


# Citizen Science Actions

AIS Shoreline Survey

Blocking Zebra Mussels

Ice-in, Ice-off

Janet Andersen

The background of the slide is a photograph of a pond. It is filled with numerous green, round lily pads. Several yellow flowers, likely water lilies, are in bloom, rising from the water. The water surface is dark, and there are some small, brown, twig-like objects floating among the lily pads.

# Shoreline search for new Aquatic Invasive Plants

NYS DEC – NYS FOLA  
Janet Andersen



# Shoreline Search Topics

Why to search

Where to search

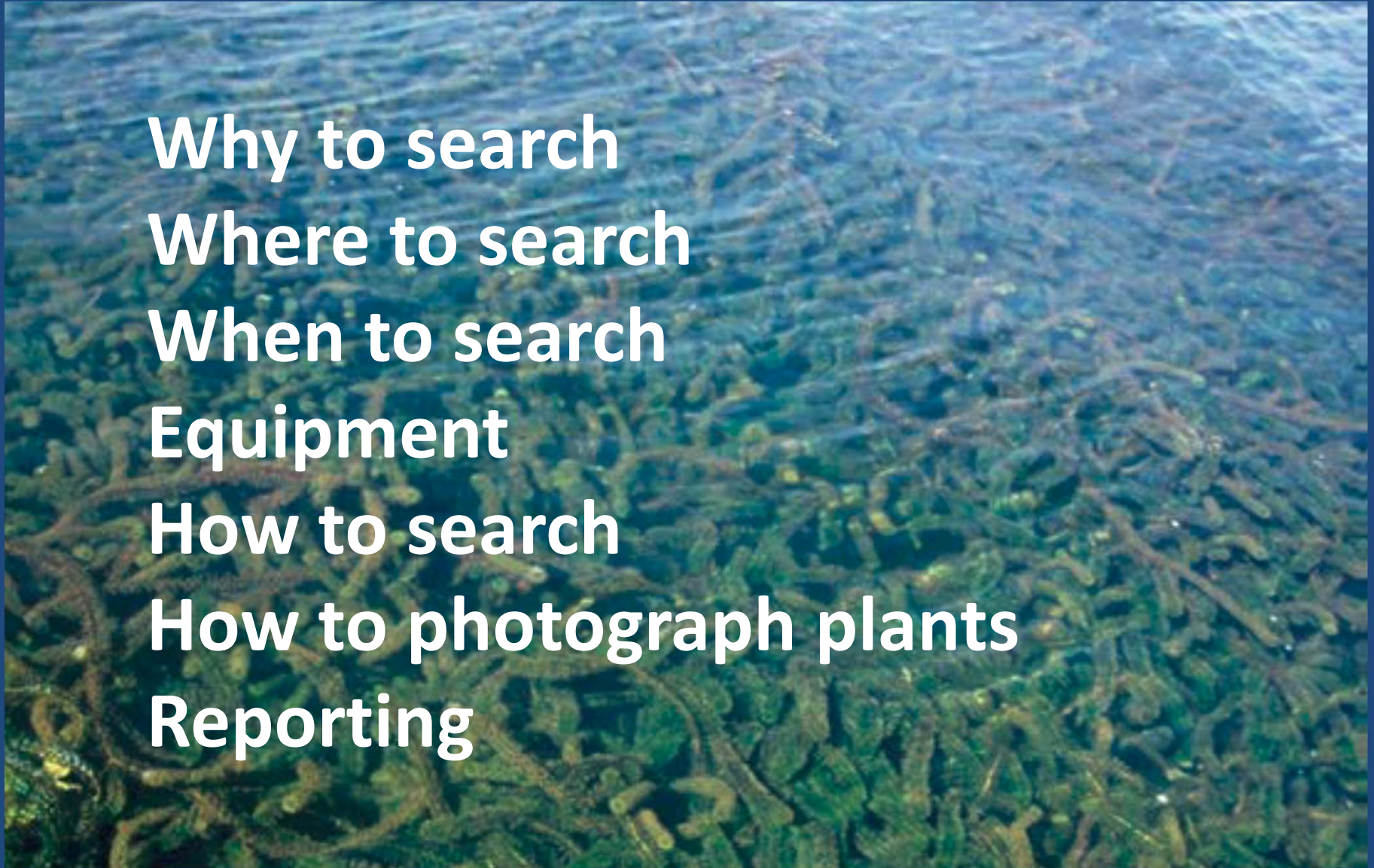
When to search

Equipment

How to search

How to photograph plants

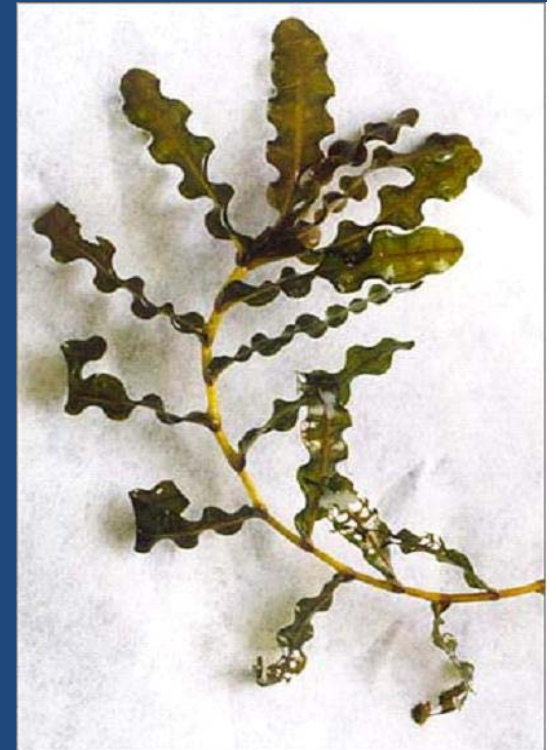
Reporting





# Aquatic Invasive Plant Search

- Not the same as a lake-wide plant survey
- Presence or absence
- Not density, distribution, or ecological value
- Designed for citizen science





# Why search for new invasives?

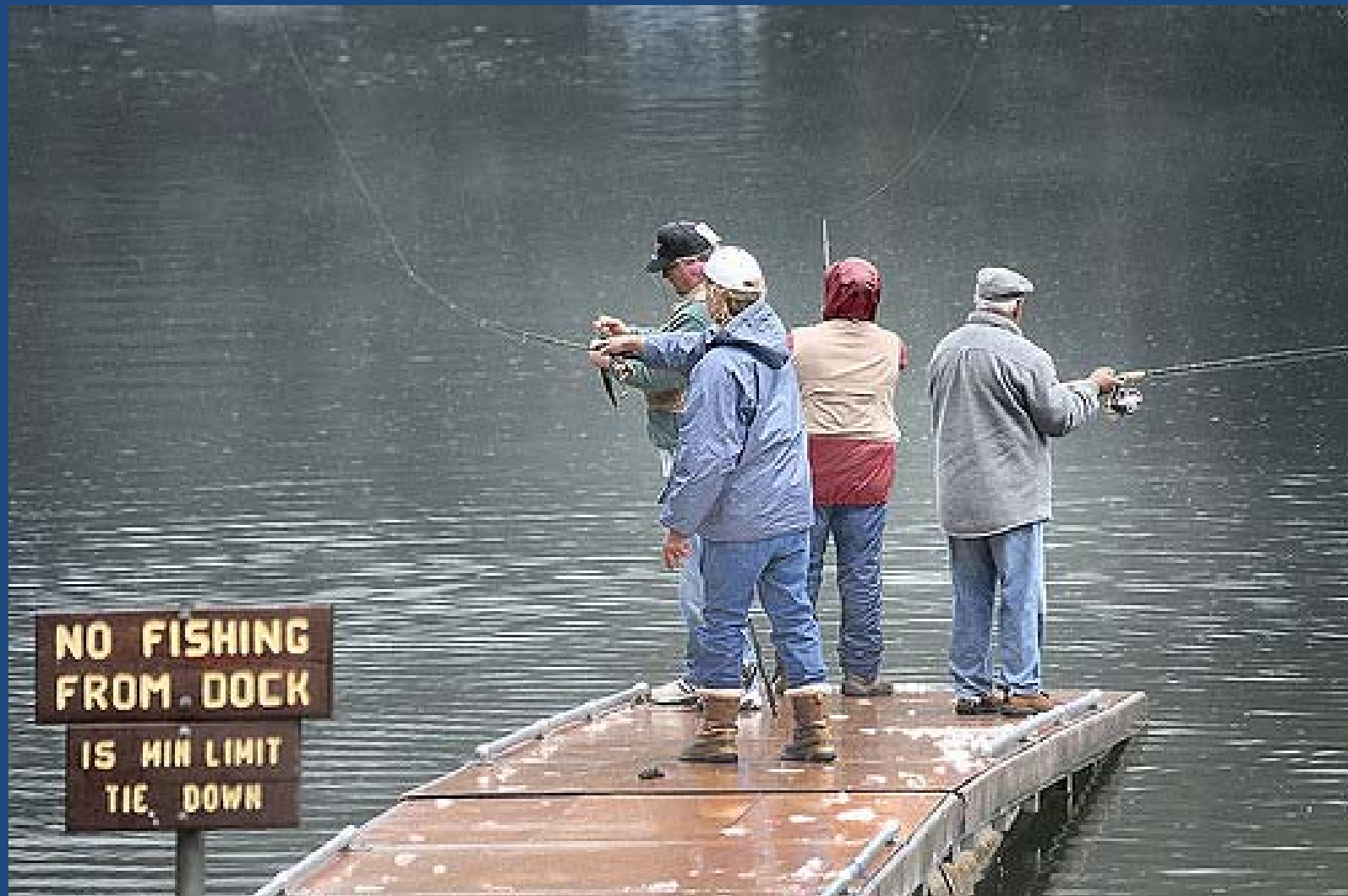
- Control may be easier if found early
- Control may be feasible if found early
- Limit additional spread
- More knowledge may lead to better prevention methods



# Where to search: boat launches



# Where to search: public fishing spots



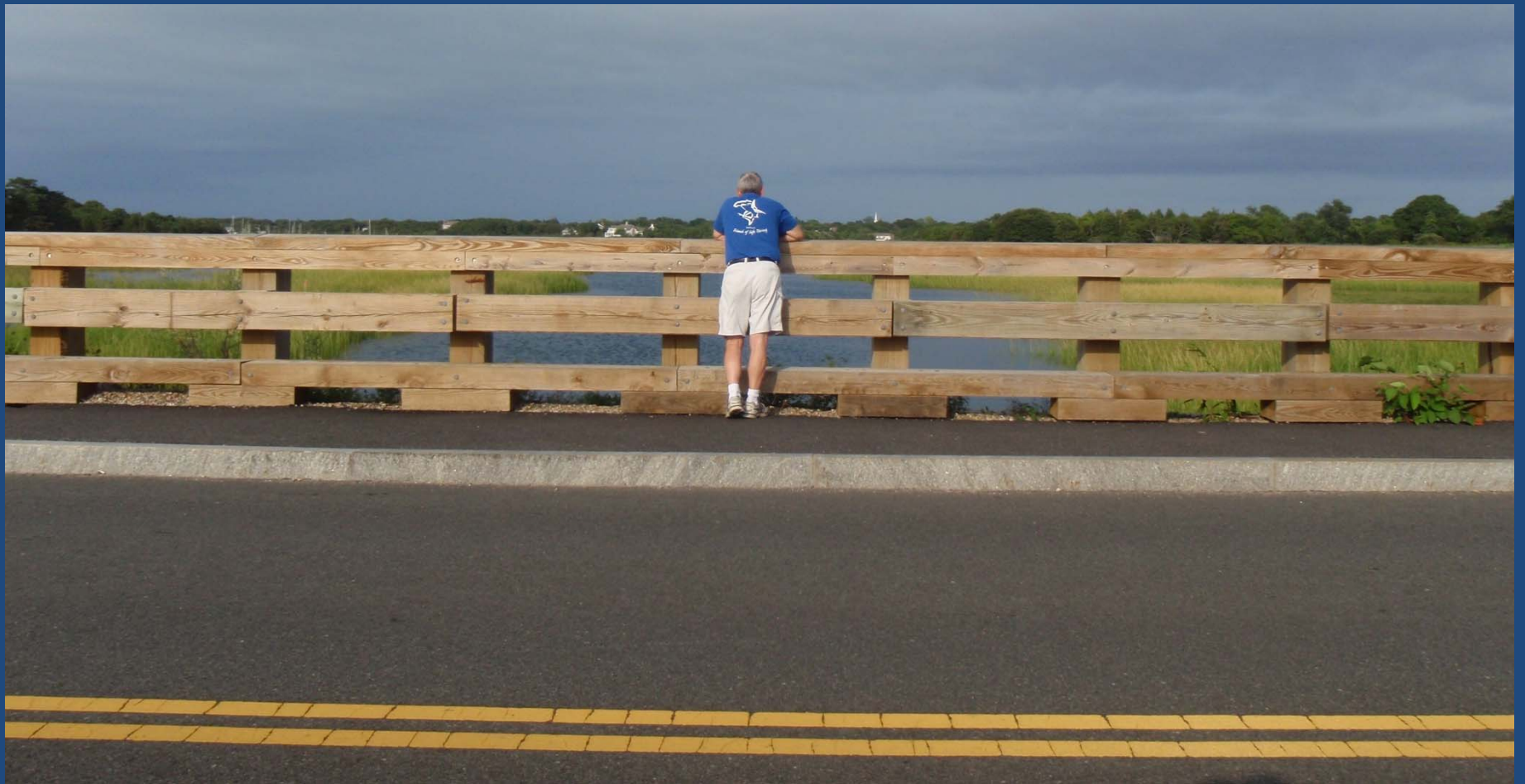


# Where to search: public access (Boating, fishing, or aquarium release)





Where to search: bridge or road access  
(fishing or aquarium release)



# Where to search: downwind shores

Fragments can be directed by wind or currents to concentrate at the shoreline or along docks.





# Where to search...

Lake outlet

Stream inlet

Near other  
known invasives

Weedbeds



# Search areas - summarized

Where people & boats have easy access

Where plants grow

Where plant fragments collect

Where you get a chance to look





# When to search

Generally, July or August

- Plants are larger
- Floating leaves may appear
- Flowers or seeds more visible
- Some flower into September



You know your lake

- Avoid algae blooms

Plants have different life cycles



# When to search

Generally July or August

--- Exceptions ---

Curly leaf pondweed

- Early spring growth
- Senescens in warmer water
- Turions resprout in fall

Water Chestnut

- Before nutlets drop





# How to search

Have a target plant (or two) in mind

Look at photos or drawings

Know what's located nearby

Be alert for anything that looks unusual for your lake



# What's nearby?

## ALS invasives by county – NYSFOLA.org

Aquatic Invasive Species - Westchester County			
Waterbody	Kingdom	Common name	Scientific name
Cross River Reservoir	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Cross River Reservoir	Animal	Virile crayfish	<i>Orconectes virilis</i>
Croton River	Plant	Hydrilla	<i>Hydrilla verticillata</i>
Croton River	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Croton River	Plant	Brittle naiad	<i>Najas minor</i>
Croton River	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Grassy Sprain Reservoir	Animal	American alligator	<i>Alligator mississippiensis</i>
Howlands Lake	Plant	Brittle naiad	<i>Najas minor</i>
Hudson River	Plant	Water chestnut	<i>Trapa natans</i>
Hudson River	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Huguenot Lake	Animal	American alligator	<i>Alligator mississippiensis</i>
Lake Katonah	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Lake Lincolndale	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Lake Lincolndale	Plant	Brittle naiad	<i>Najas minor</i>
Lake Mohegan	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>



# Basic Equipment

Map of the lake (Google is fine)

Pen or pencil or sharpie

Resealable plastic bags

Weeding or cultivating fork

Bucket to carry the gear

Digital camera

Paper towels



# Optional Equipment

GPS

Hand lens

Weed rake (aka weed anchor)

- Two garden rakes
- Remove handles
- Zip tie or wire together
- Attach 10 m rope





# How to search

Walk or wade along a section of shoreline

Look for fragments or plants

Take a photo or sample of anything that looks unusual

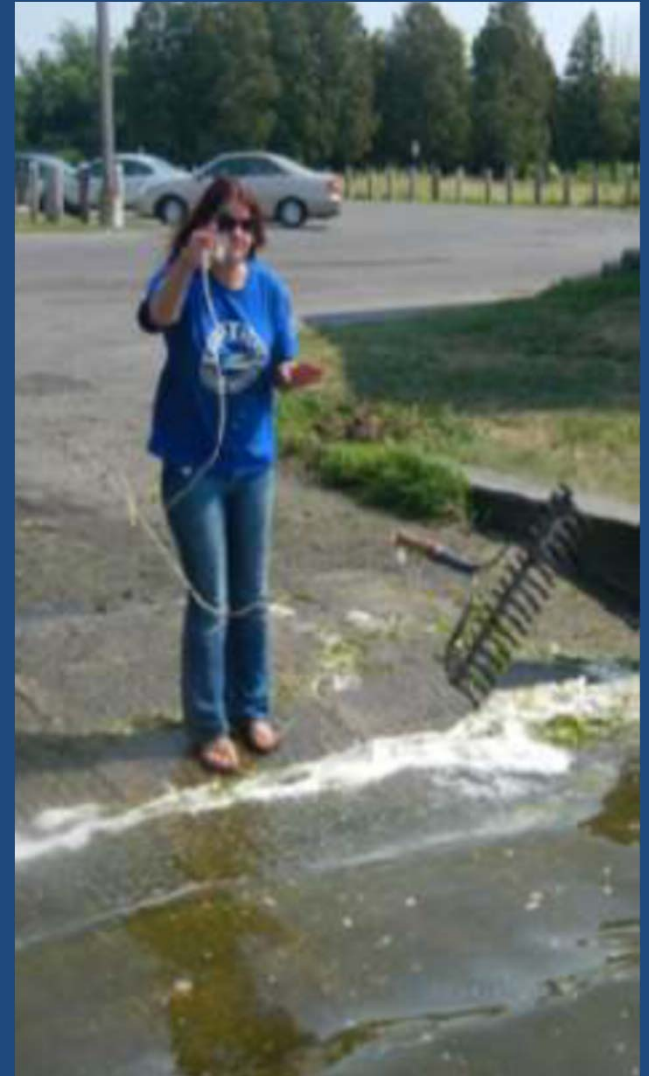


# How to search

Examine fragments

Use a rake or weeder to reach rooted plants

Use a weed rake for deeper samples

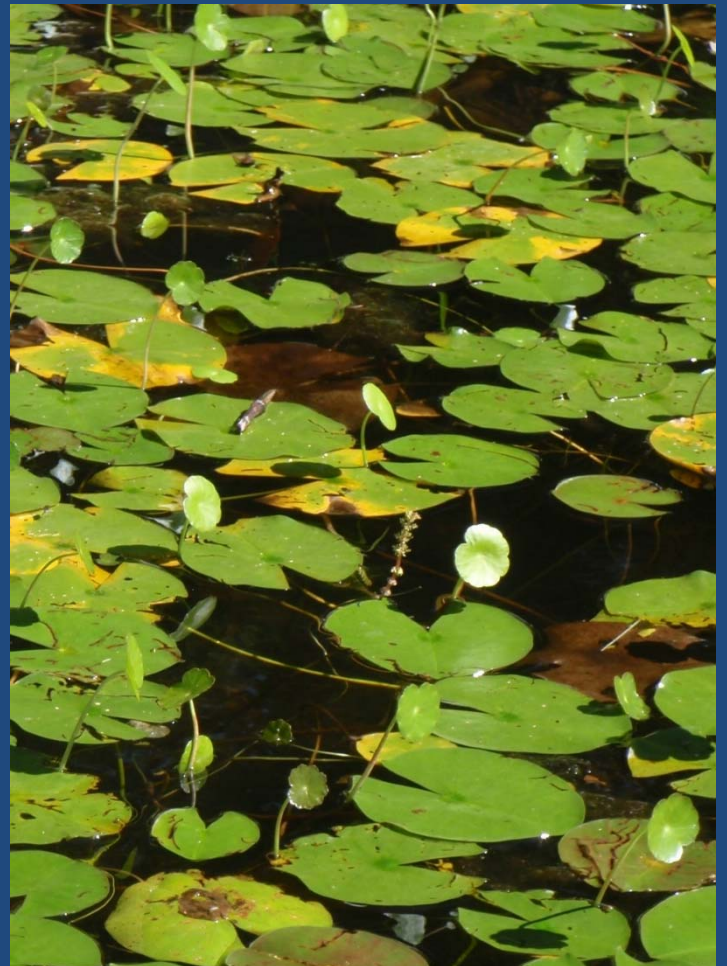




# How to search

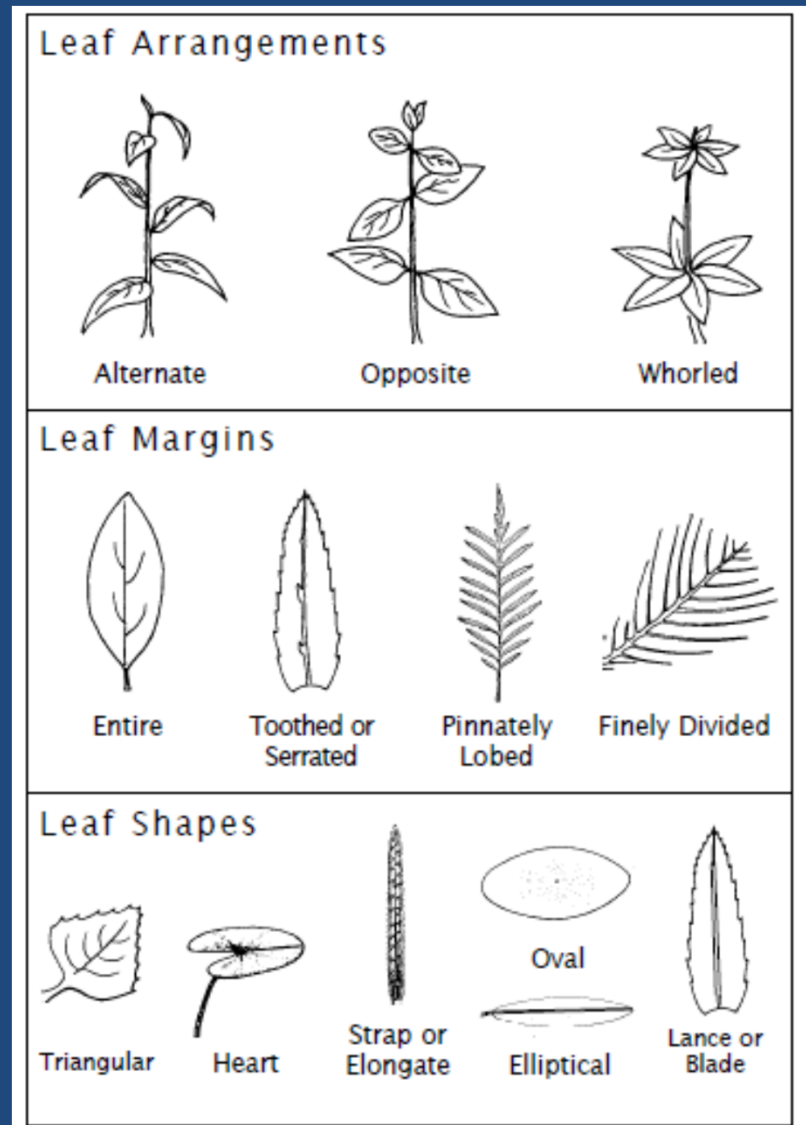
When you find something interesting:

- Collect a sample
- Put sample in a bag with a number on a piece of paper
- Write the number on your map to document where you collected it



# Plant Identification

- Take a photo and send to an expert
- Investigate using reference books or online sources
- Key out the plant



# Take photos for ID – lots of photos

Rinse plants

If plant is sturdy, take a photo on a white background

Often no flash is better

Often shade is better

Try different approaches





# Take photos

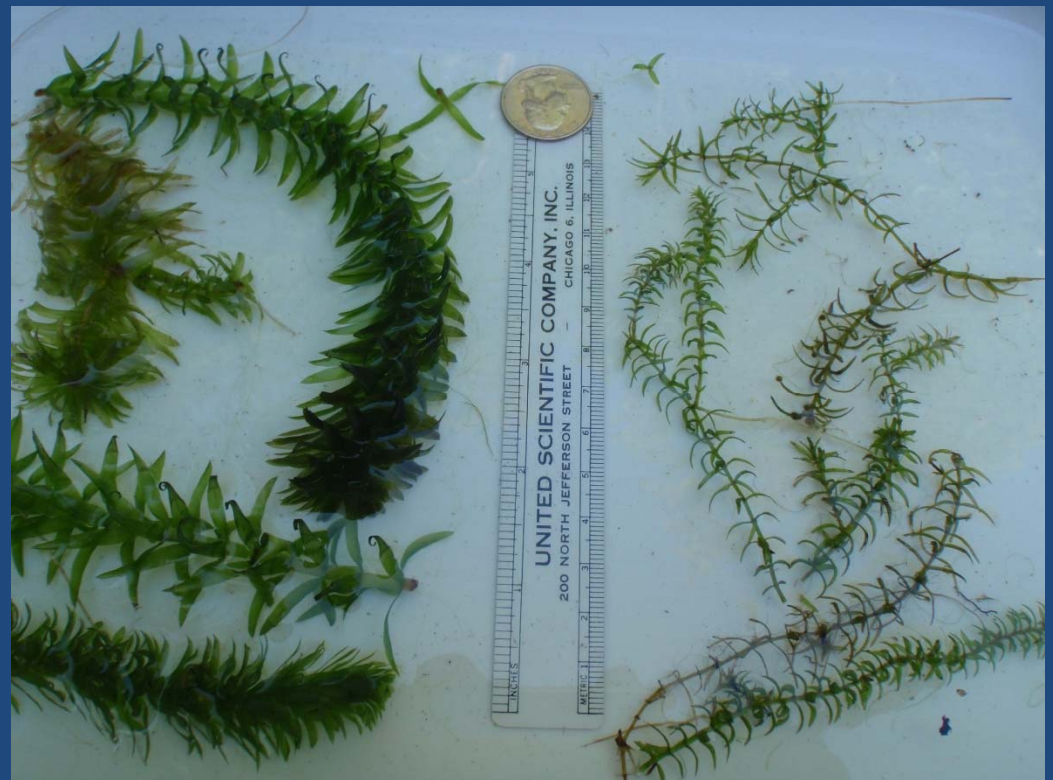
Some plants collapse out of water

Use a white tray or clear with white backing

Add a little water

Pose the plant

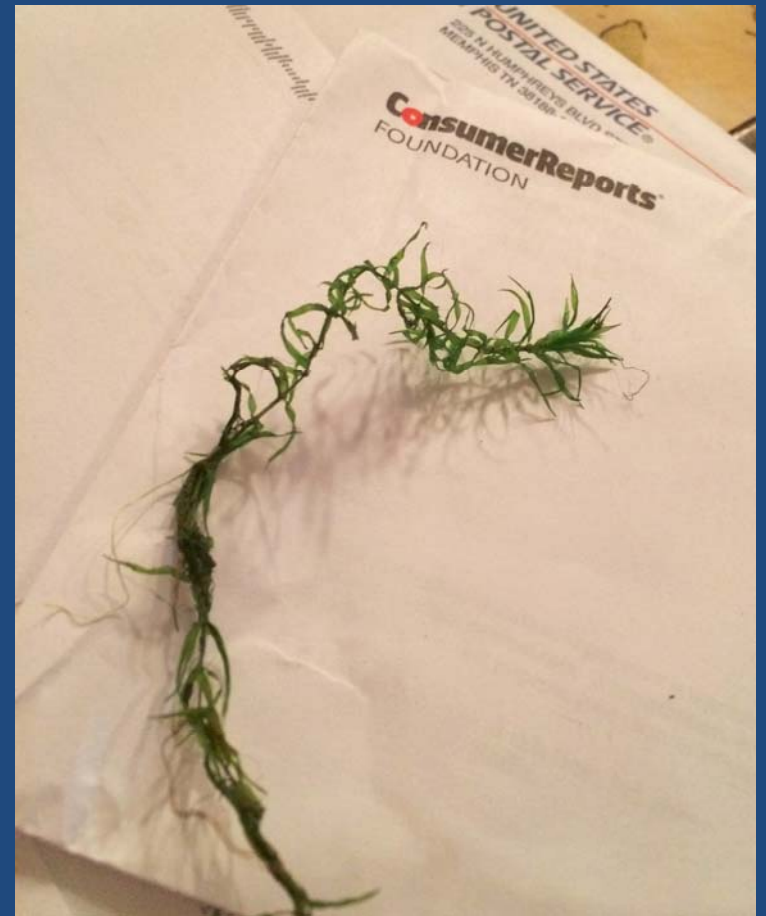
Cut whorls



# Why take photos in water



EWM in and out of water - C. Doyle, SOL



# Take photos

One type of plant per photo

Multiple stems good





# More photos – plant structures

Focus on flowers, seeds, tubers, turions



# Of course there's paperwork!

- Submit form even if nothing found – it's good to know!
- Email photos to Scott or APIPP
- Online option available for CSLAP lakes
- iMap invasives
- Lake observer

[illegible]

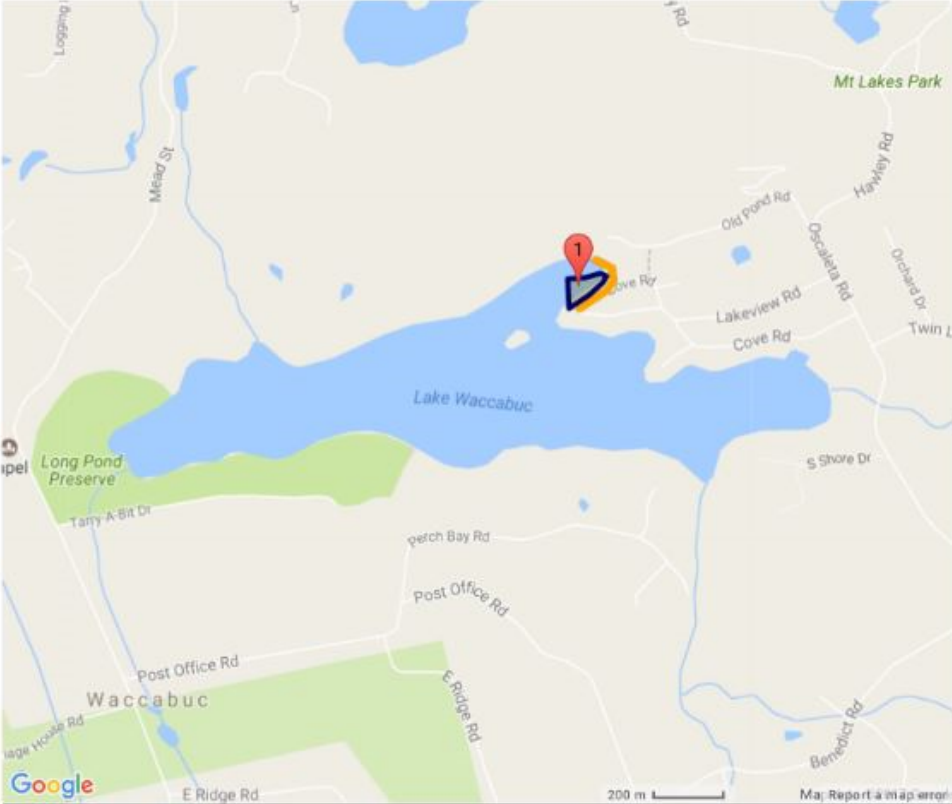
# Online CSLAPdata.org

AIS Survey Report Form			
Surveyor Information			
Names of Participants: Sally Sampler		Date: 06-26-2016 Report Number: 1	
Contact Email: sally.sampler@somelake.com		Contact Phone: (111)111-1111	
How was survey conducted: <input checked="" type="checkbox"/> Walking <input type="checkbox"/> Boating		Total People Hours: 2.00	
Monitoring Information			
Lake Name: Lake Waccabuc	County: Westchester	CSLAP Lake ID: 4	
Where did you look? Mark on map and check all that apply:			
<input type="checkbox"/> Boat Launch	<input type="checkbox"/> Public Access	<input checked="" type="checkbox"/> Shoreline	<input type="checkbox"/> Road Crossing
<input type="checkbox"/> Inflow	<input type="checkbox"/> Outflow	<input type="checkbox"/> My Dock	<input type="checkbox"/> Weed Bed
<input type="checkbox"/> Other:			
Were you looking for a specific species (for example, hydrilla hunt)? If so, what?			
Brazilian elodea			
What did you find?			
<input checked="" type="checkbox"/> Check this box if NO invasives were found during the survey. Otherwise, please fill in items below. If an invasive is known to be present in your lake, and you are sure of the identification, a photo is not needed.			
Species found (or unknown)	Describe Location	Specimen #	Comments (eg: habitat, depth, rooted or floating, density)
Eurasian watermilfoil	some dense beds, other strands scattered throughout area	1	rooted and floating fragments: previously known in lake
Email photos and, if possible, scan forms and send both to: scott.kishbaugh@dec.ny.gov or paper forms can be sent to Scott Kishbaugh, NYSDEC Division of Water, 625 Broadway 4th Floor, Albany, NY 12233-3502. Forms may also be submitted through the CSLAP website <a href="http://www.cslapdata.org">www.cslapdata.org</a> .			



# AIS Shoreline search map

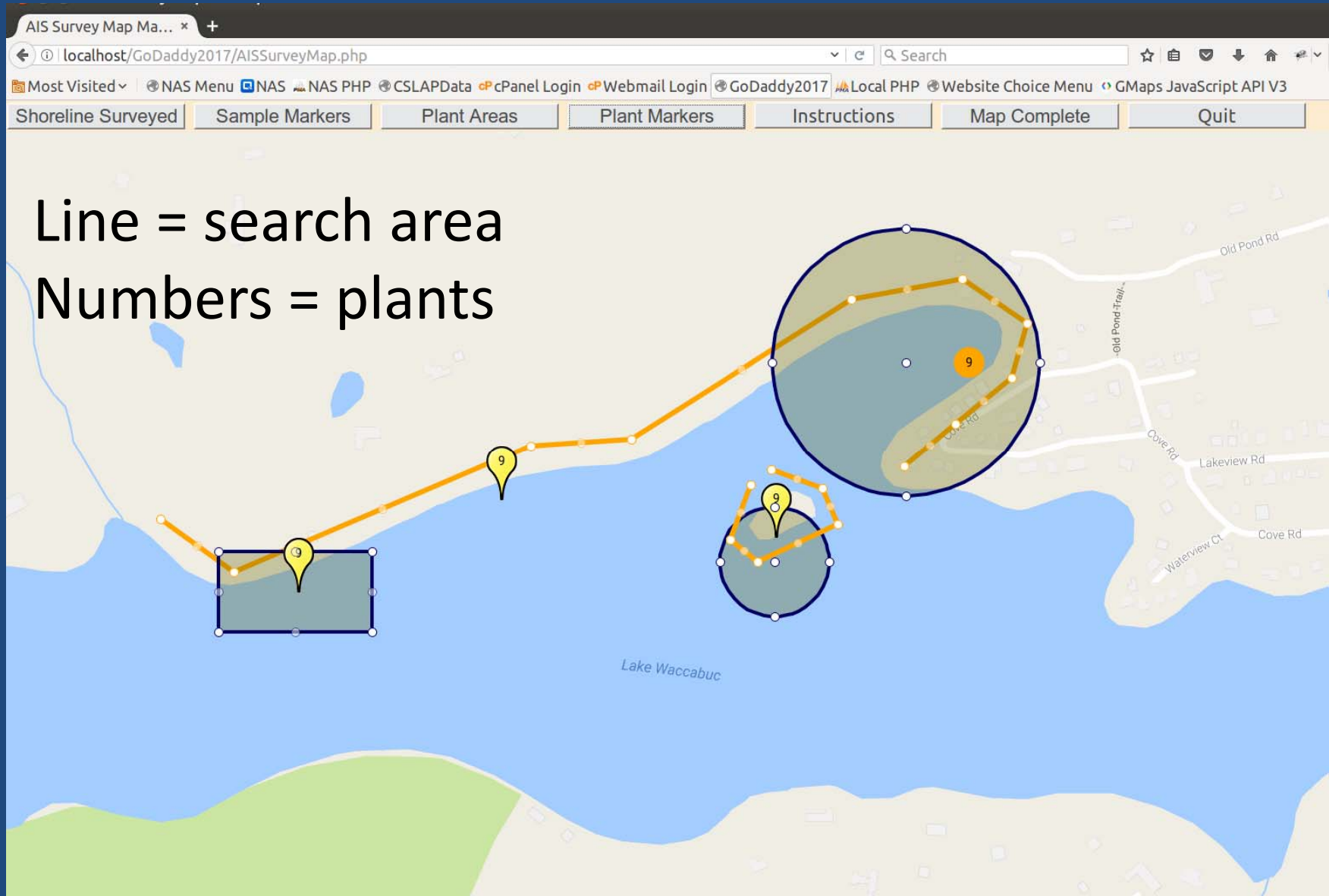
**Lake Waccabuc, Westchester County  
Aquatic Invasive Species Survey**



**AIS Survey Report Form**

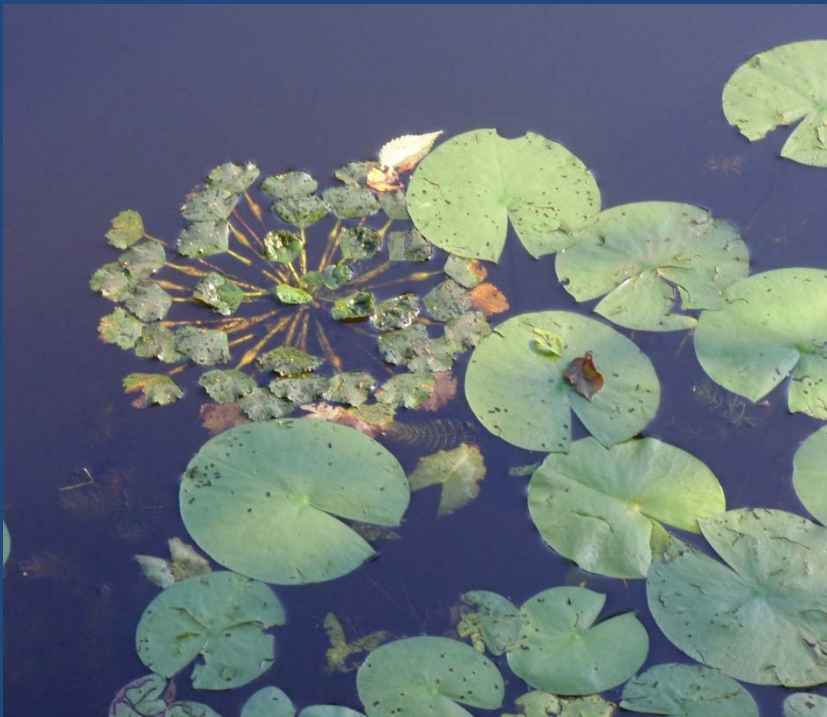
Surveyor Information	
Names of Participants: Sally Sampler	Date: 06-26-2016
Contact Email: sally.sampler@somelake.com	Report Number: 1
How was survey conducted: <input checked="" type="checkbox"/> Walking <input type="checkbox"/> Boating	Contact Phone: (111)111-1111 Total People Hours: 2.00
Species found during survey	
1 - Eurasian watermilfoil	

# Map (CSLAPdata.org)



# What next?

- False alarms are fine!
- If it's suspicious, confirmation needed
- If it's clear, start work!





# Key Plants for Search

Water chestnut

Hydrilla

Eurasian watermilfoil

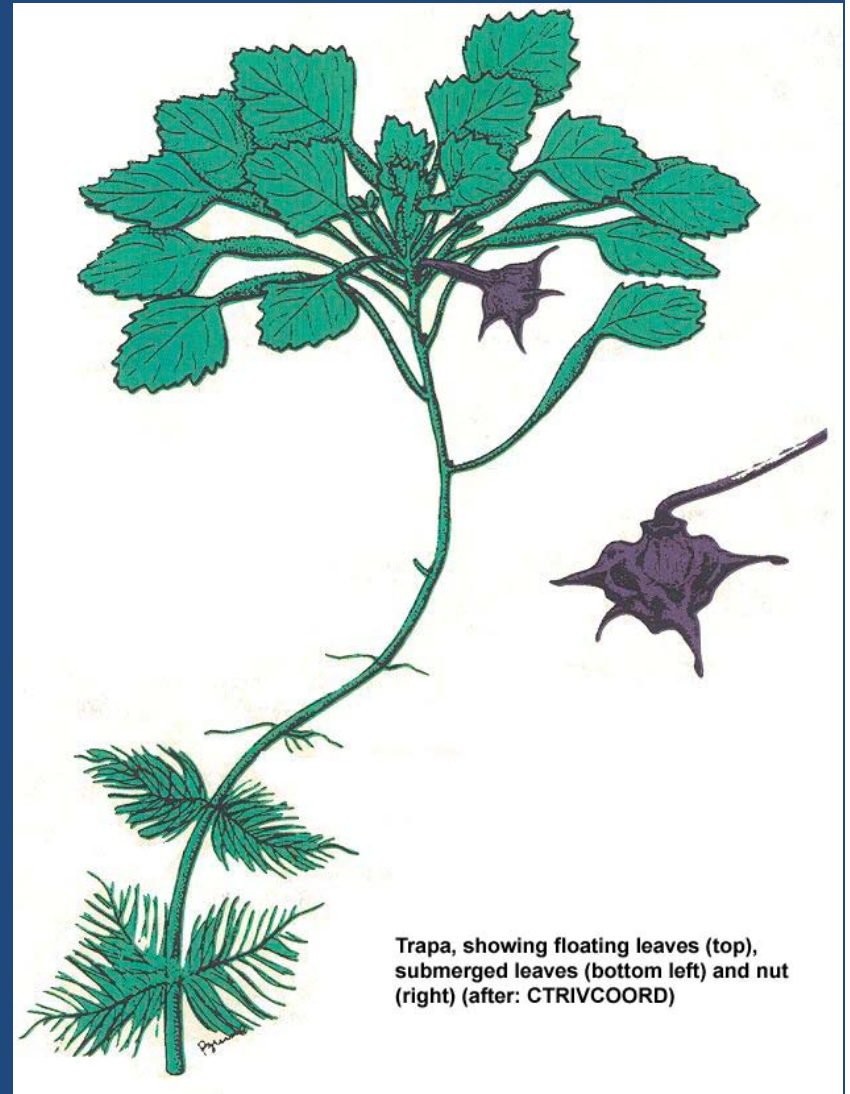


Hydrilla - Jon Reis for NYSFOLA



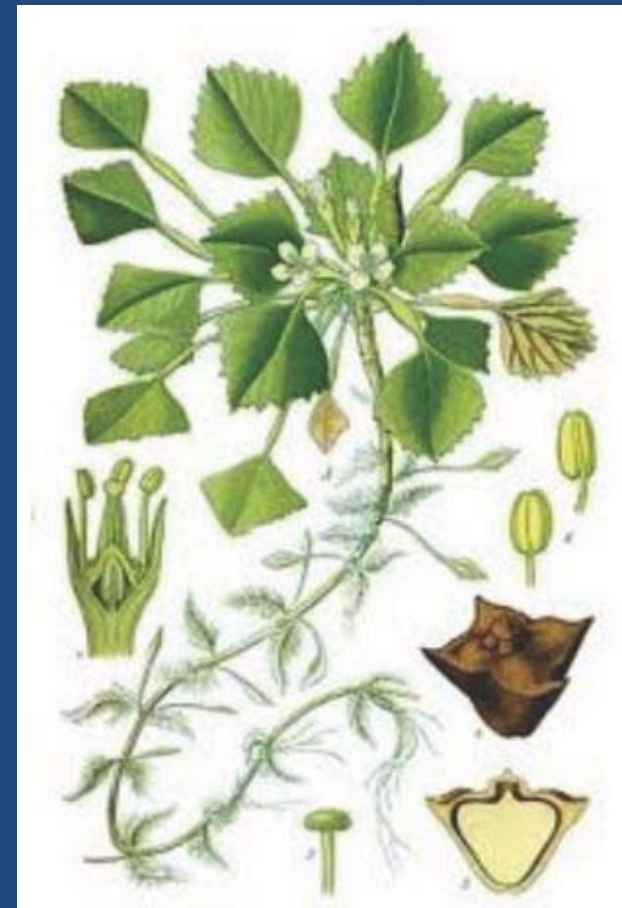
# Water Chestnut

## Easy to identify – Possible to control



# Water Chestnut Chasers

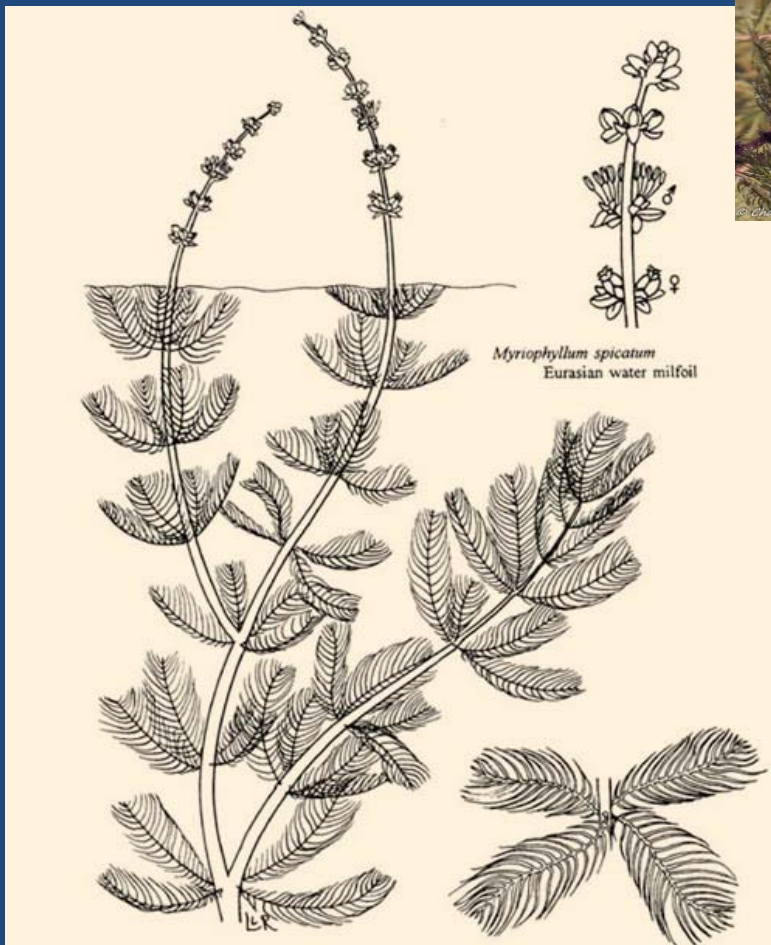
- Water chestnut chasers challenge
- Webinar June 28
- [nyimapinvasives.org](http://nyimapinvasives.org)
- See Meg at iMap Invasives





# Eurasian watermilfoil

## Under-reported threat



# Hydrilla – least wanted

- Found scattered across state
- Leaves – toothed, whorls, most often 5
- Tubers in sediment enable regrowth



# Questions?

Shoreline search protocol & forms are on  
[NYSFOLA.org](http://NYSFOLA.org) website

AIS plants by county on website & regional reports

Online data – [CSLAPdata.org](http://CSLAPdata.org)

Thanks to Robynn Shannon, Scott Kishbaugh, Chris Doyle (Solitude / ABI), Maine VLMP  
& Maine's Courtesy Boat Program, & University of Wisconsin, Lou Feeney



# Blocking Zebra Mussels: Monitoring for Zebra Mussels in Your Lake

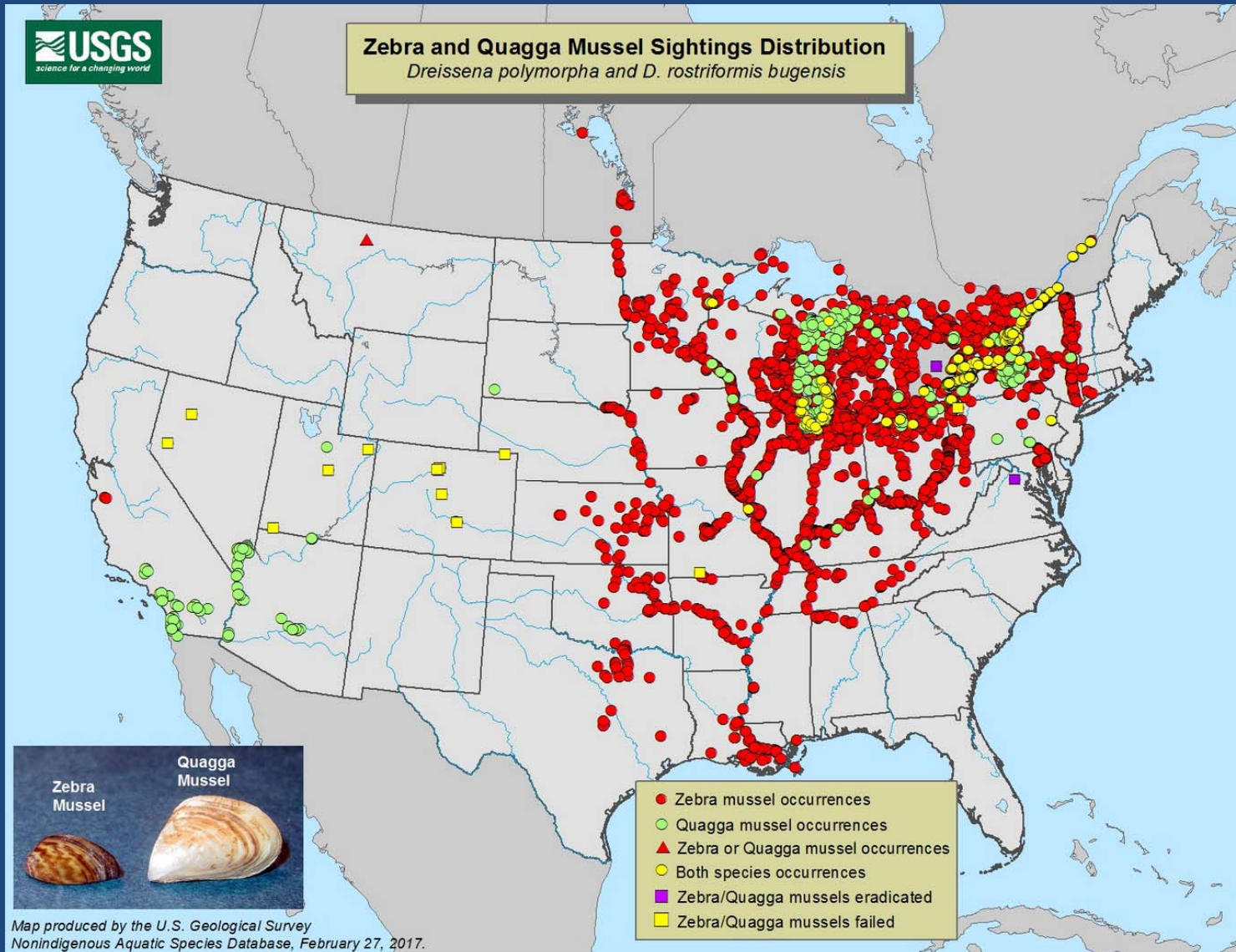
Citizen Scientists vs. Invasive Mussels

# Why monitor?

- Zebra and quagga mussels are common
- Continue to spread rapidly
- Knowing where they are can allow actions
  - Lake George – removed 25K mussels thru 2009
    - None spotted in 2010
  - Monitor boats to slow spread by transport
  - Increase education
  - Biocontrol ?



# Rapid Dispersal





# Favorable NY Habitat

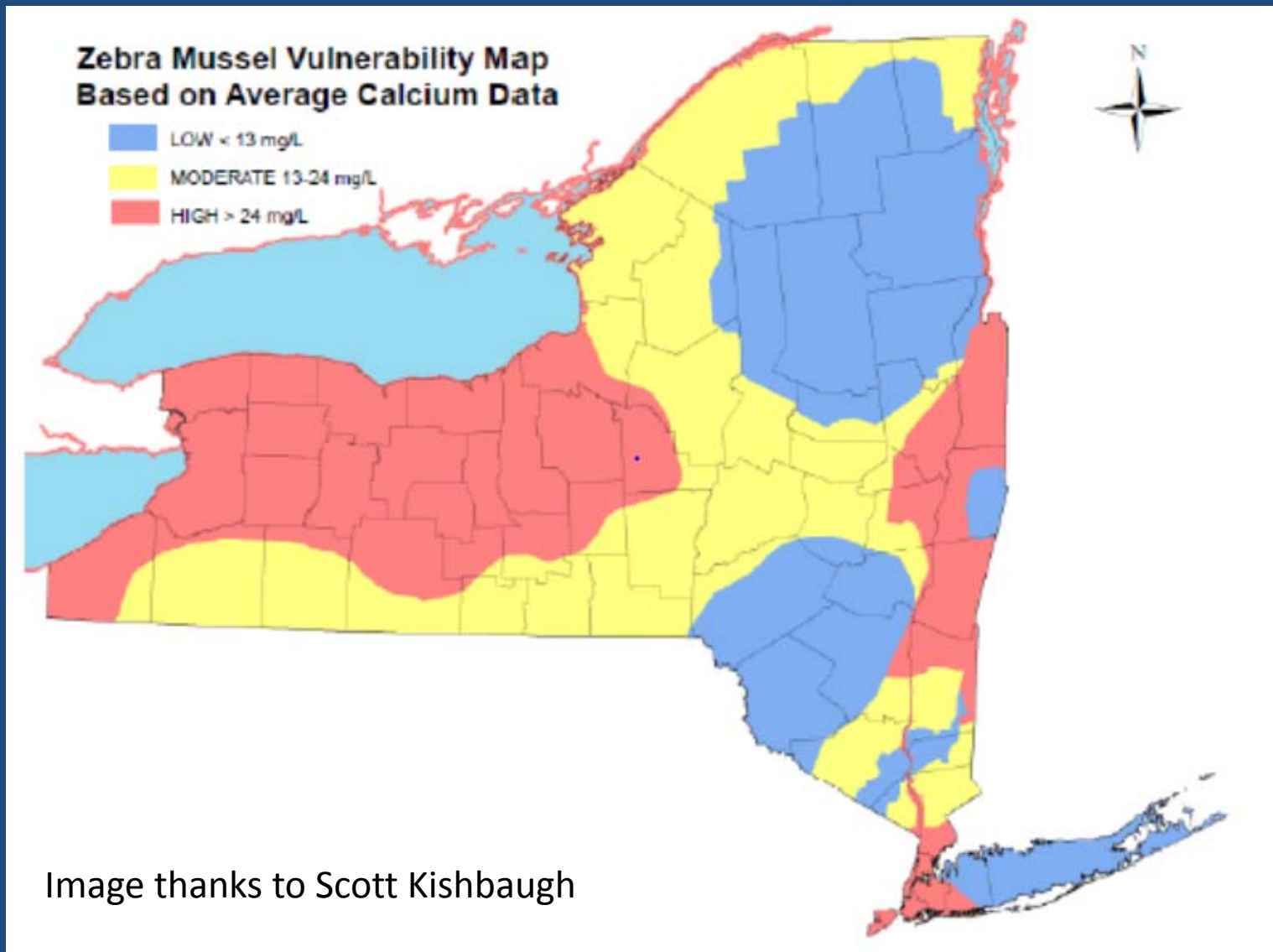


Image thanks to Scott Kishbaugh

# Life Cycle and Monitoring

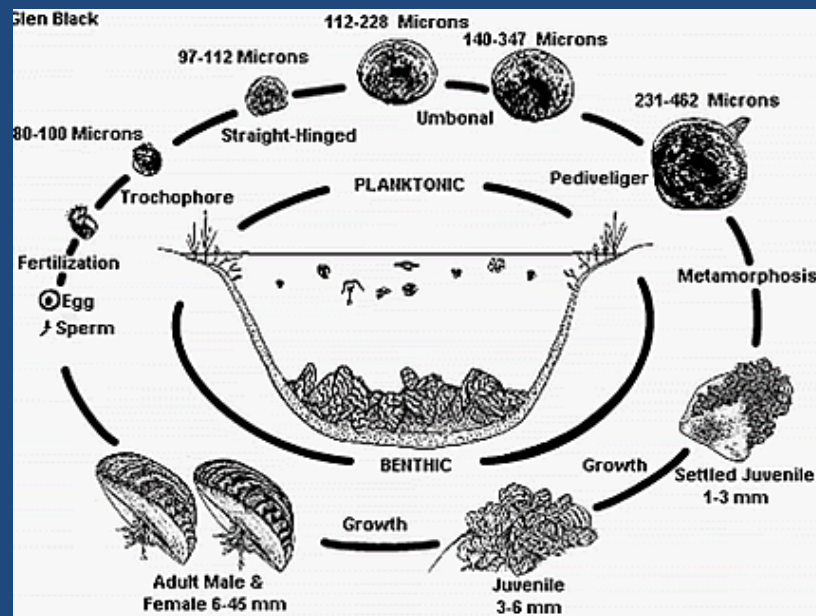
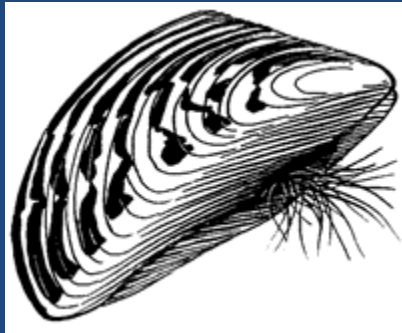
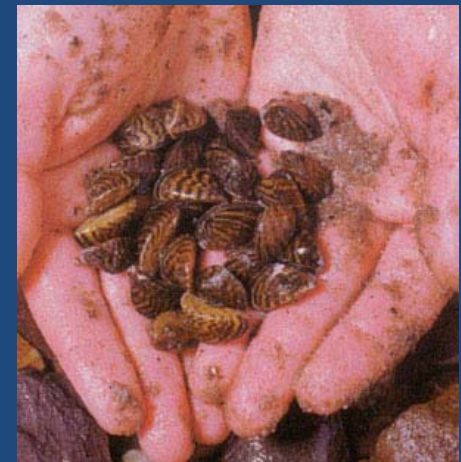
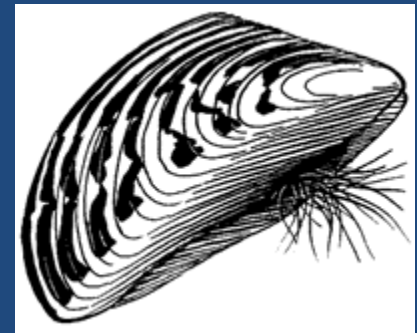


Image from  
[http://www.fws.gov/midwest/mussel/images/zebra\\_mussel\\_%20life\\_cycle.html](http://www.fws.gov/midwest/mussel/images/zebra_mussel_%20life_cycle.html)

- Velegers float in water
- Juveniles attach to objects
- Zebra mussels want hard substrates
- Set a block that can be easily monitored
- Multiple spawns each year – monitor monthly

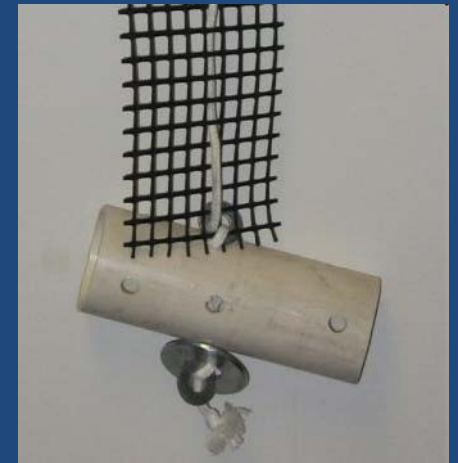
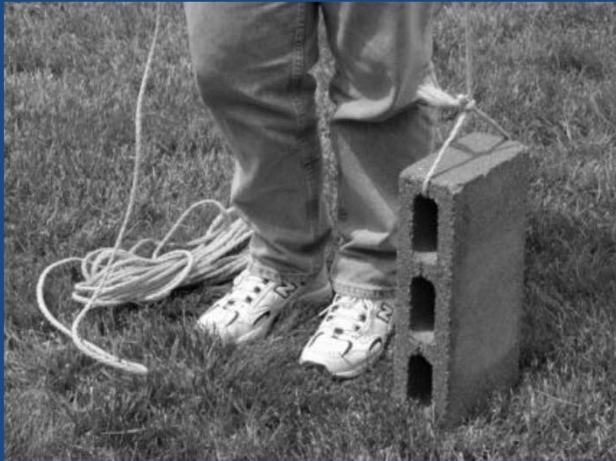
# Monitor with a block

- Get a block or brick & tie a rope around it
- Tie it 1 foot above sediment in 6 feet of water – under dock is good
- Install in spring - 55°F
- Monitor monthly – pull up the block and inspect
- If see nothing strange – send report in fall
- Leave block in or remove for the winter





# It doesn't have to be a brick



This shopping cart is covered with zebra mussels.

# Yikes- what's on the block?

- If something suspicious is on the block, email a photo to Scott Kishbaugh  
[scott.kishbaugh@dec.ny.gov](mailto:scott.kishbaugh@dec.ny.gov)
- If Scott agrees that mussel needs to be inspected, send the mussel to a field research laboratory... address on form
- Do **not** send **mussel** in CSLAP cooler
- Do **not** send **block** in CSLAP cooler



# Don't move a mussel!



UGA1299199



Ice in, Ice Out  
-or-  
Ice on, Ice off

# Why ice dates?

- Amount of ice cover may influence summer conditions
  - Plant growth
  - Fish health
  - Unknown
- Long trend - climate change
- It's easy

# How do you define?

- If your lake has a standard, use it
- Else:
  - ice from shore to middle?
  - travel from shore to middle?
- What if ice is on and off and on and off?
  - Record multiple dates



# Record ice on / ice off

- Send a note to Nancy Mueller with dates
- Lake Observer app
- CSLAPdata.org - Extra Data

The screenshot shows a web browser window titled "Non-CLSLAP Data - Mozilla Firefox" with the URL "https://www.cslapdata.org/ExtraData.php?butPush=Extra+Data". The page is titled "CSLAP Data Collection" and features a "Start Menu" on the left and a "Non-CLSLAP Data" section on the right. The "Start Menu" includes links for "Lake Rippowam", "Westchester County", "CSLAP Lake ID: 204", and "E-Mail: cslapdata@yahoo.com". It also has a "Non-CLSLAP Sampling Session" section with a "Report Ice In/Out" button and a "Graph Ice In/Out" button. Below this is a "Dissolved Oxygen / Temperature Profiles" section with buttons for "DO Profile", "Graph Your Data", "Blank DO Form", and "Sample Graphs". At the bottom of the "Start Menu" is an "Other information" section with buttons for "Other Data", "Other Data Form", and "Return to Start Menu". The "Non-CLSLAP Data" section contains text explaining the purpose of the extra data collection and providing instructions for users. It mentions that if users collect additional information about their lake outside of the formal CSLAP program, they are encouraged to share that information. It also states that if users sample more often than the eight CSLAP sessions, they should use the CSLAP forms or their own form that gathers the same types of information collected during a CSLAP session. Additionally, it notes that if users supply dissolved oxygen and temperature profiles of their lake, they will be able to graph the dissolved oxygen levels, temperatures and the thermocline over the course of the year. The page also includes a "Logout" link, a "NYSFOLA Home Page" link, and a footer with "FAQs", "Citizens Statewide Lake Assessment Program", and "Questions?".

Non-CLSLAP Data

CSLAP Data Collection

Start Menu

Lake Rippowam  
Westchester County  
CSLAP Lake ID: 204  
E-Mail: cslapdata@yahoo.com

Non-CLSLAP Sampling Session

In the works. Will be completed by end of sampling season.

If a lake does additional sampling outside of the 8 CSLAP sessions, they can record the session with all the same data as a CSLAP session. The information will then be comparable to the CSLAP data and included with the In-Season reports.

Ice In / Ice Out Report

Report Ice In/Out

Graph Ice In/Out

Dissolved Oxygen / Temperature Profiles

DO Profile

Graph Your Data

Blank DO Form

Sample Graphs

Other information

Other Data

Other Data Form

Return to Start Menu

Logout

Non-CLSLAP Data

If you collect additional information about your lake outside of the formal CSLAP program, we would encourage you to share that information with us.

If you sample more often than the eight CSLAP sessions such as during the early spring or late fall, we suggest that you use the CSLAP forms or your own form that gathers the same types of information collected during a CSLAP session. That way, the data will be comparable with the information from your CSLAP sessions. As additional information is collected, we plan to upgrade the in-season reports to include the extra data. If you do any chemical tests during these sessions, please enter them in Other Data section.

If you supply dissolved oxygen and temperature profiles of your lake, you will be able to graph the dissolved oxygen levels, temperatures and the thermocline over the course of the year.

Additionally, we are collecting any other types of data that you collect regularly. If you press the Other Data Form button, you see the current list of items that can be entered. If you collect some item not on the list, send an e-mail using the Questions? link at the bottom right of the page and let us know what else you would like to track and we'll add it to the database.

If you want to edit a previously entered Temperature/DO profile or Other Data report, press the appropriate button and then enter the same date used to submit the original report. You will then be given a choice if you want to edit that information. If you chose Yes, the original data will be displayed which you can edit. After making any changes, press submit and the original record will be deleted and the new information will be saved. Ice In/Out information is not currently editable. If you need corrections made, send us a note and we will fix it for you.

This extra data collection is meant to be a resource for you. Let us know what you would like to see from your data and we will try to get it for you.

Feel free to contact me with any questions and comments.

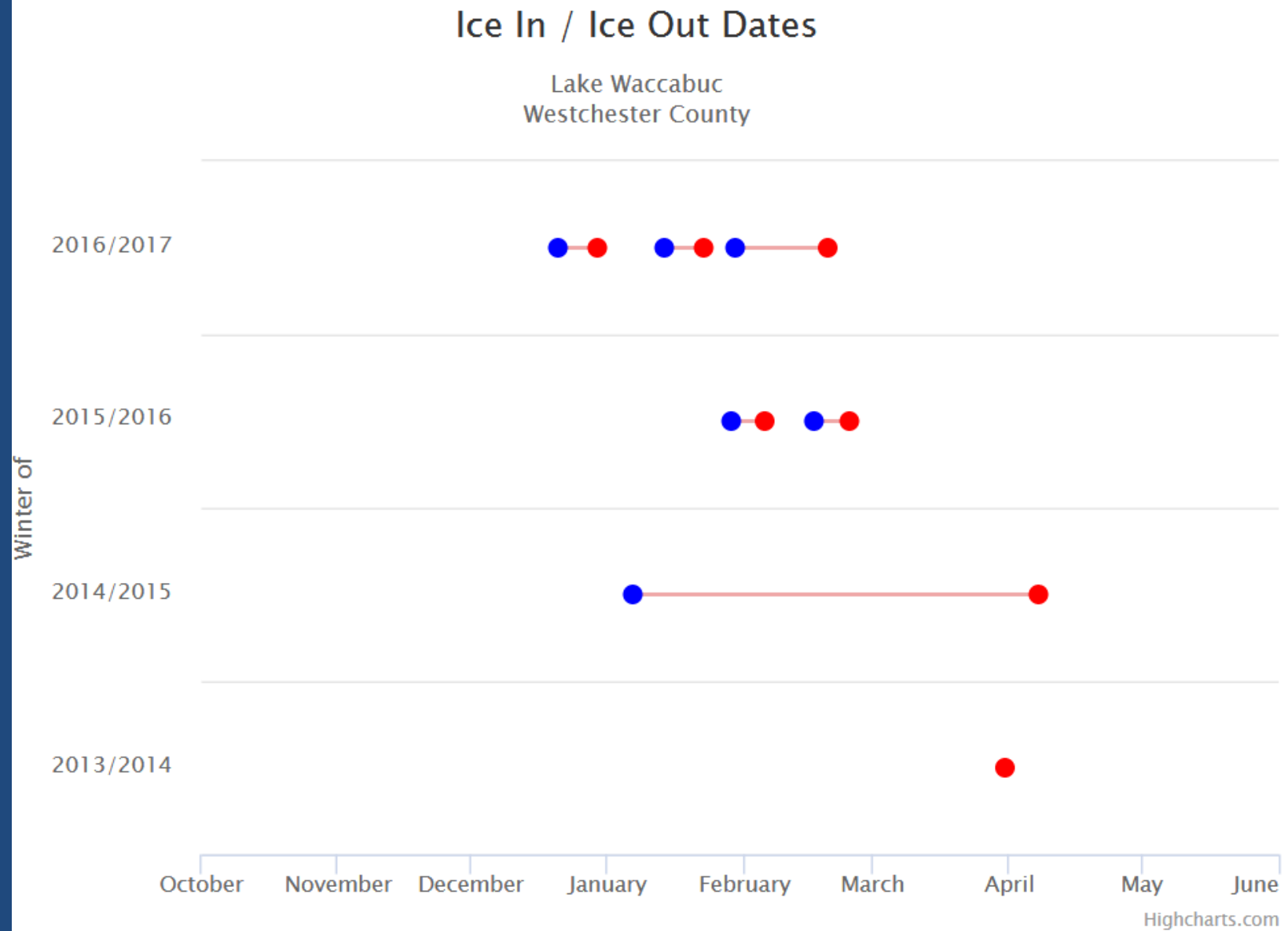
Lou Feeney, help@cslapdata.org

FAQs

Citizens Statewide Lake Assessment Program

Questions?

# CSLAPdata.org



# Summary

- Citizen science extends reach of experts
- Citizen science is important source of data
- Citizen science can be for everyone
- AIS shoreline search – find invasive plants
- Drop a block – monitor for zebra mussels
- Ice in / ice out – weather & climate patterns
  
- Questions?