

AIS Data Collection and Sharing iMapInvasives and SASPro

NEAPMS Plant Camp – September 2022



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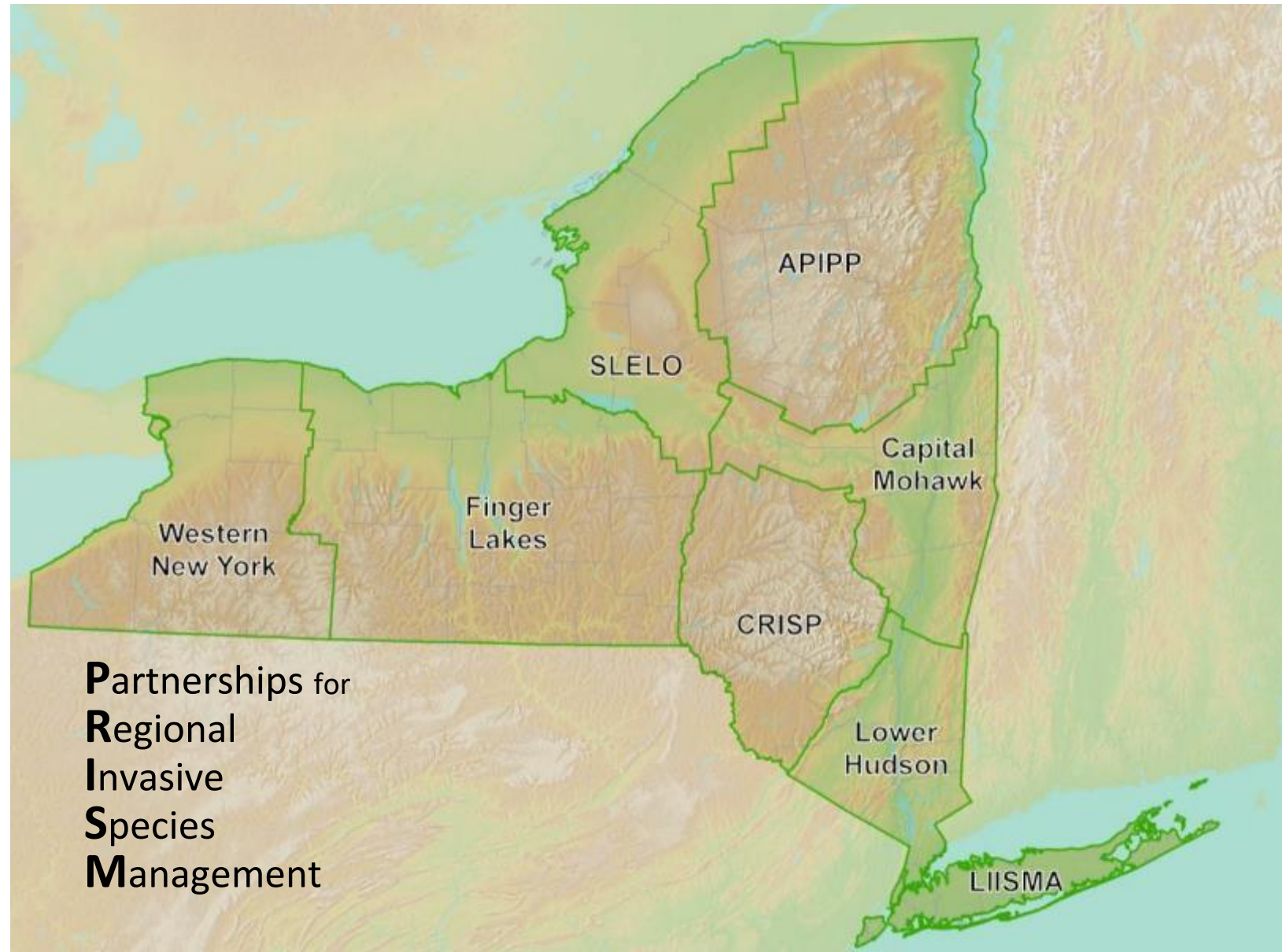


Coordinated invasive species efforts across New York

- Invasive species council
 - NYS Agency programs
- Advisory Committee
- PRISMs = Regional hubs
- Research Institute
- Information sharing



New York
Natural Heritage
Program



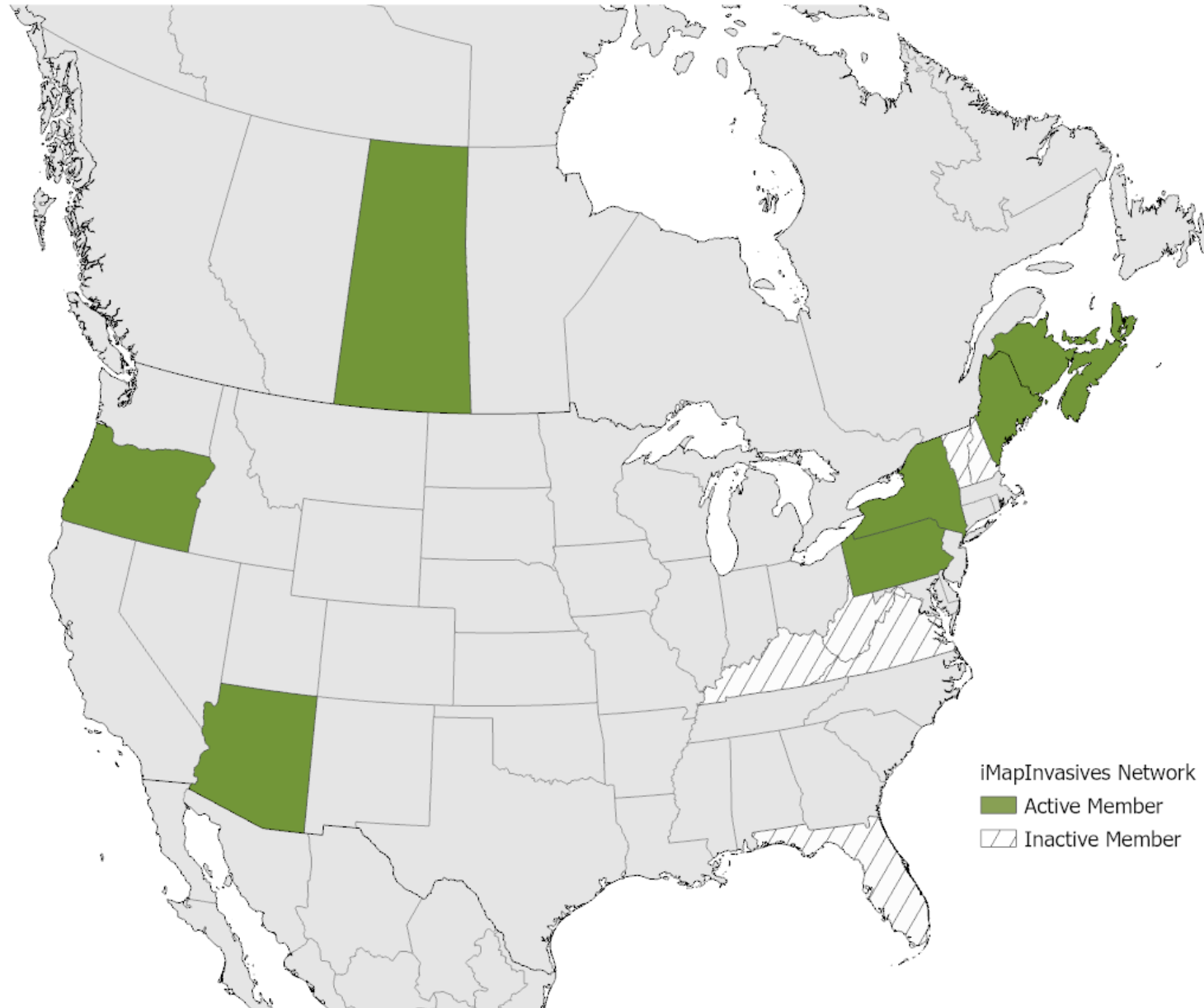
Partnerships for
Regional
Invasive
Species
Management



iMapInvasives

Sharing information for strategic management

iMapInvasives is an online, GIS-based data management system used to assist community scientists & natural resource professionals working to protect our natural resources from the threat of invasive species.



iMapInvasives Network

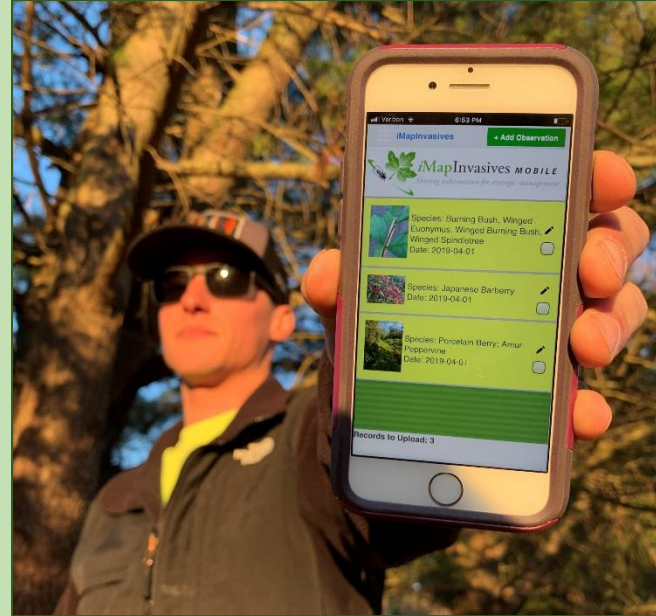
■ Active Member

▨ Inactive Member

Using iMapInvasives for collecting, sharing, and analyzing data



Invasive Species Mapping and Distributions

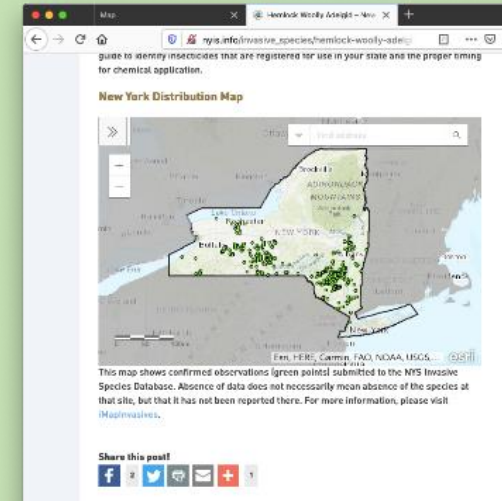


Field data collection tools



Tracking Control Efforts and Results

Web Map Services



Early Detection Alerts



Cayuga Lake		
Habitat Type:	Aquatic	
Report Results:		
Presence Records:		
Scientific Name	Common Name	Confirmed Count
<i>Alosa pseudoharengus</i>	Alewife	34
<i>Bithynia tentaculata</i>	Mud Bithynia	3
<i>Butomus umbellatus</i>	Flowering rush	1
<i>Cercopagis pengoi</i>	Fishhook Waterflea	3
<i>Corbicula fluminea</i>	Asian Clam	1

Summary Reports

www.NYimapinvasives.org --- www.imapinvasives.org

The image shows the homepage of the NY iMapInvasives website. The header is dark green and contains the following elements from left to right: the iMapInvasives logo (a green leaf with a white insect), a 'Blog' link, and a navigation menu with links for 'Volunteers', 'Professionals', 'Certified Trainers', 'WISPA', 'Educators', and 'View map' (which is circled in red). Below the navigation menu is a banner with the text 'Help us monitor *Spotted Lanternfly* in New York State!' and a 'Login' button. The main content area is divided into two columns. The left column has a dark green background with the text 'Welcome to NY iMapInvasives' and a description of the platform. Below this is a 'Featured species' section for the Spotted Lanternfly, including an image of the insect and buttons for 'Create account' and 'View public map'. The right column features a map titled 'Confirmed Reports of Tree-of-Heaven in iMapInvasives' showing green tree icons across New York State. The map includes a scale bar and the Esri logo.

Create Account/Login

imapinvasives.natureserve.org

Log in to iMapInvasives

Email Password

Sign Up

Help us track Invasives - it's free.
(Users must be at least 13 years old)

First Name:

Last Name:

Email:

Retype Email:

Password:
(Must be at least 8 characters long, with a number and an uppercase letter)

Retype Password:

Jurisdiction:

Login (if you have account)

Create Account

Check email for link ("[click here](#)"),
click open the User Agreement.

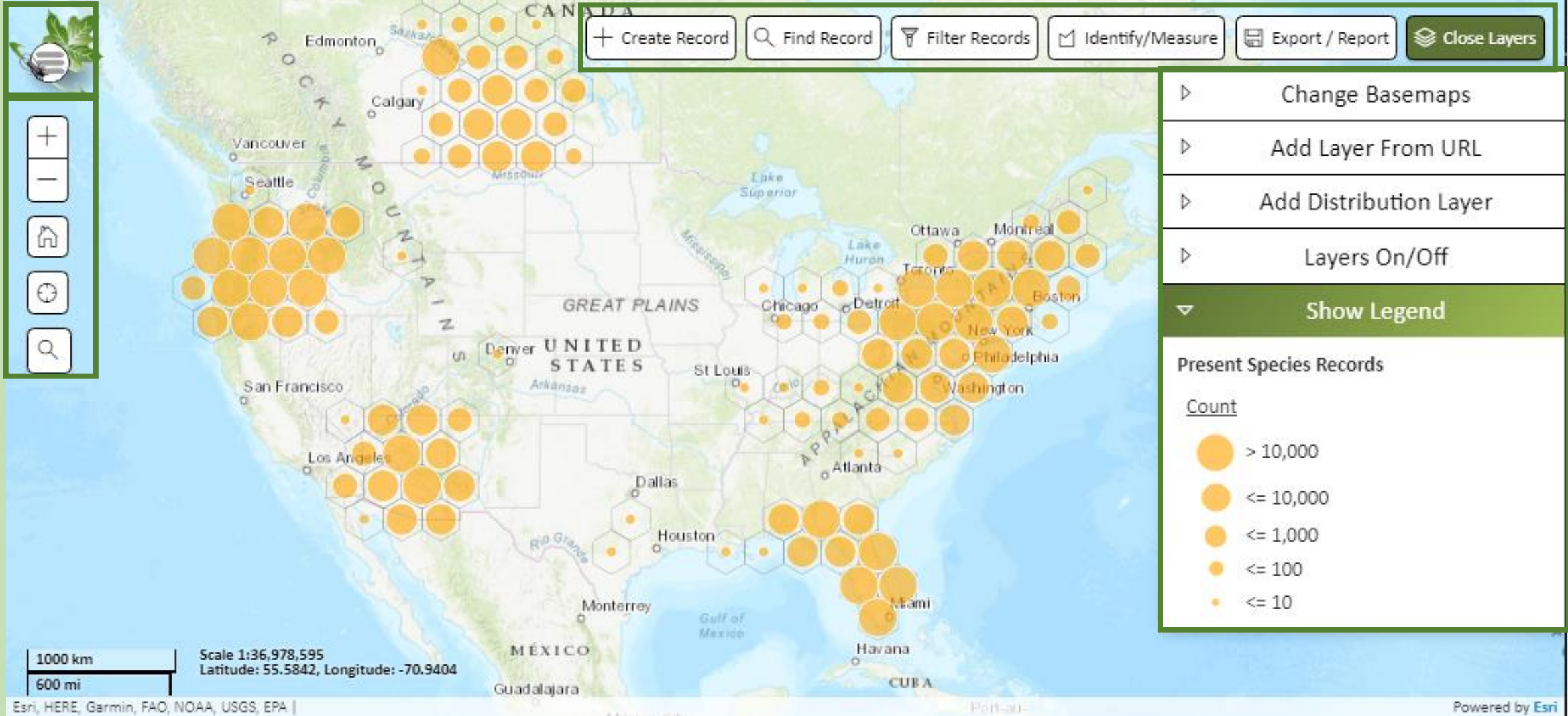
Read User Agreement and accept

iMapInvasives Online

Main Menu

Action Tools

Navigation



Geographic Layers

iMapInvasives Online: Viewing Data

Filter Records

General Presence Treatment

Not Detected Record IDs

Geography Metadata

Species Name:

Select one or more...

Species List: (All Network Species)

Species Type:

Growth Habit:

Habitat Type:

Kingdom:

Genus:

Action Tools

Present Species Records

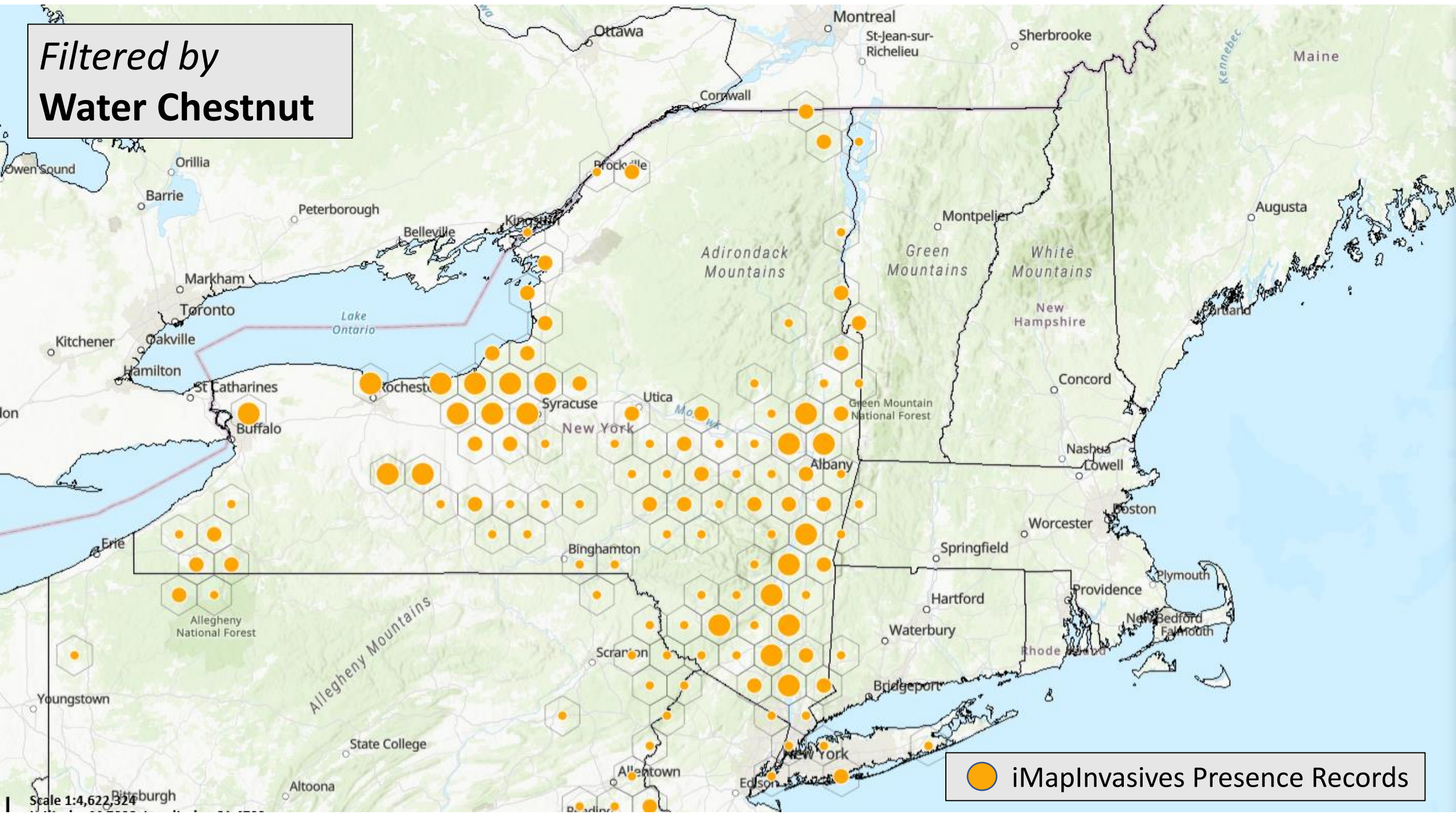
Count

- > 10,000
- <= 10,000
- <= 1,000
- <= 100
- <= 10

Powered by Esri

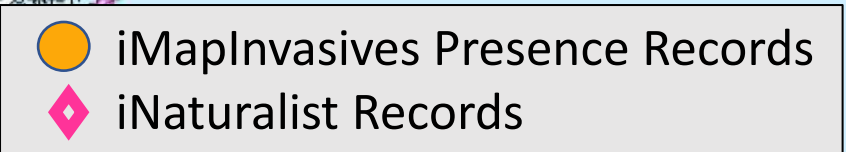
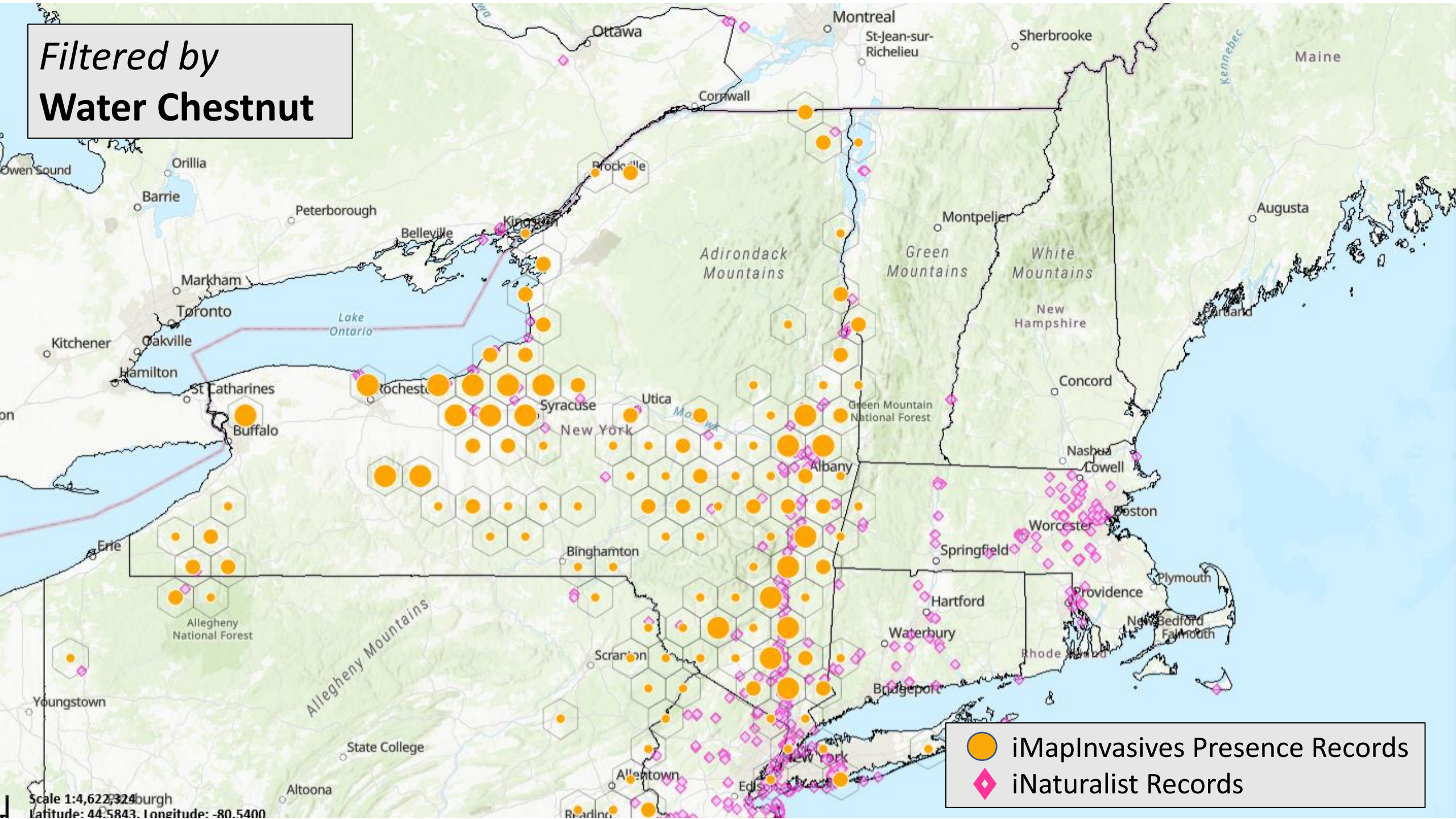
Geographic Layers

Filtered by
Water Chestnut



 iMapInvasives Presence Records

Filtered by
Water Chestnut



iMapInvasives Online: Distribution Maps

Main Menu

Action Tools

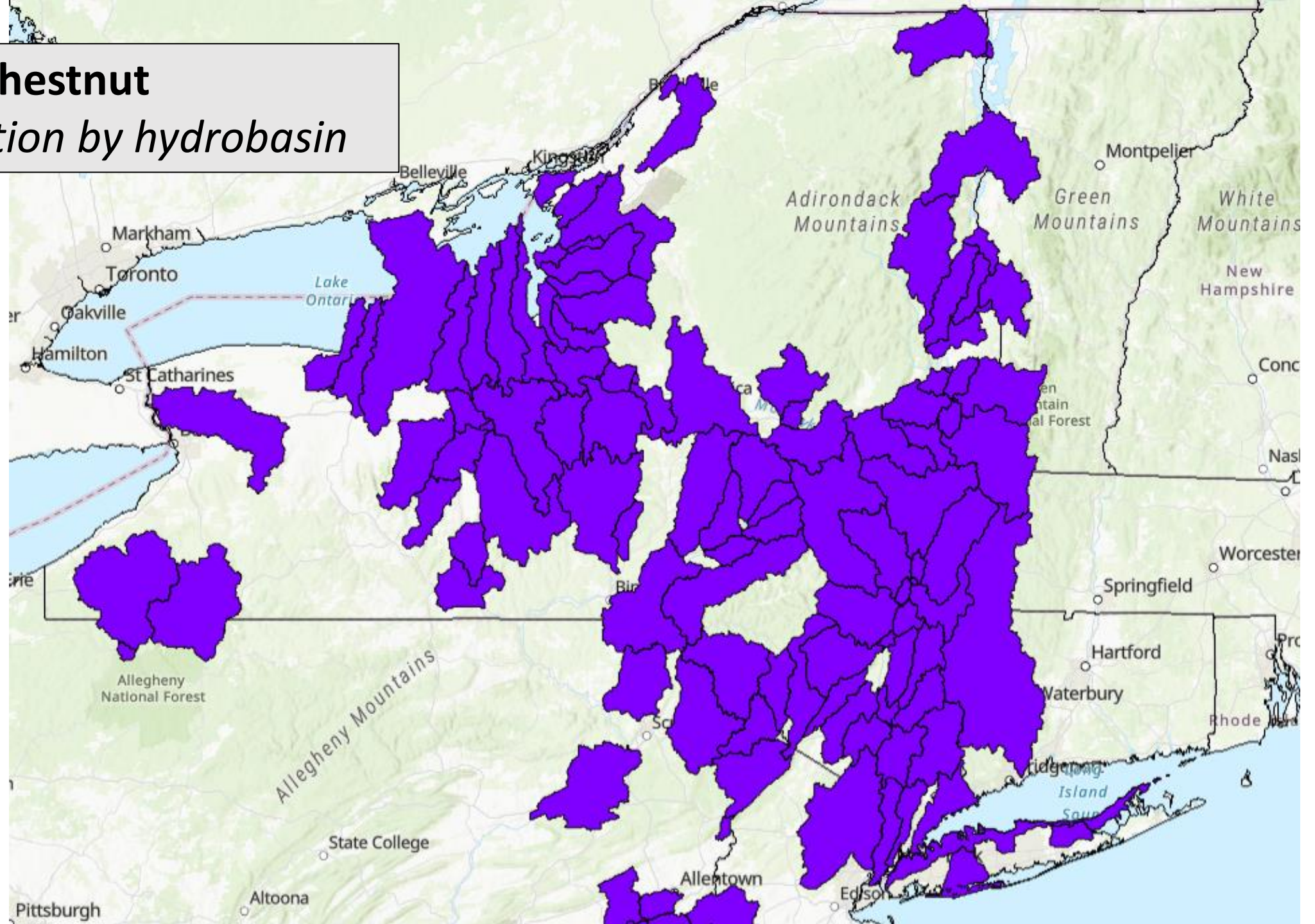
Navigation

Geographic Layers

The screenshot displays the iMapInvasives Online interface. At the top, a navigation bar contains several action tools: '+ Create Record', 'Find Record', 'Filter Records', 'Identify/Measure', 'Export / Report', and 'Close Layers'. Below this, a map of North America is shown with orange circular markers representing the distribution of Water Chestnut. The map is overlaid with a hexagonal grid. A sidebar on the right, titled 'Add Distribution Layer', is highlighted with a red circle. This sidebar contains the following options: 'View Distribution By:' set to 'Hydrobasin', 'Include Approximate Presences?' (disabled), 'Include Unconfirmed Presences?' (disabled), 'Layer Color:' set to purple, 'Show the Distribution Layer' (checked), 'Remove the Current Distribution Layer' (checked), and 'Unique Title For Layer From Distribution:' set to 'Water Chestnut by Hydrobasin'. On the left side, a 'Navigation' sidebar includes a small map icon, a zoom in (+) button, a zoom out (-) button, a home button, a refresh button, and a search button. At the bottom left, there is a scale bar (1000 km / 600 mi) and coordinates (Scale 1:36,978,595, Latitude: 55.5842, Longitude: -70.9404). The bottom right corner indicates the map is 'Powered by Esri'.

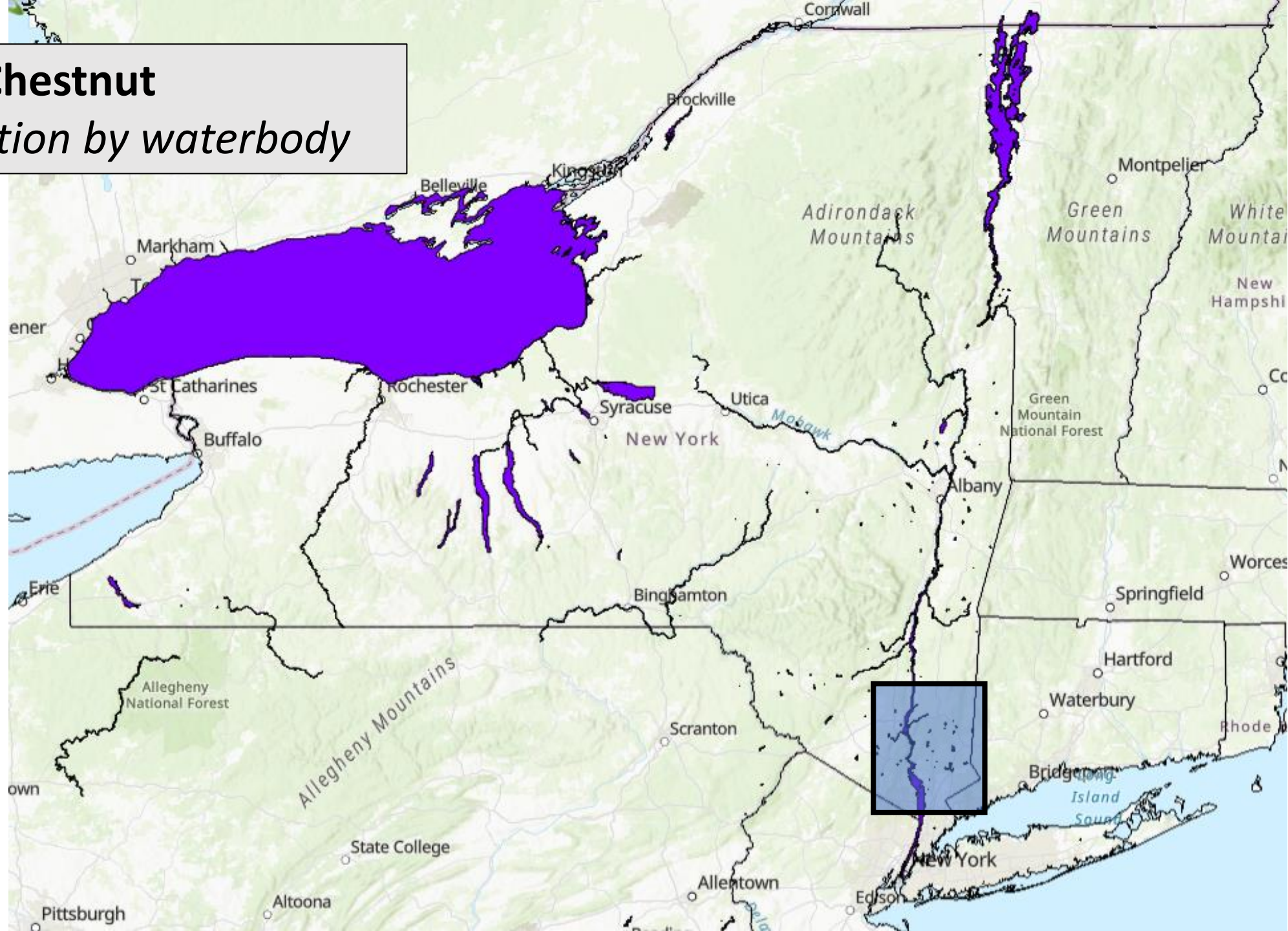
Water Chestnut

Distribution by hydrobasin



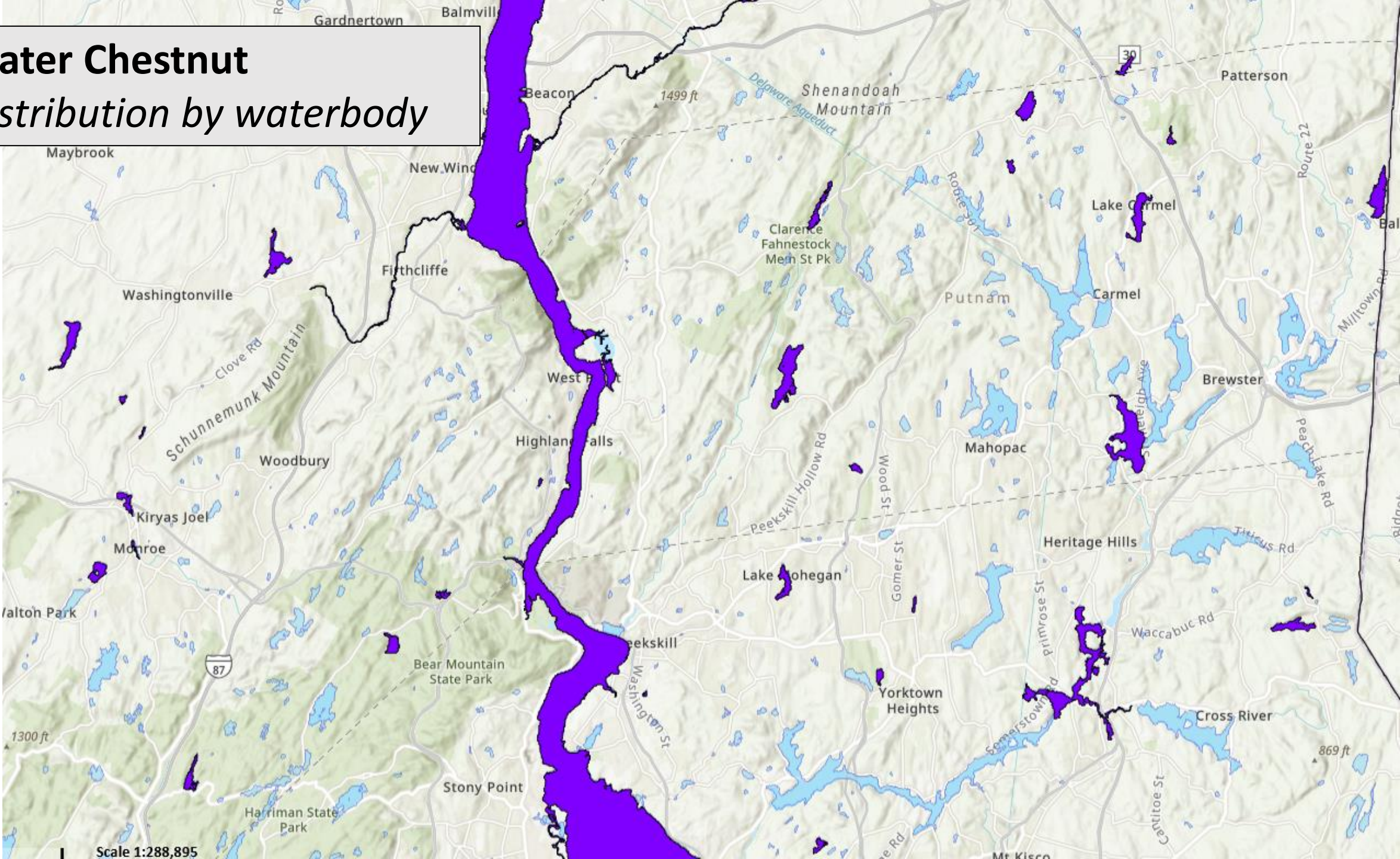
Water Chestnut

Distribution by waterbody



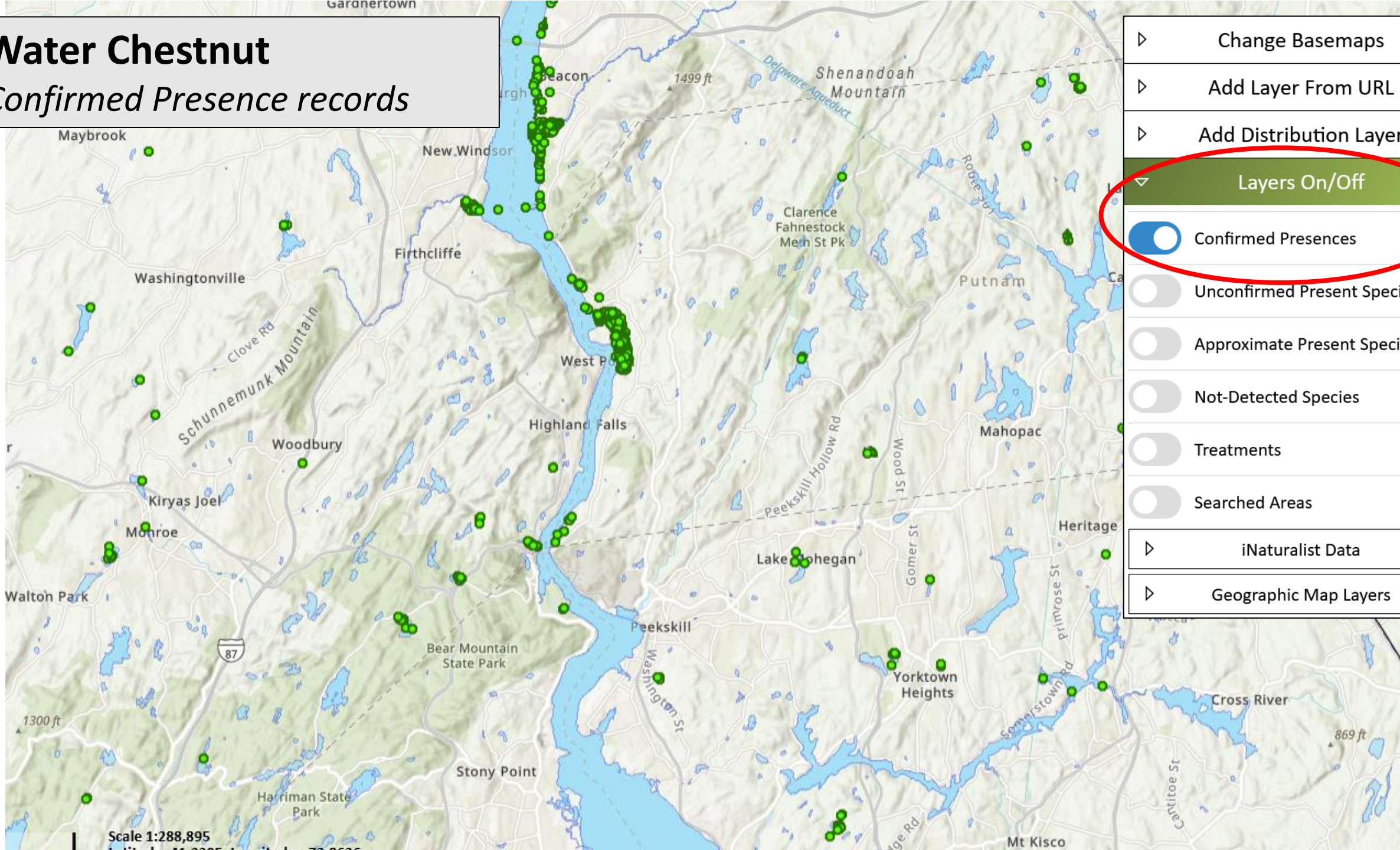
Water Chestnut

Distribution by waterbody



Water Chestnut

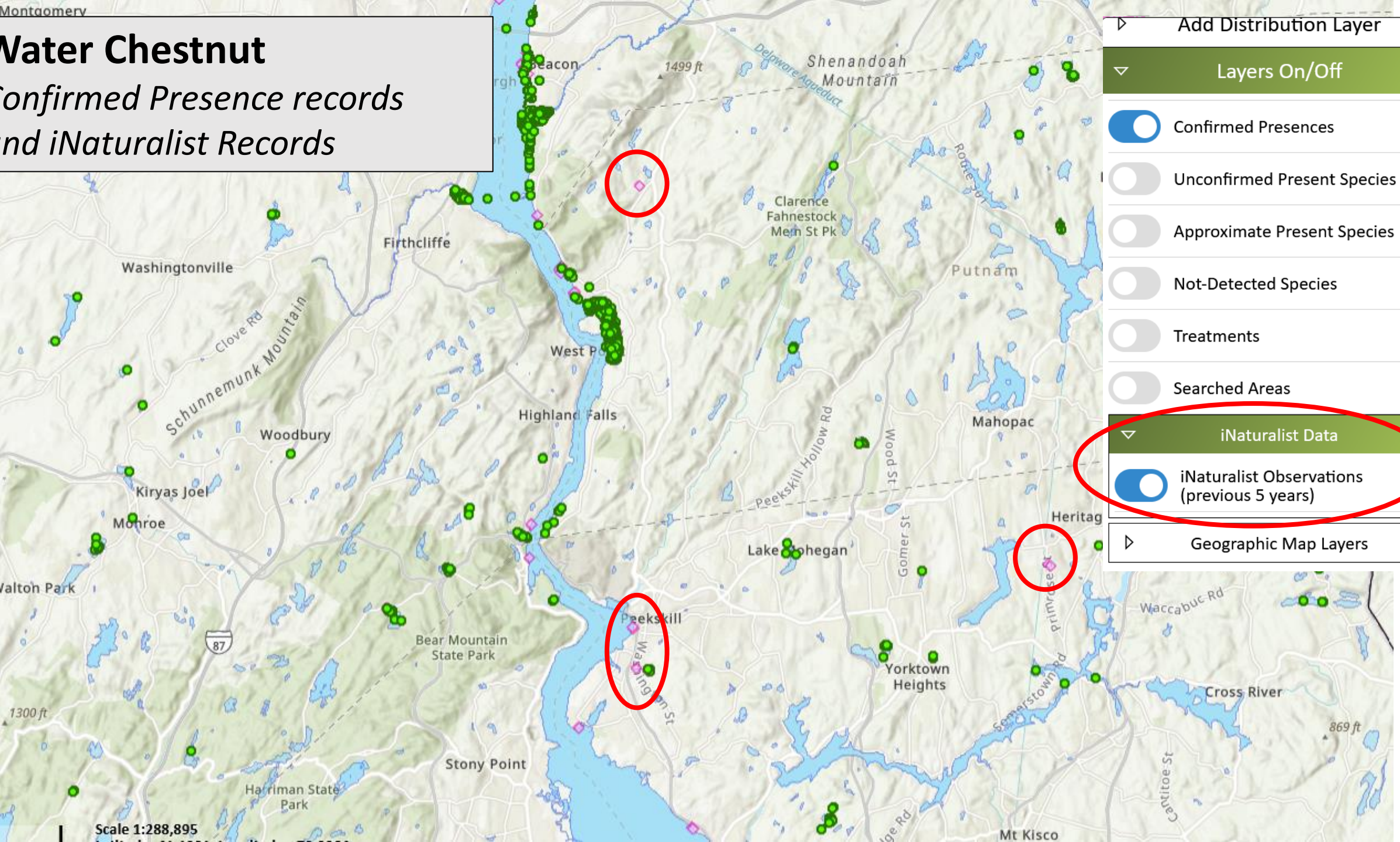
Confirmed Presence records



- ▷ Change Basemaps
- ▷ Add Layer From URL
- ▷ Add Distribution Layer
- Layers On/Off**
- Confirmed Presences >
- Unconfirmed Present Species >
- Approximate Present Species >
- Not-Detected Species >
- Treatments >
- Searched Areas >
- ▷ iNaturalist Data
- ▷ Geographic Map Layers

Water Chestnut

Confirmed Presence records and iNaturalist Records



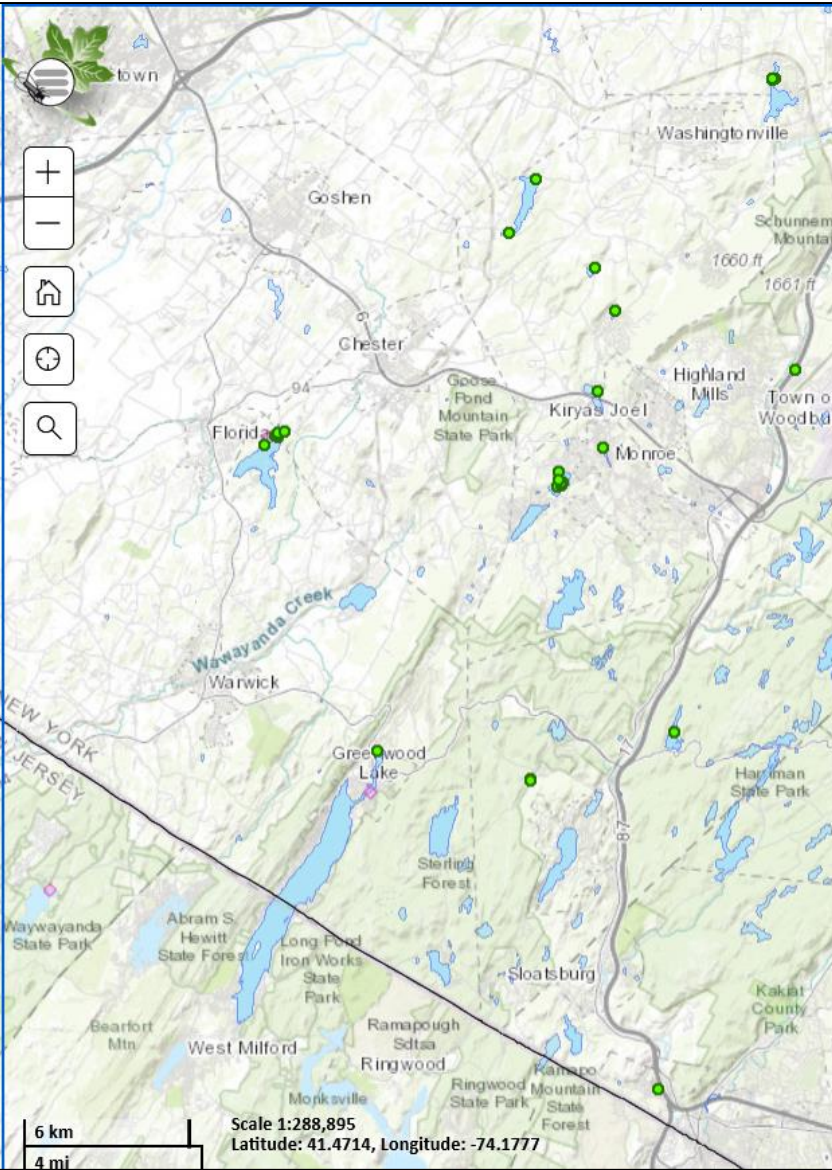
▶ Add Distribution Layer

▼ Layers On/Off

- Confirmed Presences >
- Unconfirmed Present Species >
- Approximate Present Species >
- Not-Detected Species >
- Treatments >
- Searched Areas >
- ▼ iNaturalist Data
 - iNaturalist Observations (previous 5 years) >
- ▶ Geographic Map Layers

Scale 1:288,895

Identify / Measure tool



- + Create Record
- Go To Record
- Filter Records
- Identify/Measure**
- Export / Report
- Close Layers

Identify/Measure Tool

Area: 46.6919 Sq. Miles

See What's Here

Measure Again

Select the type of measurement to perform

Area Distance

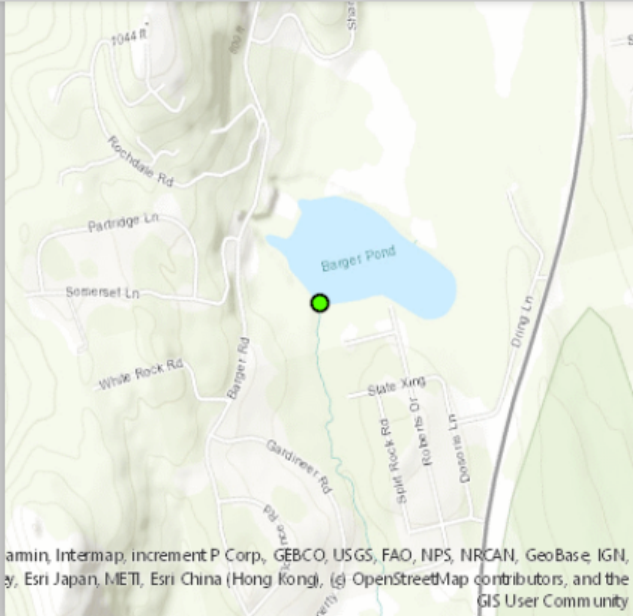
- Add Distribution Layer
- Layers On/Off
 - Confirmed Presences
 - Unconfirmed Present Species
 - Approximate Present Species
 - Not-Detected Species
 - Treatments
 - Searched Areas
- iNaturalist Data
 - iNaturalist Observations (previous 5 years) (Filter Applied)
- Geographic Map Layers
 - States/Provinces
 - County/District
 - Waterbodies
 - Conservation Lands

6 km
4 mi
Scale 1:288,895
Latitude: 41.4714, Longitude: -74.1777



Presence Record

[Edit](#)



Latitude: 41.35873 ° Longitude: -73.81472 ° [Go To Map](#)

Presence #1139723

Date: 6/1/2021
Observer: [Alejandro Reyes - 3777](#)
Organization: Northeast Aquatic Research (NEAR)
Time Searched: 5m
Species Found: Water Chestnut

[Go to Searched Area page to enter/view more information](#)

[Geographical Information](#) ▼

1 Species Present

Water Chestnut

Trapa natans
(Trapaceae Family)

[See Less](#) ▲

Photos of Present Species:



1/1

- ✔ Confirmed
- 🔒 Not Confidential
- ★ Under Treatment

General Reference Info

Reference Photo:

Measure [Export / Report](#) [Close Layers](#)

- ▶ Change Basemaps
- ▶ Add Layer From URL
- ▶ Add Distribution Layer
- ▼ Layers On/Off
 - Confirmed Presences >
 - Unconfirmed Present Species >
 - Approximate Present Species >
 - Not-Detected Species >
- ▶ Show Legend

max of 1,000 records per tab

on Name	Details	Tasks
Department of Env...	Details	Tasks ▼
Department of Env...	Details	Tasks ▼
ological Survey (...)	Details	Tasks ▼
Department of Env...	Details	Tasks ▼

Export/Report

Export or Report:
 Run Report

Report Type*:
Species List By Geography
Approaching Region
Area Treated
Infested Area
Species List By Geography
Snapshot Report

Use Current Filter:
[Learn about Reports](#)

Run Report

Map navigation: + Create Record, ✨ Go To Record, 🌿 Filter Records, 📄 Identify/Measure, **📄 Export / Report**, 🗑 Close Layers

Layers On/Off

Switch the hexagon data layer:

- Hex Summary: Confirmed | ▾
- Unconfirmed Present Species
- Approximate Present Species
- Not-Detected Species
- Treatments

iNaturalist Data

- iNaturalist Observations (previous 5 years)

Geographic Map Layers

- States/Provinces
- County/District
- Waterbodies

Scale: 1:1,155,581
Latitude: 43.4411, Longitude: -76.6981

Species List by Geography Report



Cayuga Lake

Species List by Geography Report

Habitat Type: Aquatic

Report Results:

Presence Records:

Scientific Name	Common Name	Confirmed Count
<i>Alosa pseudoharengus</i>	Alewife	34
<i>Bithynia tentaculata</i>	Mud Bithynia	3
<i>Butomus umbellatus</i>	Flowering rush	1
<i>Cercopagis pengoi</i>	Fishhook Waterflea	3
<i>Corbicula fluminea</i>	Asian Clam	1
<i>Cyprinus carpio</i>	Common Carp	15
<i>Dreissena bugensis</i>	Quagga Mussel	40
<i>Dreissena polymorpha</i>	Zebra Mussel	39
<i>Echinogammarus ischnus</i>	Scud, Euryhaline Amphipod	29
<i>Hemimysis anomala</i>	Bloody-red Shrimp	2
<i>Hydrilla verticillata</i>	Hydrilla	193
<i>Hydrocharis morsus-ranae</i>	European Frogbit: Common Frogbit	1

Report / Report

Close Layers

Change Basemaps

Add Layer From URL

Distribution Layer

Layers On/Off

Hexagon data layer:

Summary: Confirmed | >

Confirmed Present | >

Approximate Present Species | >

Detected Species | >

Comments | >

iNaturalist Data

iNaturalist Observations (previous 5 years) | >

Geographic Map Layers

Countries/Provinces | >

County/District | >

Waterbodies | >

iMapInvasives: Email Alerts

Main Menu

Action Tools

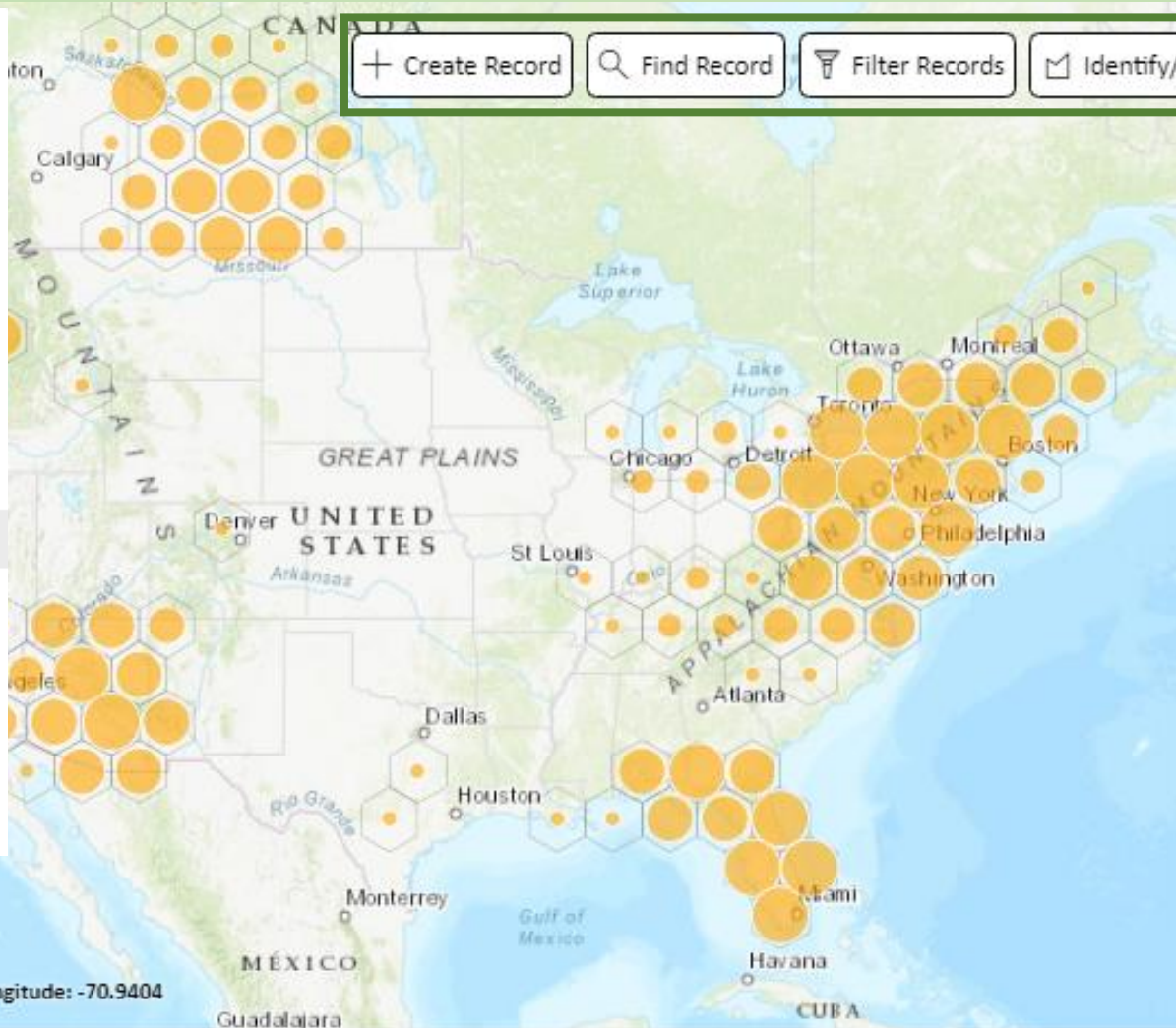
Navigation

Logged in as:
jmaedean@gmail.com

Jurisdiction Species List
Network Species List
Projects
Organizations
Persons
Your Account
Your Email Alerts

Help
Terms of Use
Log Out

+ Create Record 🔍 Find Record 🗑️ Filter Records 📏 Identify/Measure 📄 Export / Report 🗑️ Close Layers



Change Basemaps
Add Layer From URL
Add Distribution Layer
Layers On/Off
Show Legend

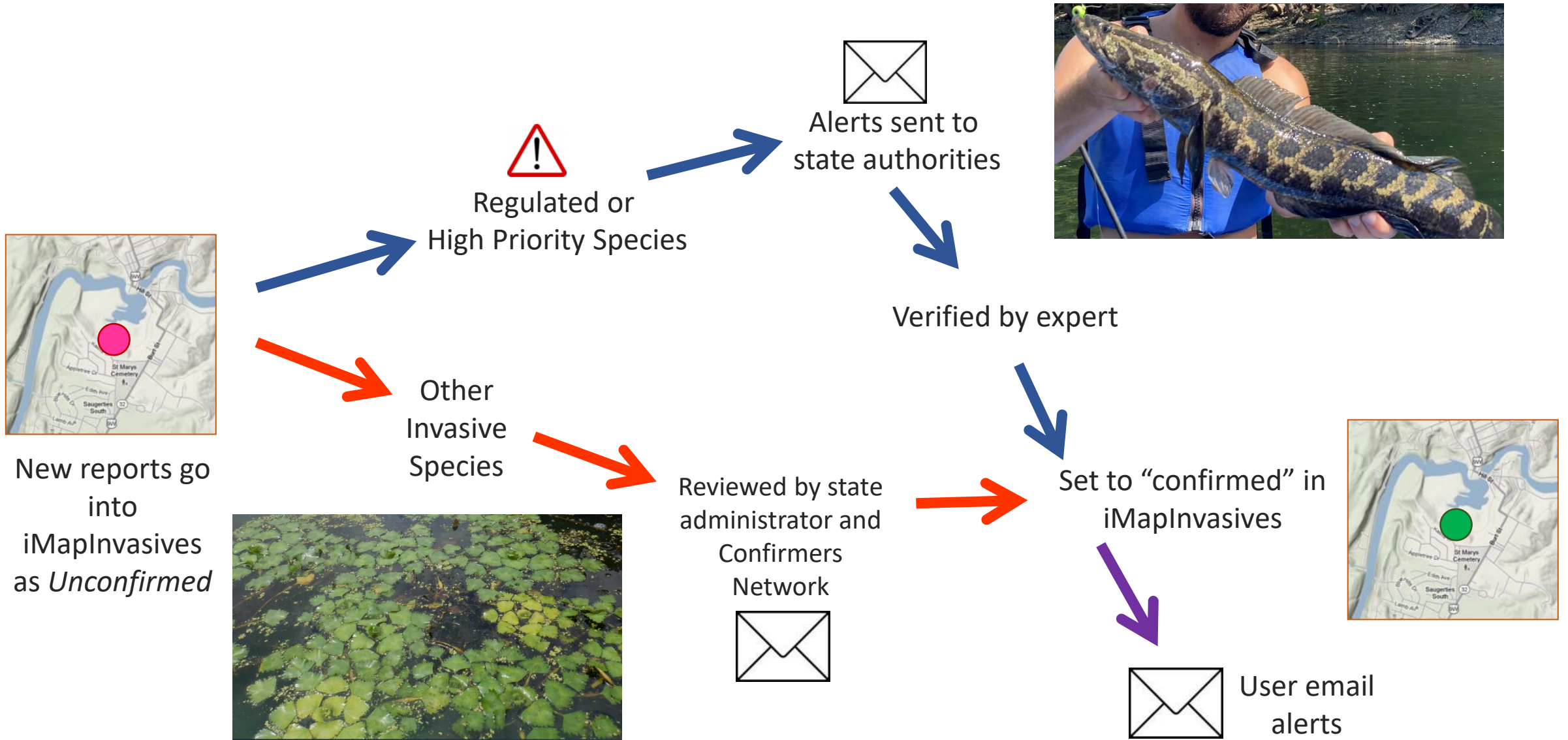
Present Species Records

Count

- > 10,000
- <= 10,000
- <= 1,000
- <= 100
- <= 10

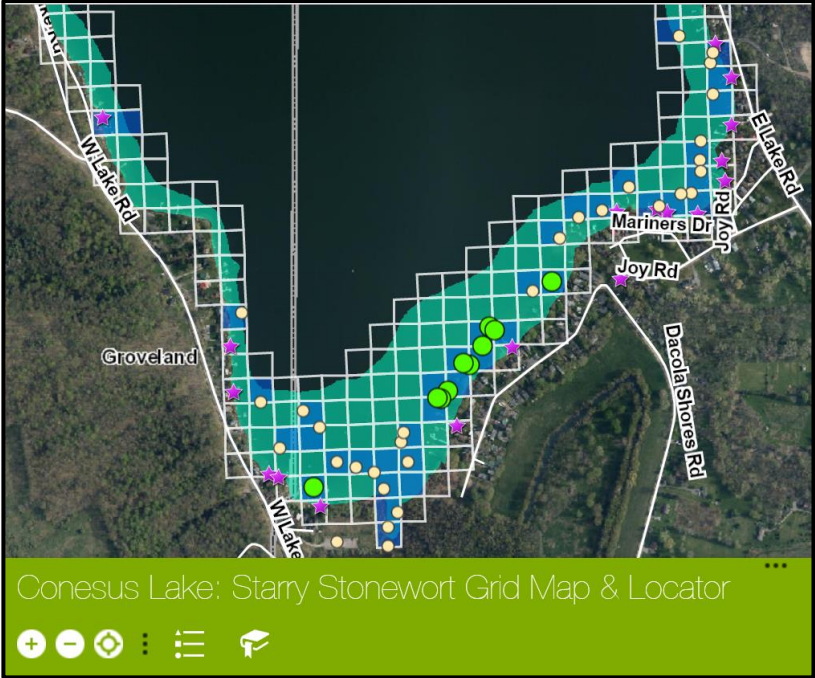
Geographic Layers

Email Alerts : *Communicating important findings*



Web Map Services

Connect to live iMapInvasives data directly from online and desktop GIS software using the iMap3 WMS



About Projects Get Involved Invasive Species Resources News Calendar

City Invasives Profiles: All Invasives Agricultural Aquatic Terrestrial enter search terms

Invasive Species — Quagga Mussel

Quagga Mussel

Common Name: Quagga mussel
 Scientific Name: *Dreissena bugensis*
 Origin: Eurasia

Description

The quagga mussel is a filter-feeding, freshwater, bivalve mollusk. It is pale toward the end of its hinge and about 3/4" wide.

Habitat

Quagga mussels inhabit freshwater habitats up to depths of 90 ft., attaching to most surfaces including sand, silt and hard substrates.

Threat

Invasive mussels displace native species, attach to and cover many surfaces, have sharp shells and are a nuisance to humans. Although they have some predators, they breed faster than they can be consumed. As filter-feeders, they remove particles from the water, affect the clarity, content and ultimately the food chain of aquatic ecosystems.

Management

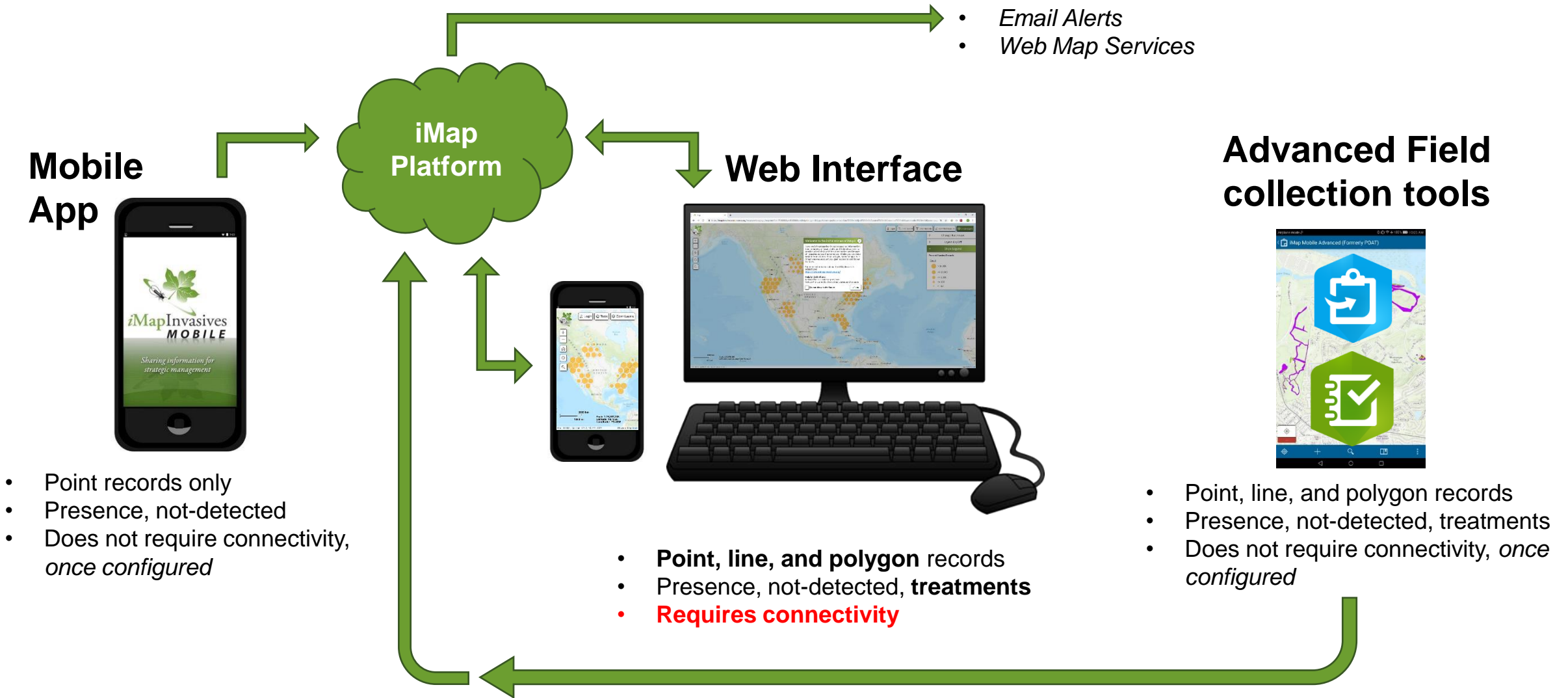
Once established, very little can be done apart from manual removal. In closed human systems such as water treatment plants, chemical, thermal, electrical and biological controls can be used. The best method is prevention through cleaning boats, bait buckets, and gear.

Regional Distribution

Widespread
 WNY PRISM Priority
 Tier 4 – Local Control

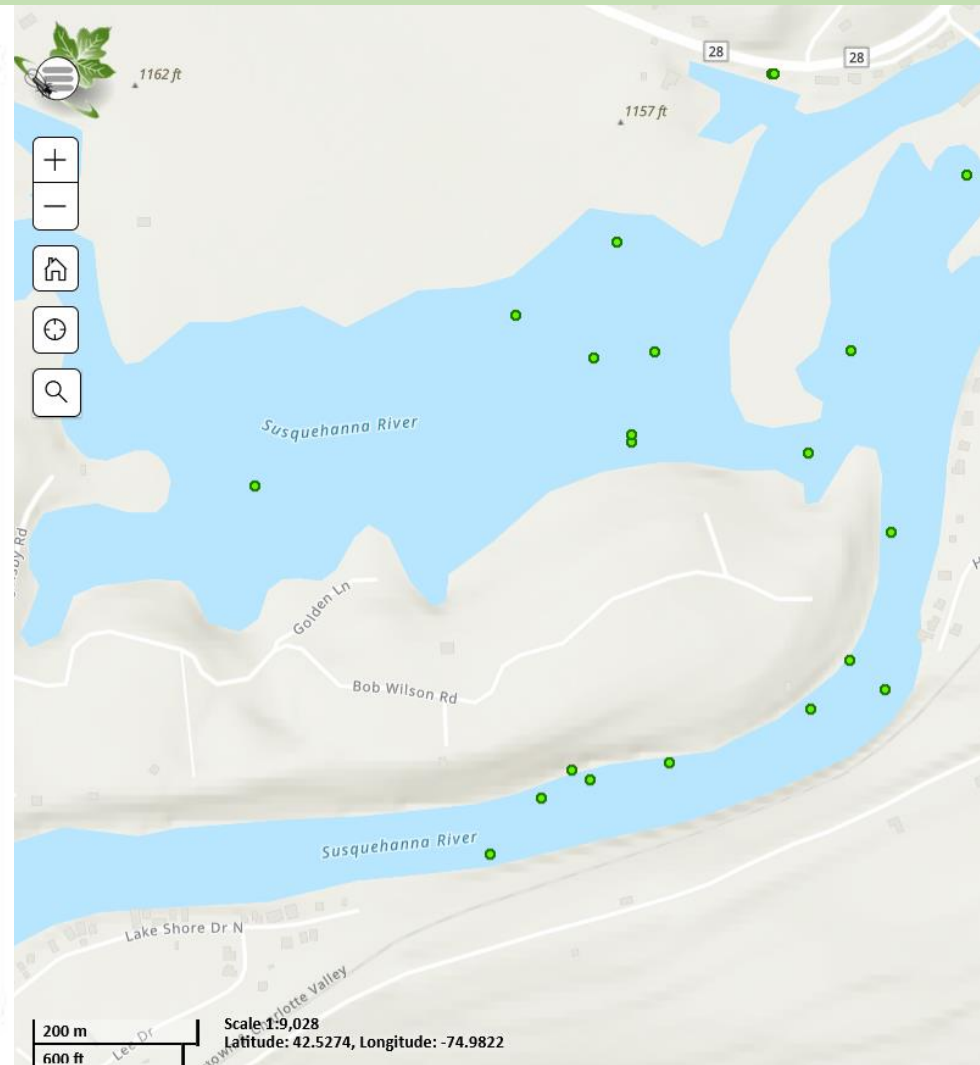
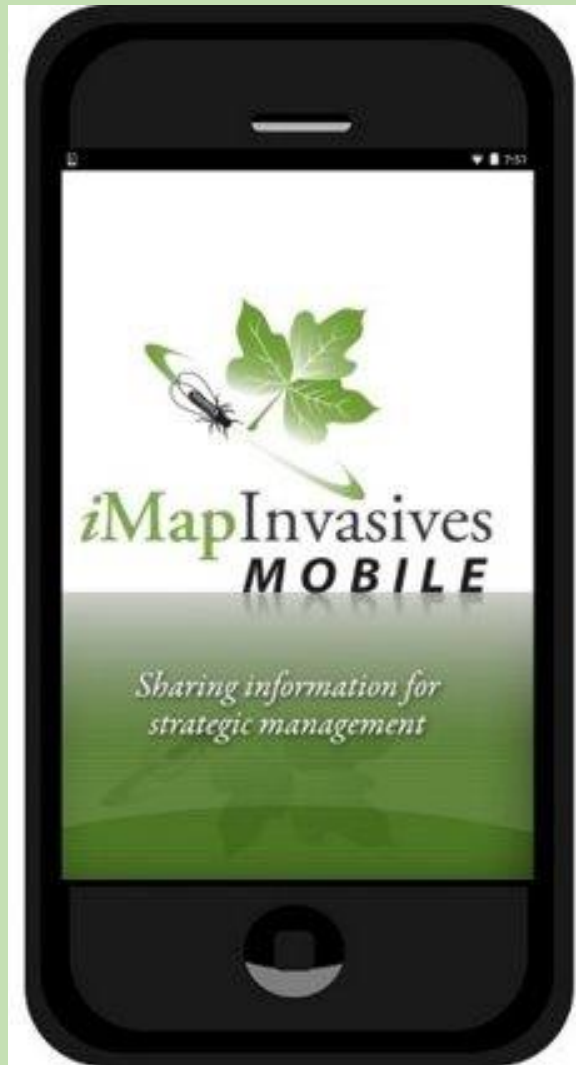


iMap Data Inputs and Outputs



**Data goes to ArcGIS Online and is then cross-walked to iMap database*

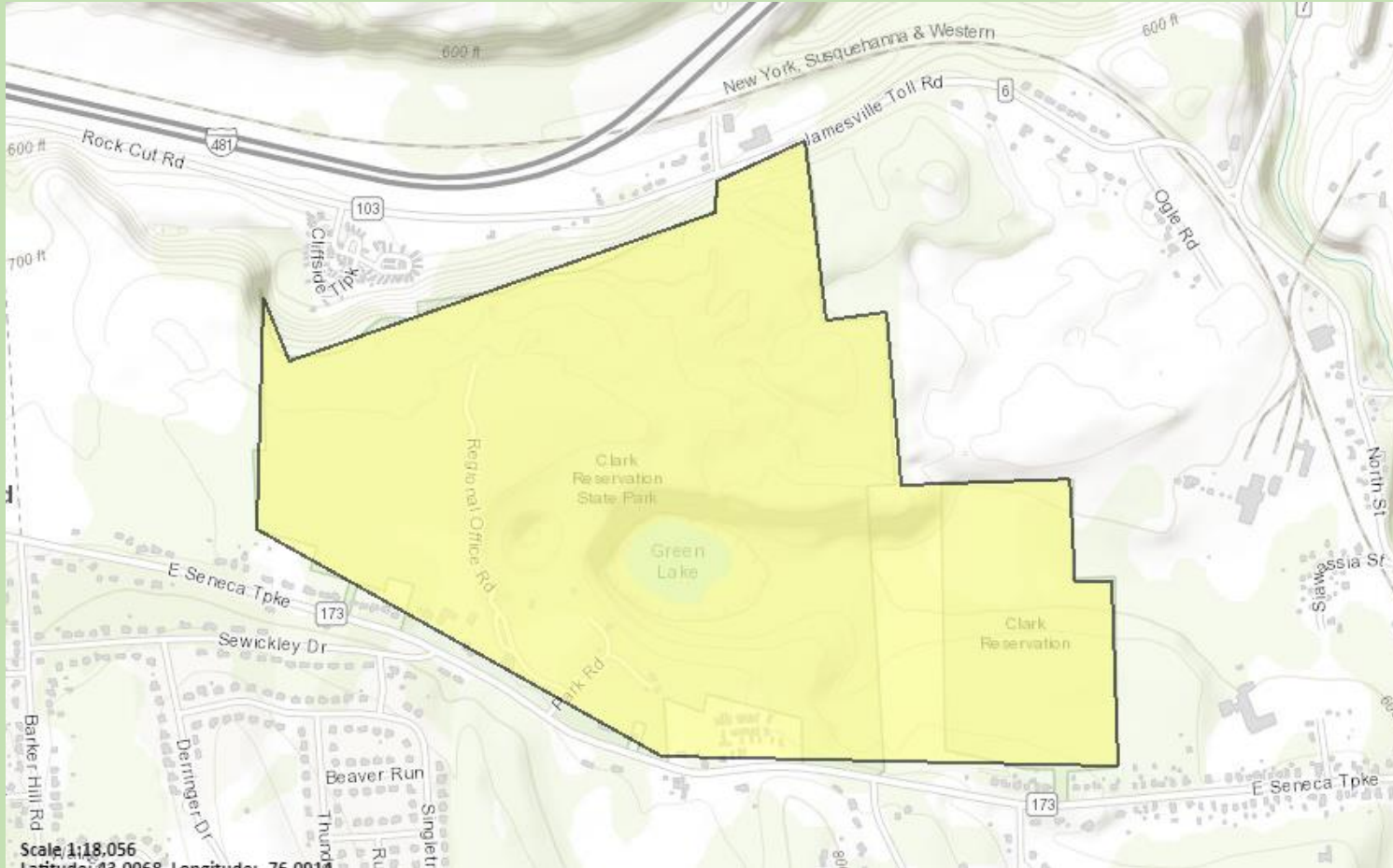
iMapInvasives Mobile App



- Go-to reporting tool for point data
- Presence and “not detected” reports
- Key fields to fill out
 - Time searched
 - Distribution (trace, sparse, dense, monoculture)
 - Size of infestation



iMapInvasives Online



Example: HWA survey for an entire property; easy to trace polygon on basemap after the fact

- Good for creating records back home / back in the office
 - Take notes in the field
 - Use satellite imagery to trace infestations
 - Input data from the past
- Example: reporting a water chestnut pull effort at the end of the day
- Access to all the data fields in iMap
- Mobile Responsive - can be used in the field, if you have connectivity

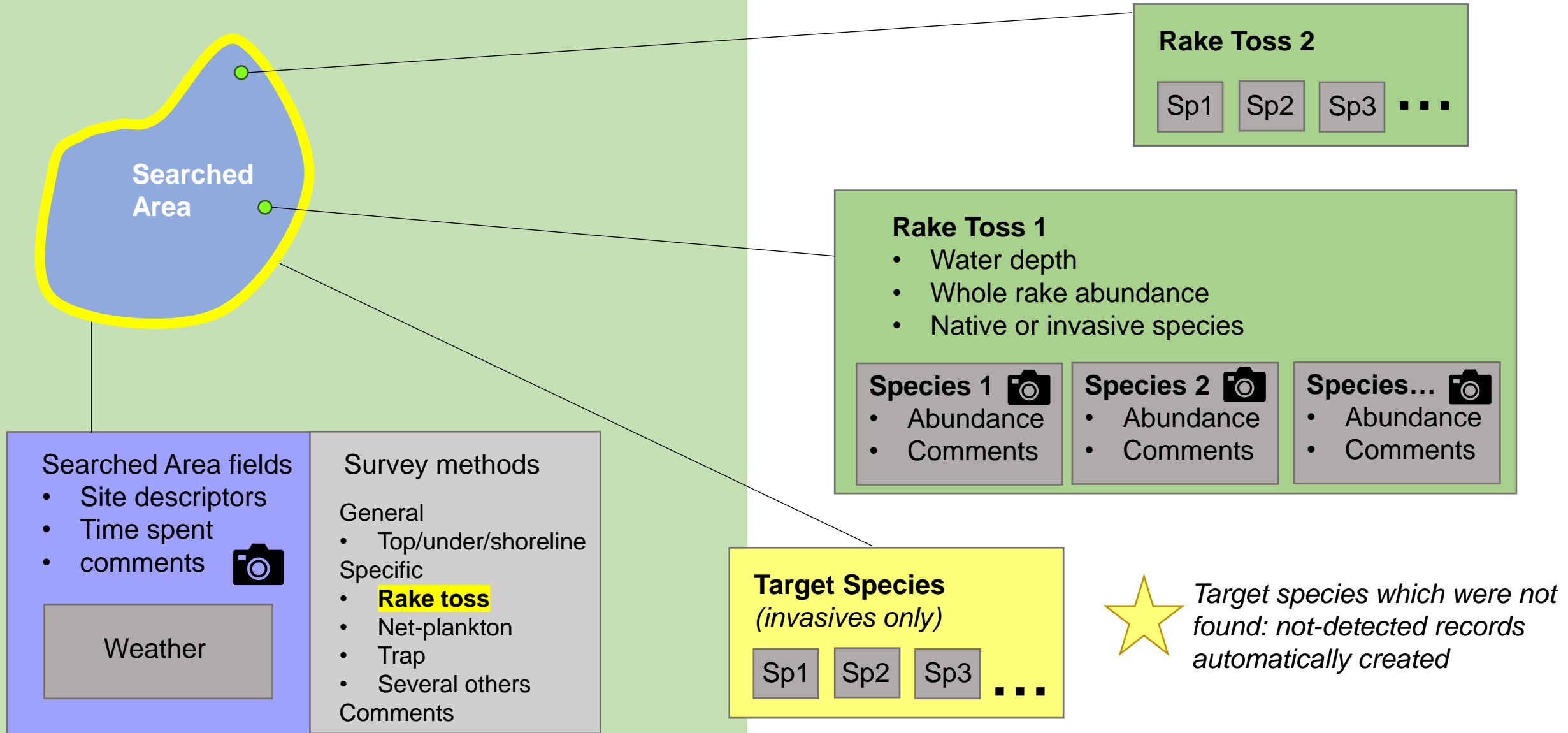
Simple Aquatic Survey (SASPro)

- Form within Esri's Survey123 App
- Record advanced aquatic surveys
 - Invasive species detected
 - Native species detected
 - *Invasive species searched for but not detected*
- Data fields map to iMap data fields – crosswalk via Esri AGOL
- Created by NYNHP for New York organizations, but template can be shared




Photo by Chris Doyle, SOLitude Lake Management


SAS-Pro Data Schema



Simple Aquatic Survey - Pro



 **Searched Area** [Delete](#) [Edit](#)


County of Frontenac, Province of ... Powered by Esri
Latitude: 44.0761 °
Longitude: -76.31969 ° [Go To Map](#)

Searched Area: ● Presence: ● Treatment: ●

Searched Area #1263140 [See Less](#)


Site Name: Mud Bay
Search Date: 7/28/2021
Created By: NY iMapInvasives Batch Record Creator Tool - 16500

Organization: [St. Lawrence and Eastern Lake Ontario \(SLELO\)](#)
[Partnership for Regional Invasive Species Management \(PRISM\)](#)

Comments: _____
Priority Conservation Area: Mud Bay

Survey Intensity: PartialWaterbody

Photos of the Region:

1/1

2 Presences: _____

Eurasian Water-milfoil

Brittle Naiad

0 Treatments

1 Not-Detected Region: _____

Water Hyacinth, Water Lettuce, Northern Snakehead, Silver Carp, Hydrilla, Bighead Carp, Fanwort

Target Species List

- List of the **invasive** species you are specifically looking for
 - ❖ Not all species on the list - subset
 - ❖ Rake toss - macrophytes
 - What if you detect a species that wasn't on your target list?
 - ❖ Not a problem – you can create the presence without having to go select it in the target species
- ❖ Automatic creation of not-detected records
 - ❖ “Favorites” feature to save a target list for repeated use

Survey123 tips

- Use “Favorites” feature
 1. Enter iMap Person, Org, Project ID, target species
 2. Save as favorites
 3. Close out and save as draft
 4. Open new survey
 5. Paste favorites
- Change font size
- Updates to survey



Invasive Species Tiers

A data-driven method for creating invasive species lists

		Difficulty of Eradication / Cost of Control Abundance (in PRISM plus Buffer)			
		None in PRISM	Low	Medium	High
Impact (current and future)	Very High or High	TIER 1 <i>Early Detection/Prevention</i> Highest level of early detection survey efforts. Should conduct delineation surveys and assign to appropriate Tier if detected.	TIER 2 <i>Eradiation</i> Eradication / Full containment may be feasible	TIER 3 <i>Containment</i> Strategic management to contain infestations and slow spread in PRISMs	TIER 4 <i>Local Control</i> Established / Widespread in PRISM; only strategic, localized management.
	Medium	Evaluate <i>Further evaluate impacts and PRISM resources to see if the species should be assigned to one of the other lists.</i>			
	Unknown	X	TIER 5 <i>Monitor</i> Species that need more research, mapping, and monitoring to understand their invasiveness.		

New York State Invasive Species Tiers Table

www.nyimapinvasives.org/data-and-maps

Geography Statewide AIPP CRP CRISP Finger Lakes Lower Hudson LIISMA SLELO WNY Select All Geographies

Taxa Type **TP** Terrestrial Plant **TA** Terrestrial Animal **AA** Aquatic Animal **AP** Aquatic Plant **M** Microorganism Select All Taxa Types

Tier Value ? 1 2 3 4 5 Untiered Buffer (Blank) Select All Tier Values

Show entries

Search Table:

Species Information			Invasiveness Ranks		State Tier	PRISM Tier					
Common Name	Scientific Name	Type	Ecological	Socio-Economic	NYS	CRISP	Finger Lakes	Lower Hudson	LIISMA	SLELO	WNY
Amur maple	<i>Acer ginnala</i>	TP	Moderate	Insignificant Positive	Untiered	Untiered	4	5	5	Buffer	Untiered
Japanese maple	<i>Acer palmatum</i>	TP	Moderate	Moderate Positive	Untiered	Untiered	Untiered	5	5	Untiered	Untiered
Norway maple	<i>Acer platanoides</i>	TP	Very High	Insignificant Positive	4	4	4	4	4	4	4
Sycamore maple	<i>Acer pseudoplatanus</i>	TP	High	Not assessed	4	1a	2	3	4	1	5
Japanese chaff flower	<i>Achyranthes japonica</i>	TP	High	Not assessed	1b						
Hardy kiwi	<i>Actinidia arguta</i>	TP	High	Insignificant Positive	2	1a	1a	2	2	1	2
Silver vine	<i>Actinidia polygama</i>	TP	Unknown	Low Positive	Untiered	Buffer	Buffer	2	1a		

Aquatic Invasive Species Pond and Lake Vulnerability Prioritization Tool

Aquatic Invasive Species Pond and Lake Vulnerability Prioritization for New York



- Region
- Risk of Introduction
- Risk of Establishment
- Potential Impact of Invasion

8683

NY Lakes



178

Lakes at Risk of Introduction



164

Lakes Suitable for Establishment



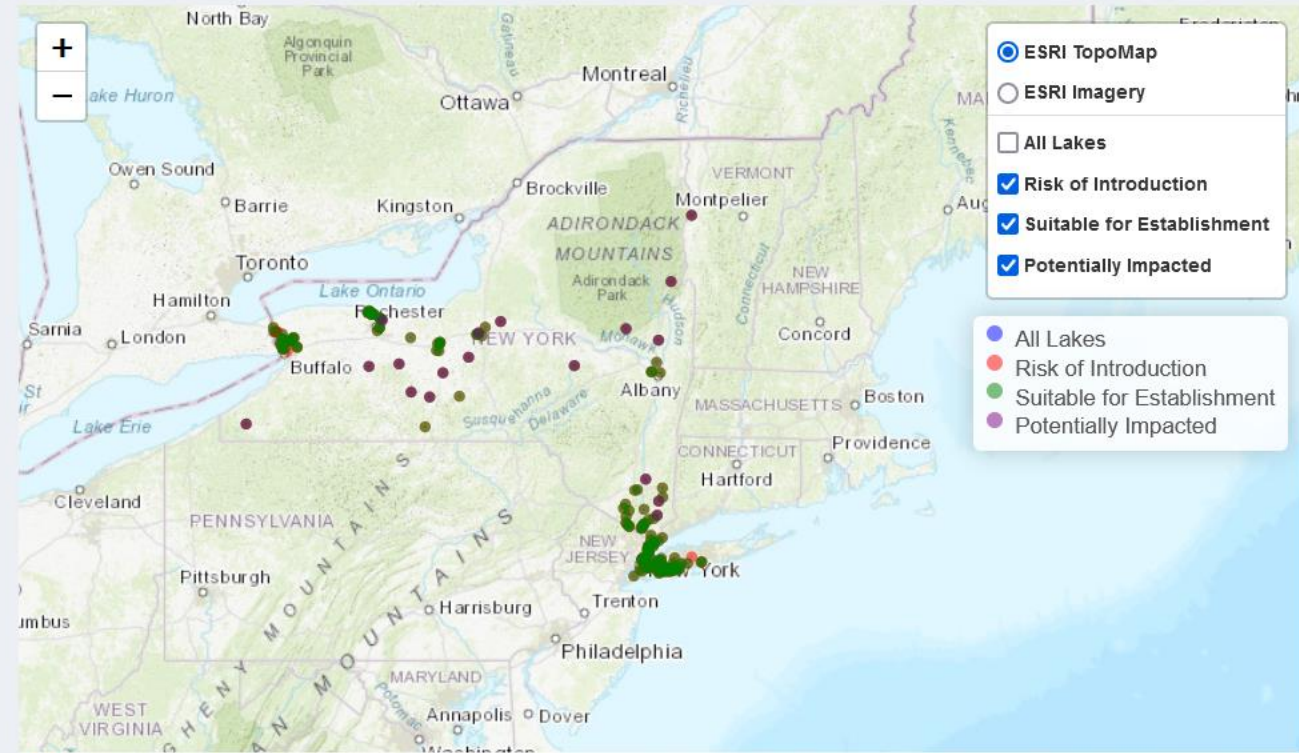
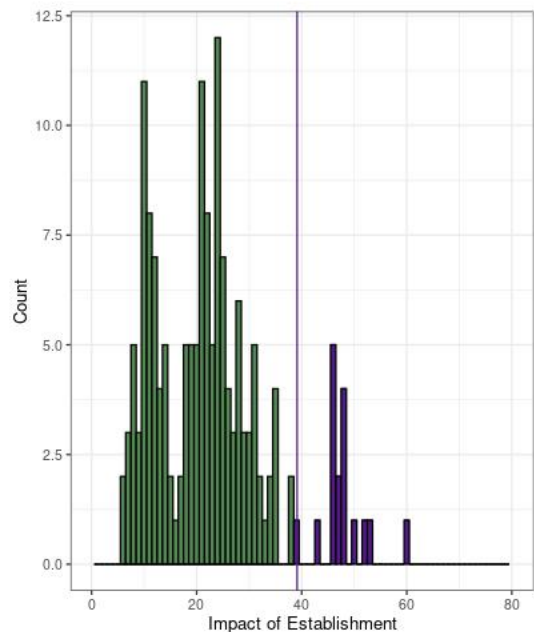
18

Lakes Potentially Impacted



Risk of Introduction Impact of Invasion

Histograms

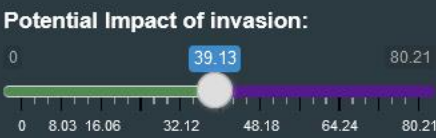


www.nynhp.org/projects/aquatic-invasive-prioritization

Step Three

Select potential impact of invasion. This score is based on the potential impact of a new invasion on the quality of a lake or pond.

Values reflect both ecological condition and recreational value of the lake and include: the presence of rare species and natural communities, native fish richness, water quality, algal blooms, existing degree of anthropogenic stressors, and extent of fishing use.



Hide

Generate report

Download Results

Thank you!

www.nyimapinvasives.org
imapinvasives@dec.ny.gov

Funding:

NYS Environmental Protection Fund through
NYS Department of Environmental Conservation

