



Aggregating and Sharing Invasive Species Data in New York



New York
Natural Heritage
Program

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Impacts of invasive species on biodiversity

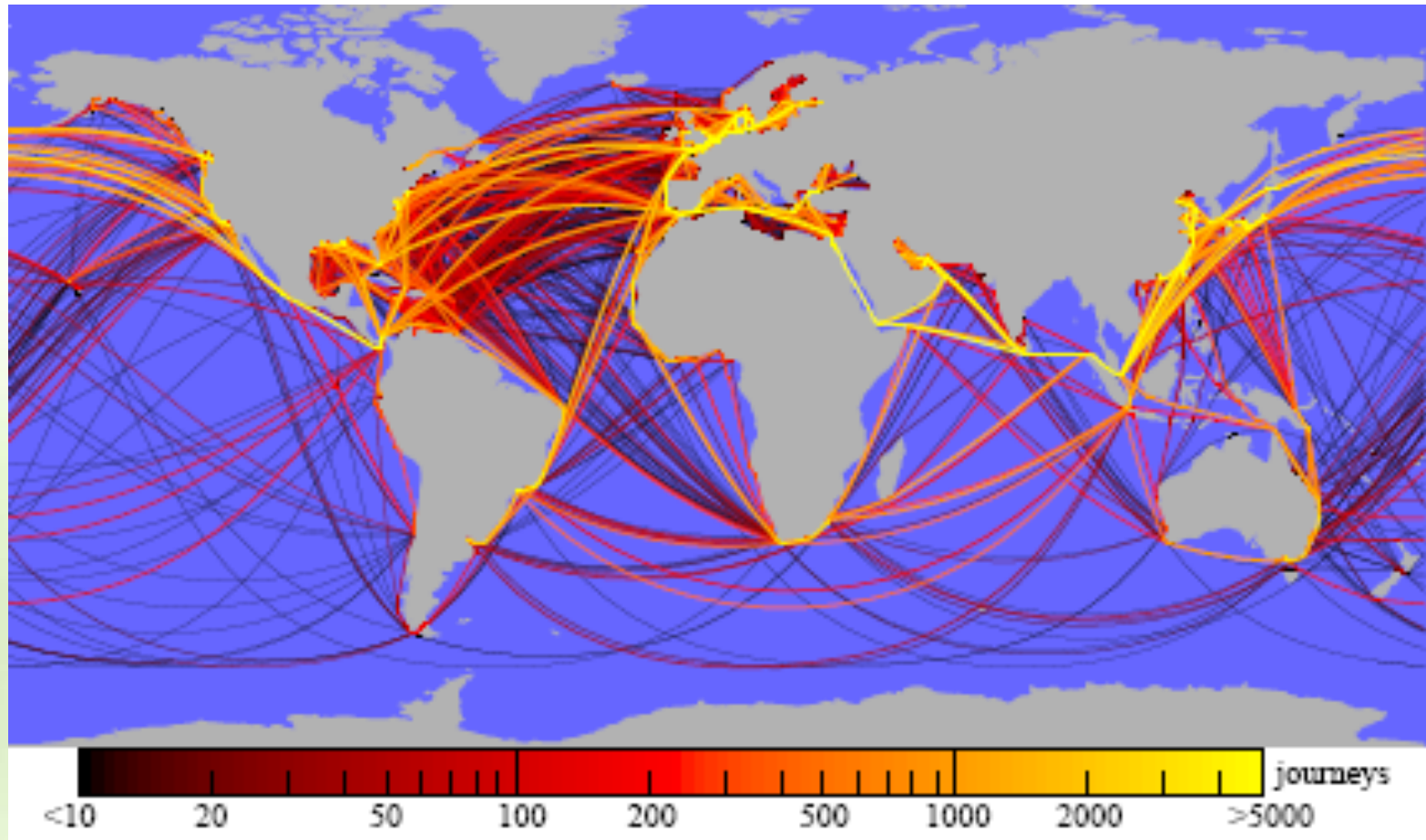
- Second largest threat to global biodiversity (after habitat loss) ¹
- Can reduce native species populations to isolated refugia, creating long-term extinction debt ²



1. Wilcove, et al. 1998. Quantifying Threats to Imperiled Species in the United States. Bioscience.

2. Gilbert and Levine, 2013. Plant invasions and extinction debts. PNAS.

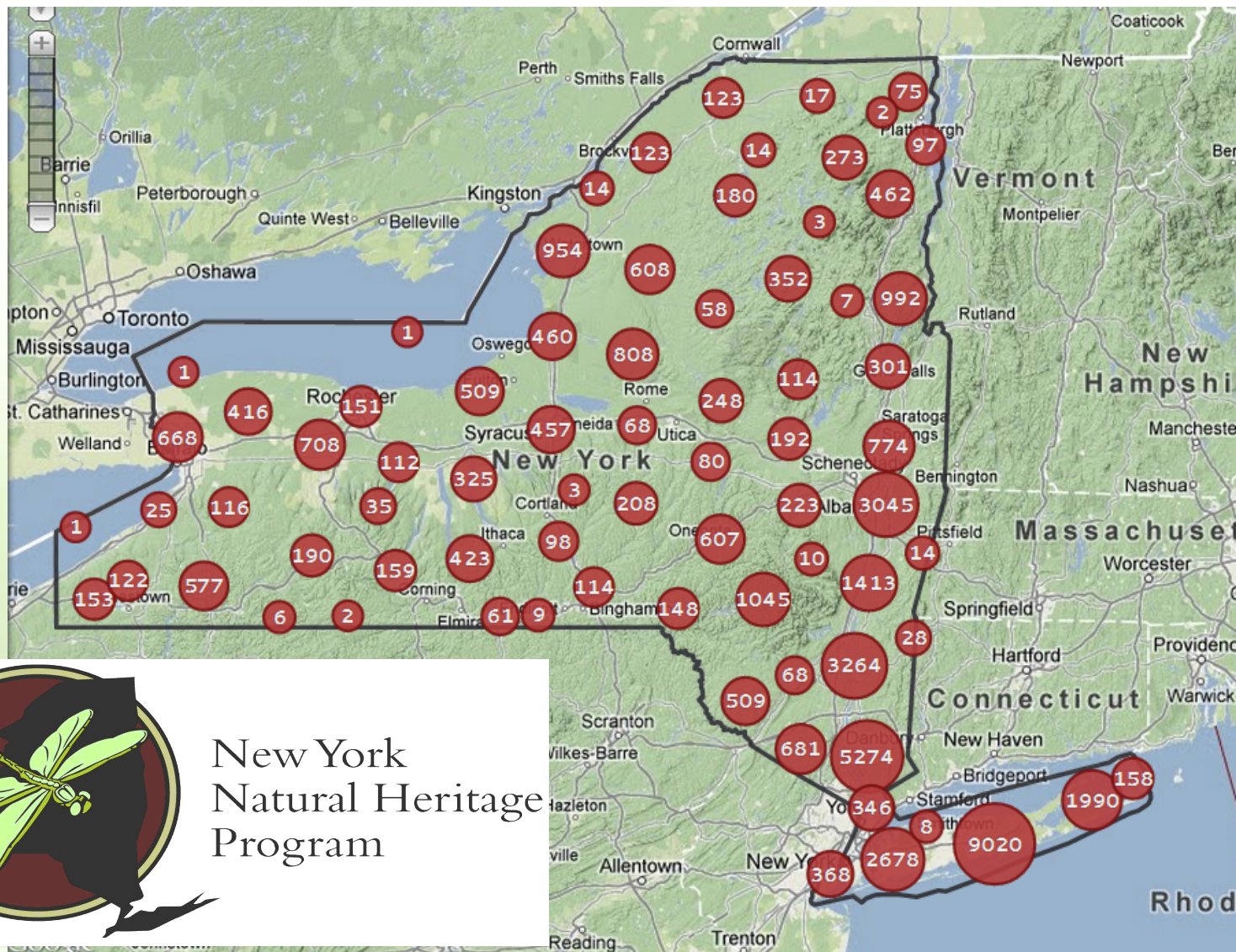
Ample opportunity for species movement



Global shipping routes in 2007 (Kaluza et al 2010)



New York State Invasive Species Database



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New York State Invasive Species Database

- Aggregation center for all-taxa data
- Communication network for Early Detection
- Online GIS-based platform
- Organization charged with managing and verifying data
- Available for professionals and citizen scientists



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Benefits to a **Statewide** Invasive Species Database

- **Early detection**
- Strategic management decisions
- Inform policy
- Reduce political/geographical challenges
- Patterns – pathways of invasion
- Changes in invasiveness over time



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iMapInvasives

Sharing information for strategic management

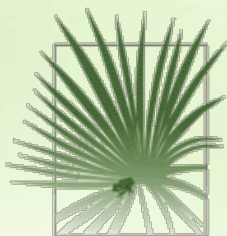
A collaborative GIS-based,
online tool for invasive
species data management



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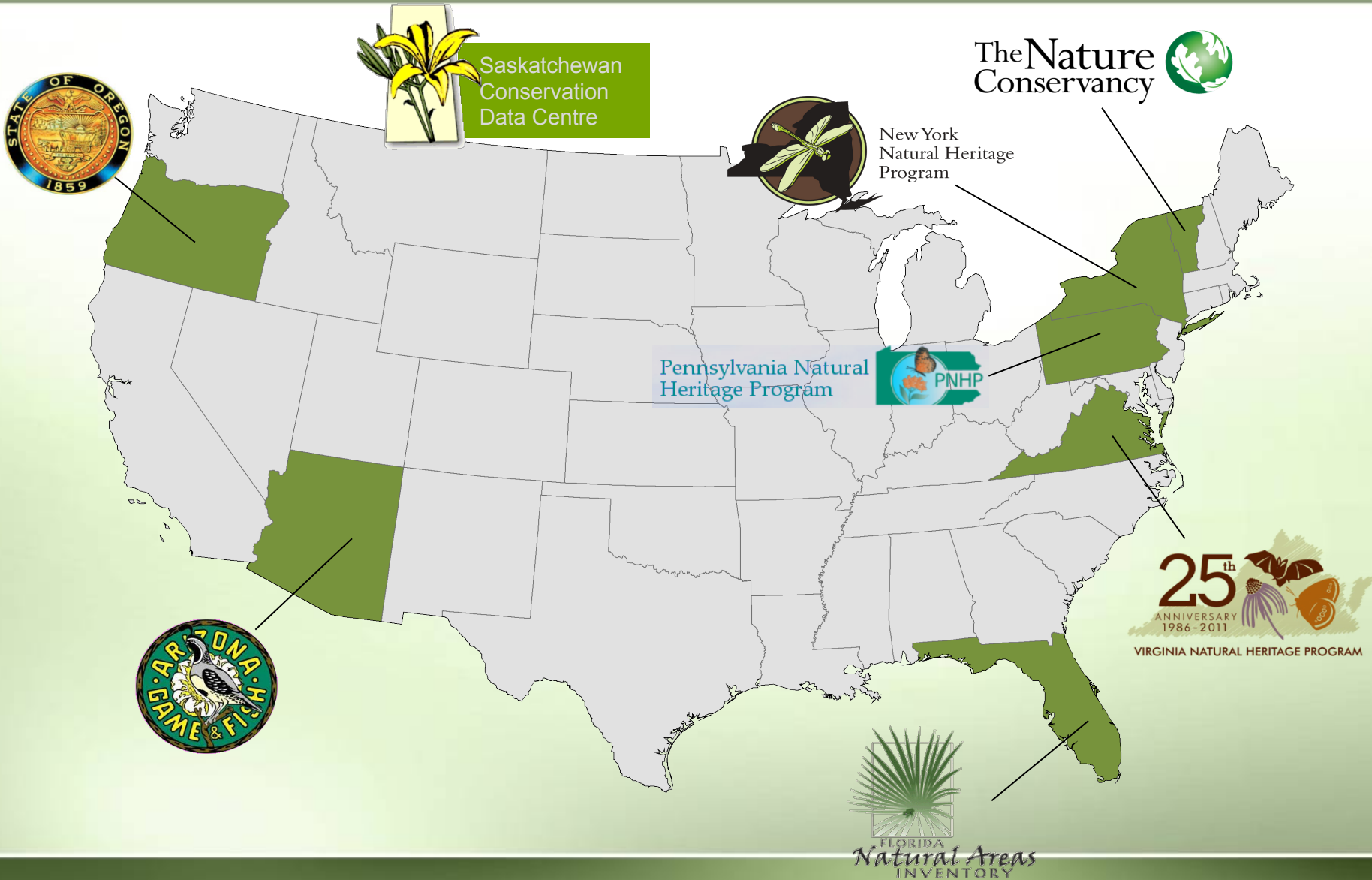
The Nature
Conservancy 
Protecting nature. Preserving life.™



FLORIDA
Natural Areas
INVENTORY



Participating States/ Province



Online data entry for observations



Step 3 What (Species)

What Species Was Observed?

Species Type

☐ Animal ☒ Insect ☐ Plant

By Common Name

Asian Long-horned Beetle


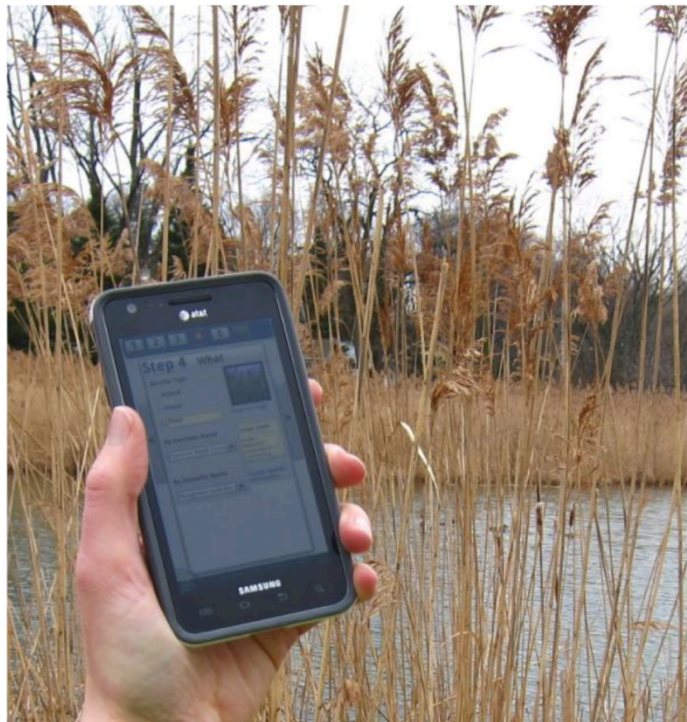


Image Credit
Kenneth R. Law, USDA APHIS PPQ, Bugwood.org

[Further Species Information](#)




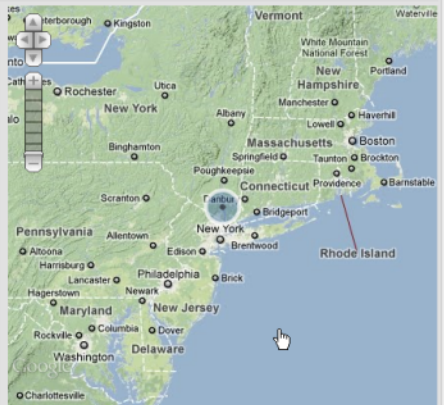
Step 5 Where

Coordinate System Enter Coordinate

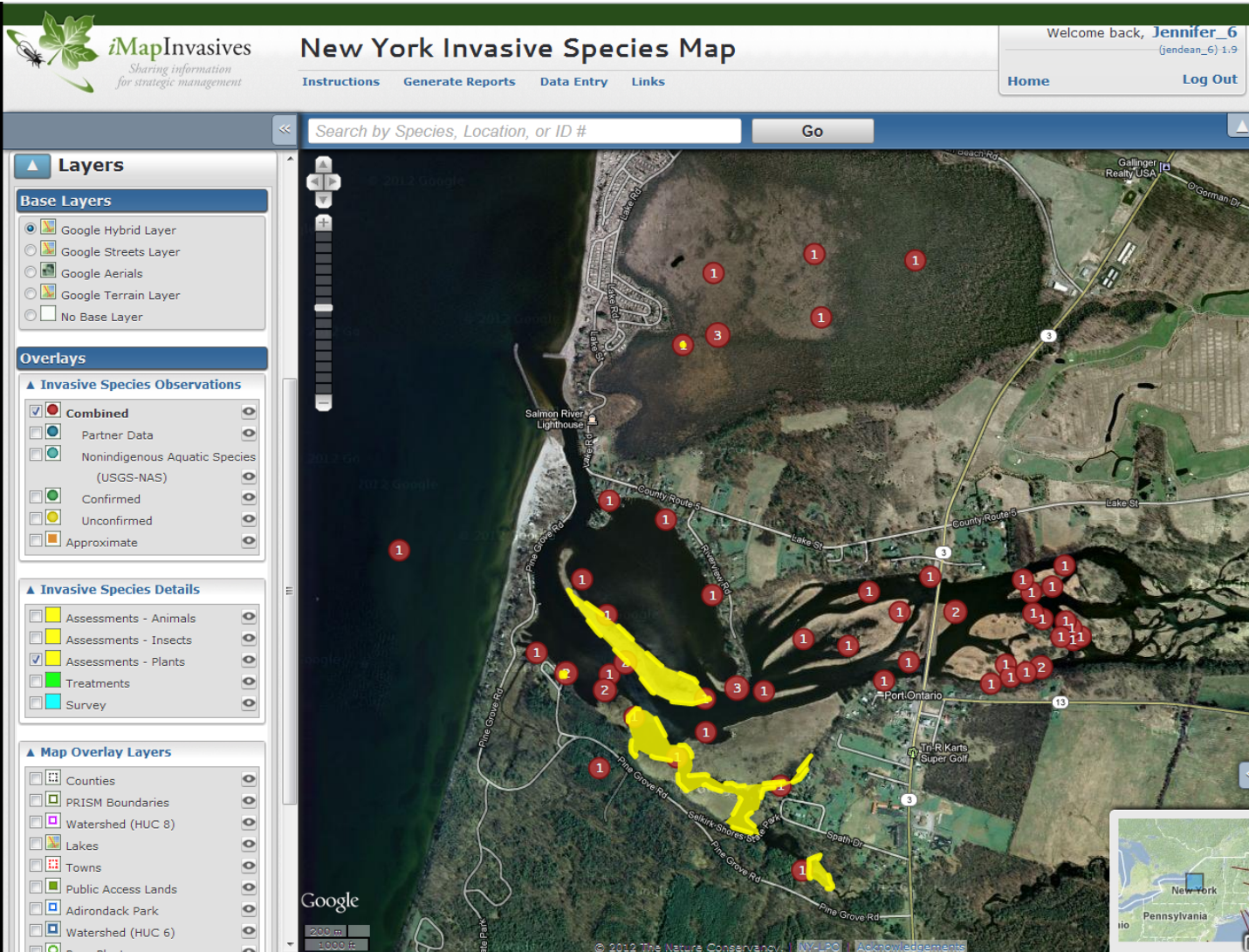
Lat/Lon Decimal Longitude Latitude

Drag Map to Update Location





Managing advanced data



Data types

Observation

Assessment

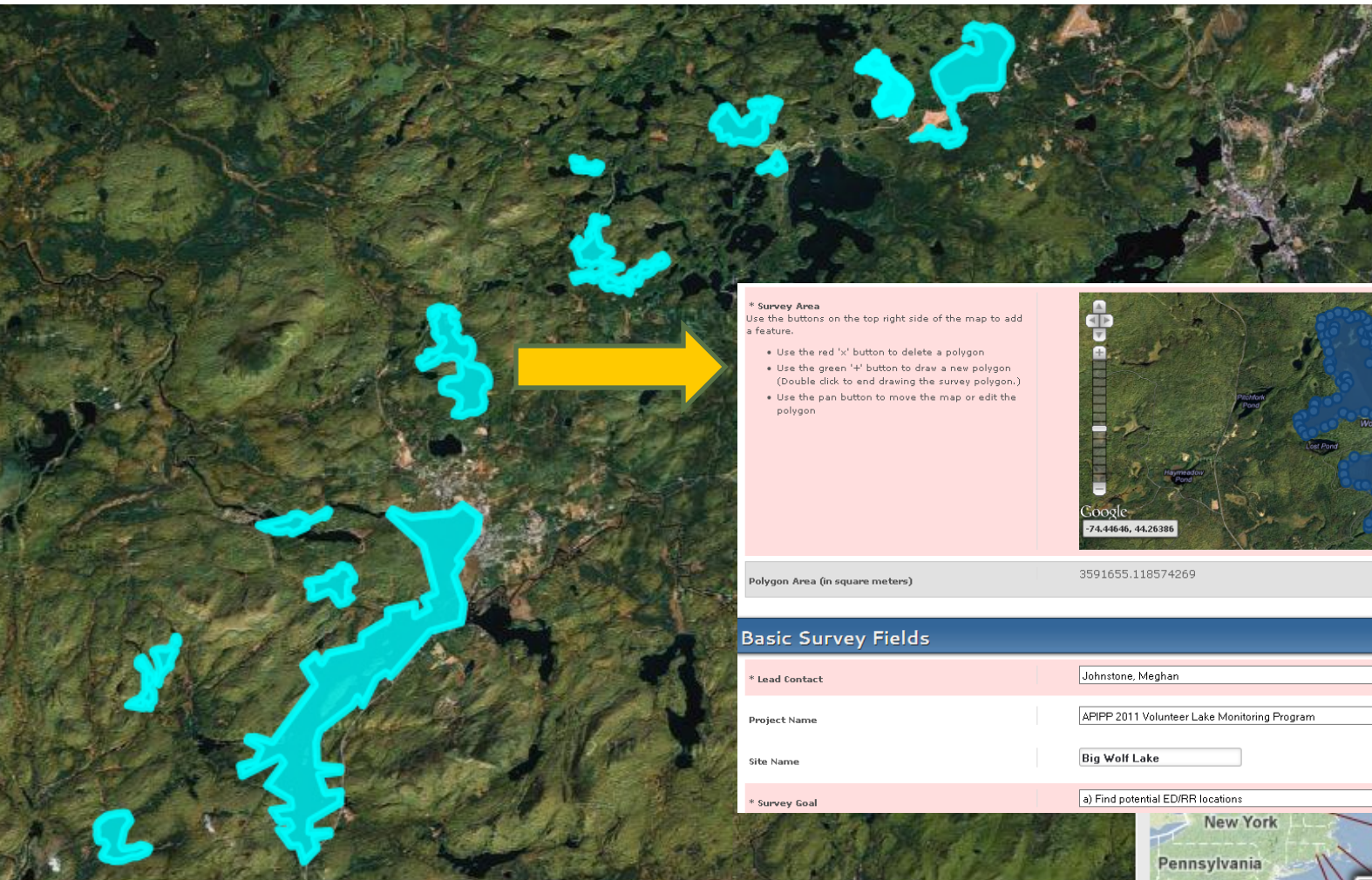
Survey

Treatment

Infestation

Management

Surveys – Presence/Absence Data



The image shows a large aerial map with several cyan-colored polygons overlaid, representing survey areas. A yellow arrow points from the map to a software interface window.

*** Survey Area**
Use the buttons on the top right side of the map to add a feature.

- Use the red 'x' button to delete a polygon
- Use the green 'H' button to draw a new polygon (Double click to end drawing the survey polygon.)
- Use the pan button to move the map or edit the polygon

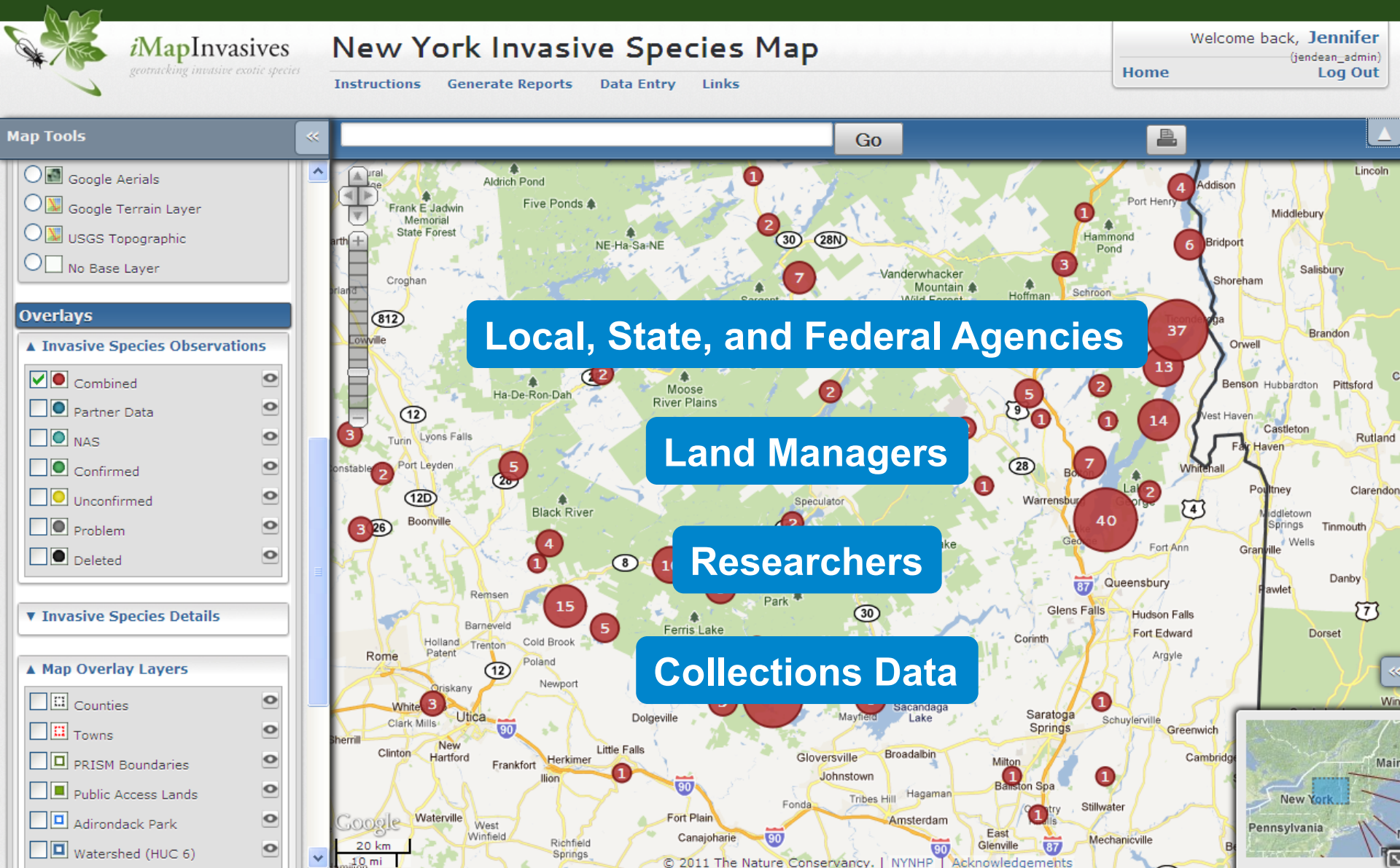
Polygon Area (in square meters) 3591655.118574269

Basic Survey Fields

* Lead Contact	Johnstone, Meghan
Project Name	APIPP 2011 Volunteer Lake Monitoring Program
Site Name	Big Wolf Lake
* Survey Goal	a) Find potential ED/RR locations

New York
Pennsylvania

Sourcing Partner Data for bulk uploads



Benefits of collections data to invasive species efforts

- Timeline of infestation
- Fill data gaps
- Native vs. non-native status
- Global collections – ID species new to continent
- Data on species not currently on the radar

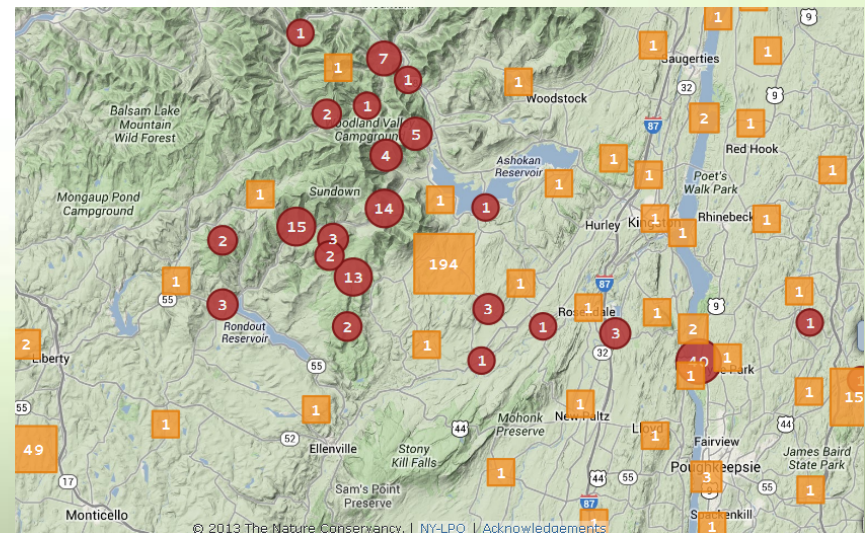
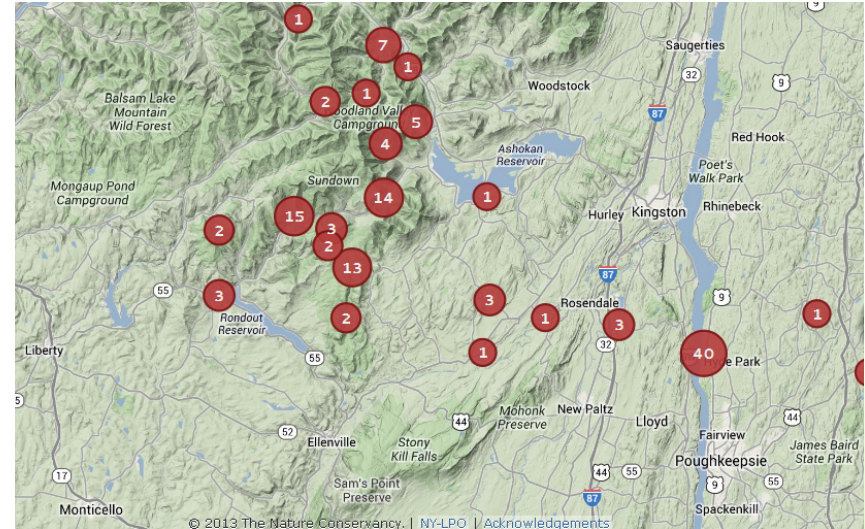


Delving into collections data

- Data requirements
 - Collection info only needed
 - Minimum data requirements – who, what, when, where
 - Also: organization, repository info, comments
 - All taxonomic groups, non-native
 - Ideally, like to get records of first findings for each county/ geographic area
- Started with the “low-hanging fruit”
 - Databased collections
 - Leads from colleagues

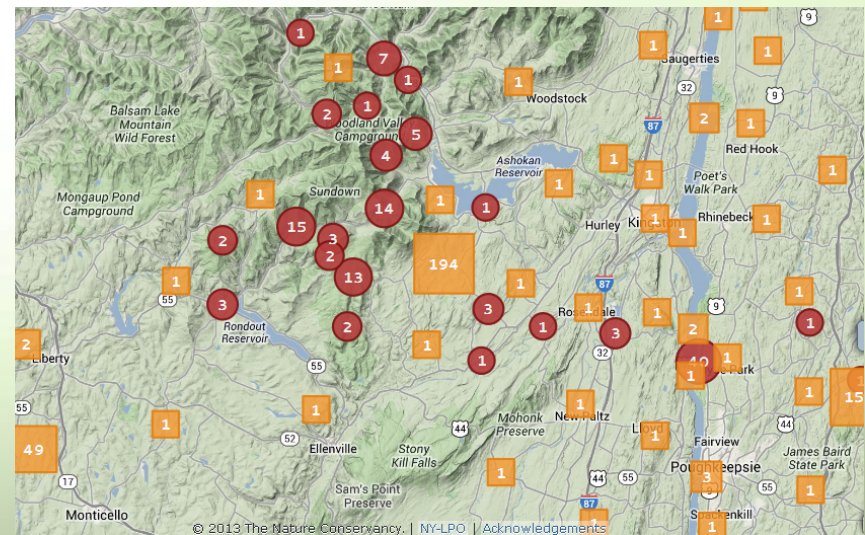
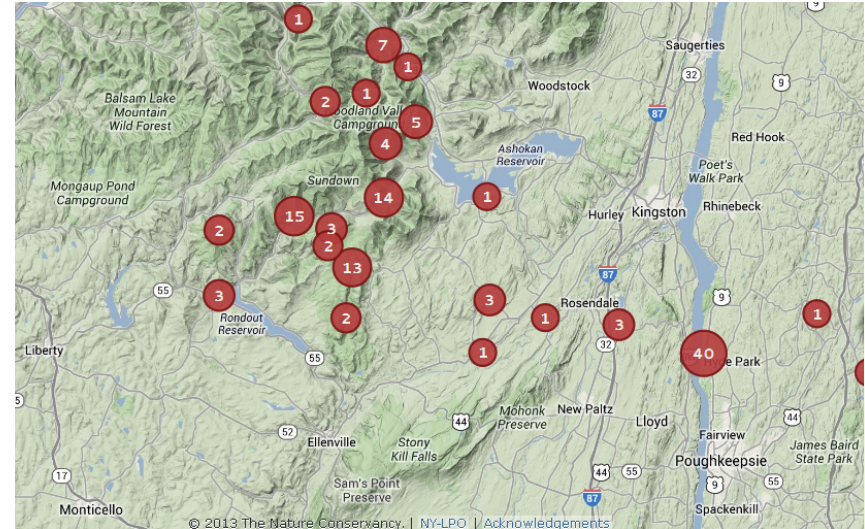
Initial Challenges

- Many records not geo-referenced



Initial Challenges

- Many records not geo-referenced
- Lining up/interpreting fields
- Filtering out the right species
 - Non-native to area
 - synonyms
- Unclear observer names
- Triggering email alerts



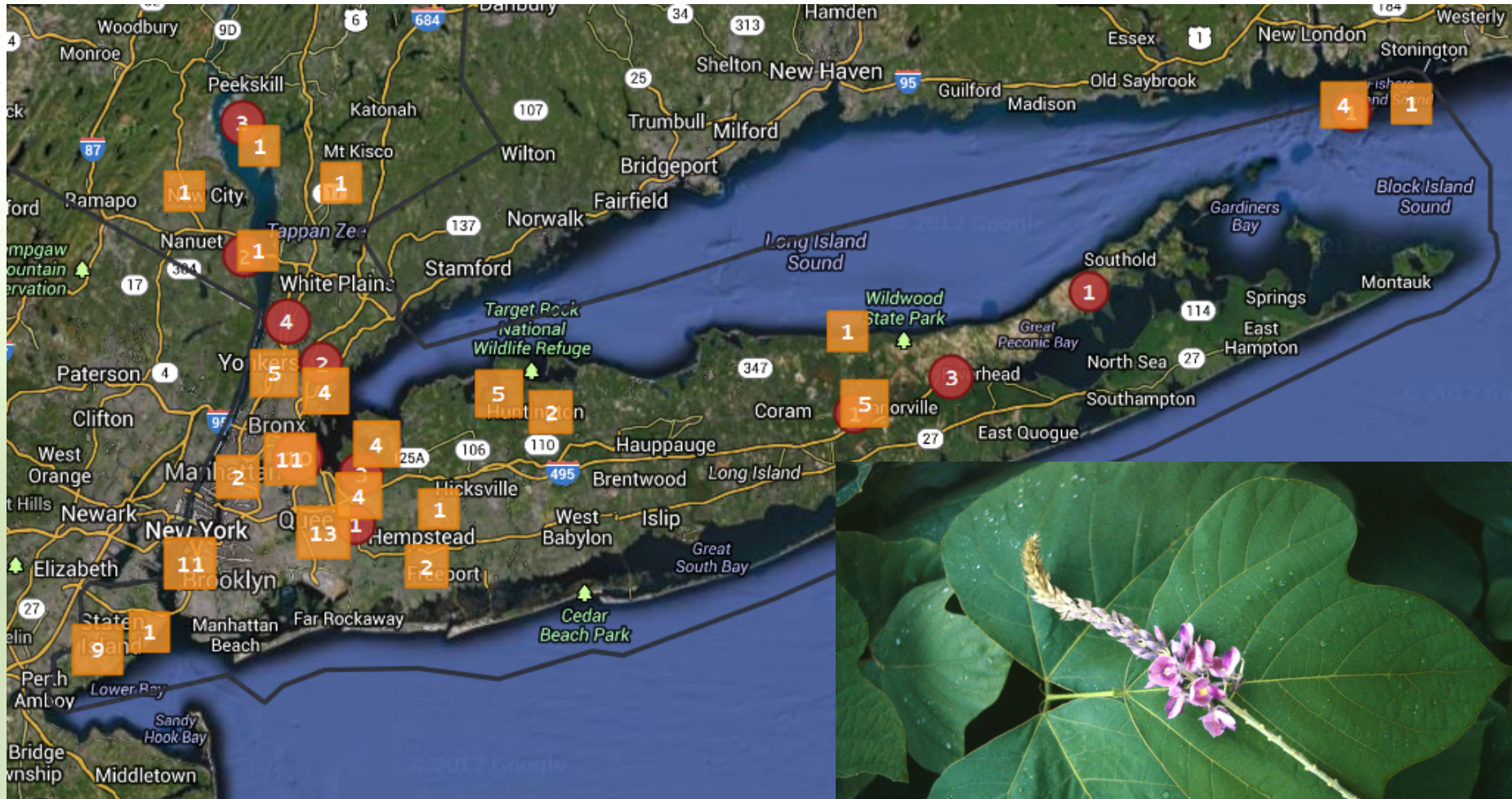
Ongoing challenges

- **Where to look?**
 - Many small, scattered pockets of data
 - Especially for animal records
- Avoiding duplicates
- How to best update datasets

Our data needs from NHCs

- One aggregated place to digitally access data
- Ability to download data and/or serve into our database
- Native/non-native filter
- Easy updating (new records option?)
- Side-by-side comparisons of images
- What else is out there that is not yet digitized?

Kudzu in NYC and Long Island



NY: Aggregation center for all-taxa data

- Online data entry (~7,000 observations)
 - Natural resource managers
 - Citizen scientists / educators
- Existing datasets (~67,000 records)
 - Local, state and federal agencies
 - Researchers
 - **Collections data (~13,000)**

