



## How to Search for Aquatic Invasive Species at Water Accesses: Guidance for Watercraft Inspectors

Authorized Watercraft Inspectors in Minnesota educate users about preventing the spread of aquatic invasive species (AIS) at water accesses across the state. While their primary duty is inspection, during non-busy times they can also serve as eyes on the water to detect and report new infestations at water accesses.

This document provides inspectors with:

1. Basic instruction on how to safely and effectively monitor water accesses for AIS.
2. A list of useful equipment for performing AIS searches.
3. Steps to report suspected new occurrences of AIS.

This is not an exhaustive list of all AIS search methods, but rather a guide for performing short, on-access searches between normal work responsibilities.

**Inspectors should first check with their supervisors before conducting searches.  
Supervisors should provide clear guidance, support and expectations for their inspectors.**

### Overview

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- **Inspection Duties Come First:** Conducting inspections and educating the public should always come first. Only conduct searches when it does not conflict with your other job responsibilities. Immediately stop searches and return to inspection/education duties when needed.
- **Equipment & Personal Protective Equipment (PPE):** All equipment and PPE should be provided by the organization that employs the inspector.
- **Safety:** Wear appropriate footwear to avoid slips, trips and fall hazards, and a high-visibility vest to help boaters and drivers see you while working near the access. As a general note, follow your employer's safety guidance while working in the field. Minnesota Department of Natural Resources (DNR) staff should first consult with their Supervisor, and refer to the Job Safety Analysis worksheet ([Appendix A](#)).
- **Timing:** Each search should take about 15 minutes. Searches should be conducted at least once a month, or more frequently as time allows.
- **Shoreline vs. Wet Protocol:** These two protocols require differing safety considerations when working on or near water. Local government staff should follow all safety procedures as directed by their organization. DNR staff should follow the "Shoreline" procedure, unless additional safety equipment is provided.

- **Infested Waters:** Before conducting a search, refer to the Minnesota DNR’s [Infested Waters List](#) and the [EDDMapS Midwest website](#) to determine if the lake or river contains AIS. Only report invasive species not known to be present in the water body.
- **Report:** There are many ways to report suspected new occurrences of AIS, including: calling the DNR, sending pictures to the DNR, bringing a sample to a DNR office, using the [EDDMapS Midwest website](#), or utilizing the [GLEDN Application](#).
- **Clean Equipment:** Equipment must be cleaned after every search to prevent the accidental spread of AIS. Before use, equipment should be double-checked and cleaned as needed.
- **For more robust search methods for resource professionals** refer to the [AIS Early Detection and Baseline Monitoring in Lakes](#) document found on the DNR webpage under [Detect and Respond to New Infestations](#).

## Section 1: Your Monitoring Kit

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A list of suggested monitoring equipment can be found below. The type of search performed (see [Section 2: Perform a Search](#)) will determine the type of equipment needed. Most equipment used for basic AIS monitoring can be purchased or built from materials found at a local hardware store. In addition, AIS identification guides are useful tools to have available during searches. Required safety equipment is in **bold** text – always follow your employer’s safety guidance while working in the field.

### Safety

- **High-visibility vest**
- **Slip resistant shoes** (close-toed shoes preferred)
- **Personal flotation device (PFD)** – required if working on a public dock or pier
- Rubber gloves to protect from zebra mussel shells or sharp debris



### Sampling Equipment

- Extendable hand rake or throw rake with attached rope (See [Appendix B](#) for double sided rake construction)
- Hand scoop / strainer
- Plastic paint scraper (to scrape AIS samples off of rocks or docks)
- Polarized sunglasses
- Digital camera, smartphone, or tablet for taking clear pictures
- Waders, hip, or knee boots
- Aquascope
- D-net
- Snorkel gear

### Identification and Sample Collection

- Identification guides:
  - [MN DNR Guide to Aquatic Invasive Species](#)
  - University of Minnesota Extension’s [AIS Identification Guide](#)
  - Minnehaha Creek Watershed District’s [AIS Early Detector Manual](#)
- Shallow pan or tray for identifying plants and invertebrates
- Magnifying glass or hand lens
- Zip-loc® bags and/or plastic containers to store samples
- Small cooler and ice for preserving samples (can also be used to store other kit equipment)
- Office supplies (permanent marker, pens, clipboard)
- Paper towels to wrap plant samples

### Reporting

- Before going to the access, review [Section 3: Report Your Findings](#) with your supervisor and determine which option you will use to report your findings.

### Equipment Cleaning

- Boot brush
- Container of tap water
- Towel
- Review [Section 4: Clean Your Gear](#)

## Section 2: Perform a Search

### Before Starting:

- Choose an appropriate time to search. The best time to perform a search is either when boat traffic is slow or at the beginning/end of a shift. **Remember that your normal inspection duties come first!**
- If working alone, set up a communications plan with your supervisor – contact them prior to starting and after completing a search.

### Put on all Personal Protective Equipment (PPE):

- Slip resistant shoes that can get wet.
- High-visibility vest.
- Personal Floatation Device (PFD) must be worn at all times if searching from a public dock or fishing pier, which needs to be within 100 feet from your inspection station. A PFD may be also be required by your employer if you are following the Wet Protocol.

### Shoreline Protocol

*For DNR and local government staff with employer's permission*

Start at the ramp and walk the shoreline, keeping your feet dry and staying on public property. As a dry protocol, you shall not enter the water to perform searches.

### Wet Protocol

*For local government staff with employer's permission*

Wade into the water at the ramp. When walking on shore, stay on public property. Only use equipment that was provided to you, unless other search methods are approved (i.e. snorkel, SCUBA). While a maximum wading depth of 3 feet is suggested, your employer should designate the maximum depth of water in which you may search. Employees should follow their organization's safety guidance while working in the field.

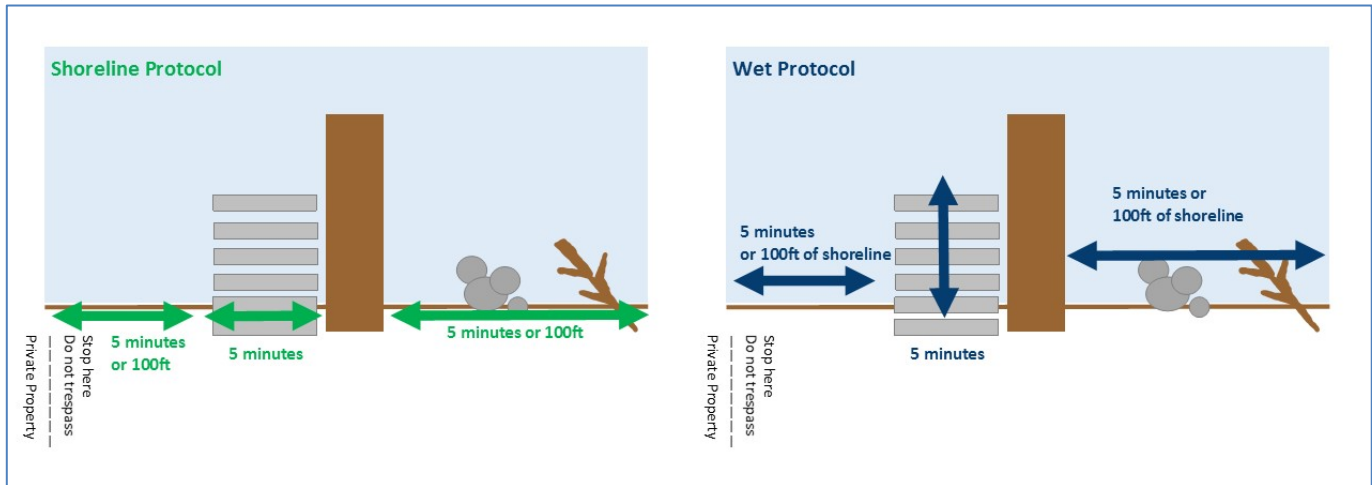
### Procedures for both the Shoreline and Wet Protocols (See [Diagram](#)):

- Spend about 5 minutes on each side and 5 minutes at the ramp itself (15 minutes total).
- Walk or wade, ideally 100 feet, in each direction.
- Pick up driftwood, aquatic vegetation, rocks, and other debris.
- Use extendable hand rake or throw rake (if provided) to reach vegetation or invertebrates in the water. For throw rakes, tie or clip the end of the rope onto your arm or wrist. Throw the rake into the water, perpendicular to the shore, then reel it back in and identify any attached vegetation. Repeat this process at intervals of 10 to 20 feet.
- Visually inspect shallow areas for AIS. Use Aquascopes (if provided) to search deeper depths.
- **Report suspected new occurrences of AIS immediately.** See [Section 3: Report Your Findings](#).

### Safety Tips:

- Follow your employer's guidance on safety while working in the field.
- Be aware of your surroundings. Assess the site for potential slips, trips and fall hazards.
- Use caution when on or near a boat ramp for potential drop offs and slippery surfaces.
- Search the shoreline on the sides of the boat ramp to avoid traffic hazards on the ramp. Never cross behind a vehicle that is backing up.
- If you are throwing a rake, avoid throwing near people, boat traffic and wildlife. It is not recommended to use a throw rake on a river or stream, as the rake can easily get caught on rocks or debris. You should not go near fast moving/flowing water.

## Diagram: Shoreline and Wet Protocols



## Section 3: Report Your Findings

**If you find a new AIS not known to be present in the water body, or a suspicious species that you cannot identify, it is important that you provide a detailed report to the DNR as soon as possible.** It is better for the DNR to receive dozens of false positives than to have a new infestation overlooked. This information is also included in the [Watercraft Inspection Manual](#).

**If you found no new AIS during your search:** Consult with your supervisor on how to report that you conducted a search, but no new AIS were detected. Supervisors should consider using the “absence report spreadsheet” to track all search efforts, which could also be included with your End-of-season Watercraft Inspection Program Report.

### **If you believe you found a new occurrence of an AIS:**

Report by phone, in person or electronically, and be sure to include these key details in your report: **species, waterbody name, county, access name, case number, date, your name and your contact information.**

**By Phone:** Call your DNR AIS Specialist ([Appendix E](#)).

**In Person:** Fill out the Suspected AIS Collection Form ([Appendix C](#)) and collect a sample and/or take photos as described below. Submit the completed form to your supervisor immediately and email it to [wip.dnr@state.mn.us](mailto:wip.dnr@state.mn.us)

**Electronically:** Submit a report using the [EDDMapS Midwest website](#) or the [GLEDN Application](#) ([Appendix D](#)).

- Once uploaded, the system will automatically send the report to the appropriate DNR AIS Specialist.
- It is strongly recommended that you contact your Supervisor and/or your DNR AIS Specialist ([Appendix E](#)) to confirm they received your report.

### **Collect a Sample, if Needed**

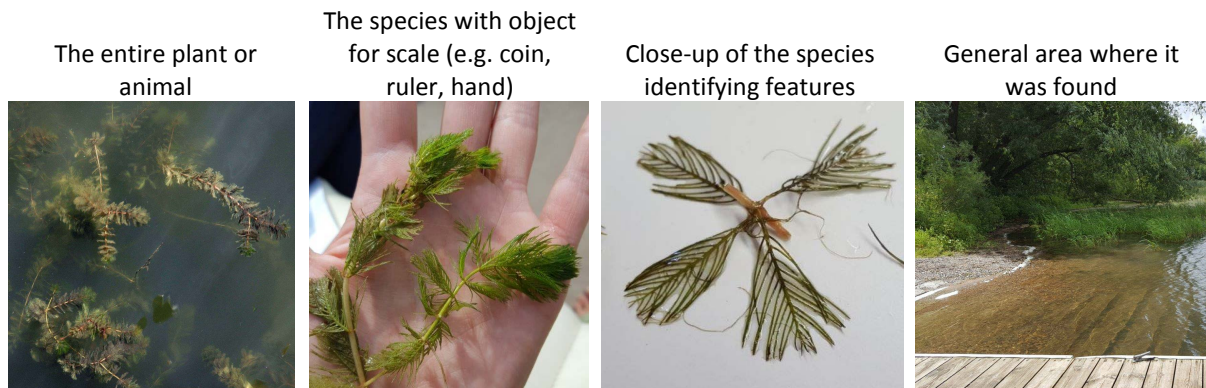
In most situations, detailed location information and high quality pictures of a suspect AIS is enough information for the DNR to confirm or deny the report. If you still wish to collect a sample, follow these steps:

- **Preserve:** Wrap aquatic plants in a damp paper towel, then seal it in a plastic sampling bag. Store animals in a sealed container. Store all samples on ice if possible.
- **Label:** On the outside of the container in permanent marker and on a slip of paper inside the container in pencil record: waterbody name, county, access name, date, your name, and your contact information.
- **Deliver:** Work with your supervisor to deliver the labeled sample to your area’s [DNR AIS Specialist](#).



## Take Multiple Photos

Without a sample, DNR staff require high quality pictures of the identifying features of the suspected AIS in order to confirm or deny a report. If using a smartphone or tablet, save images at 8 MP or higher.



## Section 4: Clean Your Gear

Search equipment could be shared amongst multiple inspectors at multiple water bodies. It is essential that all equipment that was used in the water be cleaned thoroughly between uses.

### Required by Law:

**CLEAN** all visible aquatic plants, zebra mussels, and other prohibited invasive species from watercraft, trailers, and water-related equipment before leaving any water access or shoreland.

**DRAIN** water-related equipment (boat, ballast tanks, portable bait containers, motor) and drain bilge, livewell and baitwell by removing drain plugs before leaving a water access or shoreline property. Keep drain plugs out and water-draining devices open while transporting watercraft.


**DISPOSE** of unwanted bait, including minnows, leeches, and worms, in the trash. It is illegal to release bait into a waterbody or release aquatic animals from one waterbody to another. If you want to keep your bait, you must refill the bait container with bottled or tap water.

### Additional Best Management Practices:

- Refer to the Minnesota Pollution Control Agency's "[Standard Operating Procedures \(SOP\): Protocols for Decontamination after Sampling Water Resources with AIS](#)"
  - Scrub any visible material (mud, invertebrates, seeds, vegetation and other organic matter or debris) off footwear and gear with a stiff brush.
  - Rinse off all field equipment and personal protective equipment that has been in contact with aquatic habitats with tap water.
  - Drain trays, containers, scoops, scopes, boots, snorkel and mask, nets, rakes, etc.
  - Wipe equipment dry with a towel.
- Some invasive species are small and difficult to see at the access. To remove or kill them, take one or more of the following precautions:
  - Spray with high-pressure water.
  - Rinse with very hot water. These water temperatures will kill zebra mussels and some other AIS: 120°F for at least 2 minutes; or 140°F for at least 10 seconds.
  - Dry for at least 5 days.
- [A map of staffed decontamination locations and hours](#) can be found online at [www.mndnr.gov/decon](http://www.mndnr.gov/decon)



## Appendix A: Job Safety Analysis

<b>MN DNR HEALTH &amp; SAFETY PROGRAM</b>  <b>JOB SAFETY ANALYSIS</b>	JOB TITLE (and number if applicable): AQUATIC INVASIVE SPECIES SEARCHES AT PUBLIC WATER ACCESS POINTS Page <u>1</u> of <u>1</u> JSA No. _____		DATE: January 2, 2018	NEW X REVISED
	TITLE OF PERSON WHO DOES JOB: <b>Watercraft Inspector Intern</b>	SUPERVISOR: <b>Regional Watercraft Inspection Supervisor</b>	CREATED BY: <b>Invasive Species Program</b>	
	LOCATION: <b>PUBLIC WATER ACCESSES (BOAT RAMPS)</b>	DIVISION: <b>EWR</b>	REVIEWED BY:	
REQUIRED PERSONAL PROTECTIVE EQUIPMENT: <b>High Visibility Clothing, Slip Resistant Knee Boots, Sunscreen, Tick Protection,</b>		PREREQUISITE TRAINING REQUIRED: <input type="checkbox"/>	APPROVED BY:	
SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	RECOMMENDED ACTION OR PROCEDURE		
<b>1) Check shoreline for the presence of aquatic invasive species – plants and animals.</b>	<b>1A) Slip, Trip and Fall hazards; shoreline has the potential to be slippery.</b>	<b>1A1) Wear slip resistant knee boots.</b>		
		<b>1A2) Assess the site before starting work, look for slip, trip and fall hazards.</b>		
<b>2) Use a rake to pull in vegetation from the bottom of the lake.</b>	<b>1B) Traffic concerns.</b>  <b>2A) Overexertion with throwing rake and pulling rake back into the shore.</b>	<b>1B1) Wear high-visibility vest to aid people in being able to see you.</b>		
		<b>2A1) Warm up and stretch before doing any strenuous work.</b>		
<b>3) Checking for aquatic invasive species from the dock or using a boat.</b>	<b>2B) Slip, Trip and Fall hazards; shoreline has the potential to be slippery.</b>  <b>3A) Potential to fall into the water.</b>	<b>2B1) Wear slip resistant knee boots.</b>		
		<b>3A1) A PFD is required for any work in a boat or when working from a dock.</b>		
	<b>4A) Working alone.</b>	<b>4A1) If working alone, have a communication plan set up with your Supervisor prior to and when completed with the AIS survey.</b>		

## Appendix B: Constructing a Throw-Rake

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### Materials and Equipment:

- Two metal rakes or rake heads, preferably one with a solid wooden handle
- Heavy-duty zip-ties or access to a welder to connect the two heads together
- 25 ft. of nylon rope
- An eye-bolt to tie the rope off to (optional)
- Tools:
  - Drill and drill bits
  - Hand-saw and/or hack-saw
  - Sandpaper

### How to Construct:

- 1) Saw the handle off about 1 ft. above the rake head. This makes the rake easier to throw and store.
- 2) Remove the handle of one rake and fasten the rake heads together either by welding or using heavy duty zip ties. Local businesses may offer welding services, a strong weld will make a more durable throw rake and is easier to clean.
- 3) Sand the end of the handle until smooth so there are no wood splinters or rough edges.
- 4) Drill a hole near or on the end of the handle and either tie the rope through the hole or screw in the eye-bolt and tie the rope to the eye-bolt.
- 5) Attach a clip or tie a slip-knot in the end of the rope so the thrower has a way to tie-off the rope to avoid losing the rake when throwing it.

## Appendix C: Suspected AIS Collection Form



### SUSPECTED AIS COLLECTION FORM

Collector's Name: \_\_\_\_\_

Vehicle License (not required for citizen reports): \_\_\_\_\_ Organization: \_\_\_\_\_

Lake Name & Access: \_\_\_\_\_

Collector's Phone Number: \_\_\_\_\_ Collector's Email: \_\_\_\_\_

Date of Collection/Report: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Time of Collection/Report: \_\_\_\_\_

**Reason for Collection (check all that apply):**

- Visual ID of ANS       Plants on Boat/Trailer  
 Bumps on Boat/Trailer       Unidentifiable Organic Material

**Location of Suspected AIS Prior to Collection:**

- Watercraft Hull       Motor       Live Well  
 Anchor       Bilge       Watercraft Interior  
 In Lake/Reservoir       Other: \_\_\_\_\_

**Citizen Report Information:**

Reporter's Name: \_\_\_\_\_

Reporter's Phone Number: \_\_\_\_\_ Reporter's E-mail: \_\_\_\_\_

Suspected Species: \_\_\_\_\_

**Location species seen (be as specific as possible):**

Does the reporter have photos? Yes No If yes, email them to: WIP.DNR@state.mn.us

Date Delivered: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

**DO NOT WRITE  
for Lab Use Only**

Date received at DNR Office: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Specimen ID: \_\_\_\_\_ Date identified: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Technician: \_\_\_\_\_ Further analysis needed: \_\_\_\_\_

Collector contacted with results: \_\_\_\_\_

**COLLECTING SAMPLES**

Take a sample for identification and/or law enforcement if:

- You think you have found an aquatic invasive species attached to a watercraft or water-related equipment coming out of a water body which is not known to be in that water.
- You have found a prohibited invasive species on a watercraft or water-related equipment entering a water access.

**Steps to follow:**

Put sample in a plastic bag and keep it in a cool place (a cooler in your car or refrigerator at home). Call your supervisor and he/she will, if possible, pick it up and bring it in to the office to be identified.

**Note the following information on the plastic bag:**

- Date
- Water body
- Describe where it was found (e.g., on a boat, on a trailer, growing in a water body, caught by a fisherman caught on his line, etc.).
- Before removing from a boat or equipment, be sure

to take photos. Then get vehicle and boat license numbers, and description of boat and boater. If possible, get the name of the vehicle driver.

**Samples for education:**

When at zebra mussel waters, if you find native mussels, or anything interesting (like a shoe, anchor rope, fishing equipment) with attached ZM, keep it and turn it into your supervisor ASAP. Your supervisor will then bring it into the office to be preserved for a educational specimen. You should have a copy of the DNR Prohibited Invasive Species Permit issued for Invasive Species Program Staff to transport the species for educational purposes.

**Citizen report of new infestation:**

Collect contact information for the citizen reporting the infestation; ask if the reporter has photographs and e-mail them to wip.dnr@state.mn.us. When collecting location Information be as specific as possible: GPS info, location on a map, address of property nearby, color of cabin or dock nearby, etc. Submit this completed form to your supervisor immediately, and e-mail information to: wip.dnr@state.mn.us



## Appendix D: Reporting with the EDDMapS Midwest website and GLEDN Application

Image credits: EDDMapS Midwest Training Smartphone App

### Getting Started

1. Create an account at [EDDMapS Midwest](#).
2. Download the [Great Lakes Early Detection Network](#) (GLEDN) Application onto your work tablet. Log in to the App using your EDDMapS Midwest account. The App also has a field guide to assist with identification.

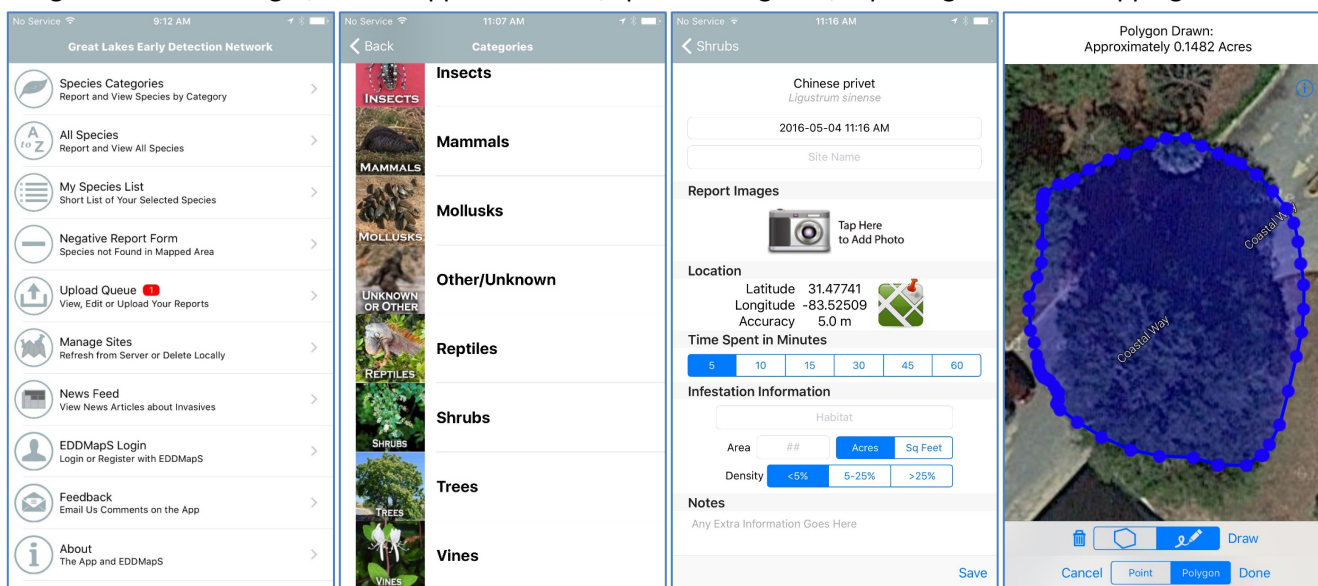
### Reporting New Occurrences of AIS using EDDMapS Midwest

1. Log in to EDDMapS Midwest (requires connection to the internet).
2. Click on the type of species you would like to report (plant or animal).
3. Fill out as many fields as possible in the reporting form.
4. Always include images with your reports.
5. Click submit report.

### Reporting New Occurrences of AIS using the GLEDN App

1. Open and log in to the GLEDN App.
2. Click [All Species](#) in the main menu.
3. Find the species you would like to report. Most AIS are found in the aquatics, crustaceans or mollusks categories. Select the species you would like to report by clicking on the species name or image. If you are unsure of the species or the species is not listed, click “other/Unknown” category.
4. Fill out these fields in the reporting form: time spent, habitat, area, density and notes. Automatically populated fields include: species name, date and time, latitude and longitude.
5. You may use the App’s mapping function to more precisely map the infestation.
6. Always include images with your reports. Click the camera icon to take pictures.
7. **Click Save.** The report will be saved in your [Upload Queue](#) on the main menu.
8. **Upload your report when your device is connected to Wi-Fi.** Open the App, click on [Upload Queue](#), click [Actions](#) on the top right, select the report to upload, and click [Upload](#) at the bottom of the screen.

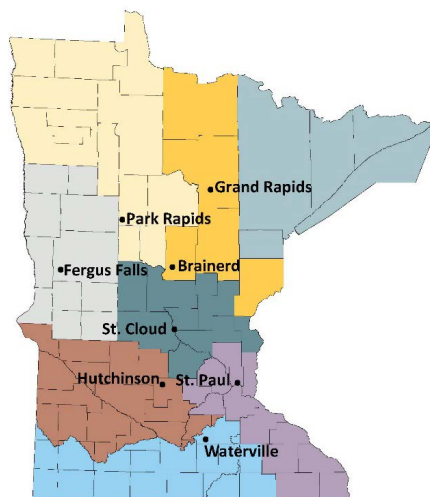
Images: From left to right, GLEDN App main menu, species categories, reporting form and mapping function.



## Appendix E: DNR Invasive Species Contacts

Refer to the online [AIS Contacts](http://www.mndnr.gov/ais) page (found at [www.mndnr.gov/ais](http://www.mndnr.gov/ais)) for current information.

Map Color and Region Number	Region Name	District	Office Location
1	Northwest Region	North District	Park Rapids
1	Northwest Region	South District	Fergus Falls
2	Northeast Region	West District	Brainerd
2	Northeast Region	East District	Grand Rapids
3	Central Region	North District	Sauk Rapids
3	Central Region	South District	St. Paul
4	Southern Region	North District	Hutchinson
4	Southern Region	South District	Waterville



### Invasive Species Specialists and Natural Resource Specialists (NRS)

Primary contact for local AIS issues and permits. Provide technical support for invasive species management and prevention activities for their respective work areas.

Office Location	DNR Region and District	Name	Phone Number	Email
Park Rapids	1 North	Nicole Kovar	218-732-8960	<a href="mailto:nicole.kovar@state.mn.us">nicole.kovar@state.mn.us</a>
Fergus Falls	1 South	Mark Ranweiler	218-739-7576 x254	<a href="mailto:mark.ranweiler@state.mn.us">mark.ranweiler@state.mn.us</a>
Brainerd	2 West	Tim Plude	218-203-4354	<a href="mailto:timothy.plude@state.mn.us">timothy.plude@state.mn.us</a>
Grand Rapids	2 East	Richard Rezanka	218-328-8821	<a href="mailto:richard.rezanka@state.mn.us">richard.rezanka@state.mn.us</a>
Sauk Rapids	3 North	Christine Jurek	320-223-7847	<a href="mailto:christine.jurek@state.mn.us">christine.jurek@state.mn.us</a>
Sauk Rapids	3 North	Vacant (NRS)		
St. Paul	3 South	Keegan Lund	651-259-5828	<a href="mailto:keegan.lund@state.mn.us">keegan.lund@state.mn.us</a>
St. Paul	3 South	Kylie Cattoor (NRS)	651-259-5729	<a href="mailto:kylie.cattoor@state.mn.us">kylie.cattoor@state.mn.us</a>
St. Paul	3 South	April Londo (NRS)	651-259-5861	<a href="mailto:april.londo@state.mn.us">april.londo@state.mn.us</a>
Hutchinson	4 North	Eric Katzenmeyer	320-234-2550 x237	<a href="mailto:eric.katzenmeyer@state.mn.us">eric.katzenmeyer@state.mn.us</a>
Waterville	4 South	Allison Gamble	507-362-8786	<a href="mailto:allison.gamble@state.mn.us">allison.gamble@state.mn.us</a>

### Watercraft Inspection Program Supervisors and Assistants

Supervise DNR watercraft inspection staff. Provide technical support for watercraft inspection and decontamination activities in their respective work areas.

Office Location	DNR Region	Name	Phone Number	Email
Fergus Falls	1	Mike Bolinski, Supervisor	218-739-7576	<a href="mailto:michael.bolinski@state.mn.us">michael.bolinski@state.mn.us</a>
Fergus Falls	1	Anna Ness, Assistant	218-739-7576	<a href="mailto:anna.ness@state.mn.us">anna.ness@state.mn.us</a>
Brainerd	2	Keri Hull, Supervisor	218-203-4357	<a href="mailto:keri.hull@state.mn.us">keri.hull@state.mn.us</a>
Brainerd	2	Jessamyn Foley, Assistant	218-203-4356	<a href="mailto:jessamyn.foley@state.mn.us">jessamyn.foley@state.mn.us</a>
Sauk Rapids	3	Christine Hokkala-Kuhns, Supervisor	651-259-5835	<a href="mailto:christine.hokkala-kuhns@state.mn.us">christine.hokkala-kuhns@state.mn.us</a>
St. Paul	3	Sara Okstad, Assistant	651-315-3387	<a href="mailto:sara.okstad@state.mn.us">sara.okstad@state.mn.us</a>
St. Paul	3	Jeannine Howland, Assistant	651-259-5849	<a href="mailto:jeannine.howland@state.mn.us">jeannine.howland@state.mn.us</a>
Hutchinson	4	Travis Kinsell, Supervisor	320-234-2557 x247	<a href="mailto:travis.kinsell@state.mn.us">travis.kinsell@state.mn.us</a>