

**Wisconsin Department of Natural Resources
Aquatic Invasive Species (AIS) Early Detection Monitoring**

Standard Operating Procedures

Draft June 14, 2012

Before leaving the office:

- ~~Contact CLMN AIS volunteers ahead of time if visiting their lake. Invite them to take part in the survey with you.~~
 - ~~They must fill out a volunteer form to be in DNR boats.~~

- ~~Each Monday - Email Tom Joestgen - DNR Risk Management if you will have a non-state employee or volunteer with you in a state vehicle or boat during a given week.~~
 - ~~Leave person's name, business purpose, where and when they will be with you~~

- Check SWIMS or the Statewide AIS list to determine which AIS are already present. Do not collect specimens of already listed species.

- If a species has not been found in the lake and you find it during the survey.
 - Collect up to five specimens of aquatic invasive plants to be pressed for verification.
 - Collect between 10-30 of each common snail species found and place in a bottle together to be sent to UW-La Crosse.
 - ~~Collect up to 20 zebra mussels to be sent to DNR-Plymouth lab for measurement.~~

- ~~Check mussel suitability data. If the lake is listed as suitable, borderline suitable or unknown collect veliger samples. If listed as not suitable do not collect veliger samples.~~

- Print datasheets
 - [Early Detection Form](#)
 - Specimen labels

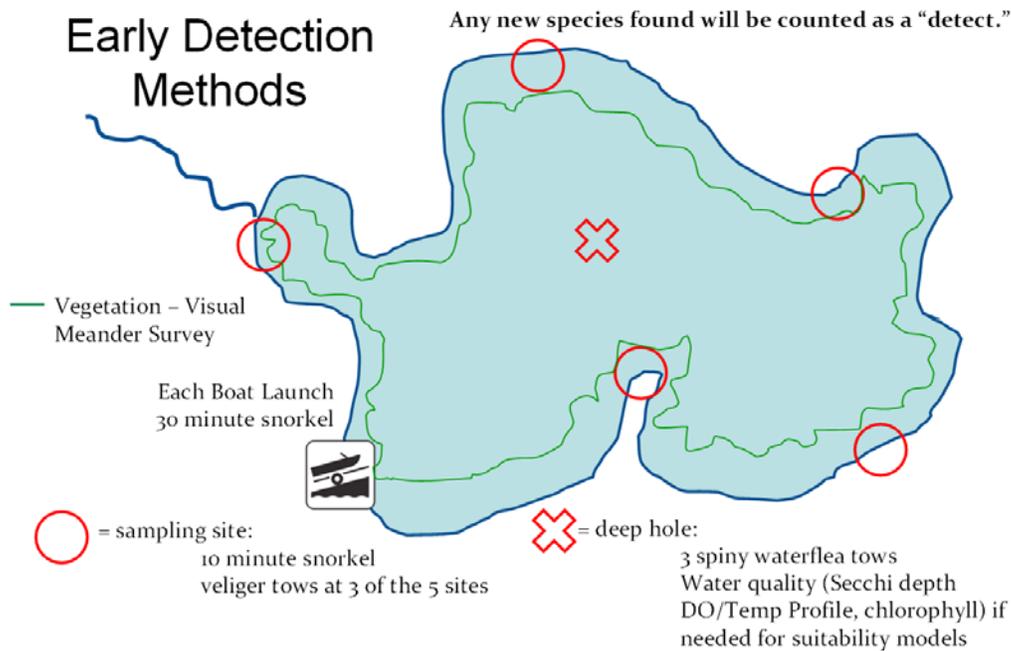
- Print bathymetric lake maps [\\central\lakesdata\Information Technology\Early Detection \(200 Lakes\)\plot](#)
 - Select five search sites where AIS are likely to be present (inlets, plant filled bays, rocky bars/points, developed shorelines, shorelines downwind of boat landings, backyard boat access points, etc.) and circle on the map. These sights can be changed once on the lake if better sites are apparent.

- Check equipment list.

- If sampling more than one lake per day organize the surveys so that work on infested waters (especially those with zebra mussels or spiny waterfleas) is always done last.

At the Lake:

Figure 1. Schematic of AIS Early Detection Survey Design



Boat Landing Search(es):

- Each public or commercial boat landing is searched ~~by snorkeling~~ for 30 minutes (15 minutes if two people ~~snorkeling~~, 30 minutes if one person). ~~Covering an area of shoreline 200' long out to the maximum depth of plant growth or 100' from shore whichever comes first.~~
 - Staff ~~snorkeling~~ should spend the first half of their time working on the **shallow** section of the site and then switch to the **deep** half of the site for the rest of the time.
 - Look for snails, mussels and aquatic plants in the water and snails on any emergent macrophytes.
 - If visibility or safety is a concern then rakes should be used to collect aquatic plants and a D-net should be used to look for snails and mussels for 30 minutes.
 - Collect specimens of each AIS found.
 - Record the location (center of site at shoreline in decimal degrees) of each boat landing on GPS whether or not any AIS are found.
 - Record the name of any species found and density rating (defined on back of sheet).

- Stop at any additional public or commercial boat landings and complete the boat landing ~~snorkel~~ search above. Do not include small backyard boat ramps for 30 minute snorkel searches.

~~Mid-lake samples:~~

~~Water Quality~~

- ~~Take Secchi depth (preferably between 10 AM and 4 PM) and conductivity reading and record on Early Detection Form.~~

~~Waterflea Tows~~

- ~~Collect three waterflea tows (using 254 um net) from the open water area of the lake (at least 15-20 feet depth). One sample should come from the deep hole and other basins should also be covered.~~
 - ~~Drop net to within 2 meters of the lake bottom while the boat is stopped.~~
 - ~~Pull net behind the boat for two minutes at lowest idling speed.~~
 - ~~Rinse samples into bottle and label (using #2 pencil) with lake name, county, WBIC, collector and date.~~
 - ~~If space allows, place all samples in the same jar and circle "Y" that samples have been consolidated on the Early Detection Form.~~
 - ~~If distinct bays of the lake are searched and specific sample location is wanted for the separate samples then place individual tows in separate bottles and circle "N" that samples haven't been consolidated.~~
 - ~~Add ethanol to samples so that 4/5 of the sample is ethanol and 1/5 is water and/or plankton.~~
 - ~~Record data on Early Detection Form.~~

~~Lake Searches:~~

~~Veliger Tows~~

- ~~Collect vertical zebra mussel veliger net tows (using the 54 um net) off shore from three of the search sites in 5-10 feet of water.~~
- ~~Attempt to collect a tow with the top of the net within one meter of the bottom. **The net must be lowered slowly to not disturb the bottom sediments and get sediment in the net.**~~
 - ~~The depth of the plankton tow will depend on the on the Secchi depth of the lake.~~
 - ~~If Secchi depth is > 4 meters, collect two 2 m tows. Consolidate into one jar.~~
 - ~~If Secchi depth is 2-4 meters, collect one 2 m tow.~~
 - ~~If Secchi depth is < 2 meters, collect one 1 m tow.~~
 - ~~Rinse samples into bottle and label (using #2 pencil) with lake name, county, WBIC, collector and date.~~
 - ~~If space allows, place all samples in the same jar and circle "Y" that samples have been consolidated on the Early Detection Form.~~

- ~~○ Add ethanol to samples so that 4/5 of the sample is ethanol and 1/5 is water and/or plankton.~~
- ~~○ Record data on Early Detection Form.~~

Snorkel Search Sites

- Stop at each search site and conduct 10 minute snorkel searches.
 - Look for snails, mussels and aquatic plants in the water and snails on the above water stems of any emergent macrophytes.
 - Collect specimens of each AIS found.
 - Record the site number and location (center of site at shoreline in decimal degrees) of each site on GPS and datasheet whether or not any AIS are found.
 - Record the name of any species found and density rating (defined on back of sheet).
- If you find additional appropriate search sites as you are driving around the lake, you can add additional 10 minute searches or replace the sites that you pre-selected.

Meander Survey

- ~~• Drive boat slowly between boat sites and look for aquatic invasive plants in the water and along the shoreline. Meander between shallow water and maximum rooting depth or 100' from shore whichever comes first.~~
- If not snorkeling the search sites, stop at 50 haphazard locations while boating around the lake and take rake pulls and D-net sweeps. Check rake and net contents for AIS.
 - Keep a tally of how many rake pulls and D-net sweeps have AIS. Record the counts on the datasheet for any species found on the Early Detection Form.
- Collect specimens of each AIS found.
- Record the location of each AIS found on GPS in decimal degrees.
 - Only collect separate GPS points from discretely different beds of invasive plants.
 - Once five specimens of a species have been collected at any site (boat landing, search site or meander survey) there is no need to collect additional specimens at other sites.
 - If three discrete locations of a certain species are found either at snorkel search sites and/or during the meander survey stop recording new locations during the meander survey. Three discrete locations of one species will indicate that the species is established in the lake.

Back at the Boat Landing:

- Inspect and remove any aquatic plants and animals from the boat and trailer.
- Drain all water from the boat and motor by pulling the plug and lowering the motor.
- Disinfect boat and trailer (per [DNR disinfection protocol](#))

- Place plankton nets in disinfection solution (bleach solution per [DNR disinfection protocol](#)) in tubs for 10 minutes.
- If traveling to another lake, rinse veliger net with water and place in tub with vinegar for 10 minutes.
- Scrub wetsuit with or place in disinfection solution (bleach solution per [DNR disinfection protocol](#)) for at least 10 minutes.

Back at the Office/Lab

- If an AIS not previously known to exist in a waterbody was found email the regional DNR coordinator within the week to let them know.
 - If the species is an aquatic plant and only found at one or two sites in the lake let them know that this could be eligible for a rapid response action.
 - The list of regional DNR AIS coordinators can be found here: <http://dnr.wi.gov/topic/Invasives/report.html>
- Enter all Early Detection form data into SWIMS once each week in the “Aquatic Invasive Species Early Detection Surveys 2012” project.
 - Contact [Scott Van Egeren](#) or [Rebecca Jordan](#) if you have questions about SWIMS data entry.
- Press aquatic plant specimens once per week and send to UW-Stevens Point Herbarium once a month. See Appendix 3 below for pressing instructions.
 - **Be sure all specimens are labeled properly!**
 - Dr. Robert Freckmann
Robert Freckmann Herbarium
0310 CNR Addition
1900 Franklin Street
Stevens Point, WI 54481
rfreckma@uwsp.edu
- ~~○ Each month send a shipment of waterflea and veliger samples and adult zebra mussel specimens to Jim Steinke at the following address:~~
 - ~~○ **Be sure all bottles are labeled properly!**~~
 - ~~○ **Include a copy of the datasheets!**~~
 - ~~○ Jim Steinke
Wisconsin Dept. of Natural Resources
1155 Pilgrim Road
Plymouth WI 53073~~

- Each month send a shipment of snail samples to Dr. Sandland at the following address:
 - **Be sure all bottles are labeled properly!**
 - **Include a copy of the datasheets!**
- Greg Sandland
 Biology Department
 855 East Ave North
 University of Wisconsin at La Crosse,
 La Crosse, WI 54601

Appendix 1. Safety Protocol

General Guidelines:

- No employees shall work alone in the field to complete AIS surveys.
- All State employees must have completed boat operation safety course.
- If non-State employees (county, RC&D or non-profit) or citizen lake monitoring volunteers will be working as part of a field crew as a passenger in a boat or vehicle we need to contact the DNR Safety and Risk Management Section. Please email [Tom Joestgen](#) and [Karen Kreger](#) at the beginning of each week giving them the names of any non-State passengers who will be working with you.
- Crews should carry an operational communications device (cell phone or portable radio) recognizing that these devices may lack coverage in some areas.
- Crews should inform a designated third party where they will be working (directly or indirectly via voice-mail, email, or calendaring). They should include as much detail as possible on location(s) of the work to be conducted, estimated time required to complete the task, and procedures to follow in case of emergencies.
- Employees must wear appropriate personal flotation gear at all times while boating.
- All staff taking part in surveys should be trained in First Aid and CPR.

Diving Guidelines:

- Diving flags (per definition in State Statute [30.70](#)) shall be used to mark each field crew member that is snorkeling.
- A surface observer will accompany the field crew to keep the diving area free of motor boats and assist the divers as necessary.
- No snorkeling shall take place in unsafe locations including:
 - Near boat landings (without a safety lookout) or sites with flowing water directly upstream of a dam.
 - In water with poor visibility where underwater logs, roots or rocks will not be visible to divers.
 - In water with visible concentrations of cyanobacteria.

Appendix 2. Disinfection Protocol

- See DNR [disinfection protocol](#) (Manual Code 9183.1)
- For lakes that will be monitored for zebra mussel veligers using DNR standard protocol an additional vinegar wash must be used to prevent contamination of samples with dead veligers from previous lakes. Bleach kills the veligers, but the dead shells may stick to nets giving a false positive for the next lake. Full strength vinegar has been shown to dissolve these small veligers shells.
- If you will be traveling to multiple lakes in one day and collecting veliger samples from each follow the steps below between lakes:
 - **1:** soak nets in bleach for ten minutes
 - **2:** rinse nets with fresh water
 - **3:** soak nets in full strength vinegar for ten minutes.
- If you only have one lake to collect zebra mussel veligers on in a given week or have multiple nets to use then follow the normal bleach disinfection practice and hang the net to dry for at least five days before using it on another lake. The veliger shells will disintegrate over this time.

Appendix 3. Sample/Specimen Preservation

- See DNR [zebra mussel veliger](#) and [spiny waterflea](#) monitoring protocols for guidance on plankton collection and preservation.
- Place snail specimens in sample bottle (labeled with appropriate lake information) with 95% ethanol to deliver for verification.
 - If faucet snails are collected, gently crack shell under a hard object before placing in ethanol.
- Collect up to 5 intact plant specimens. Try to get the root system, all leaves as well as seed heads and flowers when present. Place aquatic plants in ziplock bag with a small amount of water and riparian/wetland plants in bag with no water.
- Guidance on pressing plants can be found in the [aquatic plant monitoring protocol](#), p. 25-26.