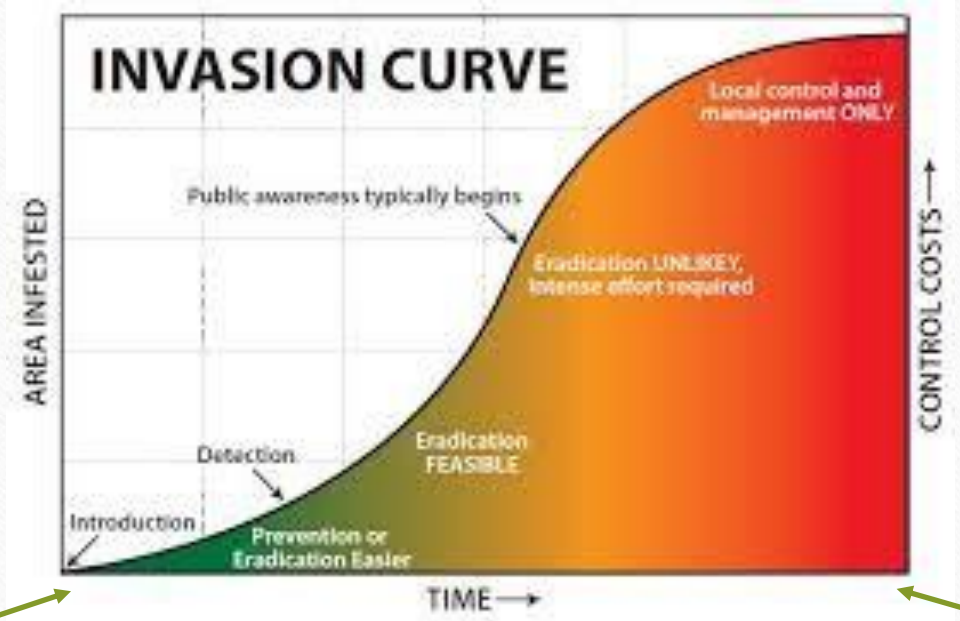
Be on the Lookout!

Report Findings of High Priority Invaders
in Northwest Pennsylvania

March 31, 2020

Welcome!

- Overview of agenda
- Presenter introductions
  - Mary Walsh, Tom Cermak, Steve Grund, Pete Woods, Amy Jewitt
- Use of Webex chat feature *(to ask questions throughout webinar and at the very end)*


INVASION CURVE
Local control and management ONLY
Public awareness typically begins
Eradication UNLIKEY, Intense effort required
Eradication FEASIBLE
Detection
Introduction
Prevention or Eradication Easier
AREA INFESTED
CONTROL COSTS
TIME

Be an early detector

Water Chestnut Chasers Challenge

- Webinar 6/24, 11am-12pm
- Report water chestnut 7/1-7/31

Invasive Species Scavenger Hunt

- Webinar 7/23, 11am-12pm
- Report invasive species 8/1-8/31

Check out the events at the Pennsylvania iMapInvasives website
https://www.paimapinvasives.org/

Lake Erie Watershed Cooperative Weed Management Area

Presented by Tom Cermak, Pennsylvania Sea Grant

What is Pennsylvania Sea Grant?

We Are …

- Pennsylvania Sea Grant is one of 33 Sea Grant College Programs around the United States, administered through the National Oceanic and Atmospheric Administration (NOAA).
- Pennsylvania Sea Grant is a collaboration between NOAA, Penn State University, and the Commonwealth of Pennsylvania.
- For the past 20 years, our Program has been promoting the ecological and economic sustainability of Pennsylvania's coastal resources through science-based research, education, and extension.

What is a CWMA?

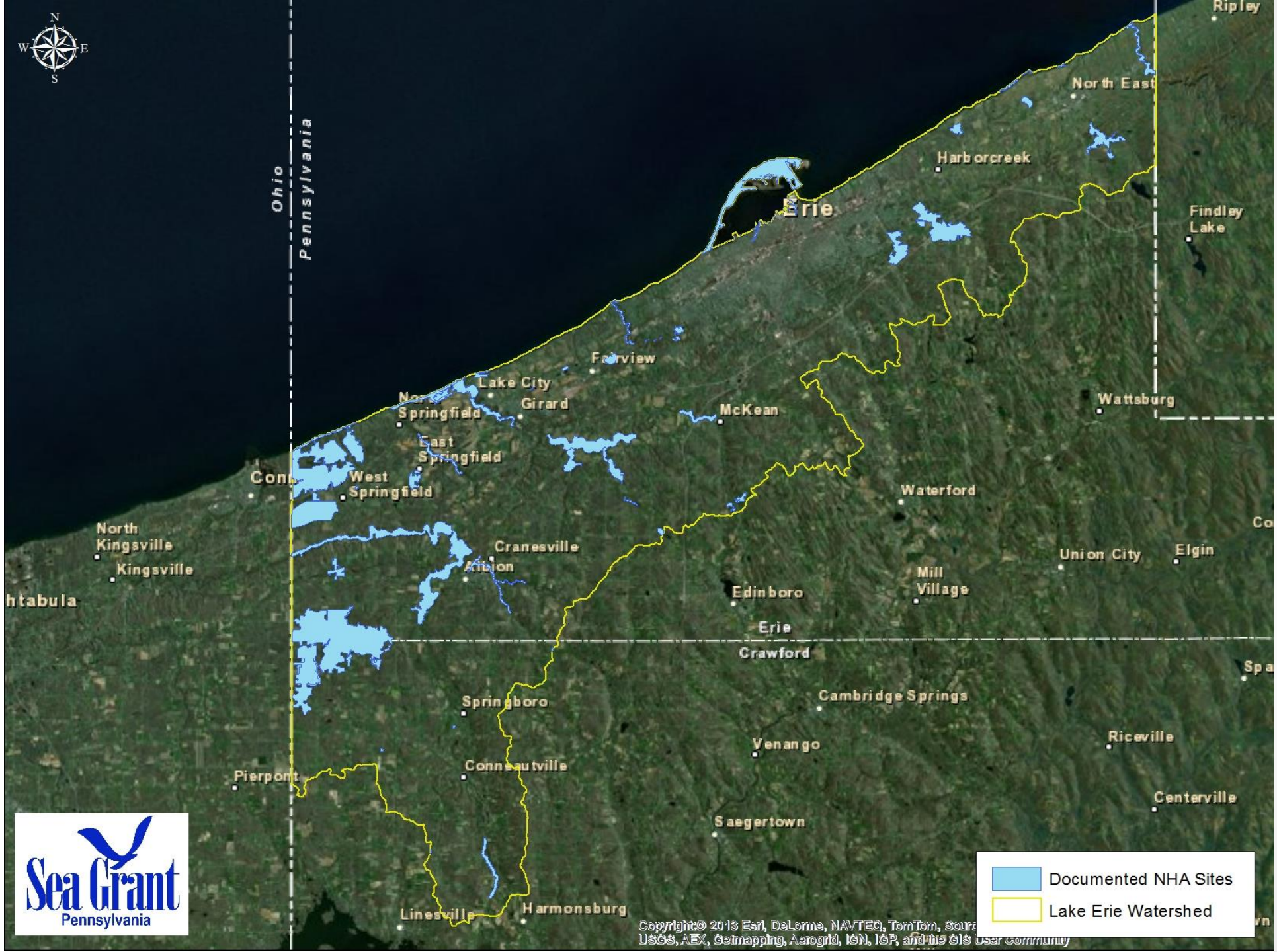
- Cooperative Weed Management Areas (CWMAs) are local organizations that bring together landowners and land managers to coordinate action and share expertise and resources to manage common weed species.
- Locally-driven CWMAs are especially effective at generating public interest in weed management, increasing the capacity of partnering organizations, and organizing community groups to support on-the-ground programs.

Lake Erie Watershed – Cooperative Weed Management Area

- Hold three annual LEW-CWMA meetings
- Identify seasonal inventory locations
- Conduct plant inventories with Pennsylvania Natural Heritage Program staff
- Review findings with steering committee to determine seasonal management priorities
- Collectively draft and implement management plans
- Provide educational opportunities for landowners and resource managers

Site Selection

- Primary Focus: Documented Natural Heritage Area Sites within Lake Erie Watershed
  - These sites generally include various landowners and ecological communities
- Although invasive species are practically everywhere, this approach allows us to utilize limited resources to protect, enhance and restore these ecologically significant sites when possible
- Although these sites are identified as our primary focus areas within the LEW-CWMA 5 Year Plan, outreach and some restoration work occurs outside of the designated site boundaries when needed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Ripley
North East
Harborcreek
Erie
Findley Lake
Fairview
Lake City
Girard
Springfield
McKean
Wattsburg
East Springfield
West Springfield
Waterford
North Kingsville
Kingsville
Cranesville
Union City
Elgin
Mill Village
Edinboro
Erie
Crawford
Cambridge Springs
Springboro
Riceville
Venango
Conneautville
Pierpont
Centerville
Saegertown
Linesville
Harmonsburg
Documented NHA Sites
Lake Erie Watershed
Sea Grant
Pennsylvania

LEW-CWMA Partners

- Pennsylvania Sea Grant
- Western PA Conservancy
- Department of Conservation and Natural Resources Bureau of Parks
- Department of Conservation and Natural Resources Bureau of Forestry
- Department of Environmental Protection
- Pennsylvania Game Commission
- Cleveland Museum of Natural History
- Go Native Erie
- Penn State Behrend
- Mercyhurst College
- PennDOT
- Erie County Conservation District
- Crawford County Conservation District
- PA Dept. of Ag
- Regional Science Consortium
- Municipalities
- Private Property Owners

For More Info About the LEW-CWMA

- Please visit the Pennsylvania Sea Grant website:

http://seagrant.psu.edu/topics/terrestrial-invasive-species/projects/lake-erie-watershed-cooperative-weed-management-area

Sea Grant
Pennsylvania
Celebrating 20 Years
Extension Education Research

Contact Info

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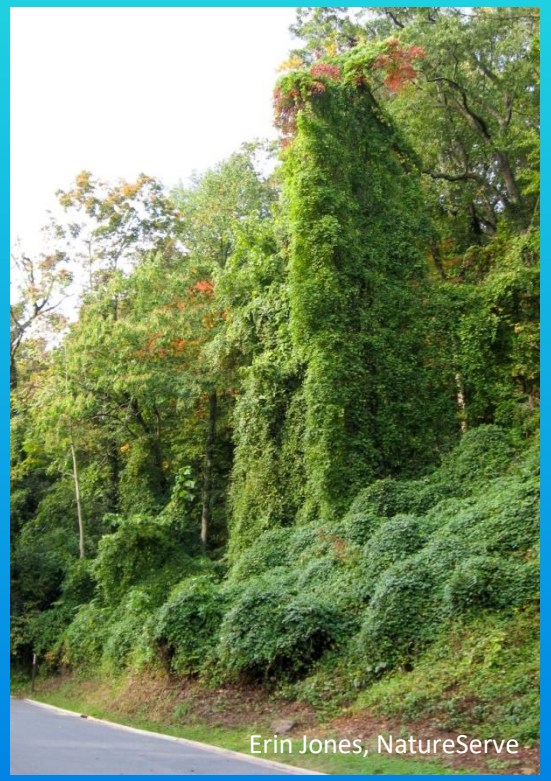
Email: tjc29@psu.edu

Thank you!

Porcelainberry
(*Ampelopsis brevipedunculata*)

Other Scientific Names: *Ampelopsis glandulosa* var. *brevipedunculata*



- Invades disturbed uplands and edges
- Spread by birds and horticultural industry

Porcelainberry

- Leaves lobed or unlobed, very much like grape leaves

Grapes (native)

Porcelainberry

- Berries mixed pastel colors (white, green, blue, purple, pink)
- Upright flat clusters

Grapes

- Berries green ripening to dark purple, with waxy bloom
- Pendant clusters

Porcelainberry

- Bark ridged, furrowed, not peeling.
- Lenticels present

Grapes

- Bark peels in strips
- Lenticels absent

Swallow-worts

Black swallow-wort (*Cynanchum louiseae*)
Pale Swallow-wort (*Cynanchum rossicum*)

Other Common Names: Louise's swallow-wort, European swallow-wort
Other Scientific Names: *Vincetoxicum nigrum, V. louisae, V. rossicum*

- Invades open uplands
- Spreads by windborne seeds

Swallow-worts

Identification

- Herbaceous perennial twining vine
- Milkweed-like seedpods
- 5-part flower
  - ¼ inch wide
  - Pink, purple, or black

Swallow-worts

Can be confused with

- Smooth Swallow-wort (*Cyanchum laeve*)
  - White flowers

- Dogbane (*Apocynum* spp.)
  - Upright herbaceous plant

Lesser Celandine (*Ficaria verna*)

Other Common Names: Fig Buttercup
Other Scientific Names: *Ranunculus ficaria*

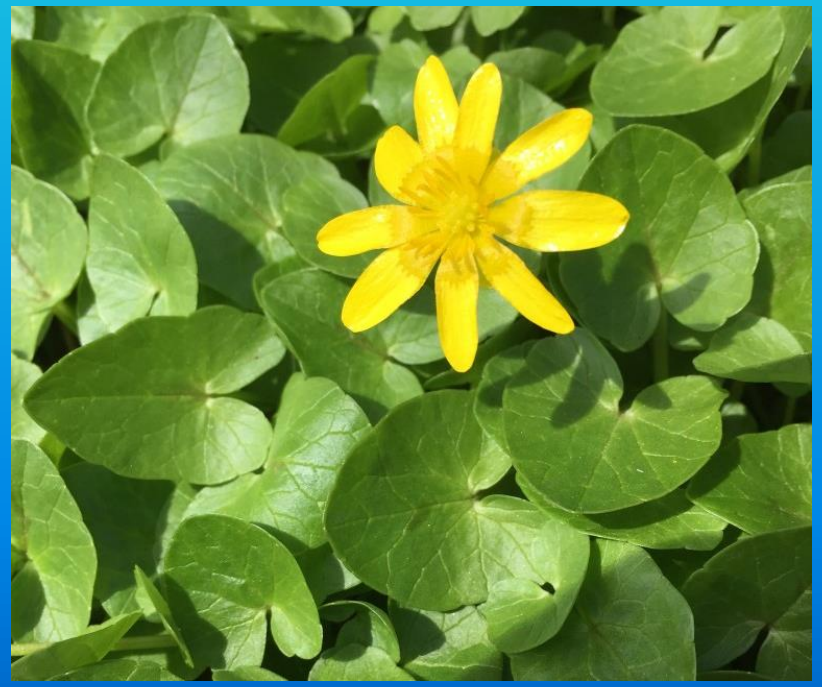
- Invades valley bottoms and lower slopes
- Spreads by tubers, bulbils, seeds, and gardeners

Lesser Celandine (Ficaria verna)

- Perennial with tubers
- 3 smaller greenish sepals behind petals

Lesser Celandine (invasive)

- Blooms early spring (starting late March)
- Usually 8-10 petals
- Leaves bluntly pointed, with ~1 dozen shallow rounded teeth



Marsh Marigold (native)

- Blooms mid-spring (starting late April)
- Usually 5 or 6 petals
- Leaves larger, round at tip, with dozens of shallow scalloped teeth

Lesser Celandine (invasive)

- Grows in mats
- 2-4 inches tall
- 3 smaller greenish sepals behind petals

Marsh Marigold (native)

- Grows in clumps
- 6-9 inches all
- No sepals

Marsh Thistle (*Cirsium palustre*)

Other Scientific Names: Carduus palustris
Other Common Names: European Swamp Thistle, Marsh Plume Thistle

- Invades damp open areas
- Spreads by windborne seeds

Marsh Thistle

Identification

- Spiny winged stem
- Purple flower heads
  - Short-stalked
  - Densely clustered at tips
- Long sticky hairs all over
- Spines on involucre (bulbous base of flowerhead) are tiny, if present at all.

Marsh Thistle

Can be confused with

- Bull Thistle (*C. vulgare*, non-native)
  - The only other thistle with winged stems like Marsh Thistle
  - Fewer, larger flowerheads
  - Long spines on involucre
  - Upland
- Swamp Thistle (*C. muticum*, native)
  - Lacks spines on stems and flower heads
- Creeping thistle (*C. arvense*, invasive)
  - Smaller flowerheads, lighter pink
  - No basal rosettes

Water Chestnut (*Trapa natans*)

Other Common Names: Water Caltrop

- Invades slow moving water less than 16 feet deep
- Spreads by seeds, fragments

Water Chestnut

Identification

- Rooted aquatic plant, with submersed and floating leaves
- Diamond-shaped floating leaves arrayed around central point
- Weird 4-pointed fruit
- Air bladders on leaves
- Not likely to be confused with other species

Yellow floatingheart (*Nymphoides peltata*)

Other Common Names: water-fringe
Other Scientific Names: *Limantheum peltatum*

- Invades lakes, impoundments, and (slow-moving) streams.
- Spreads by fragmentation of almost any part, and also by seeds, which are dispersed by birds.

Yellow floatingheart

Identification

- round floating leaves with a narrow sinus
  - often purple beneath
  - sinus terminus is rounded
- Yellow flowers held above the water
  - 5 fringed petals

Yellow floatingheart

Can be confused with

- Water-lily (*Nymphaea odorata*, native), much larger leaves with a sharp angle at apex of sinus
- Frog-bit (*Hydrocharis morsusranae*, non-native) free-floating,

Frog-bit, Charles Pierce

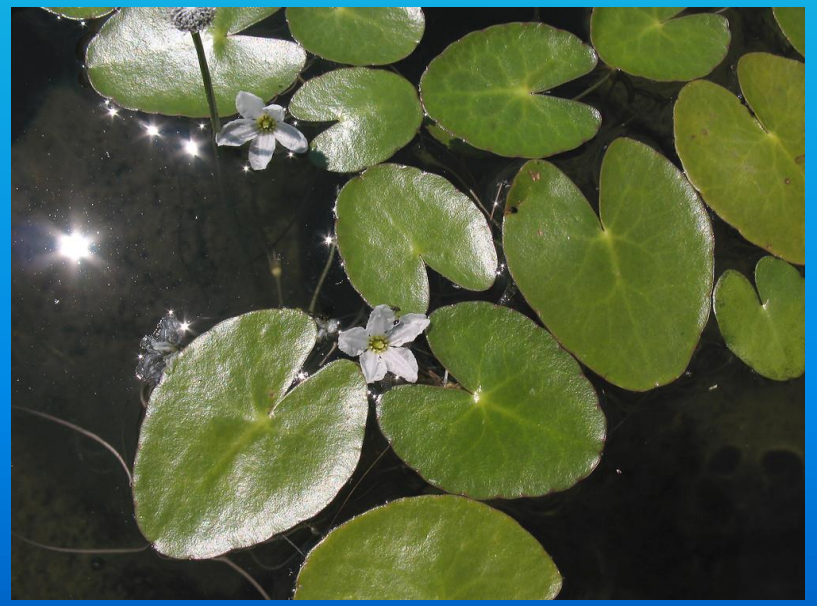
Frog-bit (*Hydrocharis morsus-ranae*)

Other Common Names: European frog-bit, kikkerbeet

- Invades shallow, still or slow-moving waters, usually somewhat acidic
- Spreads by fragmentation of stolons and by short, overwintering shoots (turions)

Frog-bit vs Yellow floatingheart

Above: frog-bit



Right: floatingheart (2 species)
Note the different venation patterns

Submerged Aquatic Plants with simple whorled leaves

Brazillian waterweed (*Egeria densa*)
Hydrilla (*Hydrilla verticillata*)

- All of these live totally submerged except for the small white flowers (uncommonly produced)
- Leaves are in whorls of 3 or more
- Snake-like shape

- Invade pretty much any water body
- Spread by fragmentation, often aided by boats and trailers

Brazilian waterweed

Identification

- Plant has a larger diameter (leaves 1–4 cm long) and denser foliage than similar species in our flora
  - Leaves have entire margins (not toothed)
  - Leaves are very crowded (short internodes)
  - Leaves 4 or more per whorl

Hydrilla

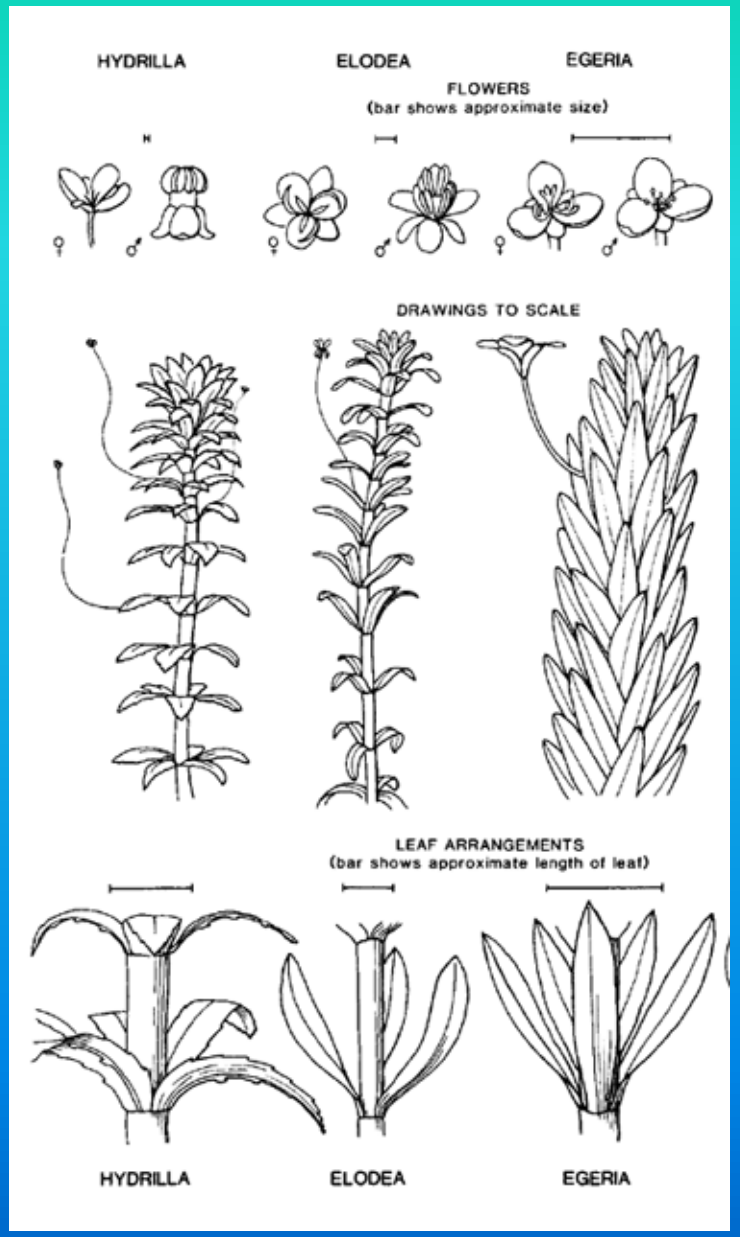
Identification

- More similar to our native waterweeds than is Brazilian waterweed
  - Leaves have small but distinct teeth on the margins, and tiny spines on the midrib
  - Leaves usually 4–5 per whorl

Submerged Aquatic Plants with simple whorled leaves

Can be confused with each other and with native waterweeds (*Elodea nuttallii* and *E. canadensis*)

- Only hydrilla has distinct teeth on the leaf margins (*Elodeas* have tiny spicules), and prickles along the midrib
- *Elodea* has 3 (rarely 2 or 4) leaves per node, hydrilla usually has 4 or 5 (3–7, 12?), and Brazilian waterweed has 5 or more
- Brazilian waterweed has longer leaves that are packed more closely together than the other species, although Canada waterweed (*Elodea canadensis,* native) has leaves quite crowded at the top.

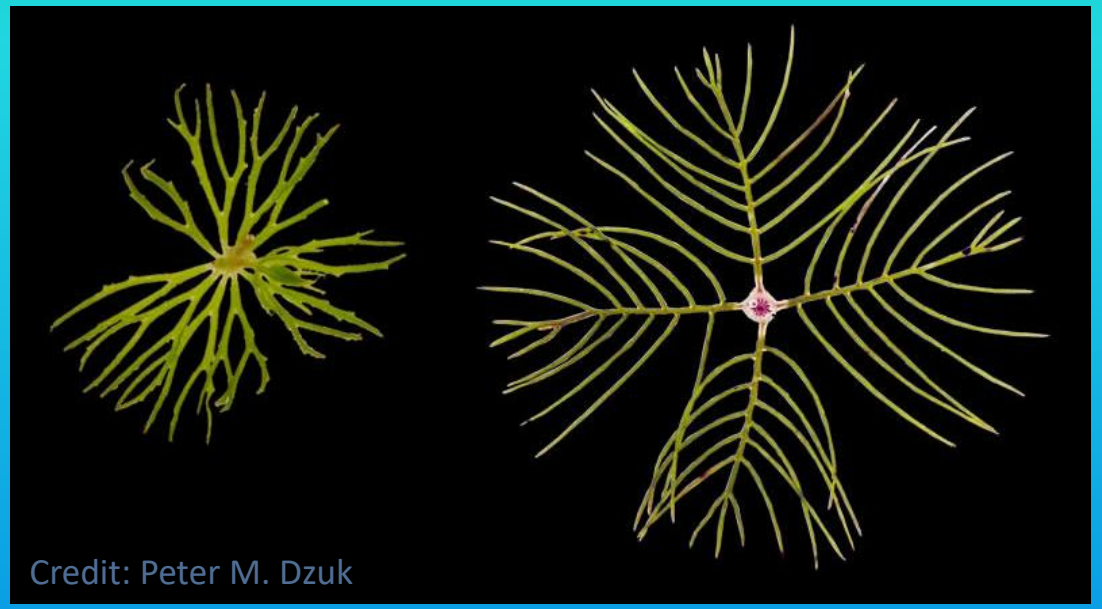


Graphic from IFAS Center for Aquatic and Invasive Plants

Water milfoils (*Myriophyllum spp.*)

Other Common Names: Water-milfoil (apparently yarrow (*Achillea milifolium*) is/was known as milfoil somewhere)

- Many submerged aquatic plants have finely divided leaves, but only water milfoils (in our region) have leaves divided like a two-sided comb, and arranged in whorls (usually of four)
- Live completely (slight exception for parrot feather) underwater except most produce flowers/fruits at the apex of the stem, extending above the water surface.



Coontail (*Ceratophyllum*), left
Water milfoil (*Myriophyllum*), right

- Invade lakes, impoundments, and slow moving streams
- Spreads mainly by fragmentation, often by hitchhiking on boats

Invasive water milfoils (*Myriophyllum spp.*)
Parrot feather (*Myriophyllum aquaticum*)

Identification

- Plants have a whitish waxy surface (glaucous bloom)
- Leaves are very stiff, with 24–36 (12–18 pairs) pinnae
- Leaves more narrow than our other species
- Leaves not reduced on stem that extends above the water – unique in our species

Christopher Dixon

Invasive water milfoils (*Myriophyllum spp.*)
Eurasian water milfoil (*M. spicatum*)

Identification

- Leaves, at least many of them, with 13 or more segments per side. Parrot-feather is our only other species with this many segments.
- Does not have the white bloom of parrot-feather, and leaves above the water are highly reduced.
- Stems branch when they reach the surface of the water, then spread out to form a mat just under the surface.
- Very similar to northern water milfoil (*M. sibiricum*), a rare native species, in which all leaves have fewer than 13 segments per side, and does not have stems that branch at the surface.

Don Cameron


Gary Fewless


Les Merhoff

Invasive water milfoils (*Myriophyllum spp.*)
Variable water milfoil (*M. heterophyllum*)

- Sometimes called broadleaf water milfoil
- This species is native in a few places in Pennsylvania, but there is an invasive component

Identification

- Leaves delicate and crowded, some may be alternate
- Leaves above the water (bracts) are toothed, but not deeply divided, unique among our species.
- Bracts reduced, but longer than the flowers/fruits (also *M. verticillatum*)

Photos by Don Cameron

Contact Info

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iMapInvasives Mobile App

The Quick and Easy Way to Report Your Invasive Species Findings!

Presented by Amy Jewitt, WPC/PNHP

iMapInvasives Mobile App

- Report invasive species data when you're outdoors and away from your computer.
- An internet connection is not necessary to create an observation (using the app).
- Upload observations when Wi-fi is available.

Credit: news.hjnews.com

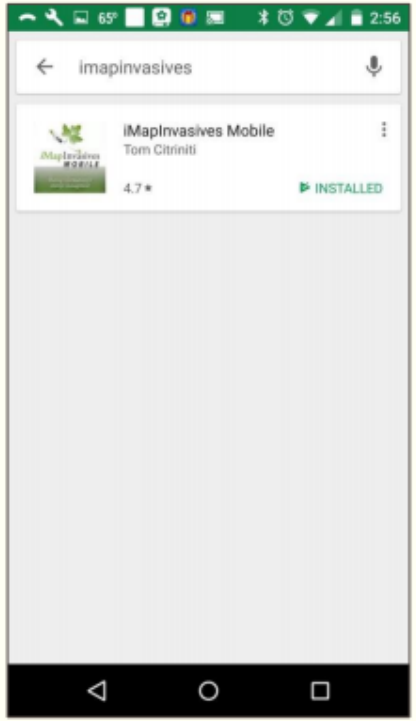
iMapInvasives Mobile Ap

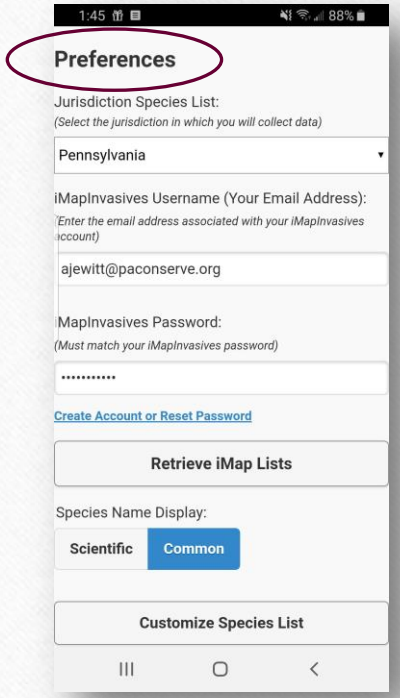
- Designed for use on Android and Apple devices.

- Usable on both smartphones and tablets. *(Device must have integrated GPS capability.)*

Getting Started

Downloading the App & Setting Your Preferences



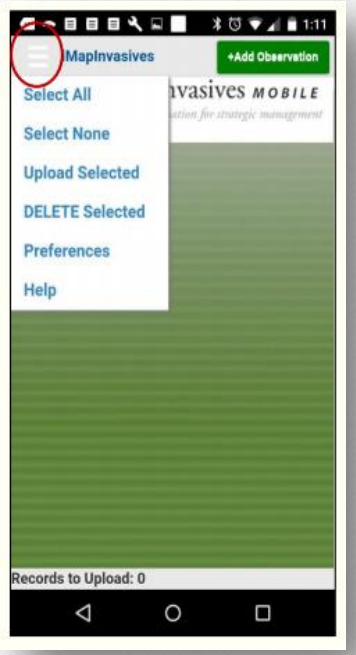


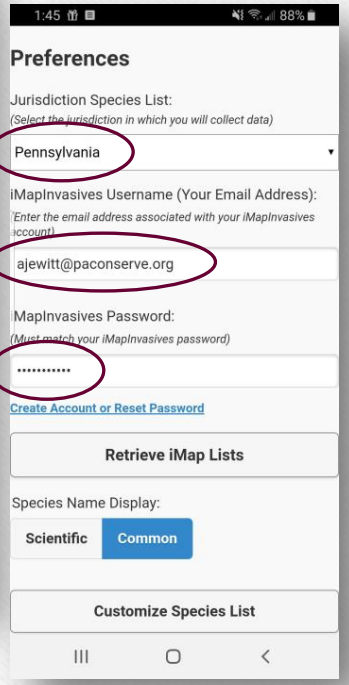
Getting Started

- Download the app
  - (Example provided on Android smartphone)
- Visit the Play Store
- Search using the key word “iMapInvasives”
- Follow prompts to install the app

Setting Your App Preferences

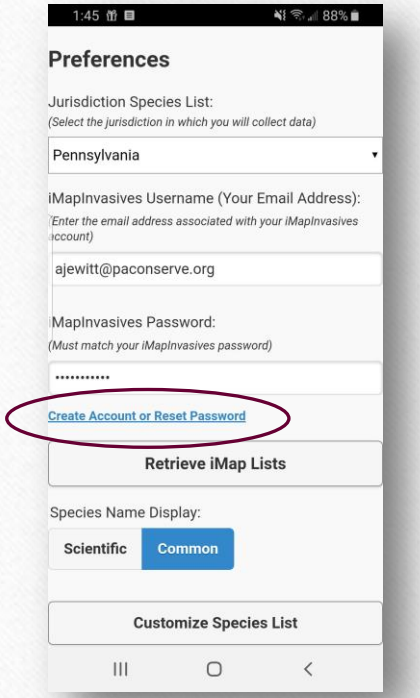
- Once installed, **<u>Set Your Preferences</u>**
- To do this, tap the menu icon in upper left corner and select "Preferences"
  - Choose your jurisdiction (Pennsylvania)
  - Fill in your email address and iMapInvasives password
    - If you are unsure what email address is on file with your iMapInvasives account, contact the PA iMapInvasives administrator.





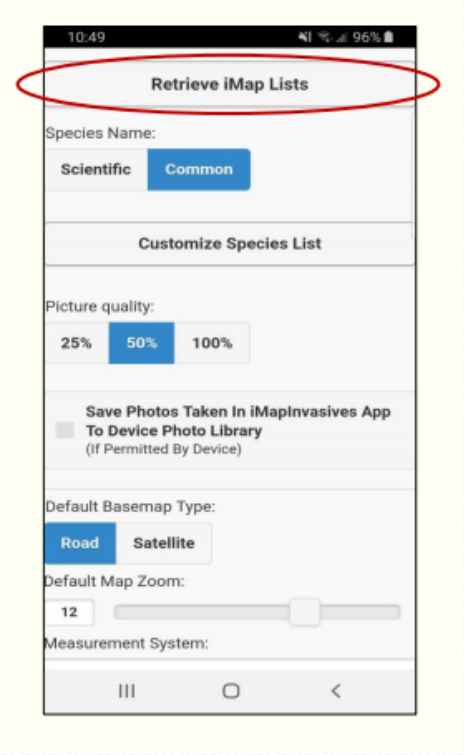
No Account or Forgot Your Password?

- If you don't already have an account OR forget your password, click "Create Account or Reset Password".



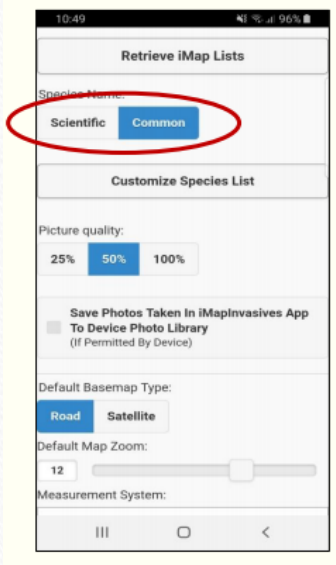
Setting Your App Preferences

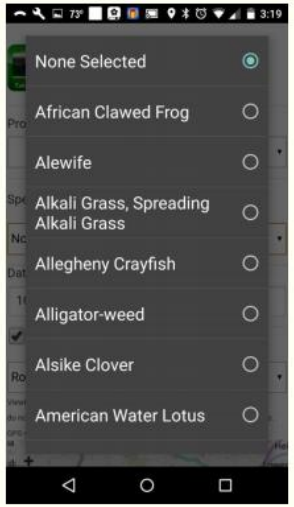
- Make sure to click the **<u>Retrieve iMap Lists</u>** button to import needed information from iMapInvasives to effectively utilize the mobile app.
  - Clicking this button allows you access to the most updated:
    - Tracked species list
    - Project list
    - Organizations affiliated with iMapInvasives



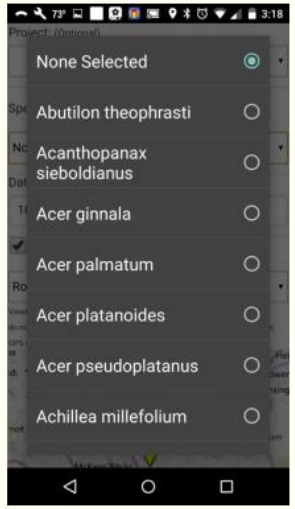
Setting Your App Preferences

- Choose how you want to see the species list: Common name, Scientific name, or both

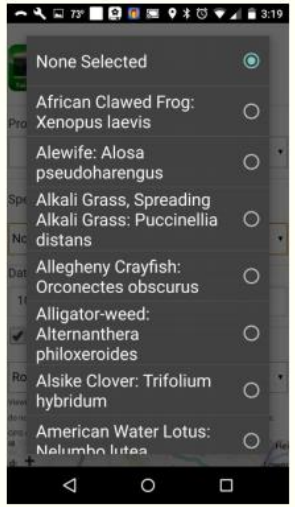




Common names



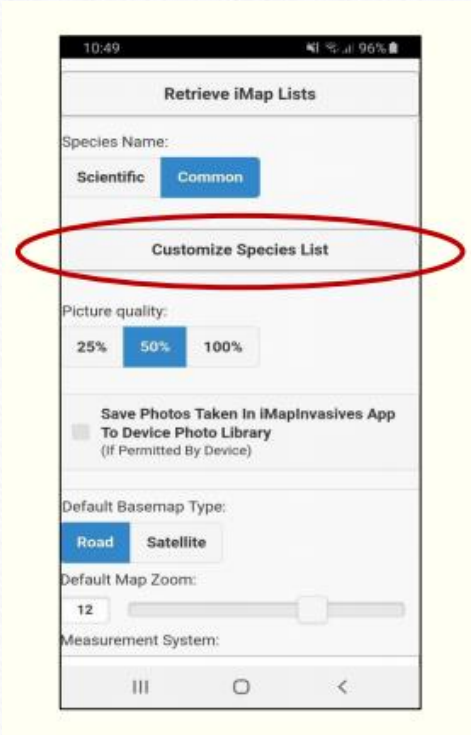
Scientific names

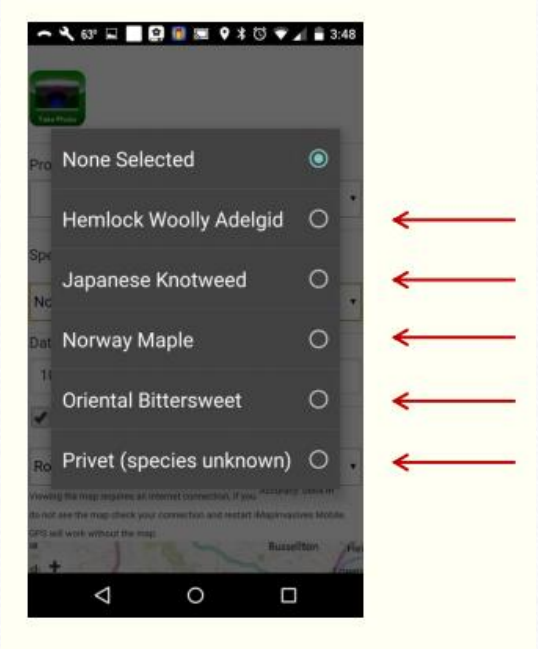


Common & Scientific

Setting Your App Preferences

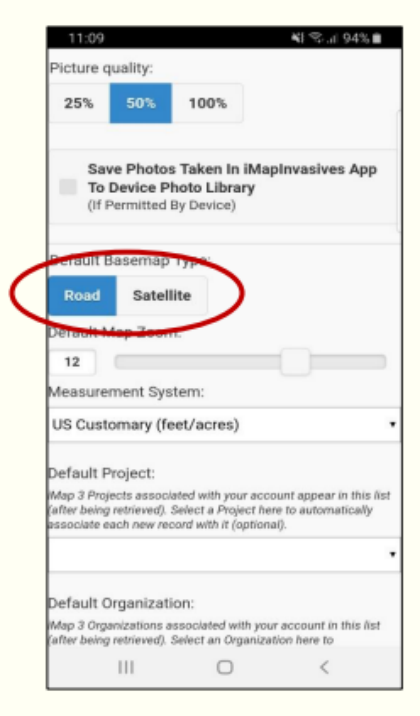
- Create a custom species list *(optional)*
  - Use this feature to save time finding the species you are surveying for specifically.
  - Only the species you choose will appear in the species selection pane when adding an observation.
  - If you choose not to create a custom list, the entire tracked list (400+) will display when selecting your observed species in the app's record creator.

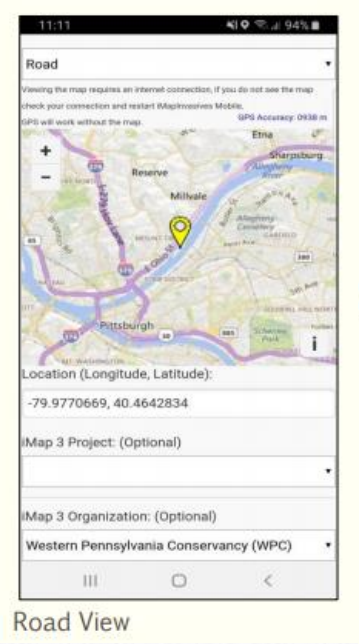




Setting Your App Preferences

- Choose which base map you'd prefer to see when entering your observations.





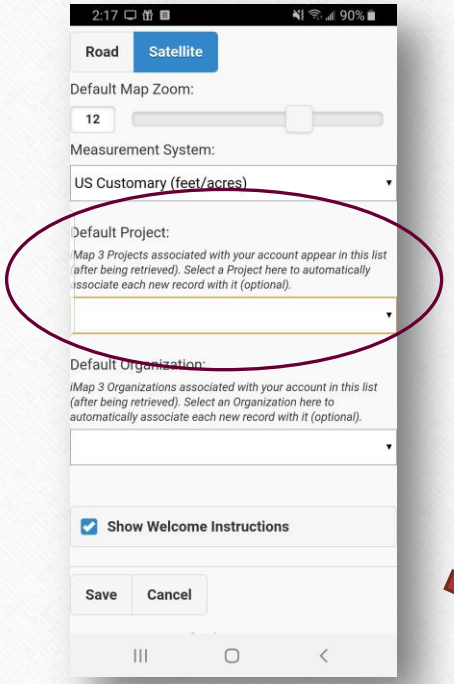
Road View

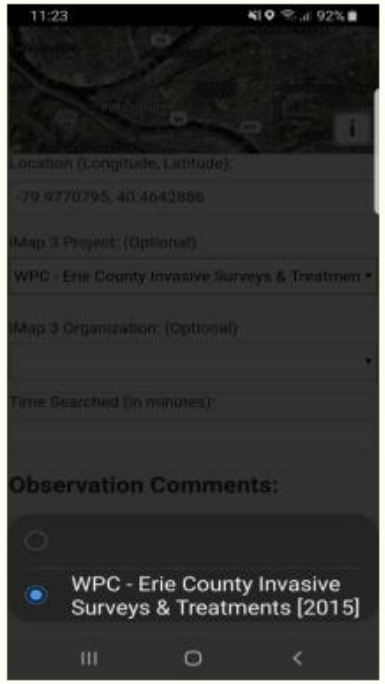
OR

Satellite View

Setting Your App Preferences

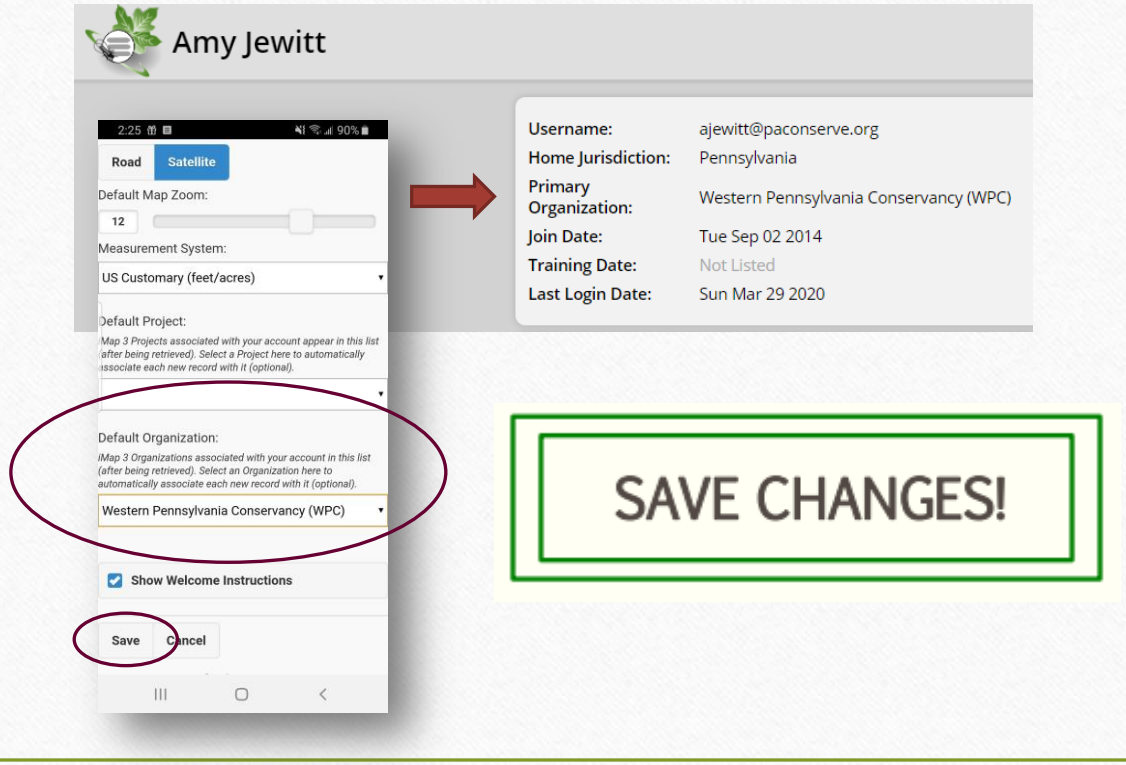
- Select a default project *(if applicable)*
  - Projects are an optional tool which allow data to be grouped together for easy querying in iMapInvasives online (i.e., the database).
  - You must already be a member of a project to make a project selection in the app.
  - **Request to become a member** of a specific project by logging into the online version of iMapInvasives.
  - **Create a new project** by logging into the online version of iMapInvasives, choosing "Projects" from the main menu, and selecting the "Create New Project" button.





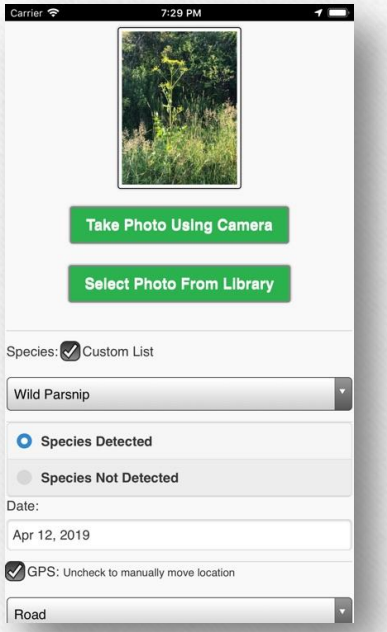
Setting Your App Preferences

- **Select your default organization**
  - The online version of your iMapInvasives account must already be associated with an organization to make a selection here.
  - If no selections appear, log into the online version of iMapInvasives and request to become a member of an organization in your account profile.
  - If a specific organization is not listed in iMapInvasives, send a request to the administrator to have it added.
  - If you are not affiliated with any "official" group, request to join the "Pennsylvania Citizen Scientists" organization instead.



Entering Observations

Entering Presence and Absence Findings

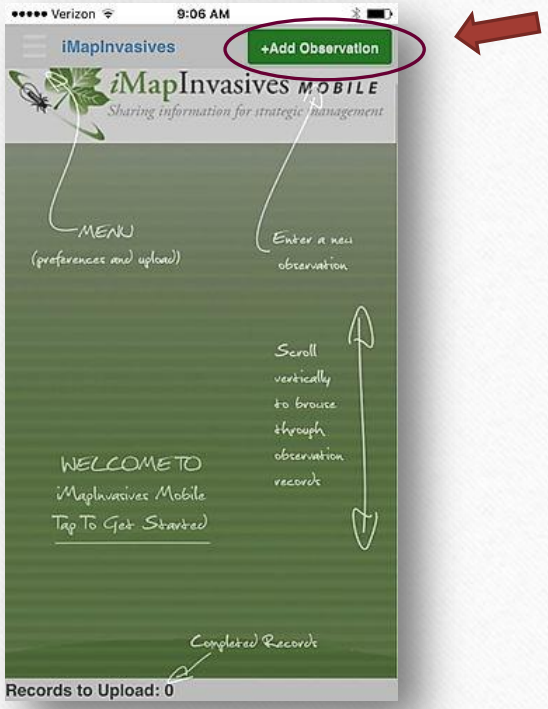


Entering Observations on the App

- **Access the App's Homepage**
  - Open the app on your phone/tablet and review the instructions outlined on the homepage. *(Example provided on Android smartphone.)*

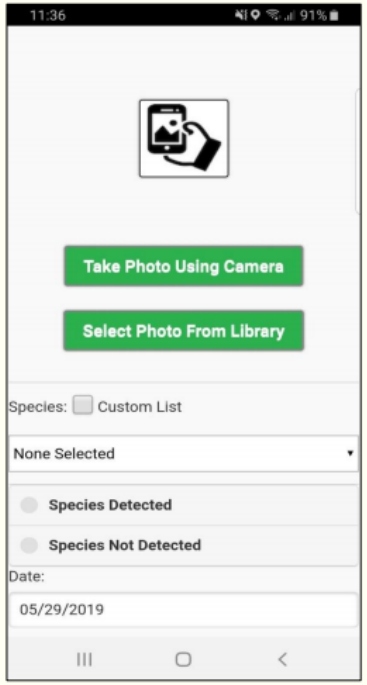
Entering Observations on the App

- **Locate the "Add Observation" button**
  - In the upper right corner, click "Add Observation" to begin logging your invasive species findings.



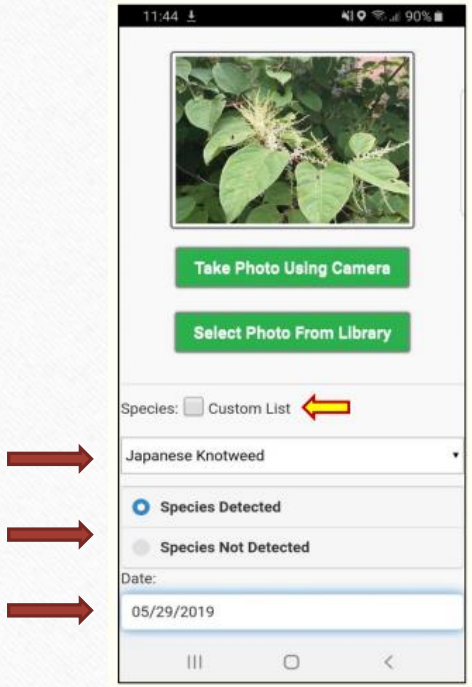
Entering Observations on the App

- **Take a Photo**
  - Take a photo using your device's camera
    - …OR select a photo you recently took and stored in your device's photo library of the species you observed at this location.
  - **Ensure your photo is <u>close-up</u>, <u>crisp</u> *(not blurry)* and includes <u>distinguishing characteristics</u> of the species you are observing.**
  - Note: The app can only save one photo per observation; however, you can take additional photos with your device, store them in your photo library, and add them to your observation record when you have access to iMapInvasives online.



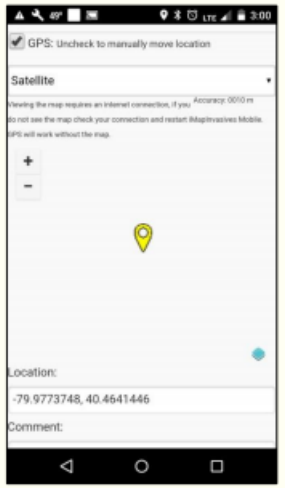
Entering Observations on the App

- **Fill in Observation Details**
  - Select the species you observed.
    - Use your custom list if desired/applicable.
  - Select if the species was detected or not detected.
    - Both presence and absence data can be recorded on the iMap mobile app.
  - The date automatically defaults to the current day, though this can be changed if needed.



Entering Observations on the App

- **Check the Observation Location**
  - The GPS capability in your phone/tablet will automatically determine your observation location.
  - **Ensure you are standing <u>next to</u> or <u>very near</u> the species being observed in order for the location to be marked accurately when uploaded to iMapInvasives online**.
  - If needed, uncheck the "GPS" box to manually move the point to another location.
  - If you do not have cell coverage or an internet connection when making an observation, the base map will NOT display; however, as long as your GPS is working, it will mark the correct location.



In this screenshot, the base map has disappeared because I do not have cell coverage/an internet connection. However, the GPS is still functioning.

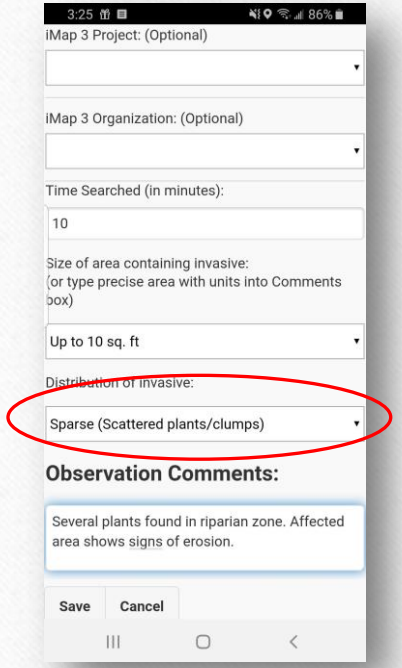
An observation can still be created even when the bas map is gone!

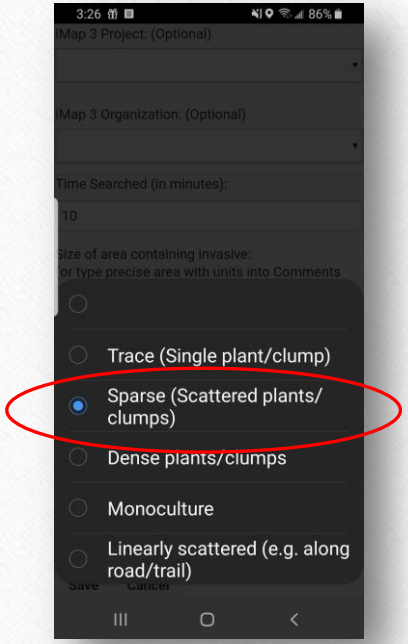
Entering Observations on the App

- **Continue Filling in Observation Details**
  - Select a project name to tag your observation to *(if applicable)*.
    - Remember, projects are an optional tool which allow data to be grouped together for easy querying in iMapInvasives online.
  - Select your affiliated organization name. *(If already filled in via your app's Preferences, your organization name will select automatically.)*
  - Enter the time in minutes you searched the area where you made your observation.

Entering Observations on the App

- **Assessment Questions**
  - Depending on what species you select, additional questions will appear.
  - For example, when observing a plant, a question will appear asking for the distribution of the invasive found. In this example, I've chosen "*sparse*" as the plant distribution.



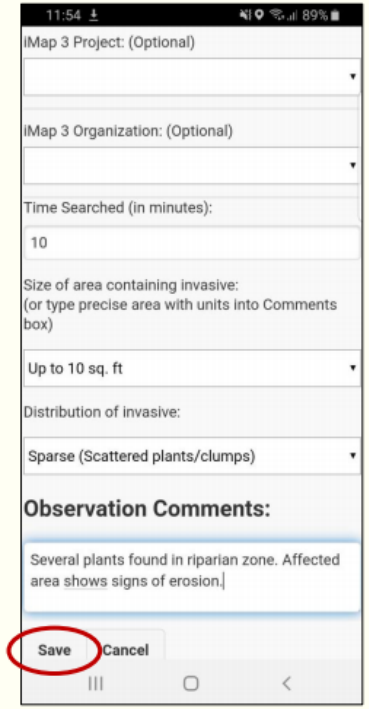


Entering Observations on the App

- **Add Comments**
  - To make your observation more informative, add some comments.
  - Comments could include information on population density, nearby landmarks, additional observers, etc.
    - *"Several plants found in riparian zone. Affected area shows signs of erosion."*

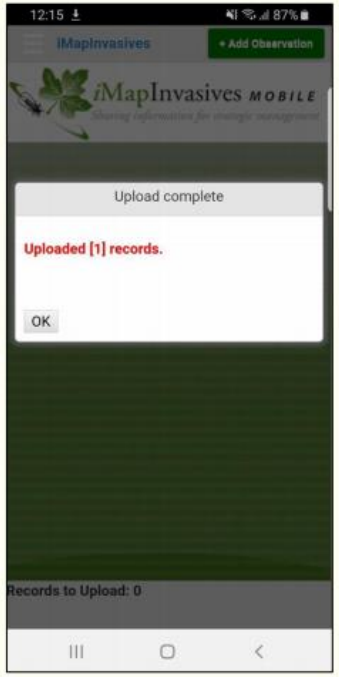
Entering Observations on the App

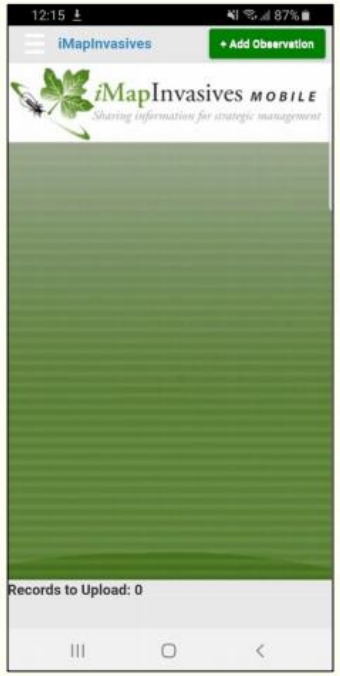
- **Save Your Observation**
  - When finished filling in all appropriate data fields, save your observation.
  - Your newly created record will then appear in a list on the app's homepage.
  - This list can be uploaded into iMapInvasives once you're back in data connectivity (Wifi).



Uploading Your Record(s)

Transport Data from Your Mobile App
to iMapInvasives Online



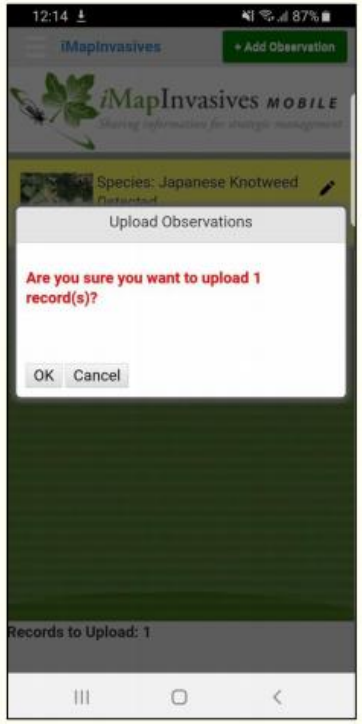


Uploading Your Record(s)

- **Upload Your Observations**
  - To upload your observation(s) once you're back in an area with Wi-fi, click on the check box next to each observation record.
  - Access the main menu and click "Upload Selected".

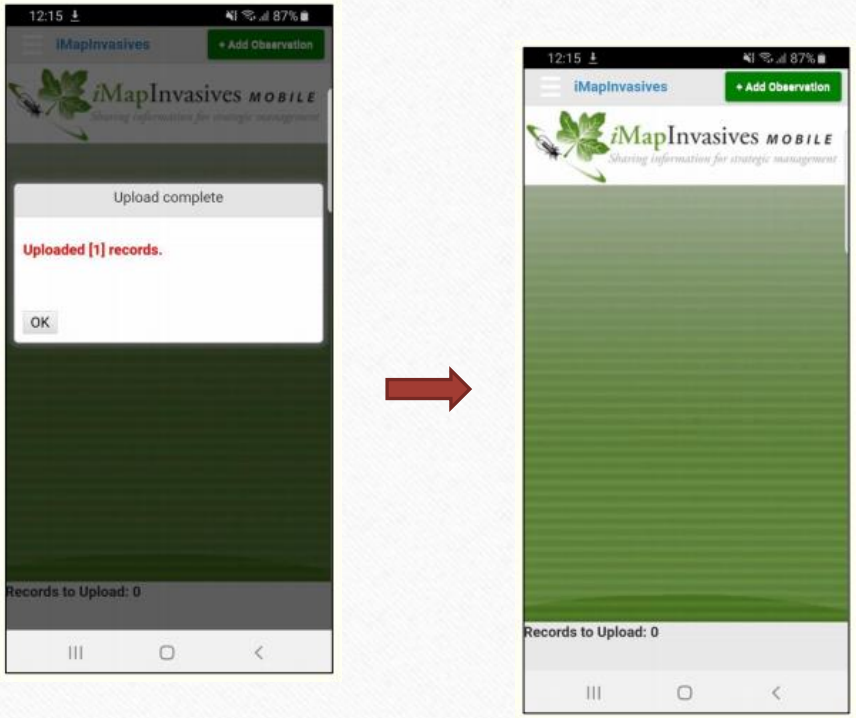
Upload Your Record(s)

- **Upload Confirmation**
  - Confirm that you would like to upload the selected record(s) to the online version of iMapInvasives (i.e., the database) by clicking “OK”.



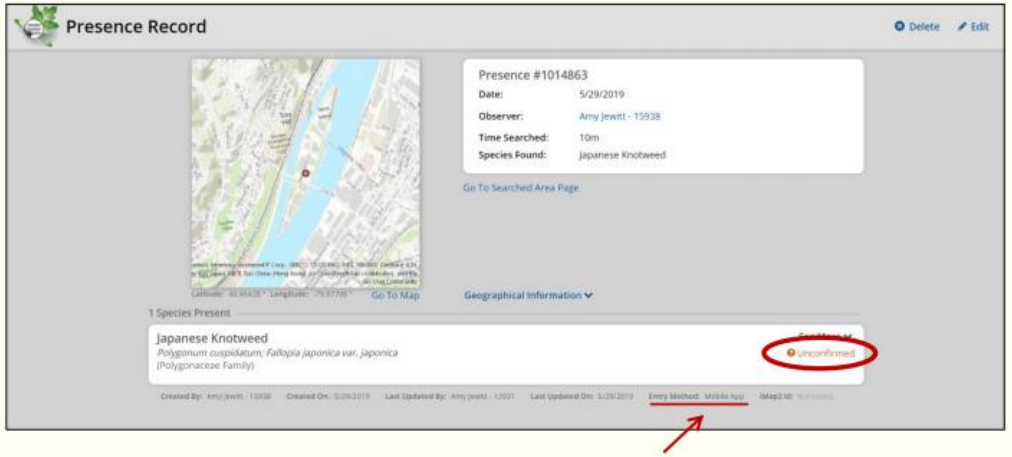
Upload Your Record(s)

- **Record Upload**
  - Note that the record(s) will disappear from your mobile app once the record(s) have been successfully uploaded.
  - **Note:** If you continue to see the observation(s) in the list on your app's homepage, this means the observation(s) have NOT been uploaded into the iMapInvasives database. If this happens, try uploading again.



Upload Your Record(s)

- **Now what?** What happens once your record(s) have been submitted?
  - Your record(s) will be listed in the online iMapInvasives database as "Unconfirmed".
  - With assistance from a botanical expert, the PA iMapInvasives administrator will:
    - Review your record details and provided photograph(s).
    - If the species ID is correct, your record will be listed as "Confirmed" and/or "Approximate".
    - If there are questions regarding your record, you will be notified via email.



This record was created using the mobile app and has been uploaded to the iMapInvasives online database. You can see it has not yet been reviewed since its status still says "Unconfirmed".

Importance of Taking Good Photographs

Examples of Bad Photos
and Good Photos

Importance of Taking Good Photographs

Examples of **<u>Bad</u> Photographs** You Should Avoid Including with Your Observation Records

Both photos: Too far away – can't confirm species ID

Close up, but still inadequate for ID – would need additional photos showing more of the plant's distinguishing characteristics.

Importance of Taking Good Photographs

Examples of **<u>Bad</u> Photographs** You Should Avoid Including with Your Observation Records

Blurry! (This is a view of an area where New Zealand mudsnails were found. Helpful, but hard to see.)

Too far away – can't confirm species ID

Importance of Taking Good Photographs

Examples of **Good Photographs** that are Close-Up and Crisp

Example of a **Close-Up** photograph *(Porcelain-berry)*

Example of a **Crisp** photograph *(Swallow-wort spp.)*

Importance of Taking Good Photographs

Examples of **Good Photographs** that Show Scale and Display a Species' Unique Identifying Characteristics

Example of a photograph showing scale *(Hydrilla)*

Example of a photograph showing a species' unique identifying characteristics *(Water chestnut)*

Note: It's always a good idea to include multiple photographs in your observation record(s).

Be an early detector

Water Chestnut Chasers Challenge

- Webinar 6/24, 11am-12pm
- Report water chestnut 7/1-7/31

Invasive Species Scavenger Hunt

- Webinar 7/23, 11am-12pm
- Report invasive species 8/1-8/31

Check out the events at the Pennsylvania iMapInvasives website
https://www.paimapinvasives.org/

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Final Questions, Comments, and Feedback

(Remember to use the chat feature to communicate with the webinar hosts)