~ INVASIVE SPECIES ~

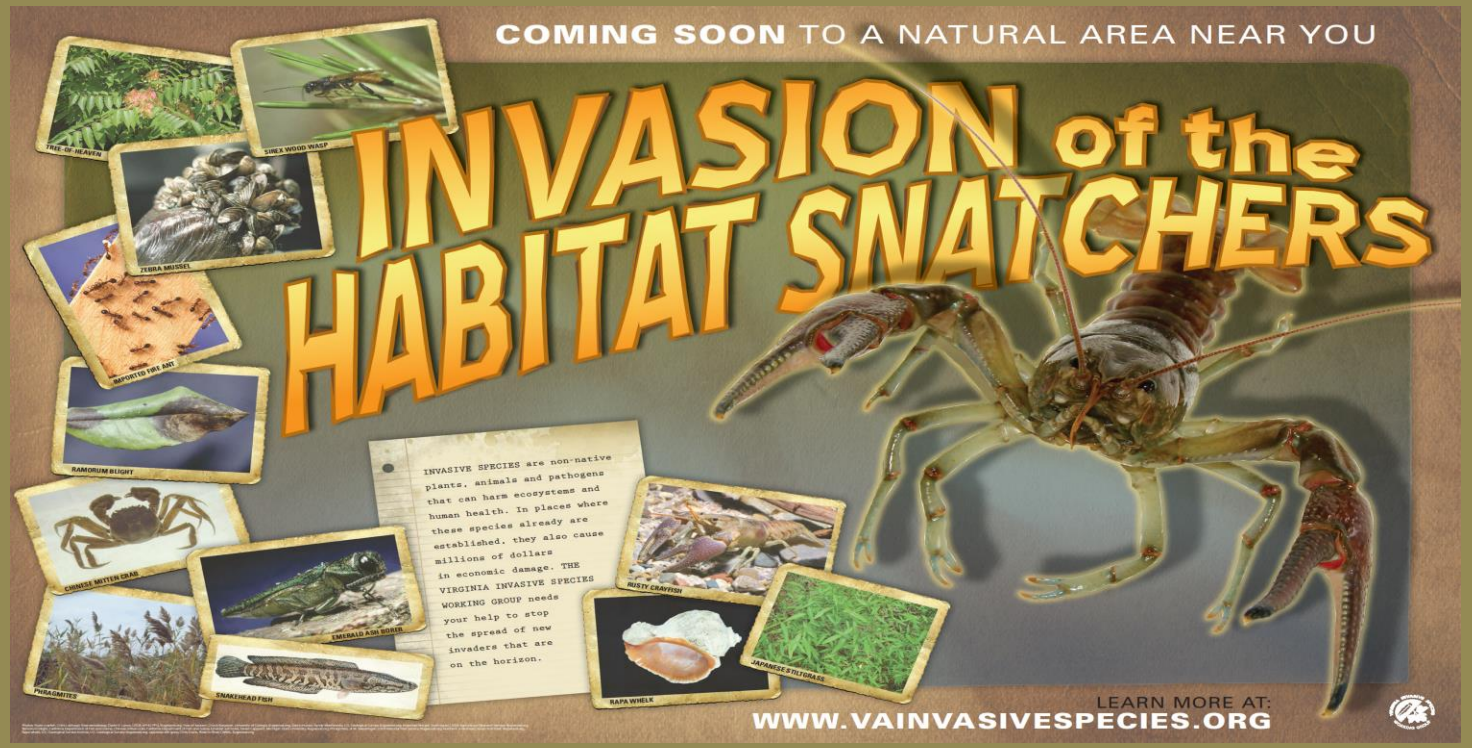
Coming to a Community near you…

AMC Hiking Club ~ Albany Chapter – February 2016

What is an invasive species?

1) non-native (or alien) to the ecosystem under consideration and;

2) whose introduction causes or is likely to cause significant economic or environmental harm or harm to human health.



What's the Difference?

Native Species:

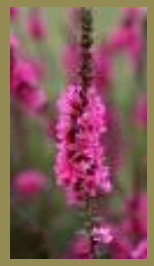
Species indigenous to a region at the time of European settlement

Non-native Species (Exotic, Introduced, Alien):

Accidental or purposeful introduction of a species outside of its historic range

Invasive Species (Noxious):

Species that rapidly reproduces and displaces native species causing harm



Nuisance Species (Weed):

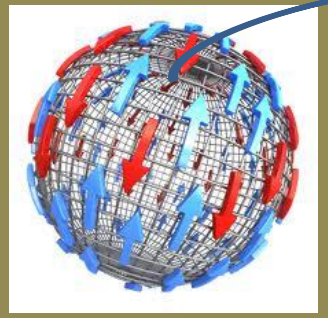
Species that interferes with human activities

How did they get here ~ Pathways

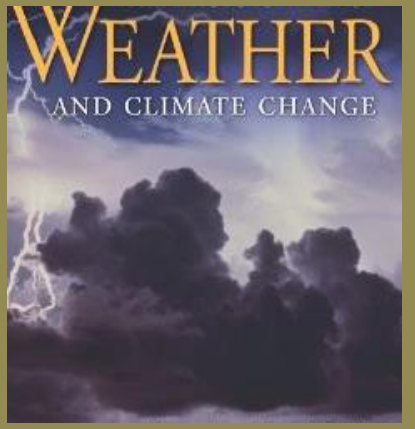
- Species that spread naturally – either passively (water, wind, or severe storms); or actively (flying, crawling, swimming).
- Accidently introduced via hitch-hiking or vectored on/by something (movement of material, people or equipment).
- Species that are deliberately introduced either legally or illegally (biological control, new genetic stock, hunting, pets, ornamental trade).

Potential Pathways

Global Trade

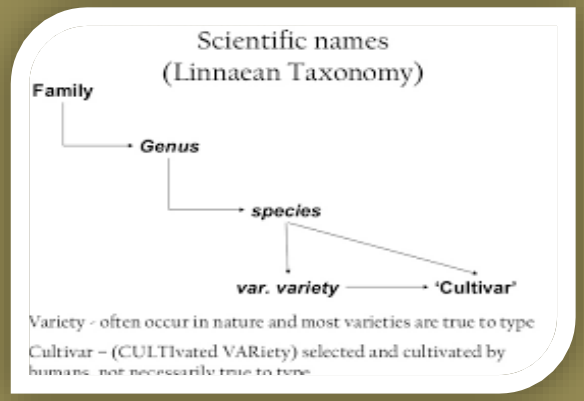


Natural Disasters

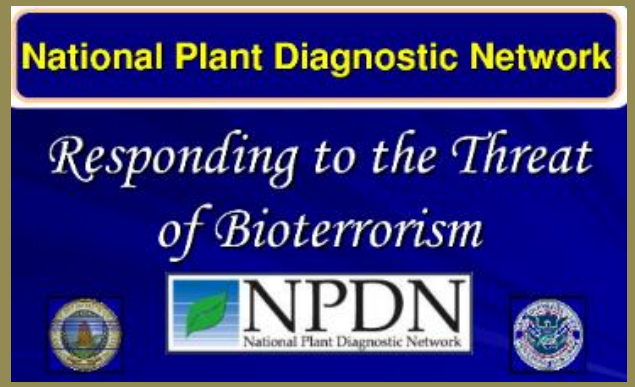


Genetic Engineering

https://www.youtube.com/watch?v=cI7S8JSrWnM



Bioterrorism / Agricultural Security



Internet

Why all the hype about non-natives invasive?

- **They lack predators, parasites, and disease to limit growth**
- ***They produce many small seeds and reproduce early***
- **They can reproduce both by seed and vegetative growth**
- ***They have few special seed germination requirements***
- **They are "generalists" capable of colonizing a wide range of sites**
- ***They monopolize resources such as light and nutrients***
- **They may produce toxins that suppress the growth of other plants**

Terrestrial Invasives Impacts

Ecological

- Habitat Loss / Degradation
- Species Loss (plant & wildlife)
- Loss of Structure and Function

Social

- Impaired recreational opportunities
- Degraded aesthetic values
- Reduced property values (economic as well)

Economic

- Lost productivity (fields & forests)
- Control & Management
- Restoration
- Transportation
    - Safety
    - Drainage
    - Increased maintenance costs

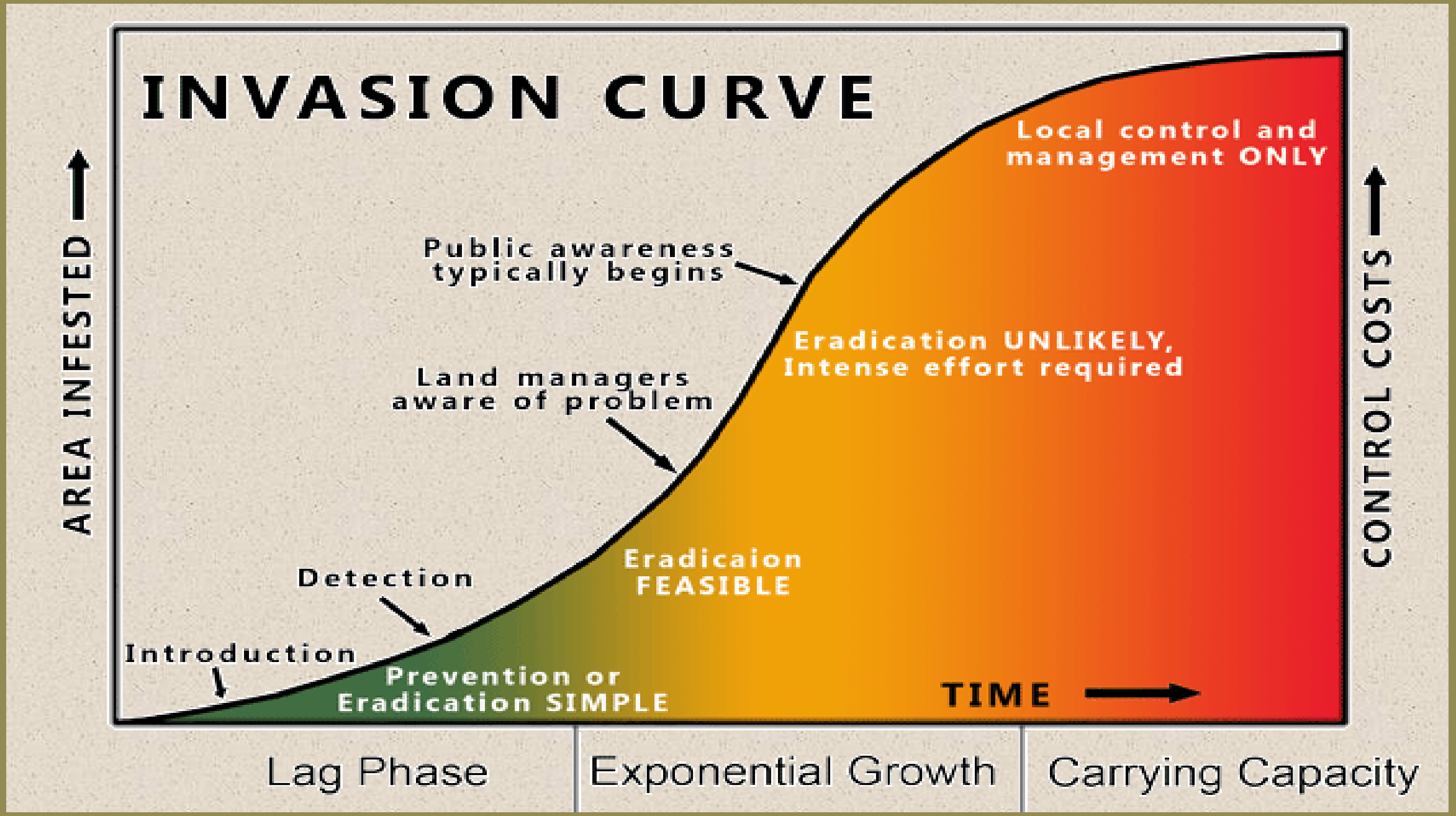
Human Health

- Disease
- Severe dermatitis

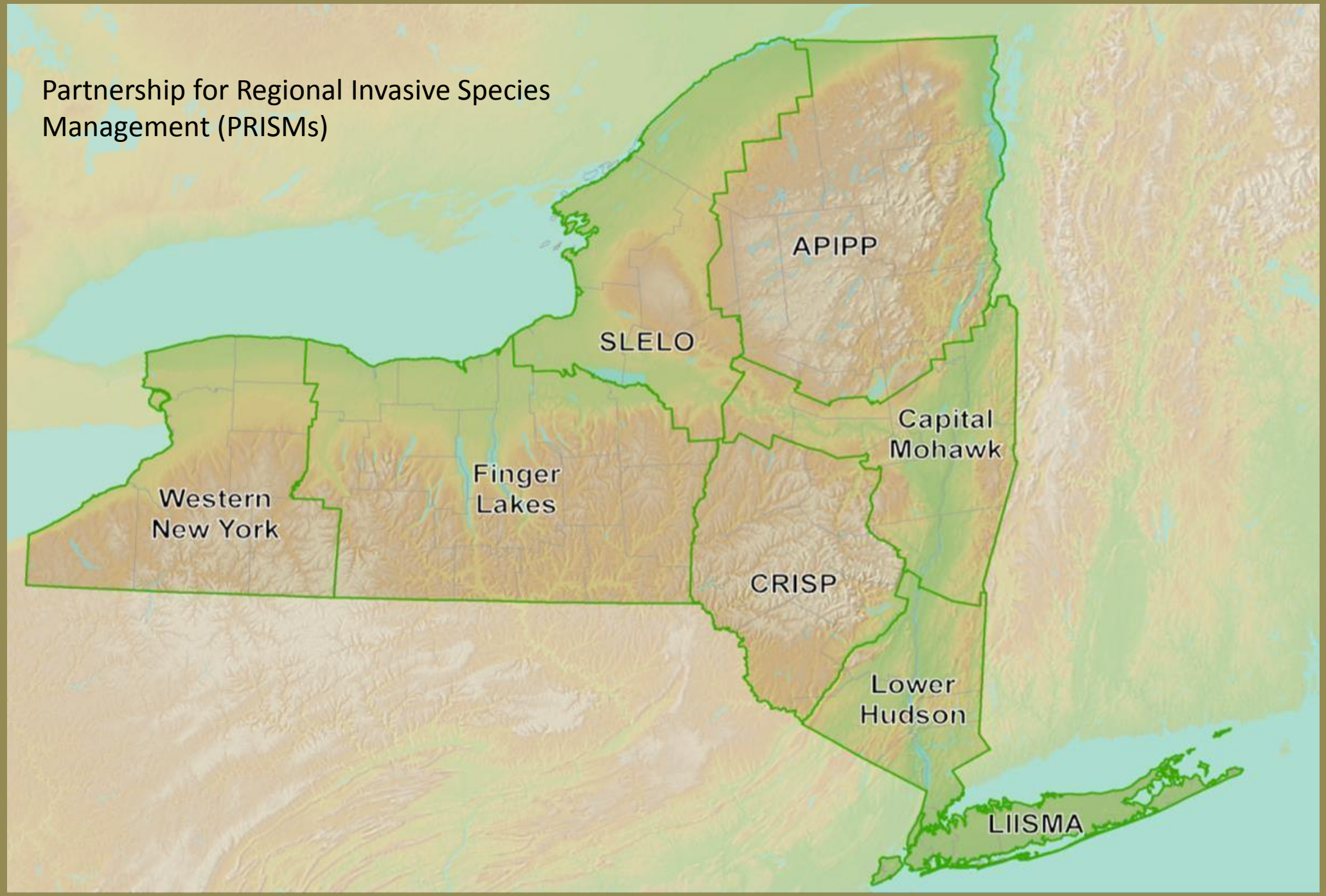
Economic impacts

Invasive species cost the U.S. an estimated $137-146 billion each year

- ***Reduced water quality***
- **Reduced productivity of forestry, fisheries, agricultural lands**
- ***Impaired recreational activities; such as access, boating, birding, fishing, hunting***
- **Reduced property values**
- ***Negative impact on tourism***


INVASION CURVE
AREA INFESTED
CONTROL COSTS
Local control and management ONLY
Public awareness typically begins
Eradication UNLIKELY, Intense effort required
Land managers aware of problem
Eradicaion FEASIBLE
Detection
Introduction
Prevention or Eradication SIMPLE
TIME
Lag Phase
Exponential Growth
Carrying Capacity

Partnership for Regional Invasive Species Management (PRISMs)



Capital / Mohawk PRISM

Mission Statement: *"detect, prevent, and control invasive species through direct action and education to protect biodiversity, the natural environment, economy and quality of life."*

Includes:
- Albany
- Columbia
- Montgomery
- Rensselaer
- Schenectady

Portions of :
- Fulton
- Greene
- Herkimer
- Saratoga
- Warren
- Washington

NYIS.info

NEW YORK INVASIVE SPECIES INFORMATION
The New York Invasive Species Clearinghouse
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Cornell University Cooperative Extension
Sea Grant New York
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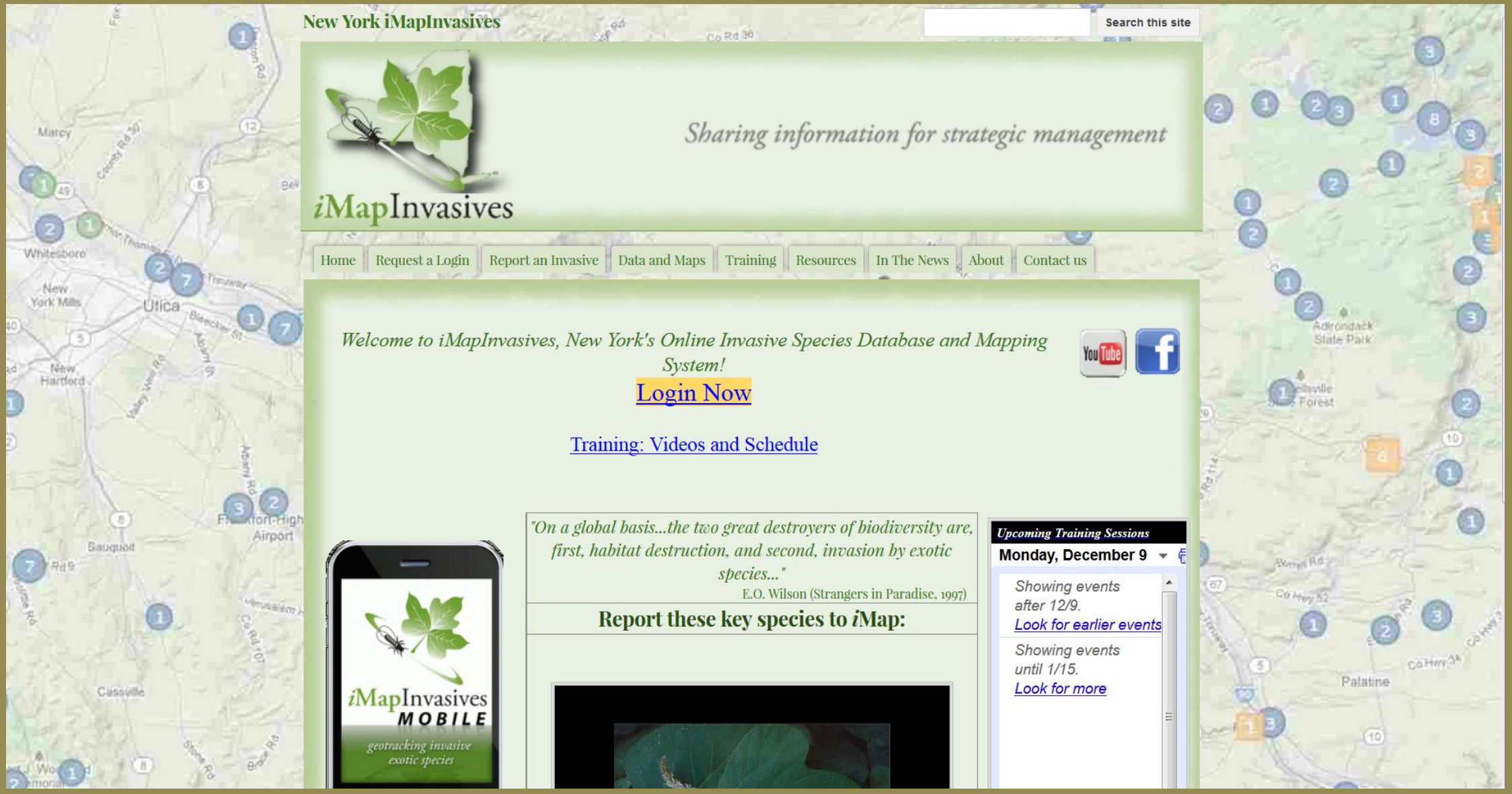
Agricultural Invaders
Aquatic Animals
Aquatic Plants
Insects
Pathogens & Parasites
Terrestrial Animals
Terrestrial Plants
Emerald Ash Borer
Find out more now >>
iMapInvasives
Sharing information for strategic management
Welcome to the
New York Invasive Species Clearinghouse
The New York Invasive Species Information Website - NYIS.INFO and its host, the New York Invasive Species Clearinghouse, [jointly referred to as NYIS.INFO] were founded in October 2008. NYIS.INFO is funded with New York State Environmental Protection Fund resources through a contract with the New York State Department of Environmental Conservation. NYIS.INFO was established in response to Recommendation 5 of the November 2005 report of the New York State Invasive Species Task Force to the Governor and Legislature. The Task Force recommended that the State should integrate invasive species databases and information clearinghouses. This resulted in the creation of the Clearinghouse. The Clearinghouse is authorized and overseen by the New York State Invasive Species Council, which is co-chaired by the New York State Departments of Environmental Conservation and Agriculture and Markets. For more information on who we are, please refer to our About page. More information on New York State's invasive species program can be found on our State and Federal Activities tab under NYS Invasive Species Policies.
ALERT!
Asian Carp
Hypopthalmichthys nobilis
ALERT!
Asian Carp
Hypopthalmichthys nobilis
ALERT!
Asian Carp
Hypopthalmichthys nobilis
SPECIES HIGHLIGHT
Asian carp
"Asian carp" refers to two species of invasive fish: the bighead carp (Hypopthalmichthys nobilis) and the silver carp (H. molitrix), both
Search Invasive Species
Enter Species Name
News
December 4, 2013. NYS DEC seeks

New York iMapInvasives



Invaders in our Area

- Norway Maple *(regulated)*
- Black Locust *(regulated)*

- Common Buckthorn *(prohibited)*
- Shrubby Honeysuckles *(prohibited)*
- Japanese Knotweed *(prohibited)*
- Garlic Mustard *(prohibited)*
- Oriental Bittersweet *(prohibited)*
- Multiflora rose *(prohibited)*
- Winged Burning Bush (Euonymus) *(regulated)*
- Japanese barberry *(prohibited)*
- Giant Hogweed *(prohibited)*

Norway Maple *–regulated*

(Acer platanoides)

- Native to Europe and Western Asia;
- Introduced as an ornamental landscape plant;
- Forms monotypic stands that creates dense shade;
- Leaf similar to sugar maple, but a milky white sap oozes out of leaf veins and stalk

Black Locust *- regulated*

(*Robinia pseudoacacia)*

- Native of eastern North America from Pennsylvania, south to Georgia;
- Has been planted beyond its range, and grows wild throughout the U.S. and Canada;
- The seedlings displace native vegetation;
- Seeds, leaves, and bark are toxic to humans and livestock.
- Alternatives: Oaks, Pines, Cedar.

Common Buckthorn – *prohibited*

(Rhamnus cathartica)

- Native of Eurasia;
- Introduced to North America in 1800's for shelterbelt plantings;
- Grows very dense thickets, and will displace native species;
- Can cause vomiting and diarrhea if eaten.

Shrubby Honeysuckles – *prohibited*

(Lonicera spp.)

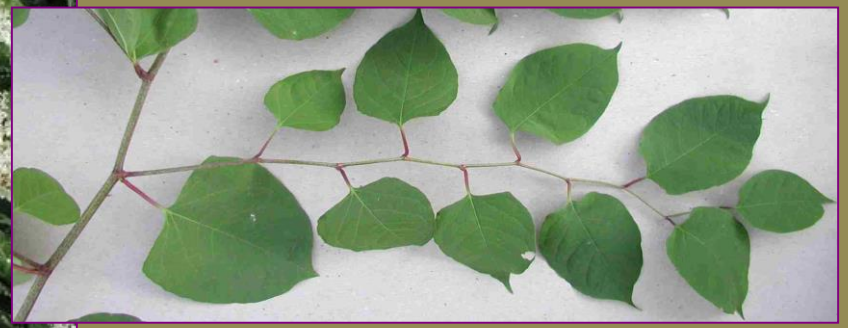
John M. Randall/The Nature Conservancy

- Natives of Eurasia, Japan, China, Turkey and southern Russia.
- Introduced for use as ornamentals, wildlife cover and soil erosion control
- Range from 6-15 feet high
- White, pink or yellow flowers bloom in pairs around late spring
- Leaves: egg shaped, 1-2.5”,opposite
- Branches of non-native varieties are often hollow; most natives are solid
- Orange-red berries ripen midsummer
- One of the first shrubs to leaf out in the spring

Japanese & Bohemian Knotweed *- prohibited*

(Fallopia japonica & F. x behemica)

- Shrub-like perennial that can get to 10 feet in height
- Stems are smooth with bamboo-like nodes and are hollow
- Oval to triangular leaves are alternate
- Cascading white flowers bloom late summer/early fall



Garlic Mustard – *prohibited*

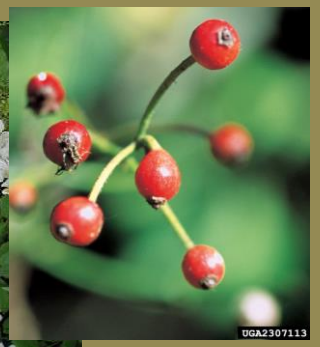
(Alliaria petiolata)

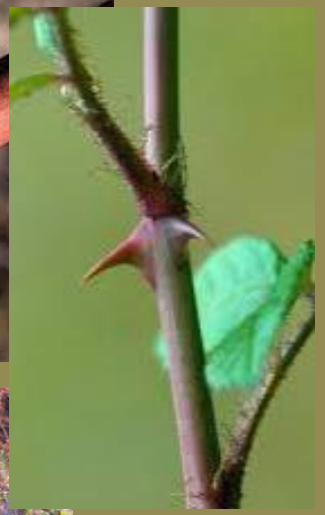
- Biennial, cool season herb
- 1st year plants: rosette of heart-shaped, toothed leaves, no flowers
- 2nd year plants: 2-4 ft. tall stalks emerge from rosette of leaves, clusters of white flowers
- Plants emerge in early spring; by May seed pods form
- When crushed, leaves smell like garlic
- Puts phytotoxins into the soil

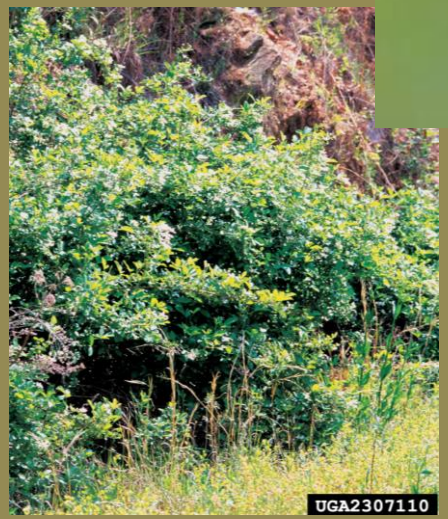
Oriental Bittersweet – *prohibited*

(*Celastrus orbiculatus)*

- Native of Japan, Korea, and China;
- Brought to North America in the mid 1800's, but by 1974 it had escaped cultivation;
- Climbs neighboring plants- shading and constricting;
- This flowers at the leaf axils, rather than the stem tips.
- Truly considered a menace.







Multiflora Rose– *prohibited*

(Rosa Multiflora)

- Native to East Asia (Japan, Korea, East China)
- First introduced to N.A., late 1700's as a garden plant and root stock for ornamental roses.
- Widely planted in Northeast in 1940's – 1960's for erosion control and as a living fence.
- A single, mature plant can produce up to a half million seeds annually.
- Seed remain viable for at least 20 years in the soil.
- Infestations have been known to lower land values.

Winged Burning Bush – *regulated*

(Euonymous alata)

- Native to Northeastern Asia, Japan & Central China;
- Introduced as an ornamental about 1860;
- Threatens a variety of habitats;
- Hundreds of seedlings are often found below the parent plant – ”seed shadow”;
- Look- a-likes: native sweet gum, native strawberry bush.

Japanese Barberry – *prohibited*

(Berberis thunbergii)

- Native to Japan;
- Introduced as an ornamental in 1875;
- Forms dense stands in a variety of habitats, but also is a host for black stem rust in wheat;
- Highly shade-tolerant.
- Grows 2-8 ft. tall

Tick Species

Three primary tick species

Black Legged or Deer Tick *(Ixodes scapularis)*

Lone Star Tick
(Amblyomma mericanum)

American Dog or Wood Tick

(Dermacentor variabilis)

Photo: Department of Entomology, University of Nebraska-Lincoln - Jim Kalisch, UNL Entomology

Ticks can pass the disease on to other animals

Giant Hogweed- *prohibited*

(*Heracleum mantegazzianum*)

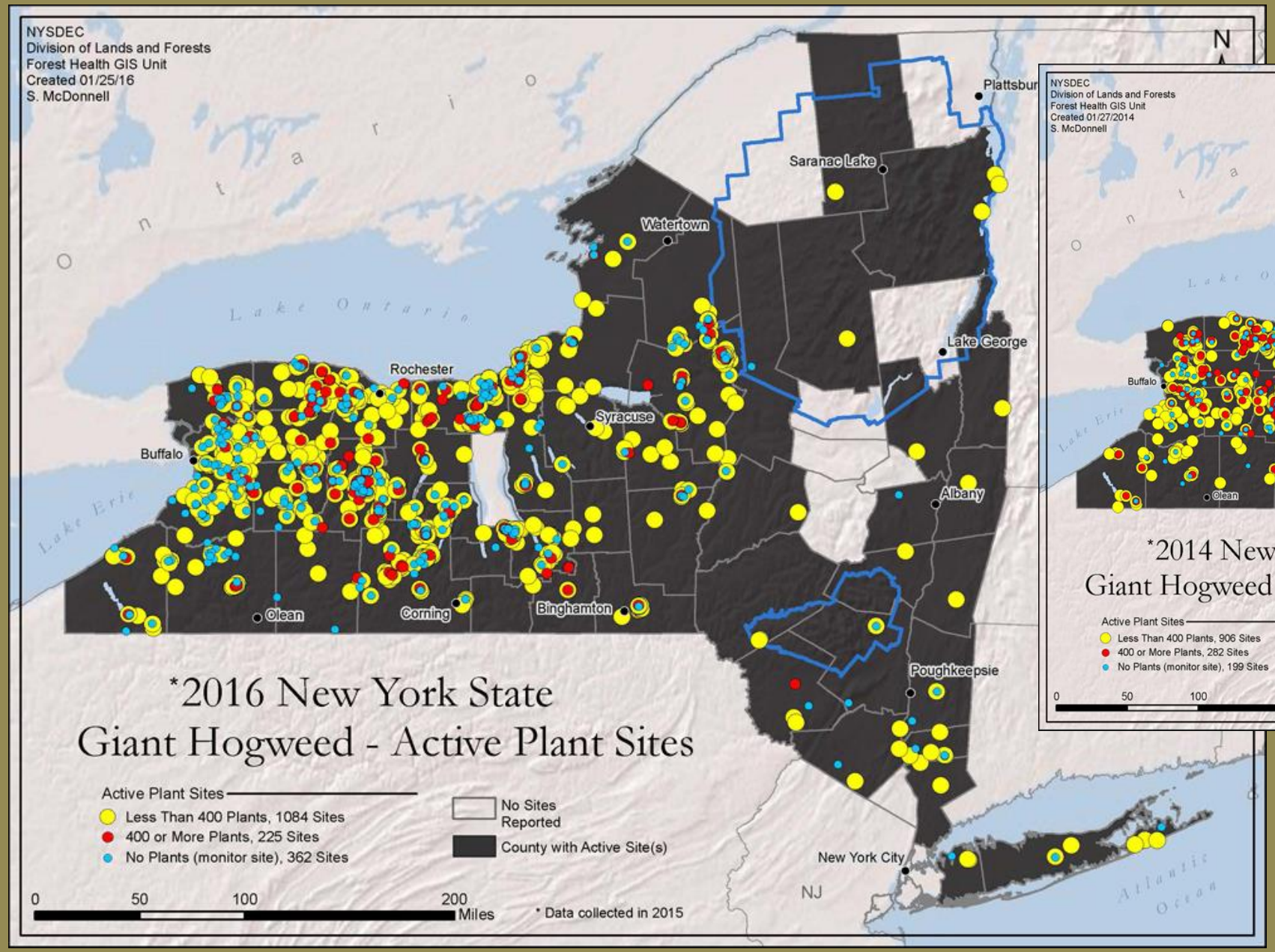
Control:

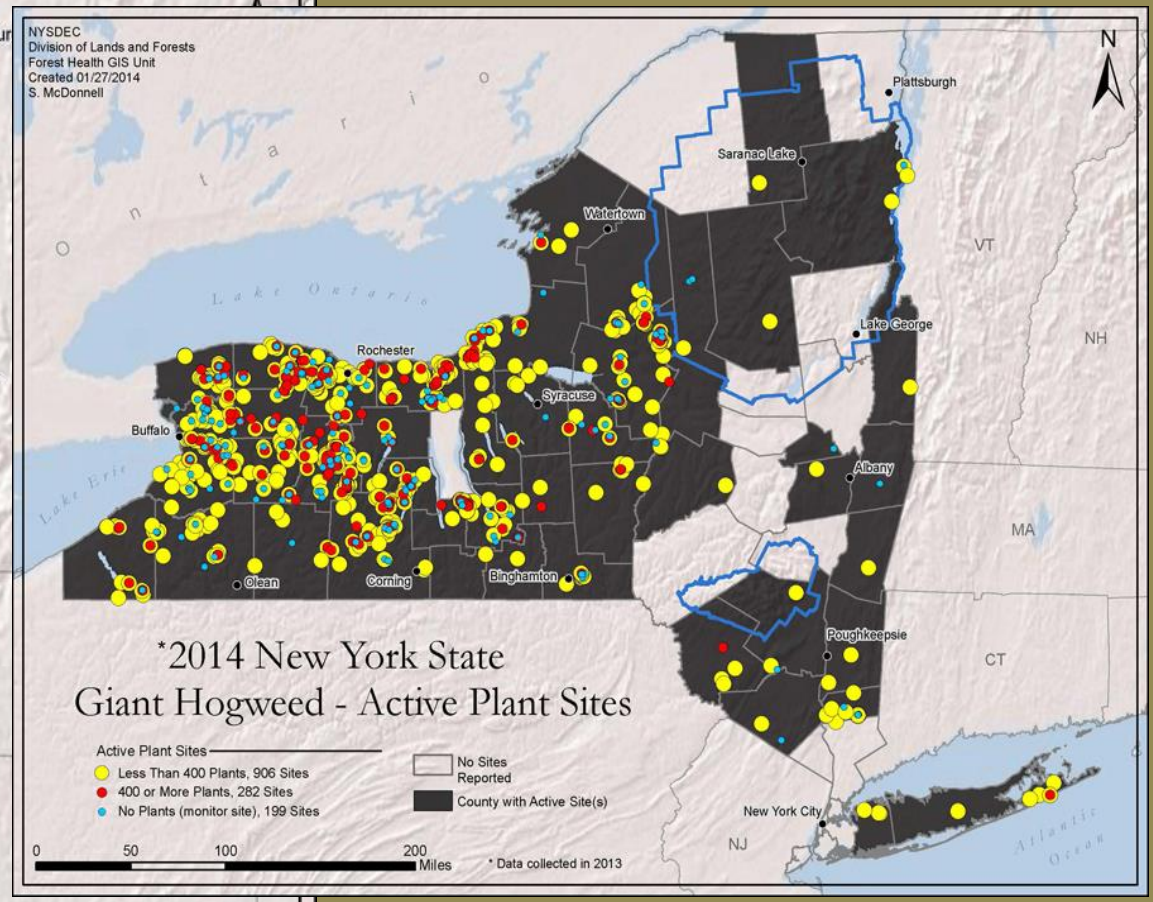
http://www.dec.ny.gov/docs/lands_forests_pdf/ghcontrol.pdf

Giant Hogweed Hotline at (845) 256-3111

Results….

Phytophotodermatitis reaction ~


NYSDEC
Division of Lands and Forests
Forest Health GIS Unit
Created 01/25/16
S. McDonnell
N
Plattsburgh
Saranac Lake
Watertown
Lake George
Rochester
Syracuse
Buffalo
Albany
Olean
Corning
Binghamton
Poughkeepsie
New York City
NJ
Lake Ontario
Lake Erie
Atlantic Ocean
*2016 New York State
Giant Hogweed - Active Plant Sites
Active Plant Sites
Less Than 400 Plants, 1084 Sites
400 or More Plants, 225 Sites
No Plants (monitor site), 362 Sites
No Sites Reported
County with Active Site(s)
0 50 100 200 Miles
* Data collected in 2015


NYSDEC
Division of Lands and Forests
Forest Health GIS Unit
Created 01/27/2014
S. McDonnell
N
Plattsburgh
Saranac Lake
Watertown
Lake George
Rochester
Syracuse
Buffalo
Albany
Olean
Corning
Binghamton
Poughkeepsie
New York City
VT
NH
MA
CT
NJ
Lake Ontario
Lake Erie
Atlantic Ocean
*2014 New York State
Giant Hogweed - Active Plant Sites
Active Plant Sites
Less Than 400 Plants, 906 Sites
400 or More Plants, 282 Sites
No Plants (monitor site), 199 Sites
No Sites Reported
County with Active Site(s)
0 50 100 200 Miles
* Data collected in 2013

Invasive Forest Insects of Concern

- Asian Long Horned Beetle (ALB)
- Emerald Ash Borer (EAB)
- Hemlock Wooley Adelgid (HWA)

STOP THE INVASION
Protect New York From Invasive Species

STOP THE INVASION
Protect New York From Invasive Species

Insect Invaders that you don’t want in your backyard!

- Asian Longhorned Beetle (ALB)
- Emerald Ash Borer (EAB)
- Hemlock Woolley Adelgid (HWA)

Asian Long-horned Beetle (ALB)

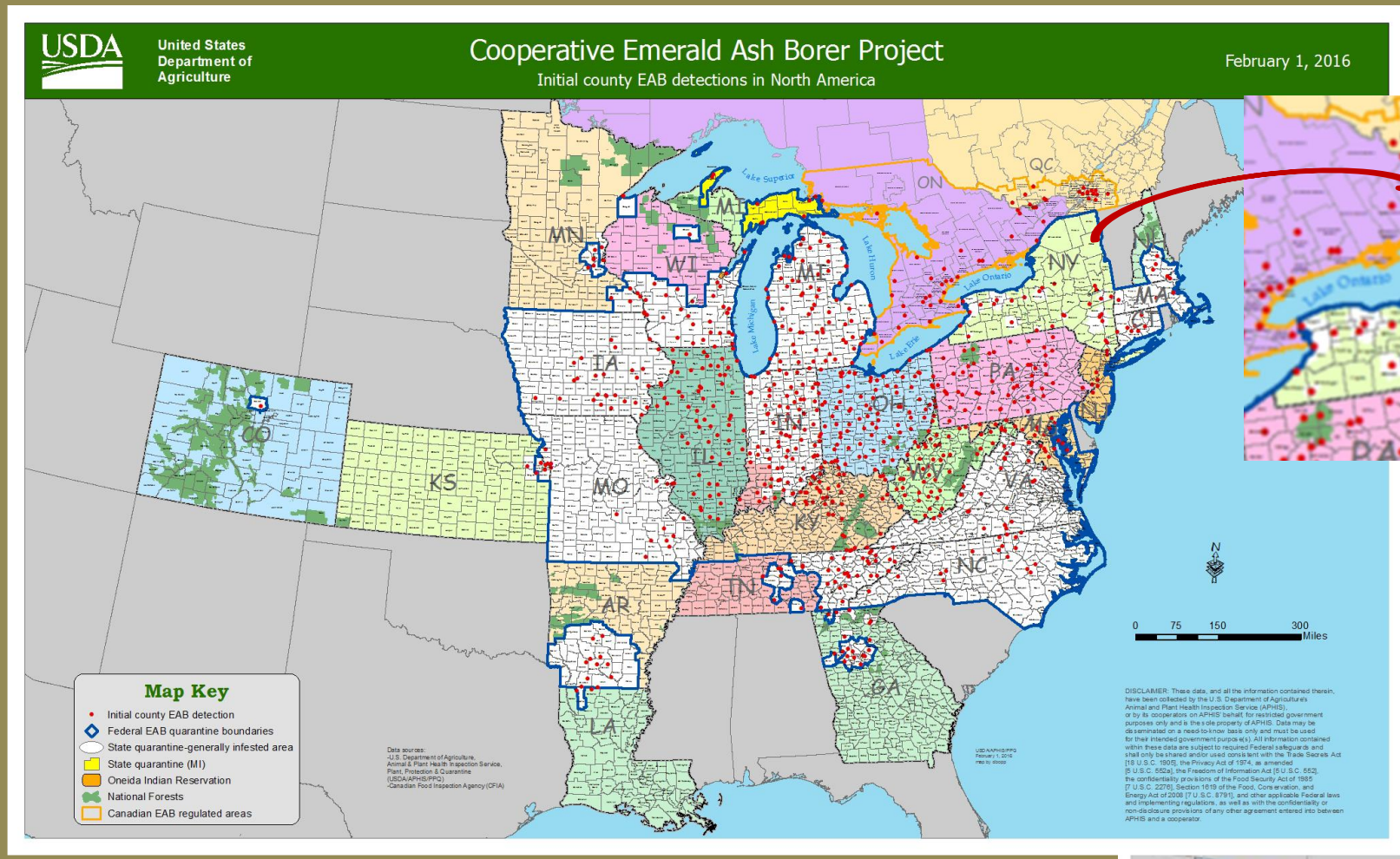
Similar looking native beetle: Whitespotted sawyer

Emerald Ash Borer (EAB)

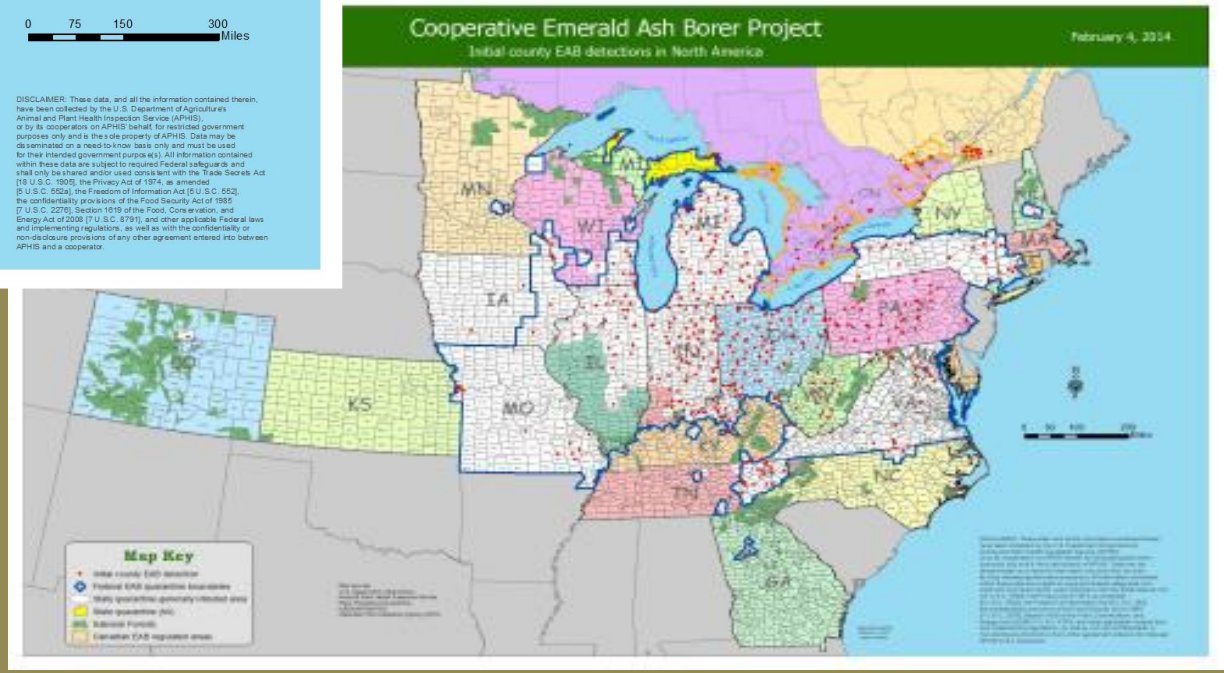
- Larvae feed in phloem and outer sapwood that girdle and kill branches and entire tree
- Kills green, white and black ash as well as horticultural varieties
- Damage first appears in the crown

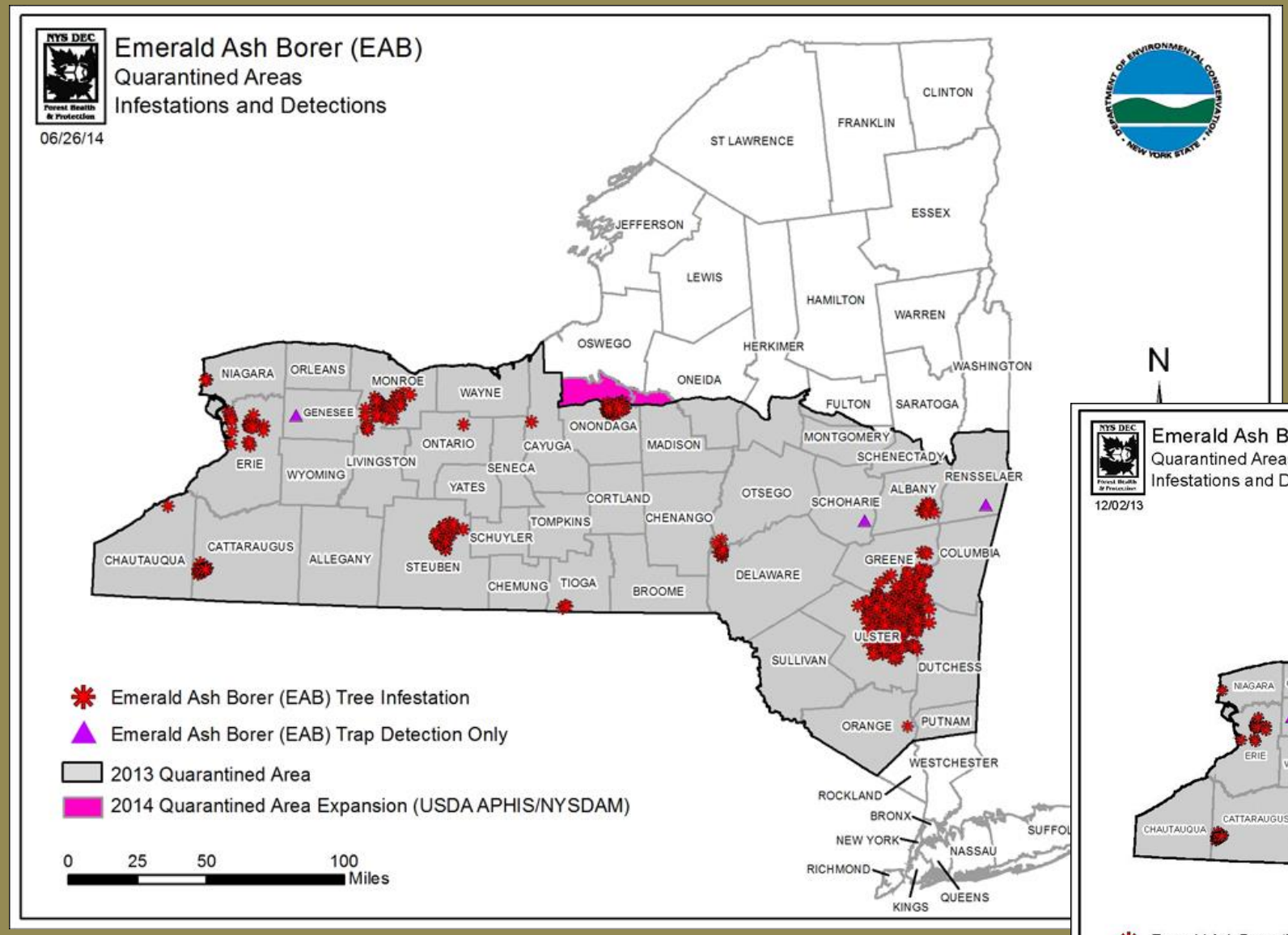
Most damage is done in the fall and early winter before pupation

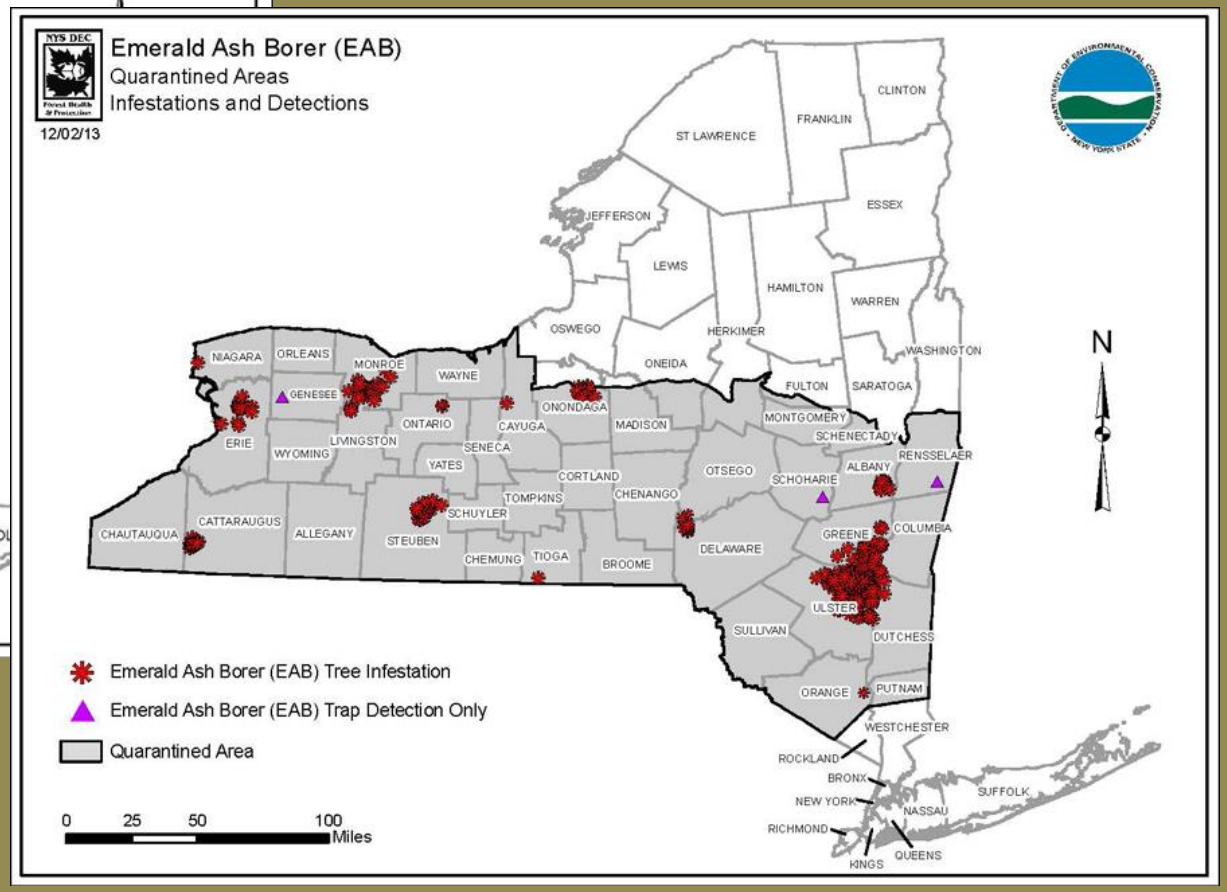
- Adults emerge after 450 degree days.
- Usually in late June, when black locust start to bloom


USDA
United States Department of Agriculture
Cooperative Emerald Ash Borer Project
Initial county EAB detections in North America
February 1, 2016
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
ON
QC
MN
WI
MI
NY
ME
VT
NH
MA
CT
RI
IA
PA
NJ
IN
OH
IL
MD
WV
VA
KY
MO
KS
CO
NC
TN
AR
SC
GA
LA
N
0 75 150 300 Miles
Map Key
Initial county EAB detection
Federal EAB quarantine boundaries
State quarantine-generally infested area
State quarantine (MI)
Oneida Indian Reservation
National Forests
Canadian EAB regulated areas
DISCLAIMER: These data, and all the information contained therein, have been collected by the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS), or by its cooperators on APHIS behalf, for restricted government purposes only and is the sole property of APHIS. Data may be disseminated on a need-to-know basis only and must be used for their intended government purpose(s). All information contained within these data are subject to required Federal safeguards and shall only be shared and/or used consistent with the Trade Secrets Act [18 U.S.C. 1905], the Privacy Act of 1974, as amended [5 U.S.C. 552a], the Freedom of Information Act [5 U.S.C. 552], the confidentiality provisions of the Food Security Act of 1985 [7 U.S.C. 2276], Section 1619 of the Food, Conservation, and Energy Act of 2008 [7 U.S.C. 8791], and other applicable Federal laws and implementing regulations, as well as with the confidentiality or non-disclosure provisions of any other agreement entered into between APHIS and a cooperator.

NY
Lake Ontario
MA
CT
PA


Cooperative Emerald Ash Borer Project
Initial county EAB detections in North America
February 4, 2014
Map Key


Emerald Ash Borer (EAB)
Quarantined Areas
Infestations and Detections
06/26/14
NYS DEC
Forest Health & Protection
N
CLINTON
FRANKLIN
ST LAWRENCE
ESSEX
JEFFERSON
LEWIS
HAMILTON
WARREN
OSWEGO
HERKIMER
WASHINGTON
ONEIDA
FULTON
SARATOGA
NIAGARA
ORLEANS
MONROE
WAYNE
GENESEE
ONONDAGA
MONTGOMERY
SCHENECTADY
ONTARIO
CAYUGA
MADISON
ERIE
LIVINGSTON
WYOMING
SENECA
RENSSELAER
YATES
OTSEGO
ALBANY
CORTLAND
SCHOHARIE
TOMPKINS
CHENANGO
SCHUYLER
CATTARAUGUS
CHAUTAUQUA
ALLEGANY
STEUBEN
GREENE
COLUMBIA
CHEMUNG
TIOGA
DELAWARE
BROOME
ULSTER
SULLIVAN
DUTCHESS
ORANGE
PUTNAM
WESTCHESTER
ROCKLAND
BRONX
NEW YORK
NASSAU
SUFFOLK
RICHMOND
QUEENS
KINGS
Emerald Ash Borer (EAB) Tree Infestation
Emerald Ash Borer (EAB) Trap Detection Only
2013 Quarantined Area
2014 Quarantined Area Expansion (USDA APHIS/NYSDAM)
0 25 50 100
Miles


Emerald Ash Borer (EAB)
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CHENANGO
SCHUYLER
CATTARAUGUS
CHAUTAUQUA
ALLEGANY
STEUBEN
GREENE
COLUMBIA
CHEMUNG
TIOGA
DELAWARE
BROOME
ULSTER
SULLIVAN
DUTCHESS
ORANGE
PUTNAM
WESTCHESTER
ROCKLAND
BRONX
NEW YORK
NASSAU
SUFFOLK
RICHMOND
QUEENS
KINGS
Emerald Ash Borer (EAB) Tree Infestation
Emerald Ash Borer (EAB) Trap Detection Only
Quarantined Area
0 25 50 100
Miles

Hemlock Wooly Adelgid

Hemlock Wooly Adelgid (HWA)

- Most serious pest of Eastern and Canadian Hemlock
- Reported in Eastern US in late 1960's
- Easy to diagnose by the presence of the white, cottony sacks on the needles
- Can kill mature trees in as little as three years but some trees survive ten years or more after infestation

- *Spread by birds, squirrels, other mammals and humans*

What to look for?

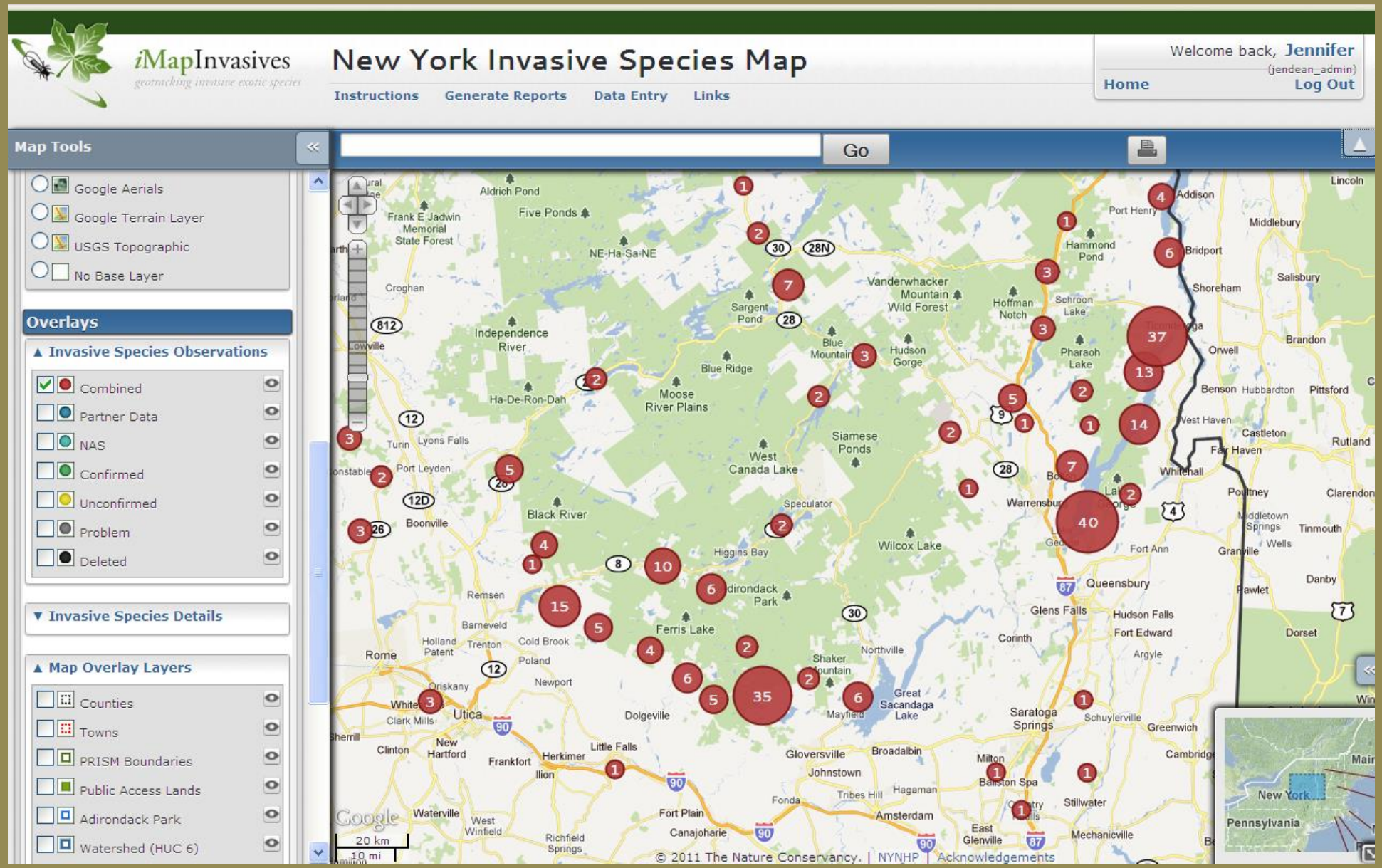
- white, cottony sacks on the needles
- Dying hemlock trees

New York State
Invasive Species Database

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

Funding provided by:
New York State
Environmental Protection Fund

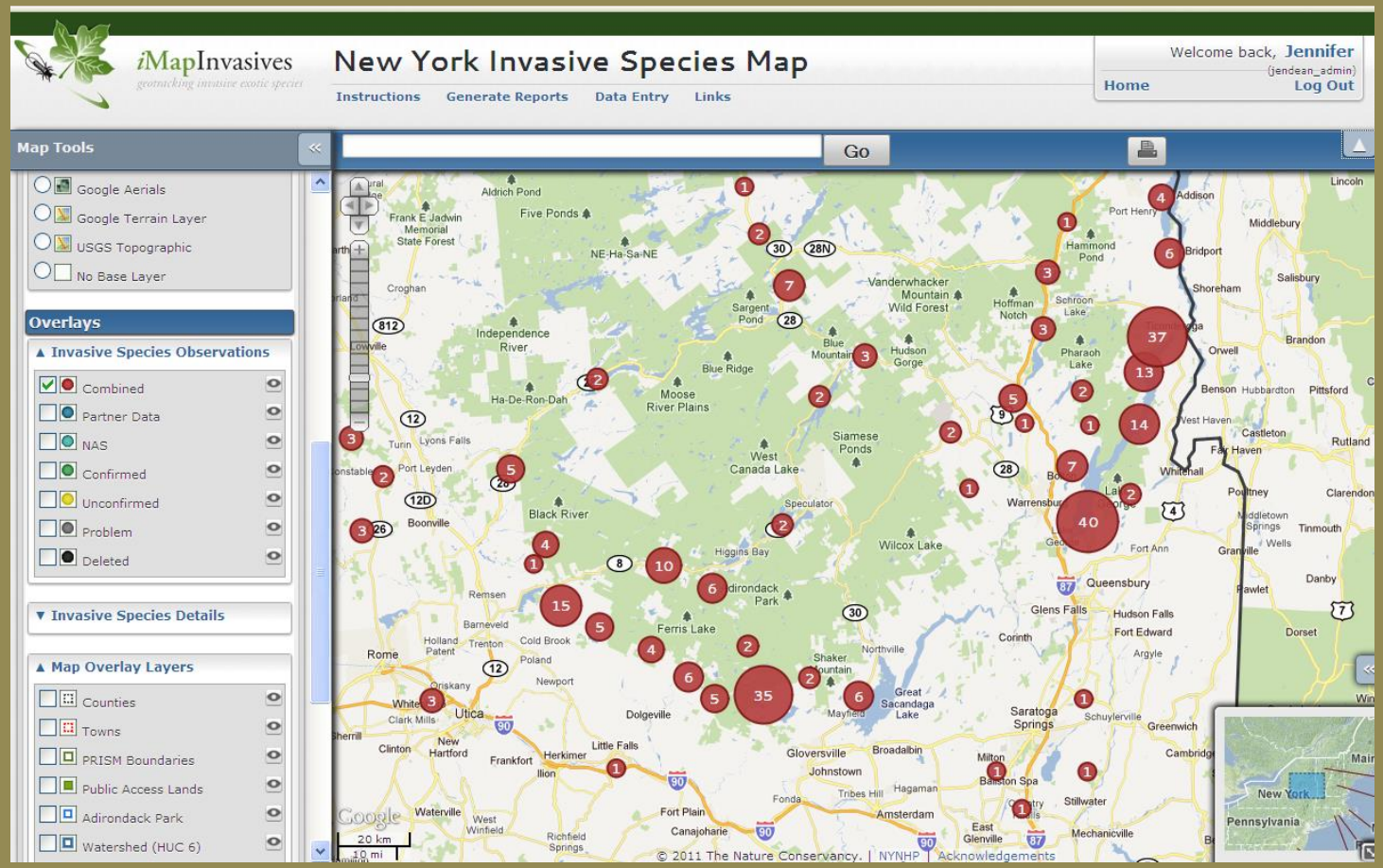
2010: Live in New York!



Where does the data come from?

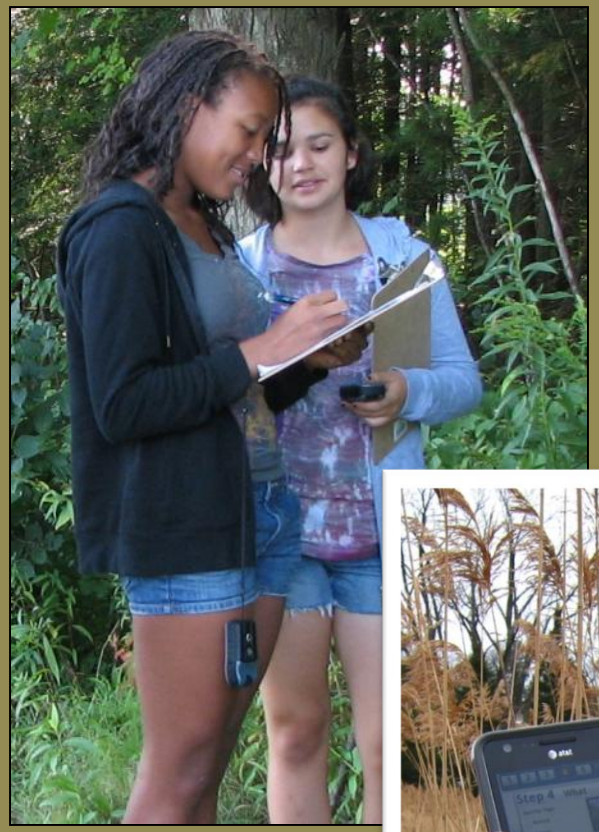
1) Bulk uploads from partner organizations

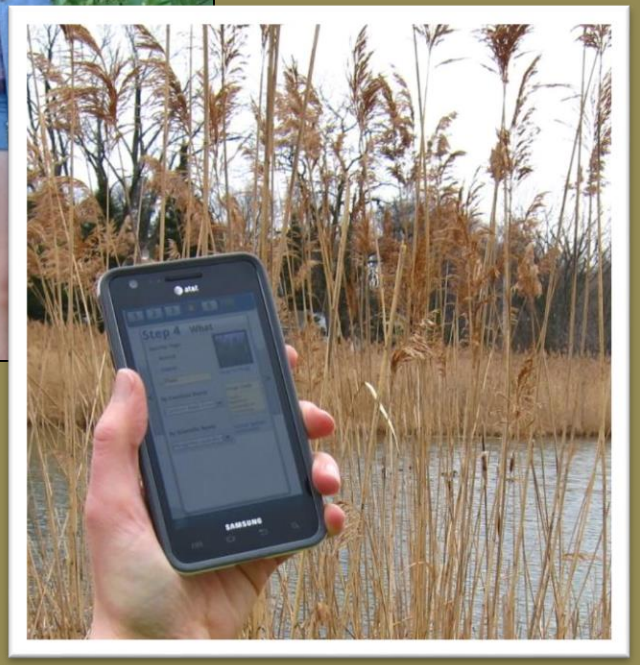
- Local, State, and Federal Agencies
- Land/ Water Managers
- Researchers
- Museum Data

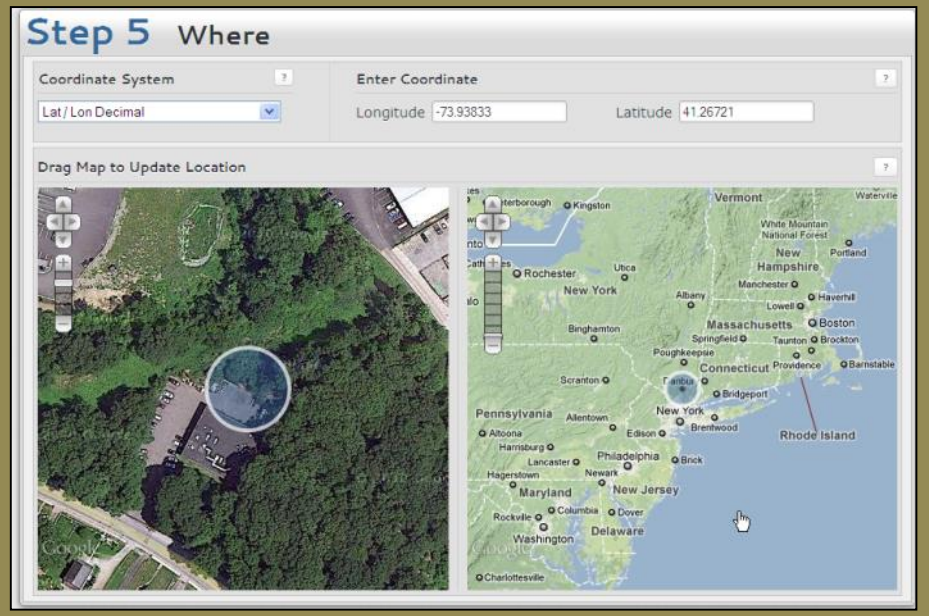


Where does the data come from?

2) Online data entry for observations







Data from professionals and citizen scientists

OBSERVATIONS

Organization Bulk Uploads: 90,000

Online Data Entry: 21,000

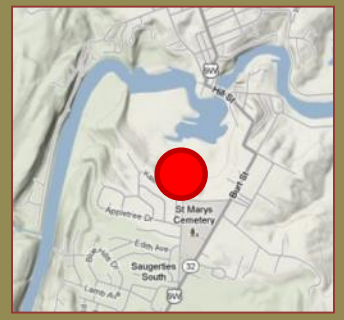
Trained iMap Users

>2,000 since 2010

Spring 2015 – another 250+ trained

Email Alerts

Communicating important findings to stakeholders



Regulated or High Priority Species

Alerts sent to state authorities

Verified by expert

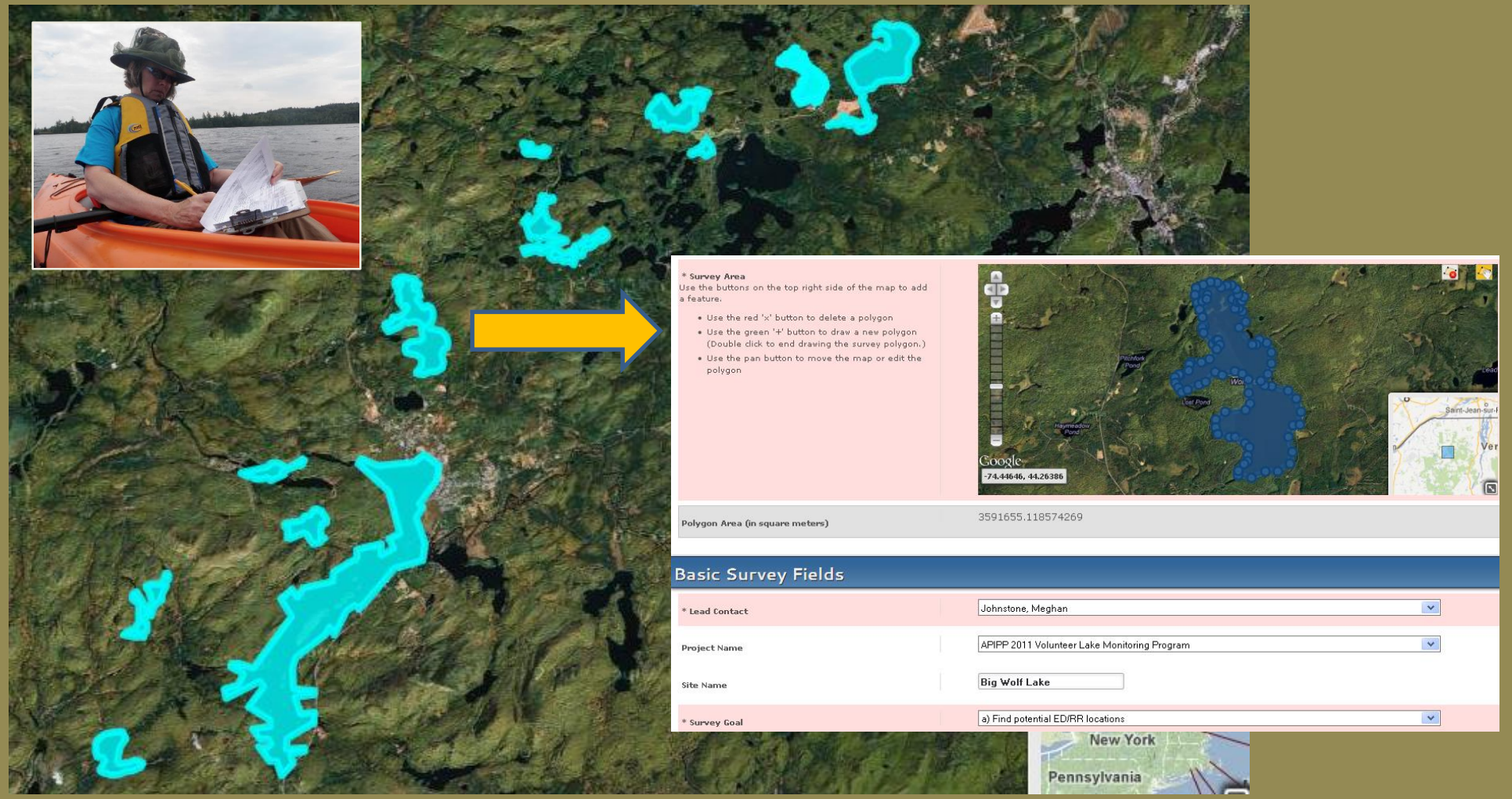
Other Species

Reviewed by state iMap administrator

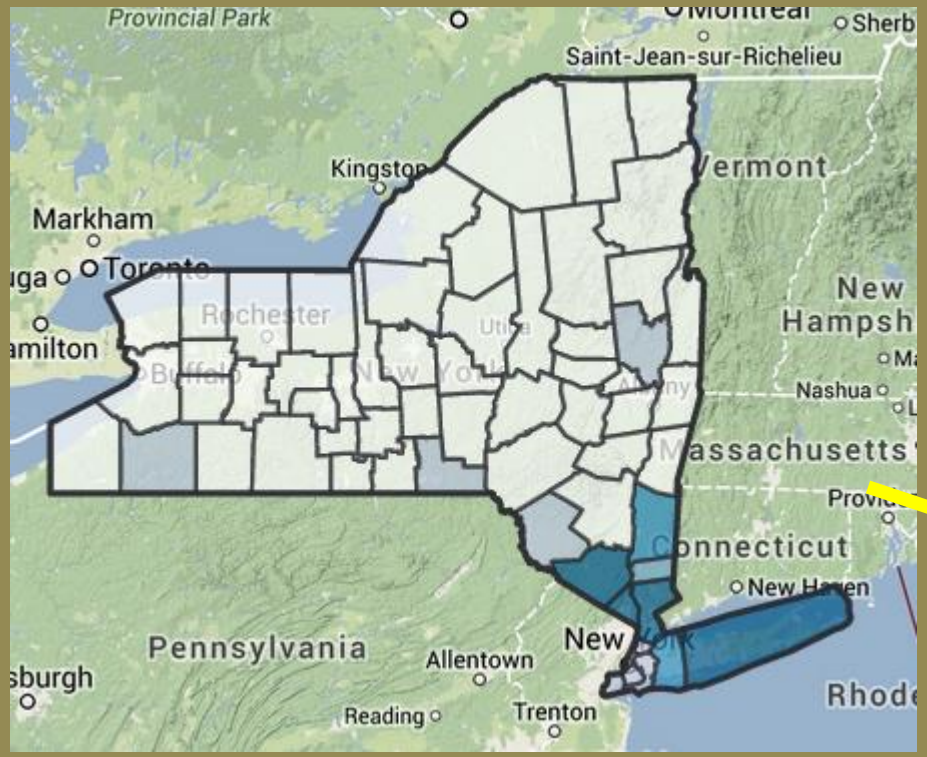
Set to “confirmed” by state iMap admin

User email alerts

Surveys – Presence/Absence Data



Scale matters!

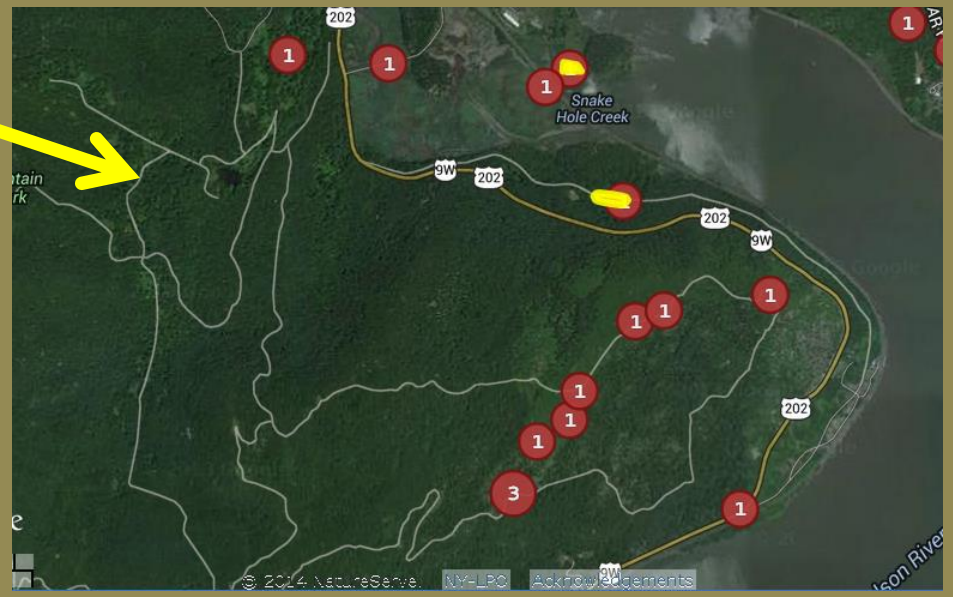


Statewide Distribution

Mile-a-Minute

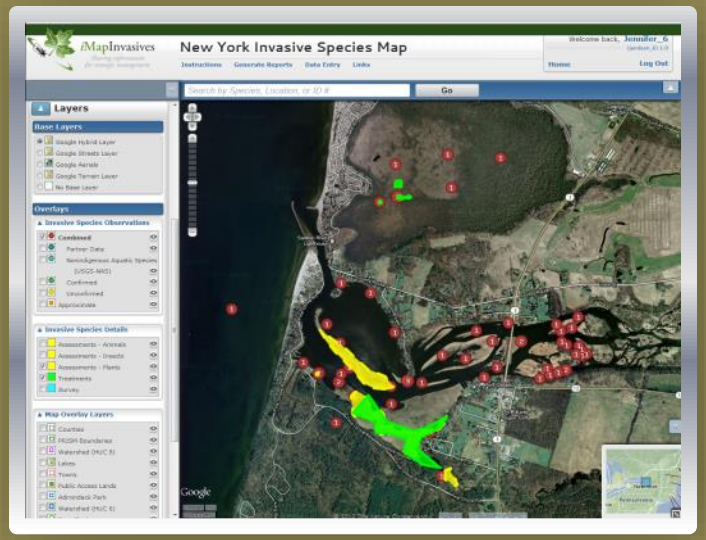
Localized Projects

Mile-a-Minute



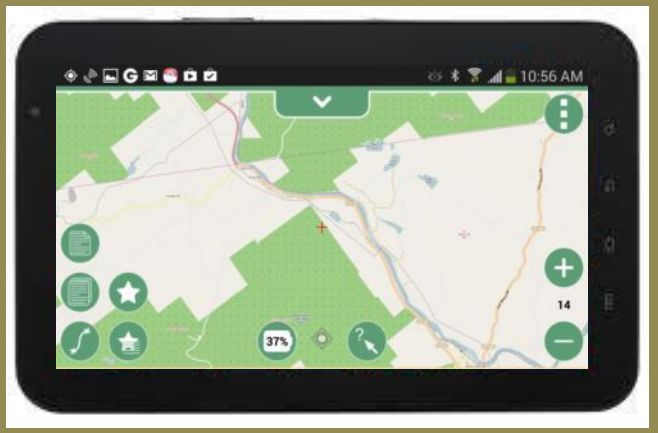
iMapInvasives

Sharing information for strategic management



Desktop

Mobile Tools



iMapField

Advanced data; requires some GIS to setup Droid tablets

iMapMobile

Observation only

Mobile Options

3 ways to contribute data:

1) iMapInvasives Mobile App - Beta (currently available for Android phones, coming soon for Apple)

Collect observations on your phone, then upload directly to iMapInvasives online once back in connectivity. This currently needs to be installed as a third-party app (not from the Google Play Store).

2) Browser-based mapping (Apple and Android)

Use your phone's internet browser to log into iMapInvasives like you do on your computer when you have data connectivity in the field. Observations will be directly uploaded into iMapInvasives online.

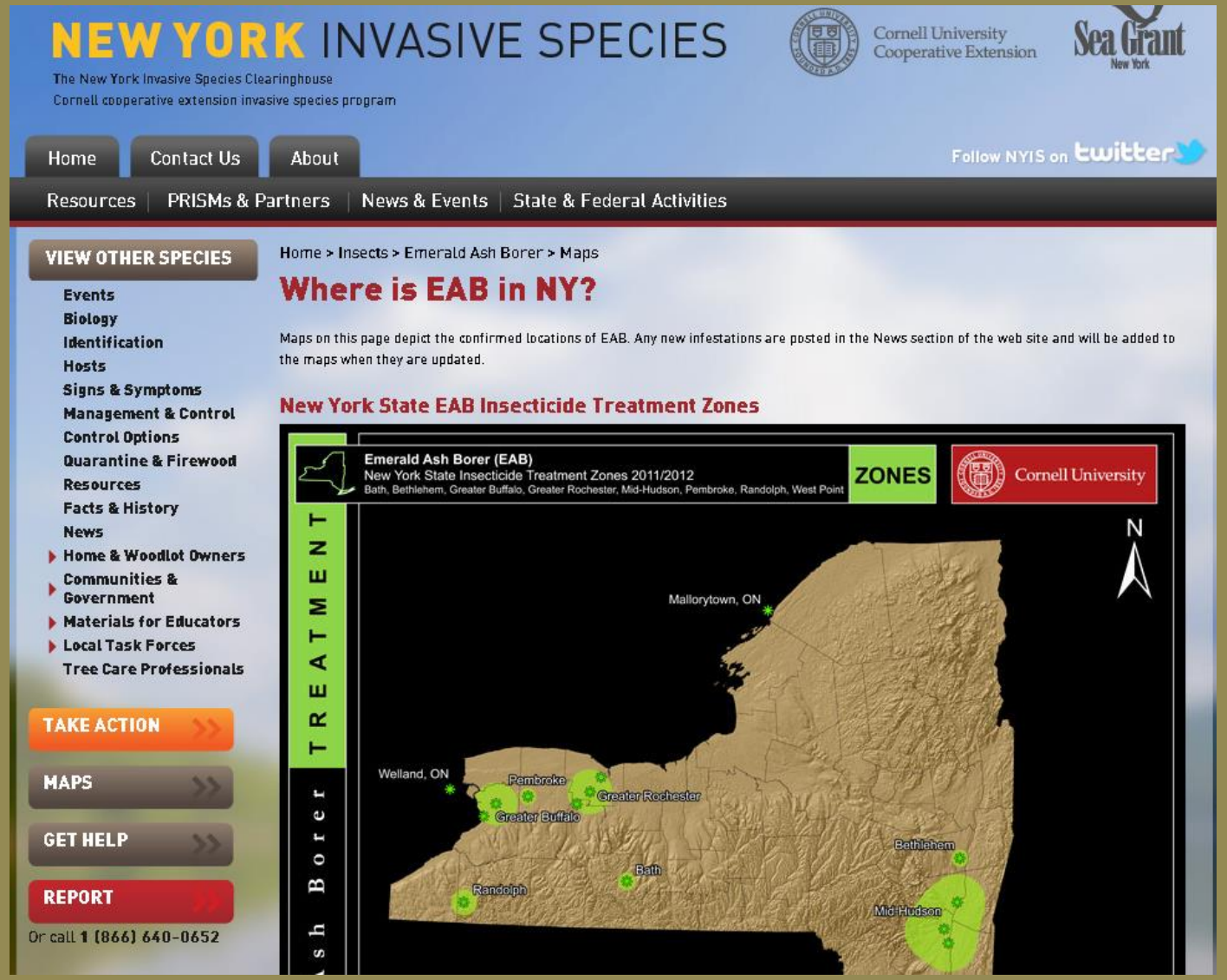
3) iNaturalist (Apple and Android)

Use the power of iNaturalist to record observations of any organism (invasive or native) and become part of the online social network of naturalists crowd sourcing species identifications.

iNaturalist.org

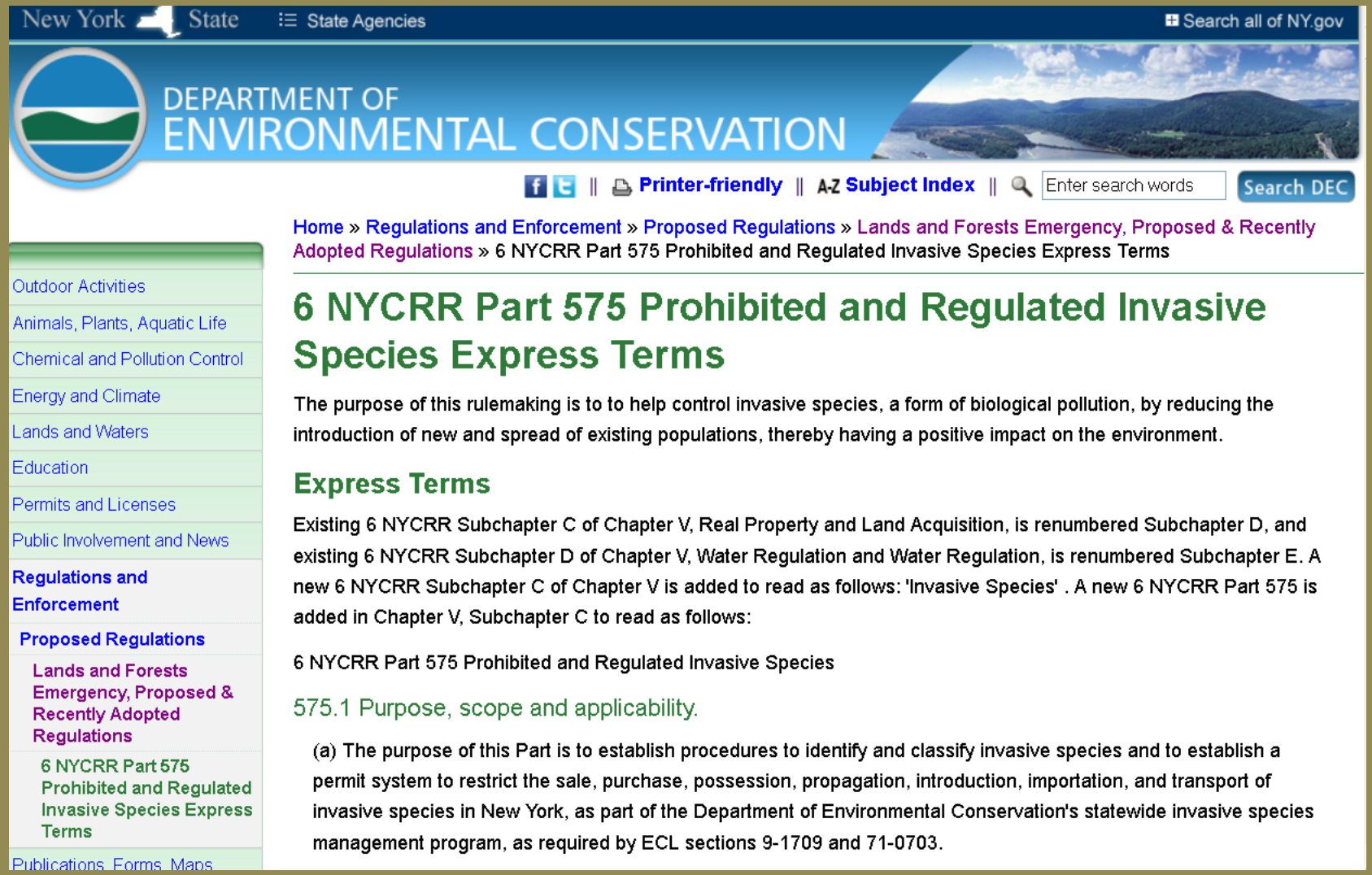
www.nyimapinvasives.org/mobile

NY Invasive Species Clearinghouse
nyis.info

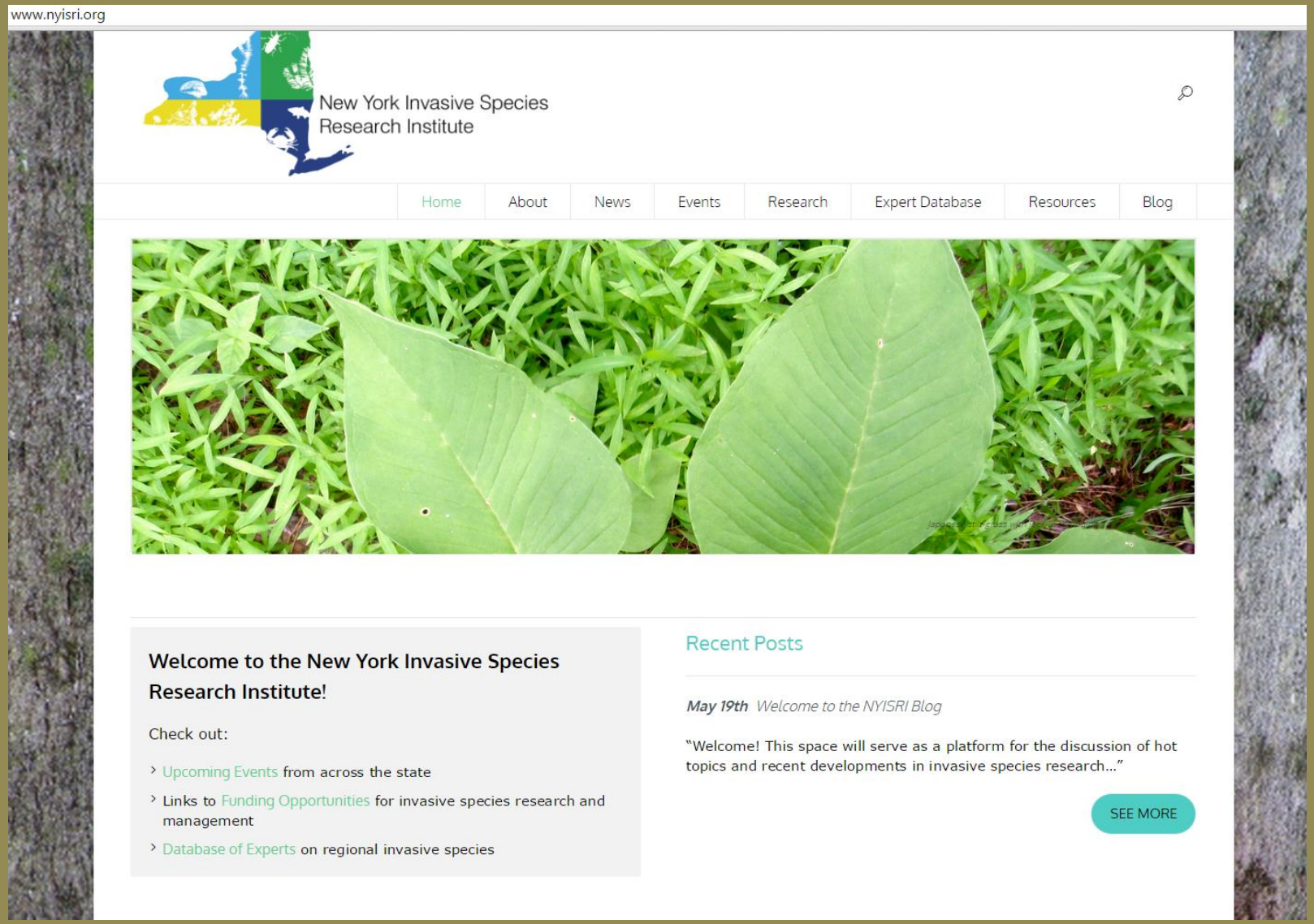


Partnerships for Regional Invasive Species Management
nyis.info

NYS Draft Regulations for Invasive Species



New York Invasive Species Research Institute
nyisri.org



Questions ???

Thank you ~
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