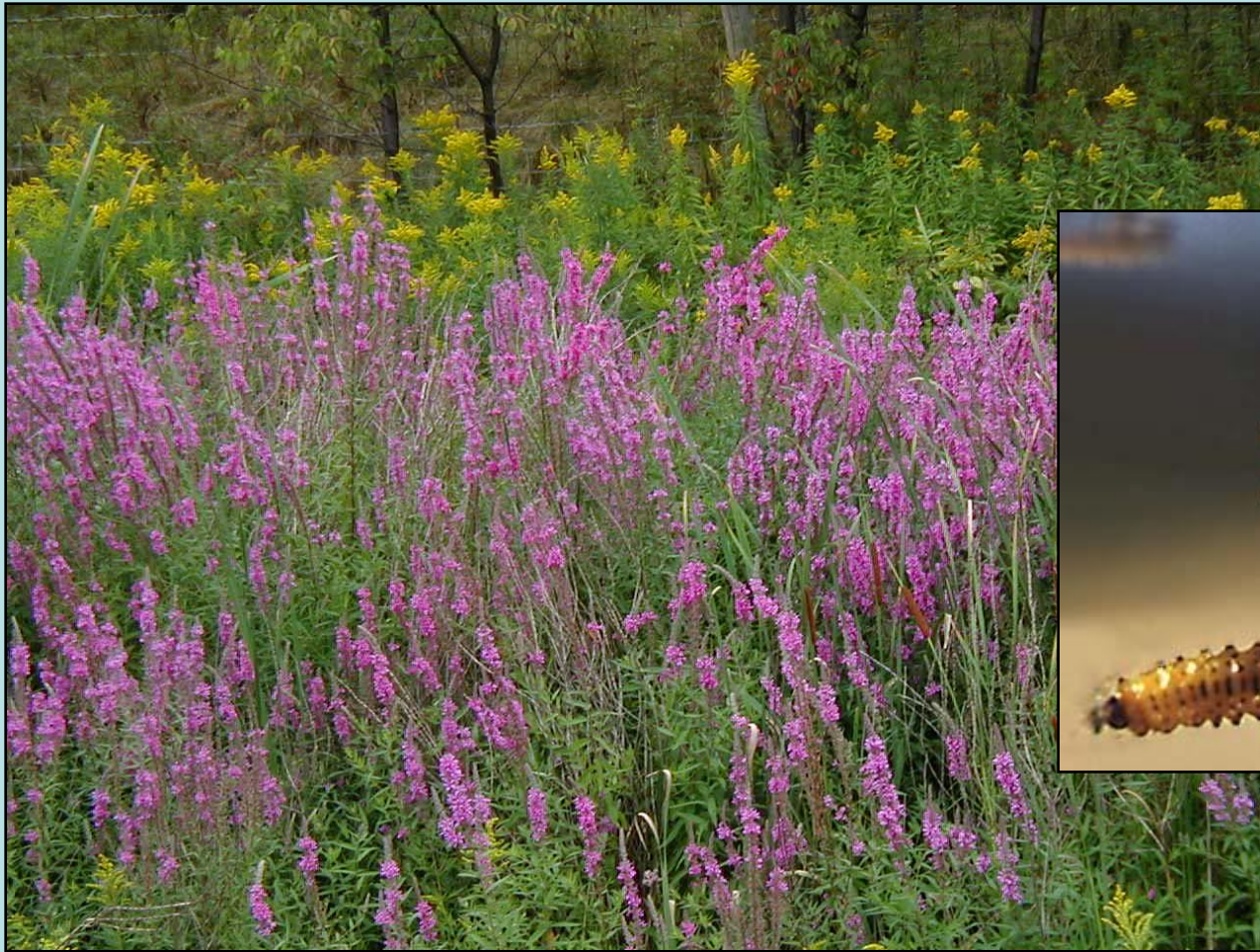


Loosestrife Watch Program

Where to Look

- **Roads**
- **Hiking trails**
- **Lake Shore**
- **Streams**

Raising Galerucella Beetles



DIGGING



PLANTING





GROWING



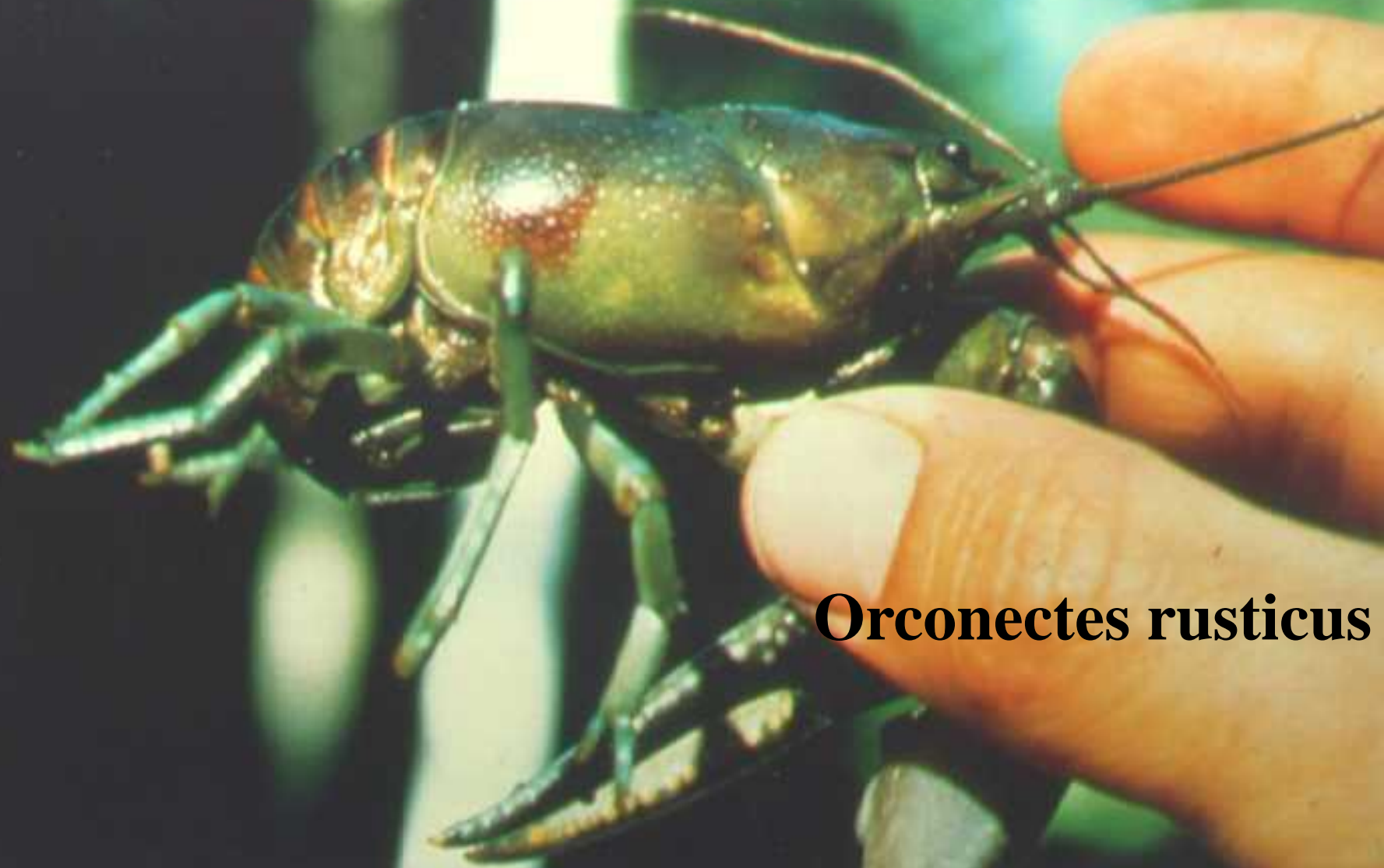


Host plant roots are dug up and planted in pots. Pots are covered in netting to protect the loosestrife beetles from predators. Beetles are added once the plants reach 2 feet tall.



**Beetle larvae
damage on
host plant**





Orconectes rusticus

Regulations When Collecting Crayfish

- **Fishing License or Small Game License**
- **Cannot have fishing gear**
- **Traps**
 - **Trap dimensions – length and width**
 - **Opening size**
- **Netting**
 - **Net size**
 - **Have to be lifted vertically**







16 6:49 AM



18 6:51 AM



Quagga on the left and zebra mussel on the right. Note the round hinge edge on the Quagga as compared to the flat hinge area on the zebra mussel.

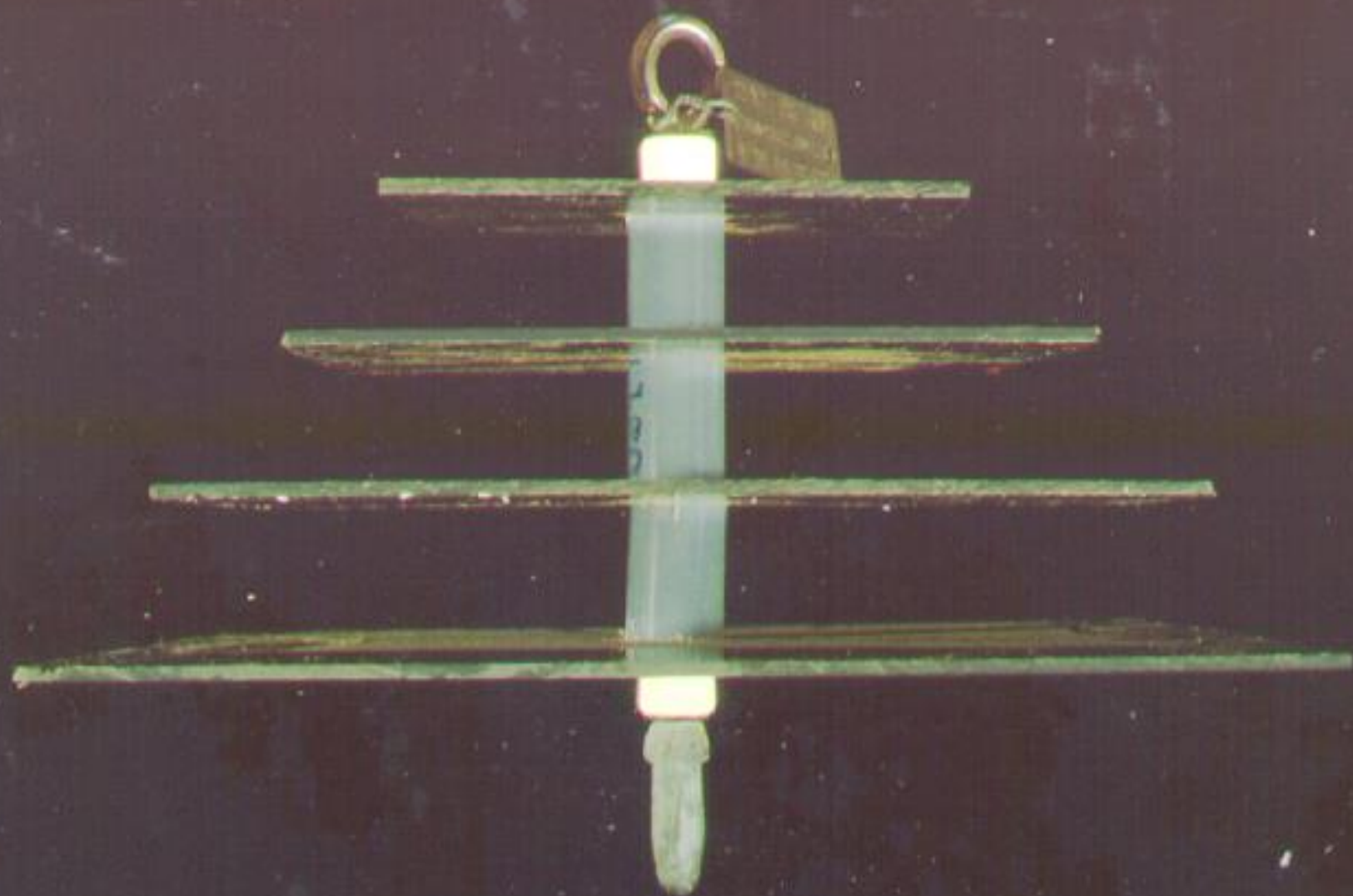


Quagga mussel on the left and zebra mussel on the right.









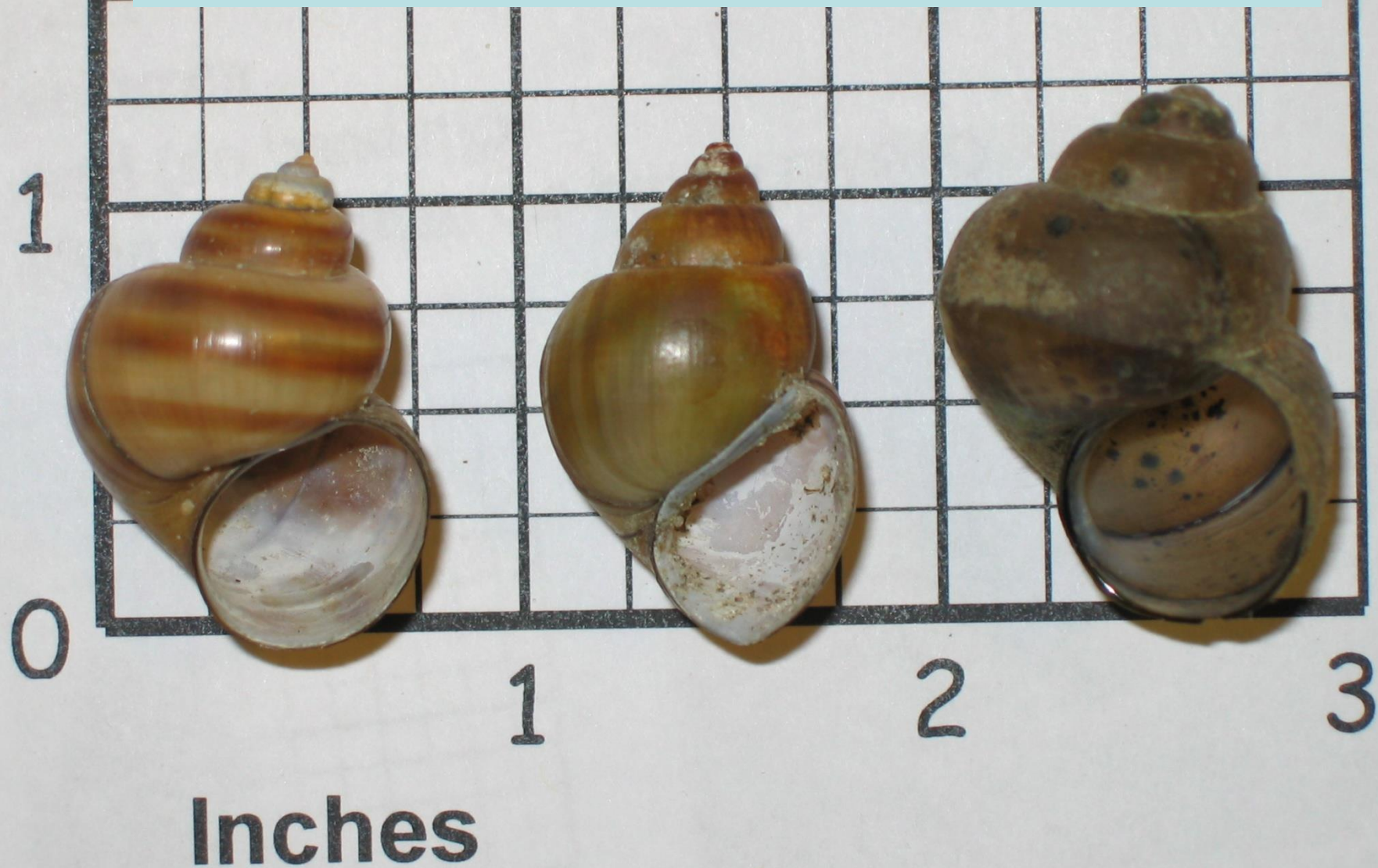


17 6'97

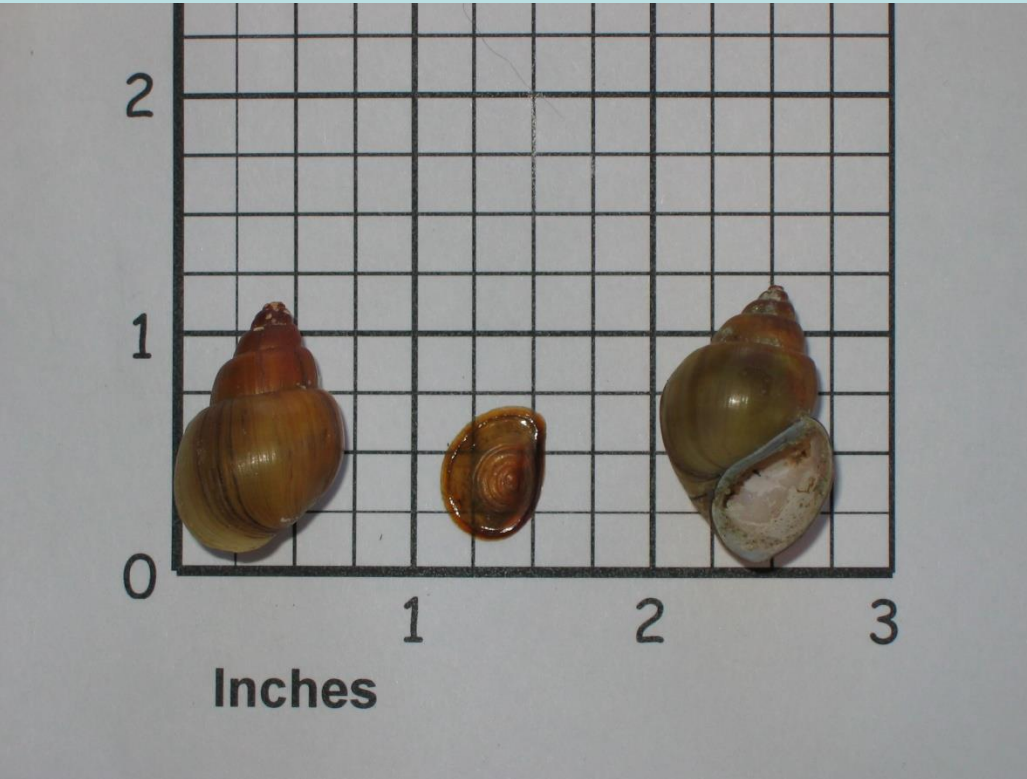




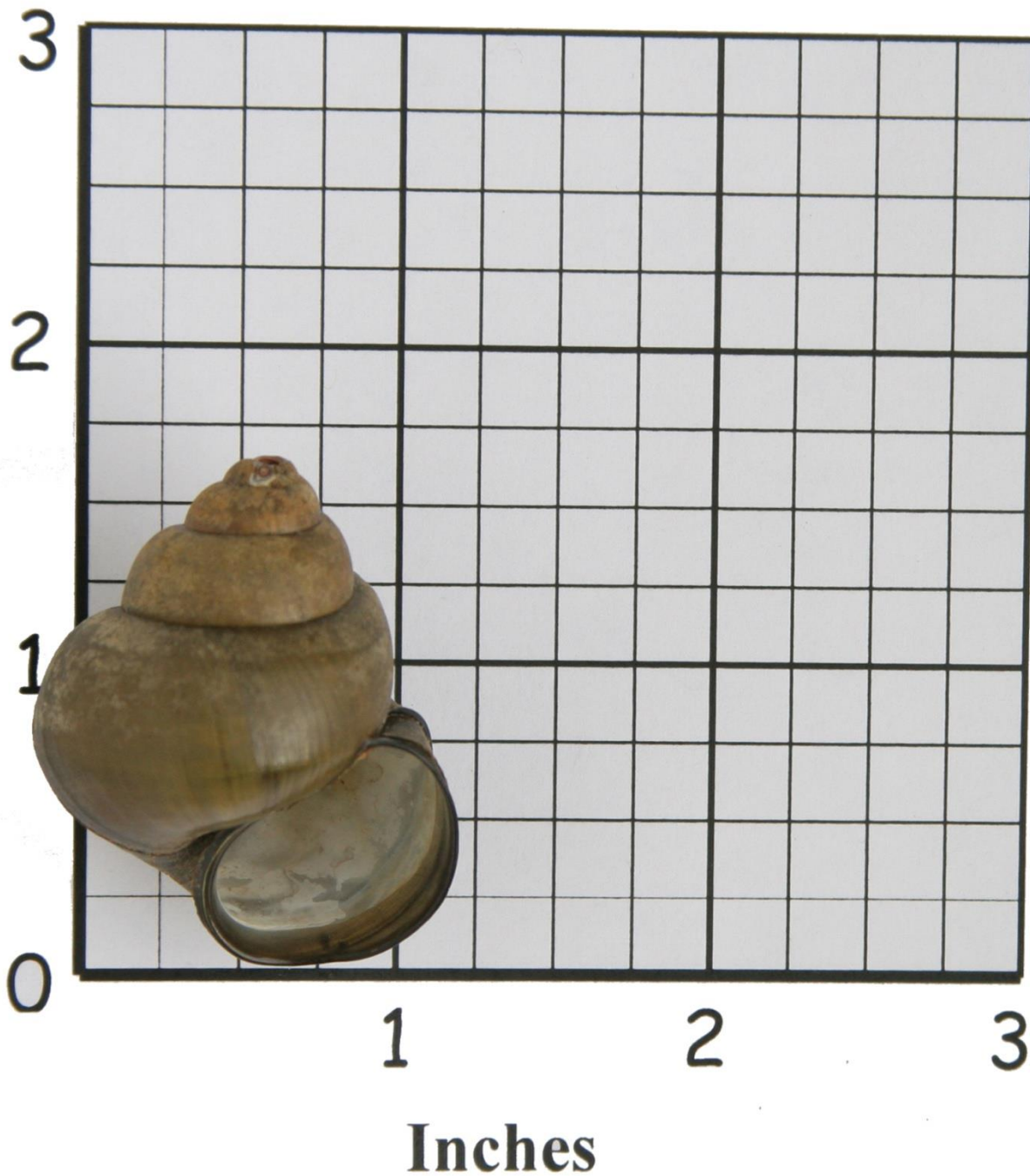
Banded, brown and Chinese mystery snails
(brown is native)



Brown Mystery Snail – Native to Wisconsin



- Adults rarely reach 1.5 inches in height
- No bands
- Have hard operculum



Chinese Mystery Snail

- Adults are over 1.5 inches in height
- No bands
- Have hard operculum



Banded Mystery Snail

- Adults are up to 1.5 inches in height
- bands
- Have hard operculum

Spiny and Fishhook waterfleas





Freshwater jellyfish



Wisconsin's Newest Nasty!

HYDRILLA VERTICILLATA

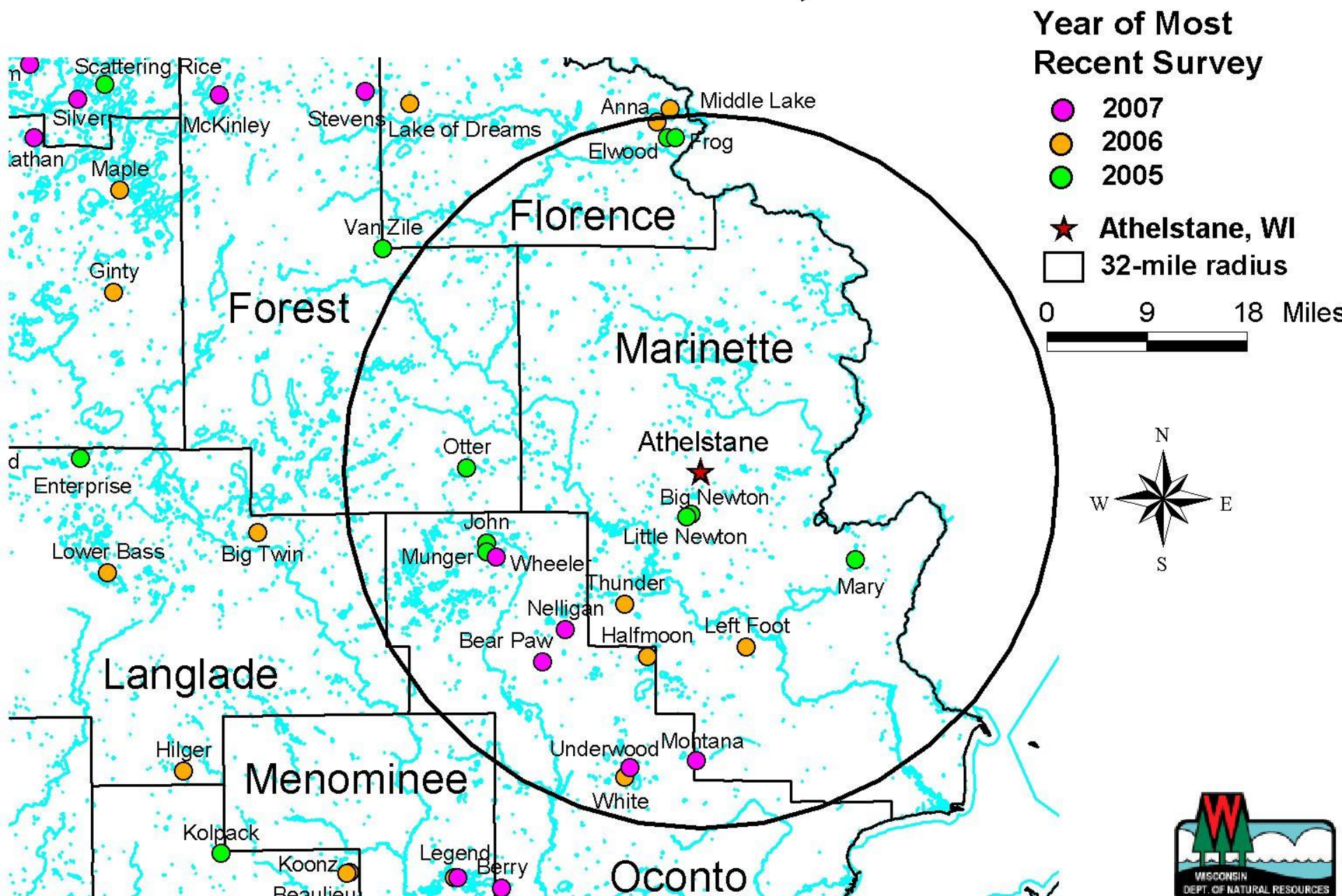


Hydrilla
Hydrilla verticillata
Photo by Vic Ramey
Copyright 1999 Univ. Florida



Hydrilla at Wakulla Springs, Florida
Hydrilla verticillata
Photo by Vic Ramey
Copyright 1998 Univ. Florida

Point-Intercept Surveys Northeast Wisconsin, 2005-2007







Hydrilla turions showing scale

Hydrilla specimen is a preserved specimen – that is why it is so pale.





Hydrilla showing whorls

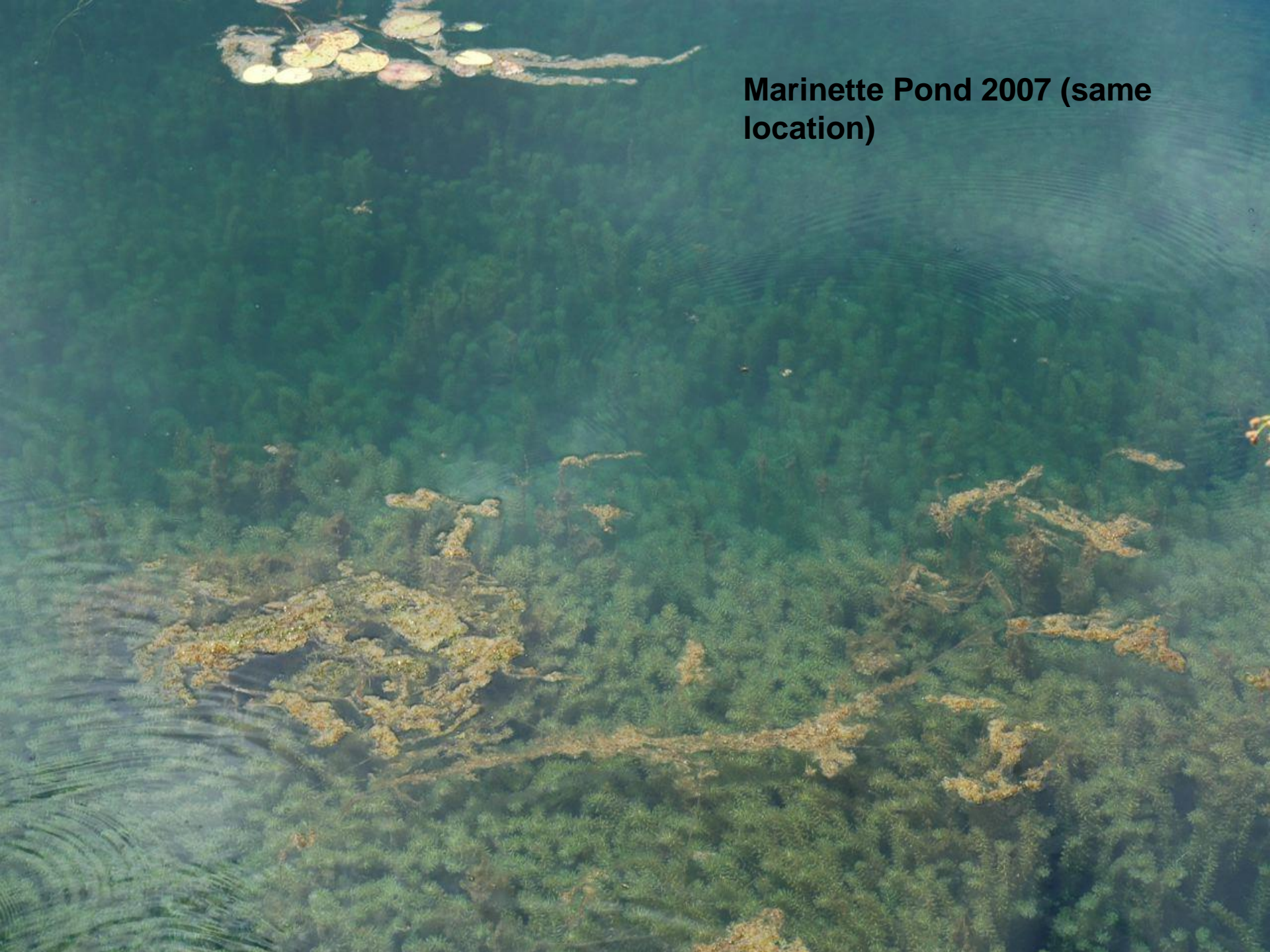


Hydrilla above is from the pond
in Marinette 2007



Marinette Pond Hydrilla 2006

**Marinette Pond 2007 (same
location)**



Detection in Upper Midwest will be difficult

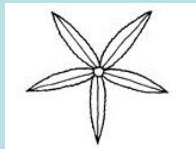
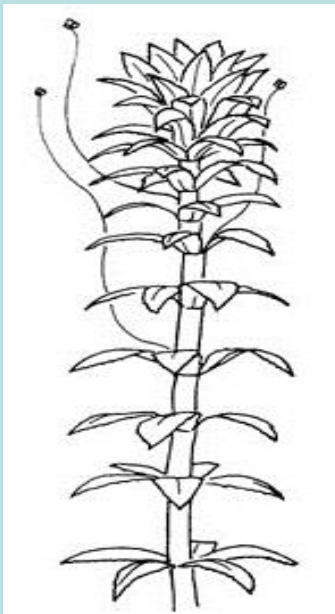
Commonly mistaken for elodea.

Brazilian elodea "egeria" in MN a look alike

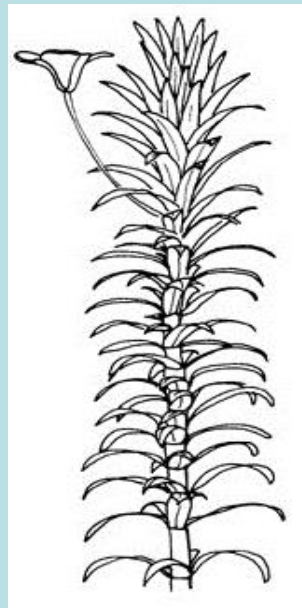
Key is 5 + whorls and spines. Not a vigorous looking plant , initially.

Nut like tubers are only hydrilla

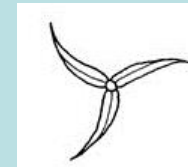
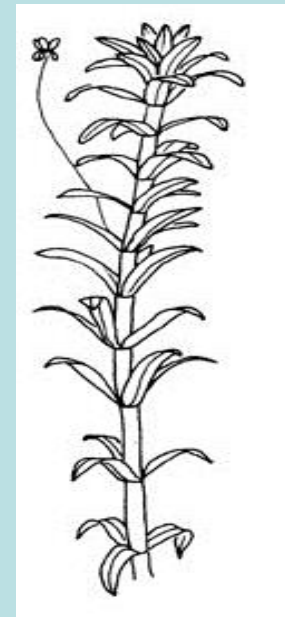
Hydrilla

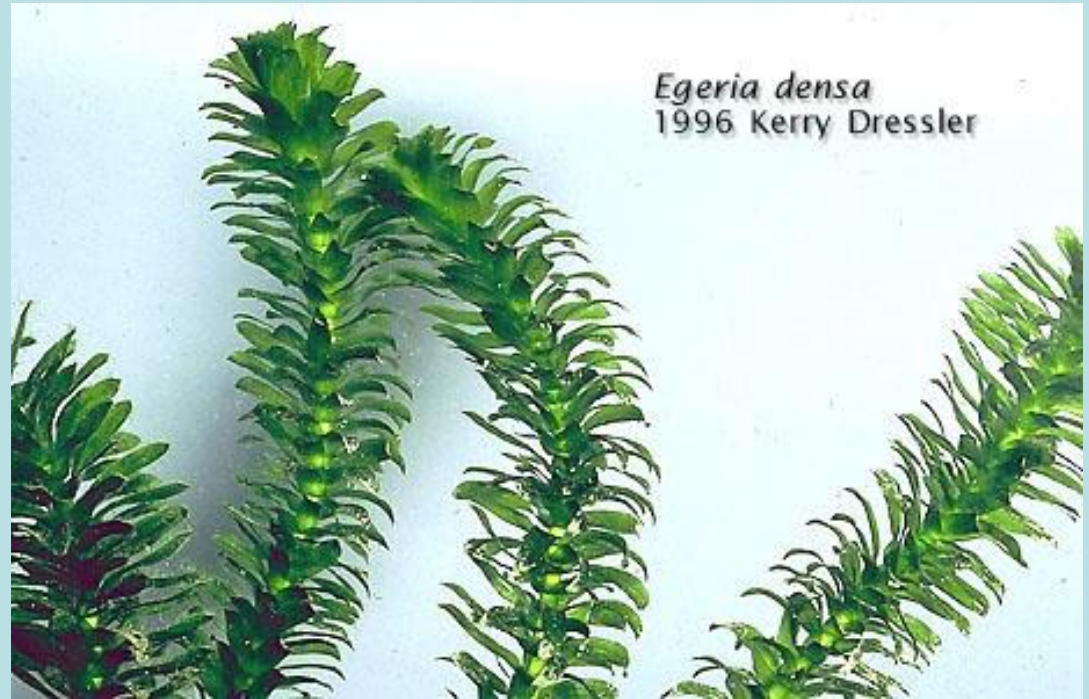


Egeria



Elodea





Upper left: Hydrilla

Above: Egeria

Left: Elodea Canadensis



New Zealand mudsnail

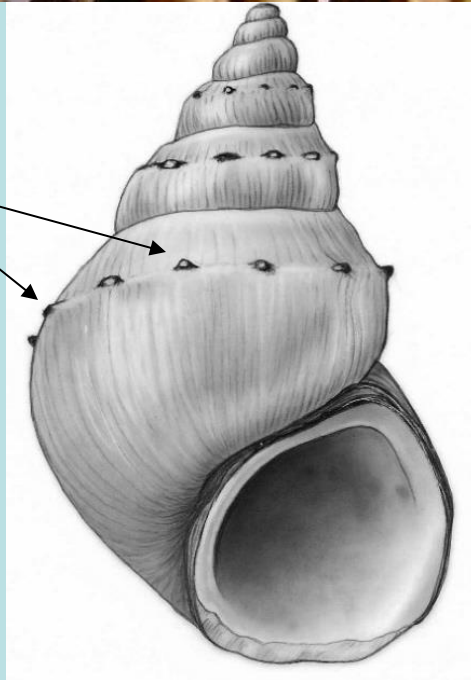
- St Louis River harbor (Duluth Superior Harbor)
 - Densities up to 500,000 / meter²
 - Asexual reproduction
 - Wide tolerance range
 - Brackish to fresh waters
 - Lives in estuaries, lakes, rivers & streams
 - Tolerates waters with high & low calcium
 - Found on soft and firm substrates
 - Inhabits turbid and clear waters
 - Tolerates water from 32° to 80° F
 - Does well in eutrophic waters



New Zealand Mudsnail

- 1/10 to 1/4 inch high
- Operculum present
- Light to dark brown
- Cone shaped shell with 5-6 whorls
- Raised carina (keel) on whorls

Carina





**Tailor the
program
for the
volunteers.**

