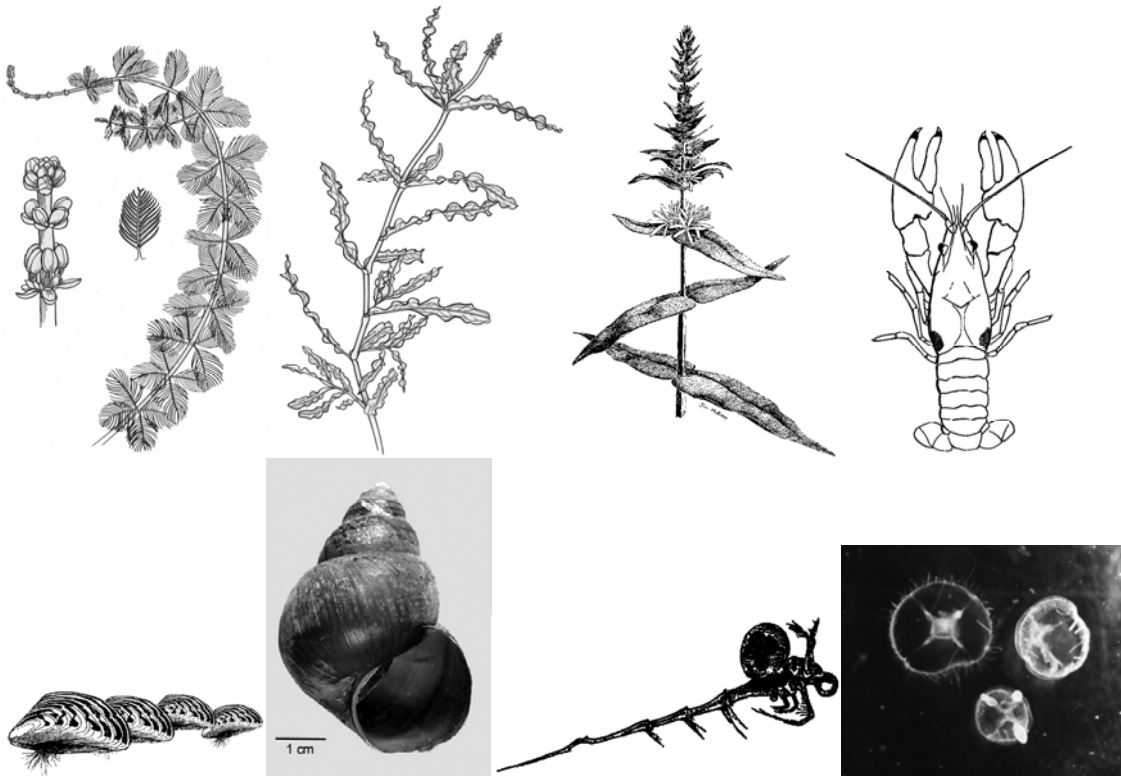


Aquatic Invasive Species Monitoring Procedures Quick Review

Citizen Lake Monitoring Network Training Manual

2007



Manual sections

- DNR and UWEX Contacts – pages vi - vii.
- Section 1 - Aquatic Invasive Species: Getting Started.
- Section 2 - Eurasian water-milfoil monitoring protocol
- Section 3 - Curly-leaf pondweed monitoring protocol
- Section 4 – Purple loosestrife monitoring protocol
- Section 5 – Rusty crayfish monitoring protocol
- Section 6 – Zebra mussel monitoring protocol
- Section 7 – Mystery snail monitoring protocol
- Section 8 – Waterflea monitoring protocol
- Section 9 – Freshwater jellyfish monitoring protocol
- Appendices
 - Terms used around lakes
 - Reporting forms
 - Equipment construction
 - List of lakes with Eurasian water-milfoil, curly-leaf pondweed, rusty crayfish, zebra mussels, Chinese and banded mystery snails and freshwater jellyfish.

Getting Started

- Why do Aquatic Invasive Species Monitoring?
 - Protect the value of your property.
 - Protect your lake.
 - Cost savings – cheaper to treat 1 acre of invasive plants than it is to treat 100 acres of invasive plants.
- What is Expected of You?
 - Lakes with out invasives – look for any / all AIS covered in this manual
 - Lakes without invasives – track the results of your control techniques.
 - Lakes without invasives - track the spread of the invasive and / or look for new colonies. Continue to monitor for other AIS.
- Setting up a Monitoring Team
 - Designate a contact / point person who:
 - Recruits volunteers
 - Makes sure the entire lake is monitored
 - Sets up schedules for monitoring
 - Acts as a go between for volunteers and UWEX, LWCD, and DNR
 - IDs plants (this will come with practice) or
 - Delivers plants to DNR, UWEX, LWCD for vouchering
 - Relays the data to your lake group and the county.
 - Obtain a Map from
 - DNR
 - Fishing Hotspots
 - Web sites
 - Divide up the work
 - Divide up the shoreline into smaller sections and assign these sections to the volunteers (“adopt-a-shoreline”)
 - Assign volunteers to monitor each species.
 - Report findings – it is important to find out which lakes were monitored and AIS were not found.

When to monitor

- Native Plants – June through August
- Eurasian Water-milfoil – May through October
- Curly-leaf Pondweed – May through July
- Rusties – June through August
- Zebra Mussels – ice out through ice on
- Mystery Snails – late summer
- Waterfleas – June through August
- Freshwater Jellyfish – August to mid-September

Eurasian water-milfoil

- Spreads by runners, rhizomes, seeds and plant fragments
- Fast grower (up to 2 inches a day in the summer)
- Starts growing early in the spring and grows late into the fall
- Identification characteristics
 - EWM has delicate feather-like leaves.
 - The thread-like leaflets, on the lower part of the leaf, are usually the same length.
 - Leaves are fairly limp when pulled out of the water.
 - Leaves are arranged in whorls (circles) of 3 to 5 around the stem.
 - Usually there are 12-21 leaflet pairs per leaf.
 - In the summer, the plants can be 20 feet tall.
 - In the summer, the distance between the leaf whorls can be several inches.
 - EWM does not produce winter buds (turions).
 - Upper part of the plant stem often has a pink or reddish color. Other water-milfoils may also be pink

Native water-milfoils

- 7 native water-milfoil species in Wisconsin including

Northern water-milfoil

- Northern water-milfoil has rigid feather-like leaves.
- Leaves are arranged in whorls (circles) around the stem.
- When looking at an individual leaf, you may notice a Christmas tree shape.
- The lower leaflets are usually longer than the upper leaflets.
- Usually there are 7-10 leaflet pairs per leaf.
- Stems are often whitish or whitish green in color.
- Leaves are stiff when the plant is removed from the water.
- Most native water-milfoils produce winter buds (turions). EWM does not.

Monitoring Highlights are listed on page 5.

Curly-leaf pondweed

- Starts growing in the fall, grows slowly in the winter, grows fast in the spring, and dies back in June to July.
- Identification Characteristics
 - CLP is recognized by alternate leaves that are minutely toothed (you may need a magnifying glass to see the teeth).
 - The leaf edges are also wavy giving it a crispy appearance.
 - Most leaves have a prominent red-tinged mid-vein.
 - The stem is slightly flattened.
 - A short flower stalk rises above the water's surface, though the rest of the plant is submersed.
 - CLP does not form floating leaves.
 - CLP produces turions (vegetative buds) that sprout in late summer and produce new plants. Turions resemble small pine cones.

Monitoring Highlights are listed on page 5.

Eurasian water-milfoil and curly-leaf pondweed monitoring

Equipment

- Boat (canoe, kayak, fishing boat, paddle boat, pontoon, etc.)
- Personal Floatation Device (PFD)
- Long-handled rake with attached rope (see pictures)
- Lake map for marking suspect CLP beds and keeping track of where you have been.
- Pencil for marking on map
- Data forms (appendix 4)
- Clip board or other hard surface for writing
- Ziploc bags
- Waterproof sharpie pen (to write on Ziploc bags)
- Cooler to keep plants in
- Plant density data sheet (optional)
- GPS unit (optional)
- Polarized sunglasses (optional)
- Aqua-View Scope (optional). Construction directions in Appendix 3.

Where to monitor

- Whole lake – from shallows out to about 20 feet
- Inlets to streams, creeks and rivers
- Boat launches and marinas
- Beaches
- High use areas (fishing hot spots)
- Windward side of lake

Reporting your findings

- Report forms are in appendix 4. Return these to DNR when an invasive is found or, if not invasives found, at the end of the summer.
- If a new invasive is found, notify the residents, lake groups and local fishing guides.
- Map the areas monitored even if no invasives are found.

Rusty Crayfish Monitoring

- You will be monitoring both native crayfish and rusties
- Monitoring should be over several years.
- A fishing or small game license is required to collect crayfish (See Fish Regs).
- Trapping
 - Trap lengths have to be less than 24" for stream trapping; traps have to be less than 16" wide; and floats cannot be orange or florescent.
 - Set traps in water 2-10' deep.
 - Check traps every 24 hours.
 - Set traps over a variety of substrates (sand, gravel and plants)
- Netting
 - Umbrella net is legal. Has to be less than 8' in diameter
 - Dip nets have to have handles at a 90 degree angle
 - Nets have to be lifted vertically
 - Collect over a variety of substrates (sand, gravel and plants)
- Mapping – keep track of where the nets were placed
- Preserve the crayfish by freezing them (alcohol is optional)
- Deliver the crayfish and reporting forms to your local CLMN contact.

Zebra mussel Monitoring

Adult Monitoring

- Small D shaped shells
- Zebra mussel is the only mussel with byssal threads (fine threads) that attach to any hard surface (plants, rocks, docks, boats, etc.)
- Female lays 300,000 – 1 million eggs per year.
- Shoreline monitoring
 - Every 1-2 weeks from ice out to ice on
 - Check high use areas (landings, resorts, etc.)
 - Check your docks and piers when you pull them in for the winter.
- Zebra mussel substrate sampler
 - Place off of your dock or pier
 - Monitor May through September
 - Place 2 samplers (one above the other)
 - Check top sampler every month
 - Check bottom sampler at the end of the season
 - For monitoring the spread of zebra mussels (on a lake known to have zebra mussels), mark 1 inch grids on sampler. Count the mussels on 3 grids. You can then calculate the densities of zebra mussels in this area.
 - Send in reporting forms each fall if no zebra mussels are found
 - Hand deliver zebra mussels and reporting forms ASAP for new if you find zebra mussels on a lake not known to have zebra mussels.

Veliger Sampling

- Volunteers assist DNR Staff while conducting waterflea monitoring.

Chinese and Banded Mystery Snail Monitoring

Chinese Mystery Snail – non-native

- Adult snails are often over 1.5 inches in length.
- Operculum (trap door) present
- Typically light to dark olive green
- Uniform coloring on the shell (no banding)
- Chinese mystery snail is often wider than the brown mystery snail.

Banded Mystery Snail – non-native

- Can get up to 1.5 inches in length
- Distinct reddish-brown bands along the shell. This feature is VERY obvious in bleached shells, but a little more subtle among living snails.

BROWN Mystery Snail - native

- Rarely reaches 1.5 inches in length.
- Operculum (trap door) present
- Typically olive green
- The width to height ratio is smaller in the brown than in the Chinese.

Monitoring Protocol:

- Late summer monitoring
- Look for the “large” snails along the shoreline. Collect the largest snails present.
- Mystery snails are often found in areas with mud and / or sand.
- Conduct a 10 minute "rapid assessment" of lakes near the boat landing, walking the shore looking for shells. If you find snails, there is no need to continue monitoring. Fill out the data form and keep this record with the snails. Stop monitoring if you do not find snails after 10 minutes of looking.

If you find what you suspect is a mystery snail you can do one of two things.

(1). Take digital pictures of the snail next to a ruler or on the green paper grid system provided and email that pictures as well as the information requested on the mystery snail reporting form (Appendix 4) to Dr. Pieter Johnson (ptjohnson2@wisc.edu) with the heading “MYSTERY SNAIL”. TIPS: Take pictures of dry shells; Shell markings show up better for shells with bodies removed. Take ventral and dorsal pictures. Keep the shells until Dr. Johnson lets you know what species you have. If the pictures do not work out, the Center for Limnology may need to see the shell.

(2). Place several snails shells in a ziplock bag and deliver them and the data reporting form (Appendix 4) to Laura Herman at the Rhinelander Department of Natural Resources office, 107 Sutliff Ave, Rhinelander, WI 54501. If there are still live snails in the shells, you can freeze the snails and then deliver the frozen snails to Laura. By freezing the snails, the snail bodies can be pulled from the shell. If the snails are killed by placing them in alcohol, the snail bodies cannot be pulled from the shells easily.

Waterflea Monitoring

Assisting DNR

- Volunteers may assist DNR staff with waterflea monitoring
- Sampling
 - June through September
 - Ideally 3 sample periods / year
 - Ideally 3 sites / sample period
- DNR analyzes sample
- DNR tracks the lakes monitored.

Volunteer Monitoring

- Some volunteers are monitoring for zooplankton. Those volunteers can look for waterfleas in their samples.
- Directions for constructing your own equipment can be found at <http://archive.orr.noaa.gov/living/watercolumn/plankton.html>.
- Suspect organisms are preserved in rubbing (isopropyl) alcohol and delivered to the DNR office.

Freshwater Jellyfish

Monitoring

In Wisconsin, look for jellyfish medusae during dry and hot summers. Only when fully grown, densely packed on the water surface, and perhaps yellowed with eggs do they draw attention. That typically happens, in Wisconsin, from early August to mid-September. The jellyfish will gently float or swim just below the surface of the water. They are easily seen by the naked eye. They often surface in large numbers called "blooms". Sunny days are especially good for spotting jellyfish. The medusae are restricted to a narrow band of 65-75 F. If the water surface of a lake becomes warmer than 75 F, as many of our lakes have during recent afternoons (and evenings), the medusae congregate in the lower epilimnion, where they can find their preferred temperature range. Even with cooler weather, the medusae should stay around through August and even into September . . . but then only in certain lakes

What should you do when you or someone else comes upon a swarm of medusae? Grab a jar or plastic bag and collect a small sample of the medusae. You can keep them alive for a few days in your refrigerator. You can also preserve a few medusae for later study and identification. Spoon-out some medusae from your jar or bag and place them in a small jar, such as a glass or plastic vial, containing 70% rubbing (isopropyl) alcohol. Label the jar with the date, waterbody name, and specific site on the water where the medusae were collected. Then take the sample to a local DNR office for verification.