

# Finger Lakes PRISM Trail Survey Part I



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HOBART AND WILLIAM SMITH COLLEGES



# Today's Agenda

1. Overview of invasive species issues
2. Finger Lakes PRISM programs
3. PILOT Finger Lakes Trail Survey
4. Common invaders of the Finger Lakes
5. JOIN US- Part II- Thursday, June 11, 9am-11am Using iMapInvasives to map trails



# Invading Landscapes



1) Invasive Species Overview



# DEFINITION: Invasive Species

An invasive species is one that is **non-native** to the ecosystem under consideration and whose introduction causes, or is likely to cause, **economic** or **environmental** harm or harm to **human health**.

## Economic:

Impacts on agriculture, recreation, wood/forest products, trade/shipping, tourism, utilities (power plants) and management costs.

## Environmental:

Impacts on biodiversity, structural diversity, natural processes, aesthetics, ecosystem function and services.

## Human Health:

Impacts on soil, water and air quality, flooding, injury, and disease/illness.

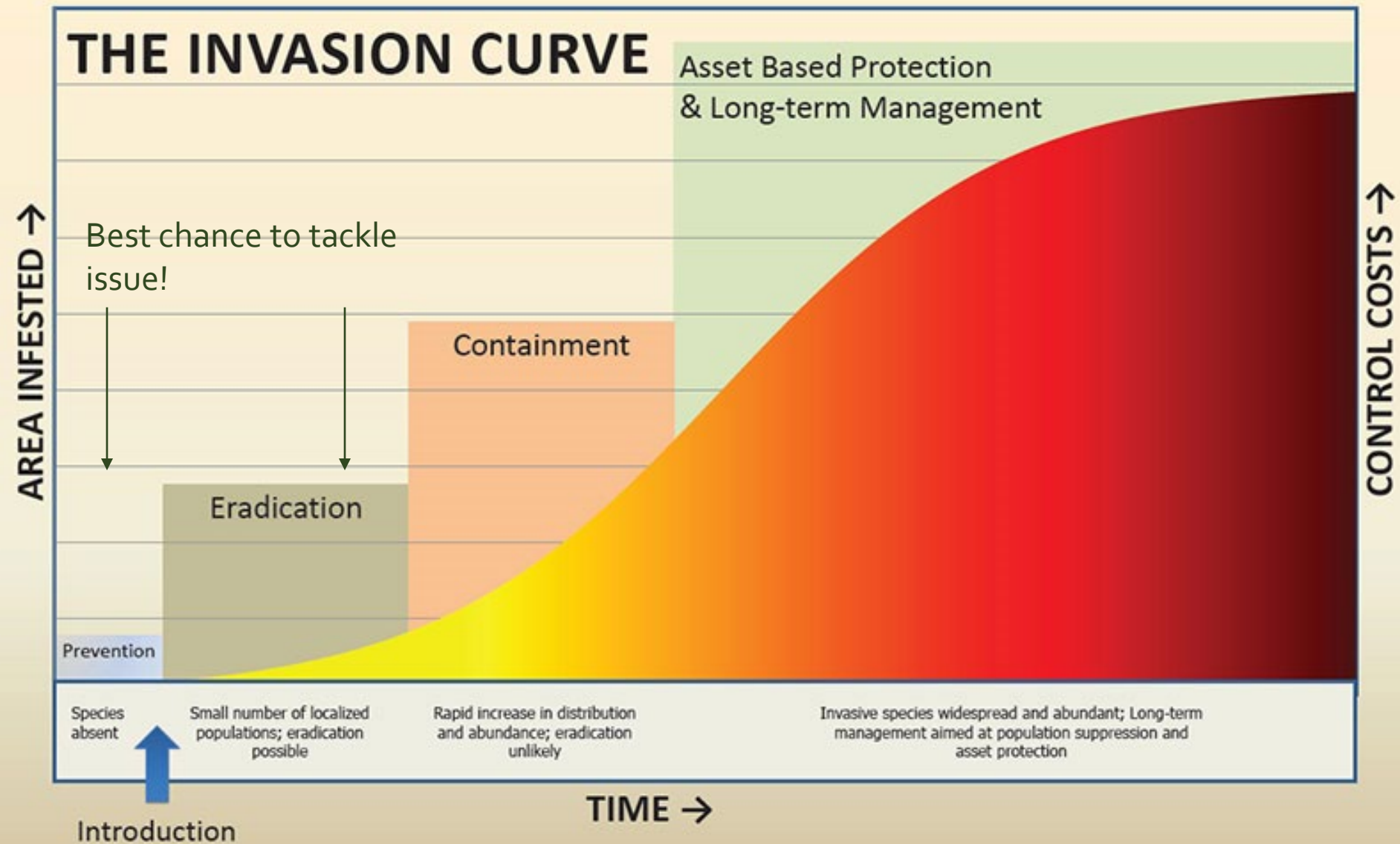


# Characteristics of an invasive

- High fecundity- Lots of babies!
- Aggressive
  - Outcompetes more valuable native species
- No natural predators
- Little to no nutritional value
- Reduces or degrades habitat or food for native organisms
- Second largest threat to biodiversity
- Are the leading source of environmental and economic damage across NYS



# THE INVASION CURVE





# HOW does a species to become invasive?



Brittany Lagaly

Lack of natural predators and diseases  
Fast growth rate and high reproduction  
Early leaf out + late senescence  
Release from environmental controls on growth

Advantageous traits the native ecosystem has not evolved to deal with



The Ohio State University, Bugwood.org

5509780



1) Invasive Species Overview

# How did they get here?

- Can be intentionally or unintentionally introduced
  - Landscaping plants
  - Food crops
  - Pet and aquarium trade
  - Ballast water
  - Hitchhikers on globally-traded products
    - Quarried stone,
    - Lumber,
    - Landscaping



Photo credit: <http://www.hungrypests.com/how-they-spread/>

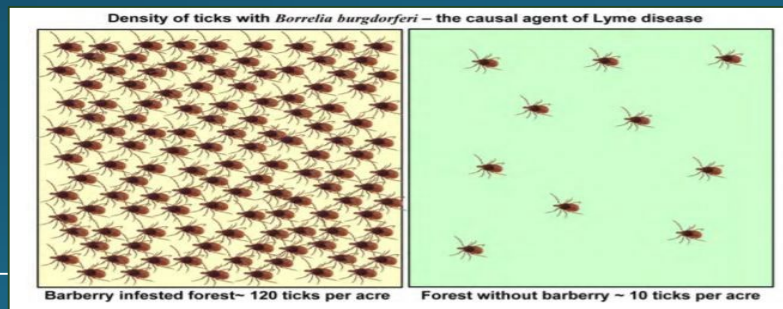


UGA0014299



# Impacts of Invasive Species on Native Ecosystems

- Dense growth habits due to lack of predators and diseases.
- Exclude native species that provide food and habitat for wildlife
- Physical alteration of forest structure
- Chemical and physical alteration of soil properties
- Increased erosion and flooding
  - Excess nutrients in the watershed



# PRISMs

- Finger Lakes-PRISM one of eight regional partnerships in NYS
- A great example of integrated approach to mgmt
- Addresses the threat of invasive species across NYS
- Allows partners to share and leverage limited resources
- Represents a highly-visible program that builds community awareness and participation
- Funding through the EPF via NYSDEC

## PARTNERSHIPS FOR REGIONAL INVASIVE SPECIES MANAGEMENT



Division of  
Lands and  
Forests

### New York State PRISMs

Invasive species means a species that is nonnative to the ecosystem under consideration, and whose introduction causes or is likely to cause harm to the environment, the economy, or the health of humans.

#### What are PRISMs?

Partnerships for Regional Invasive Species Management (PRISMs), comprising diverse stakeholder groups, were created to address threats posed by invasive species across New York State. PRISMs are key to New York's integrated approach to invasive species management. Partners include federal and state agencies, resource managers, non-governmental organizations, industry, recreationists, and interested citizens. The New York State Department of Environmental Conservation provides financial support, via the Environmental Protection Fund, to the host organizations that coordinate each of the eight PRISMs, resulting in statewide coverage.

#### What Do PRISMs Do?

- Plan regional invasive species management activities
- Implement invasive species prevention programs
- Conduct surveillance and mapping of invasive species infestations
- Detect new infestations early and respond rapidly
- Implement control projects
- Implement habitat restoration and monitoring
- Educate stakeholders on invasive species and their impacts
- Coordinate PRISM partners
- Recruit and train volunteers
- Support research through citizen science in collaboration with the Invasive Species Research Institute <http://www.nyisri.org/>
- Report observations to iMapInvasives <http://www.nyimainvasives.org/>
- Act as regional communication hubs



If you are interested in helping NY "stop the invasion," PRISMs are a great way to get involved by volunteering for monitoring, outreach, or management projects. All are welcome to participate in statewide PRISM monthly conference calls to receive updates, hear excellent presentations and learn about upcoming events. Contact a PRISM leader for more information, or visit [WWW.NYIS.INFO](http://WWW.NYIS.INFO)

**STOP THE INVASION – PROTECT NEW YORK FROM INVASIVE SPECIES**

A Division of the New York State Department of Environmental Conservation

[www.dec.ny.gov](http://www.dec.ny.gov)



# Prevention=Protection = \$\$ Saved

## Invest in programs to prevent spread

- Watercraft steward programs
- Education and outreach
- Early detection through surveys
- Leverage partnerships
  - Play, Clean, Go!
  - Wildlife Forever
  - Nationally recognized campaigns





# Watercraft Inspections

Helping educate about the harm and impact



2) Finger Lakes PRISM Programs



# Finger Lakes PRISM Education and Outreach Program





# Other Programming

## Field Guide and Fact Sheets

### GIVE INVASIVE SPECIES THE BRUSH OFF

Shoes can carry the seeds of invasive plants. Please brush them off before entering and leaving this area.



**What's The Problem?**

Non-native seed and plant parts are carried from one place to another on your shoes, hiking gear, and bike & vehicle tires.

**Slender fadrome (*Dracopis crinitus*)** is a fast-spreading, invasive grass that displaces native flora. Slender fadrome dominates forest understoreys and open grasslands. This invader can be found year-round but flowers from early July into August. Mature spikelets can be seen through October.

Slender fadrome is a serious threat to New York State! Stop the invasion—clean your gear!



**Black and pale reedwood (*Couchgrass* sp.)**

Black and pale reedwood can form dense stands that displace desirable native species.



**Wild periwinkle (*Periwinkle* spp.)**

Wild periwinkle can cause burns when it comes into contact with the skin in the presence of sunlight (photodermatitis).



**Japanese stiltgrass (*Microstegium vimineum*)**

Japanese stiltgrass grows well in sunny light conditions and replaces native vegetation in a wide range of ecosystems. It expands into dense stands of grass that prevent desirable vegetation from growing.





**STOP INVASIVE SPECIES IN YOUR TRACKS.**

Play Clean Go

Clean Your Gear Before Entering And Before Leaving This Site

FINGER LAKES INSTITUTE  
FINGER LAKES PRISM

NEW YORK STATE  
Department of Environmental Conservation

### SIGNS:

57 bootbrush stations

# CLEAN.DRAIN.DRY.

## BOATS, TRAILERS & GEAR STOP INVASIVE SPECIES



### RUSTY CRAYFISH

*Decapoda rustica*


**COMMON NAME:** Rusty Crayfish  
**SCIENTIFIC NAME:** *Decapoda rustica*  
**ORIGIN:** Ohio River Basin  
**INVASIVE RANKING, NYS:** High  
**MANAGEMENT STRATEGY:** Prevention

Rusty crayfish grow to about 10 cm in length and are dark brown with rust-colored spots on both sides of the carapace. They have relatively large, robust claws that are gray-green to red-brown with black bands on the tips. The movable claw is smooth and S-shaped, forming an oval gap when the claws are closed. Rusty crayfish live in permanent water bodies and feedways with close, well-oxygenated water and rocks, logs, and debris for shelter. They prefer cobble bottom sediment but will tolerate a variety of substrates including silt, clay, sand, and gravel.




**THREAT**  
Rusty crayfish are aggressive, reproduce quickly, and can outcompete and displace native crayfish species. This causes declines in native crayfish, plant, invertebrate, and fish populations, and reduces biodiversity of the aquatic community. Rusty crayfish can also hybridize with native species, decreasing native crayfish genetic diversity.

**MANAGEMENT**  
Prevention of spread and establishment is important. Rusty crayfish are spread through human activities, such as the dumping of bait buckets and intentional introductions by commercial crayfish harvesters. Education and outreach are necessary to raise awareness of the negative impact this species can have. Identification skills are also important for fishermen to avoid unintentional release of nuisance species.

**DISTRIBUTION**  
(as of 2/2018)



FINGER LAKES PRISM INVASIVE SPECIES FIELD GUIDE

### INVASIVE SPECIES FACT SHEETS




FINGER LAKES PRISM  
Partnership for Invasive Species Management





### INVASIVE SPECIES FIELD GUIDE

HOBART AND WILLIAM SMITH COLLEGES  
FINGER LAKES INSTITUTE  
FINGER LAKES PRISM  
Partnership for Invasive Species Management

### FISH

**EASTERN MOSQUITOFISH, WESTERN MOSQUITOFISH**  
*Gambusia holbrooki*, *Gambusia affinis*  
Origin: Southern Atlantic & Gulf of Mexico drainages, Mississippi Delta

**INVASIVE RANKING, NYS:** Very High  
**MANAGEMENT STRATEGY:** Prevention  
**DISTRIBUTION:** NYS, CT, VA

Mosquitofish are small, gray or brown invasive fish. They have short bodies, growing up to about 7 cm, with a flat-topped head and a mouth that is pointed upward for surface feeding. The dorsal and caudal fins are rounded. Small black dots may be present on the body and tail, as well as a small dark colored bar below the eye. These species are very similar in appearance to each other.

**HABITAT**  
Mosquitofish can live in a variety of freshwater habitats including rivers, springs, and marshes, although they prefer shallow, warmer waters lacking predatory fish. They may also occur in brackish water. These species can withstand higher pollution levels and lower dissolved oxygen levels than other fish. However, they are susceptible to cold temperatures. Some populations have been known to overwinter under ice cover.

**THREAT**  
Due to their aggressive and predatory behavior, mosquitofish can greatly disrupt food webs and negatively impact native fish populations through predation and competition. Single they have, these fish are not particularly efficient mosquito predators, as they prefer larger prey. They may benefit mosquitos by consuming predators and competitors of the mosquitos. They may also displace native fish species that are as more efficient mosquito control agents. Mosquitofish populations may also result in algal blooms if too many grazing zooplankton are consumed.

**MANAGEMENT**  
Prevention is the best management practice to ensure that these species remain unestablished. Education of the public about practices such as clean, drain, and dry, as well as efficient reporting of sightings, can keep these species at bay.





SPONSORED BY: U.S. Fish & Wildlife Service, New York State Department of Environmental Conservation, Finger Lakes Institute, Finger Lakes PRISM



www.CleanDrainDry.org



## 2) Finger Lakes PRISM Programs

Finger Lakes Institute at Hobart and William Smith Colleges



# Macrophyte Survey Program

Goal: learn to survey, identify, and report high priority invasives:

- Hydrilla (*Hydrilla verticillata*)
- Water Chestnut (*Trapa natans*)
- Starry Stonewort (*Nitellopsis obtusa*)

## How?

- Sample bi-weekly from June – October
- Identify and report plants in samples
  - Data entry (paper or google form)
  - Take pictures and send to [flxplantid@gmail.com](mailto:flxplantid@gmail.com)
  - Bag and tag specimens



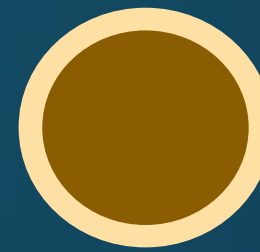
2) Finger Lakes PRISM Programs

# Why Survey Trails?

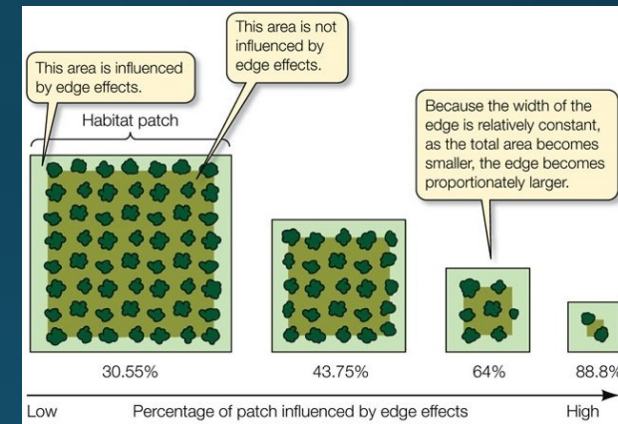
## Edge Effect and Invasive Species

Forest edges have very different environmental conditions than interior habitat

- Higher temperature, less moisture, more wind desiccation, more light
- Native forest species are adapted to low light, little wind, high or moderate soil moisture and lower temperatures (shaded conditions)
- Under natural conditions, weedy species move in and occupy disturbed area until shaded out by tree saplings, at which point competitive advantage shifts to forest species
- Invasive species out-compete native weedy species and hinder seedling germination and growth, retarding natural succession



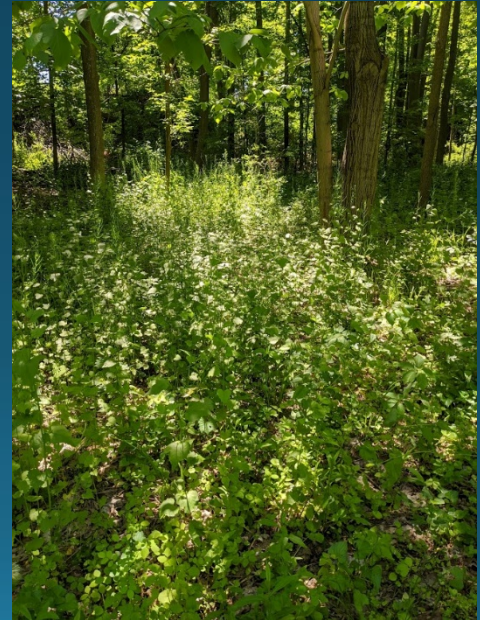
Edge Habitat  
Interior Habitat





# Finger Lakes Trail Survey

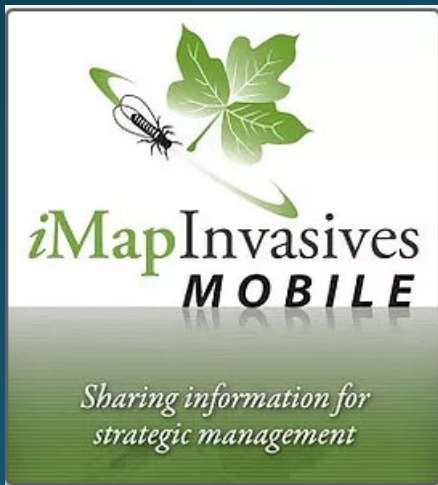
- **GOAL:** Identify, survey for, and report invasive species in the #FLX
- **WHO CAN PARTICIPATE:** Anyone with a smart phone or tablet
- **WHERE DOES IT TAKE PLACE:** A trail near you! Your choice.
- **HOW WILL WE COLLECT DATA:** Volunteers are asked to survey three times: June, July, and August for 25 common invasive species



3) Pilot Survey Program

# How Does the Trail Survey WORK?

- Pilot program for 2020 season
- Pick a trail that is your favorite or one you can walk three times
  - June- 13 species
  - July- 18 species
  - August- 19 species
- Use the iMapInvasives platform- Finger Lakes PRISM survey team
- Survey every ~50feet (@23 paces)
- Look for invasives present



3) Pilot Survey Program



List of species	June	July	Aug
Autumn olive	X		
Black swallowwort		X	X
Bull thistle			X
Canada thistle			X
Common barberry		X	X
Buckthorn spp.		X	X
Common periwinkle	X		
Common reed	X	X	X
Garlic mustard	X		
Japanese barberry		X	
Japanese knotweed	X	X	X
Knapweed spp.			X
Lesser celendine	X		
Shrub honeysuckle	X		
Mile-a-minute	X	X	
Multiflora rose	X	X	2) Pilot Survey Program

# Avoid Poison Ivy!



Can be  
ground cover,  
a vine, or a  
shrub!

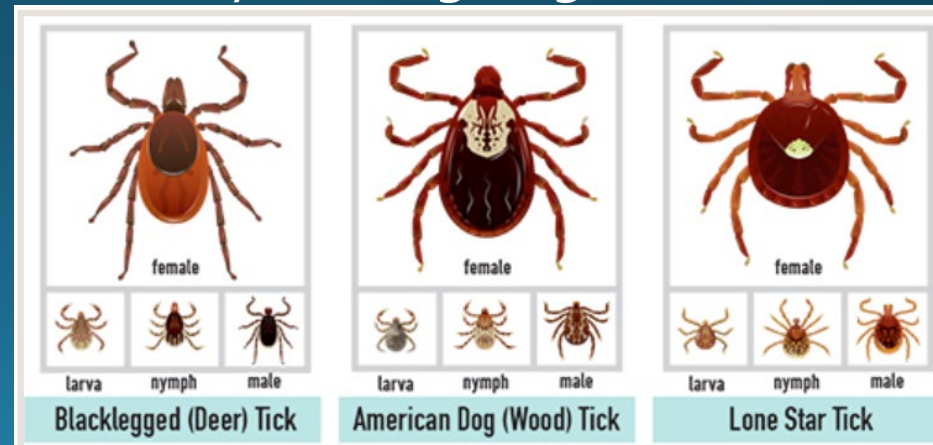


3) Pilot Survey Program



# Be Safe, Pack Right

- Practice social distancing or wear a mask!
- Pick a trail you are familiar with and know where to park, where it starts, how it ends
- Bring water, sunscreen, bug spray, and appropriate footgear and clothing
- BEWARE of ticks! Stay on trails and avoid tick-prone areas. Complete a tick check after you return from the trail
- <https://nysipm.cornell.edu/whats-bugging-you/ticks/>
- Bring a friend or let someone know where you are going and when you plan to return



# Survey

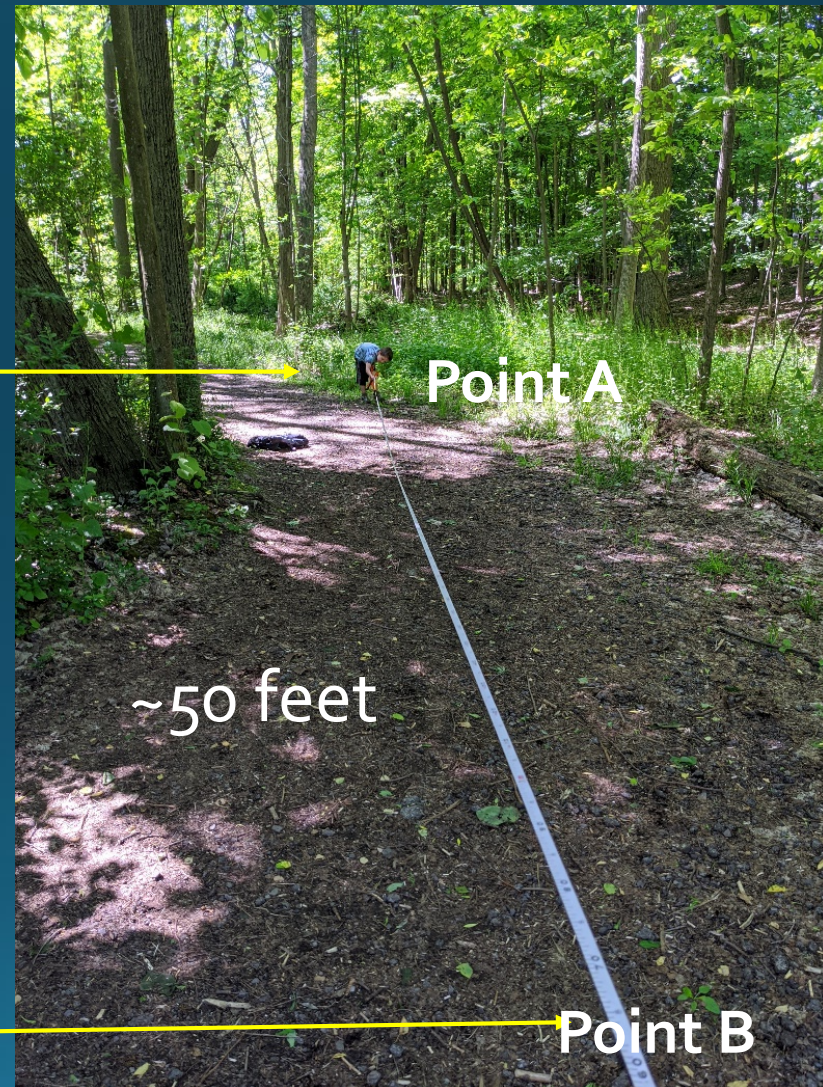
Start at beginning of trail or desired start point

Use an imaginary circle with a radius of 50ft

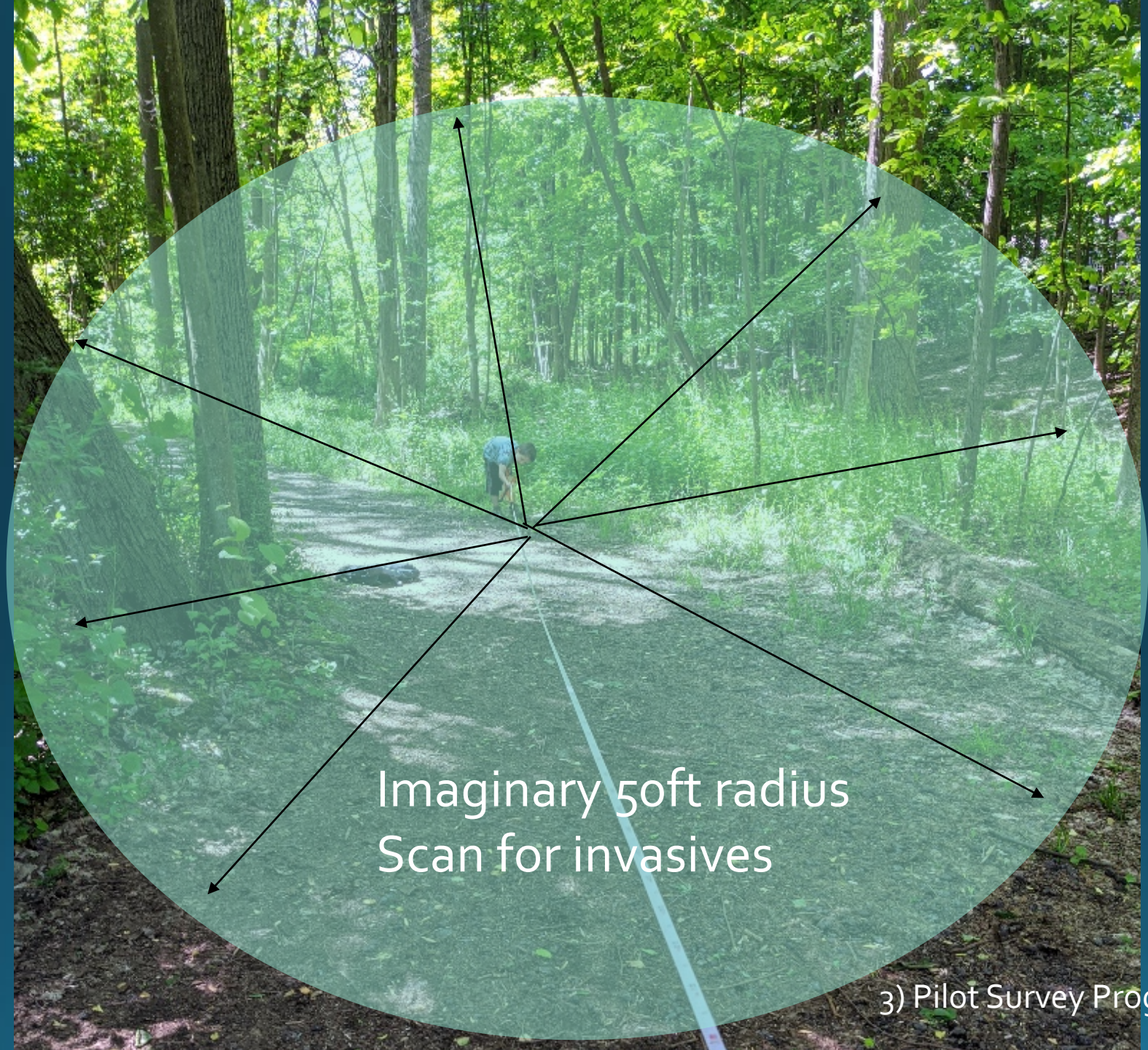
Identify and map the invasive species in the area (i.e., multiflora rose, buckthorn, honeysuckle)

Using the iMapInvasives reporting tool, report size of infestation (up to 10sq ft., up to 0.50acr, up to 1acre, more than 1acre) and distribution (trace, sparse, dense, monoculture, linearly scattered)

Once you have recorded the invasives, move to next 50ft location







Imaginary 50ft radius  
Scan for invasives



# Invasive Species ID





# Mile-a-minute Vine



## How to Identify Mile-a-Minute Vine

Broad, triangular leaves,  
1-3 inches wide.



Curved  
prickles  
on stems.

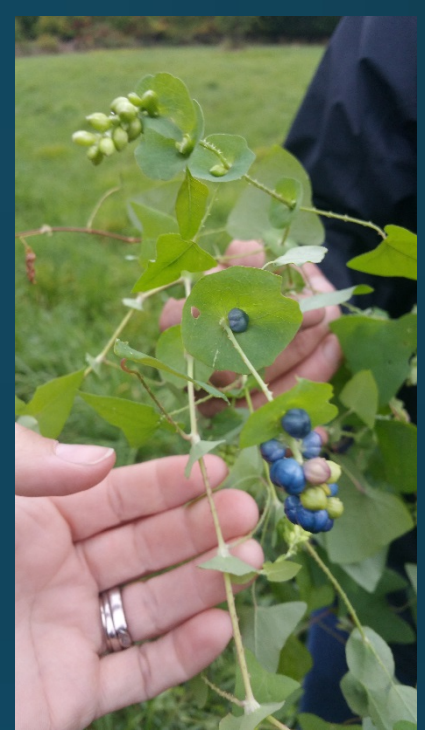


Flat, round leaves  
at nodes, called  
ocrea.

Ocrea- (looks like  
a squirrel baffle!)



Iridescent berry-like  
pale green fruits



4) Invasives ID



# Mile-a-Minute Vine

*Persicaria perfoliata*

**Native To:** India and Eastern Asia

**Means of Introduction:** Accidental

**Identification:** herbaceous annual vine with alternate, light green leaves, 4-7cm long and 5-9 cm wide and shaped like a triangle. Vines are narrow and delicate becoming woody and reddish with time. The vines and underside of leaves are covered with recurved barbs

**Impact:** decrease native vegetation and habitat in natural areas impacting plants and wildlife. Major pest in Christmas tree plantations and young forest stands



*Mile-a-minute weed* Leslie J. Mehrhoff,  
University of Connecticut, Bugwood.org



4) Invasives ID

*Mile-a-minute fruiting spike, ocreae, and barbs.* Leslie  
J. Mehrhoff, University of Connecticut, Bugwood.org



# Japanese Stiltgrass

*Microstegium vimineum*

- Impacts: replaces native vegetation in a wide range of ecosystems, reduces biodiversity
- Control: mechanical control effective for small populations, chemical control using systemic herbicides



Access road and clearing invaded with Japanese Stiltgrass John M. Randall, The Nature Conservancy, Bugwood.org



Rebekah D. Wallace, University of Georgia, Bugwood.org



4) Invasives ID

Japanese stiltgrass in a wooded understory. Chris Evans, River to River CWMA, Bugwood.org



# Japanese Stiltgrass



4) Invasives ID



# Slender False Brome

(*Brachypodium sylvaticum*)

## IDENTIFICATION

- Perennial clump grass.
- Grows up to 2 ½ feet tall.
- Leaf blades arching, flat, bright green, 0.25 – 0.3 inches wide.
- Leaves hairy, with hairs along margins.
- Stems hairy and hollow
- Flowers July/August, 5 – 10 spikelets on short pedicels

## MANAGEMENT (we think...)

- Small Infestations.
  - Manual removal
    - Dig out entire plant and root.
    - Dispose of plant material in landfill-bound trash.
- Large Infestations
  - Mechanical -suppression only, cut many times/year.
  - Herbicide- demonstrated high effectiveness



# Porcelain berry

- Woody vine, similar to grape
- Alternate lobed leaves, with heart-shaped base
- White berries, turning purple on the outside





# Oriental Bittersweet

- Woody vine, often climbing up trees
- Alternate toothed leaves
- Red berries with orange capsule



4) Invasives ID





# Black and Pale Swallow-wort

*Cynanchum louiseae* and *rossicum*

**Native To:** Europe

**First Observed in NY:** 1890

**Means of Introduction:** Cultivation, natural spread

**Impact:** Changes composition of soil; Dangerous to Monarch butterfly colonies

**Control:** handpull when infestations are low, pod removal, chemical controls, and prescribed burn



4) Invasives ID



# Japanese Knotweed

*Polygonum cuspidatum*

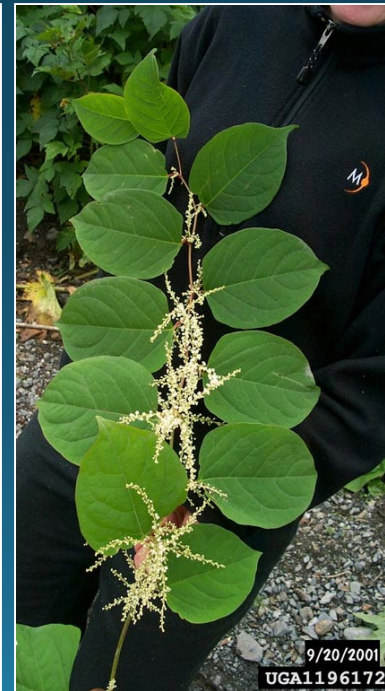
**Native To:** Eastern Asia

**First Observed in NY:** 1893

**Means of Introduction:** Ornamental; Erosion control and landscape screening

**Impact:** Dense thickets exclude native vegetation

**Control:** mechanical control depending on soil conditions and root development, chemical control (glyphosate to freshly cut stems or foliage)



# Garlic Mustard

*Alliaria petiolata*

**Native To:** Europe

**First Observed in NY:** 1860s

**Means of Introduction:** Food & medicinal purposes

**Impact:** Outcompetes native plants; allelopathic, Extirpations of some butterflies

**Control:** manual removal (best in spring when soil is soft), chemical application of a glyphosate-based herbicide



Photos courtesy of: Britt Slattery, USFWS

4) Invasives ID

UGA1378081





# Japanese Honeysuckle

*Lonicera japonica*

**Native To:** eastern Asia

**First Observed in NY:** 1806

**Means of Introduction:** Ornamental; For erosion control, wildlife forage and cover

**Impact:** Few natural enemies; Outcompetes natives

**Control:** mechanically when populations are small, herbicides used in heavy infestations





# Purple Loosestrife

*Lythrum salicaria* L.

**Native To:** Eurasia

**First Observed in NY:** 1800s

**Means of Introduction:** Ballast water and as an ornamental and medicinal plant

**Impact:** Crowds out native species

**Control:** digging, handpull, and cutting in areas with low infestation, chemical controls, and biological controls available







# Common Buckthorn

*Rhamnus cathartica* L.

**Native To:** Eurasia

**First Observed in NY:** 1800s

**Means of Introduction:** Ornamental; Fence rows & wildlife habitat

**Impact:** Crowds and shades out native plants, host for the crown rust fungus (oak), leaf litter can increase pH of soils

**Control:** mowing, excavation, cutting, burning, and chemical means (glyphosate)



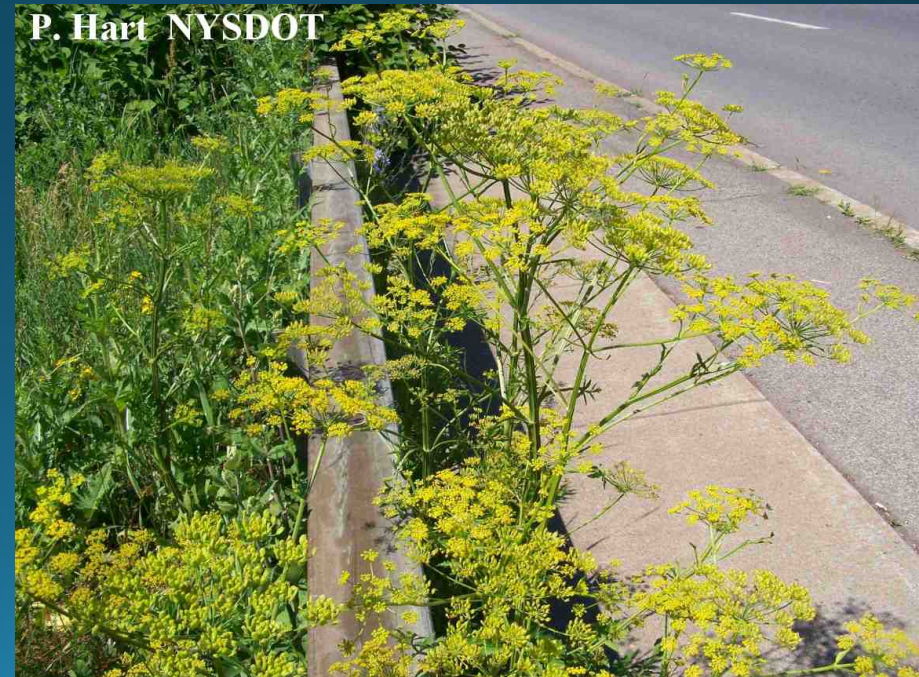
# Wild Parsnip

*Pastinaca sativa*

Among the first to green up in the spring and first year rosettes remain green until frost- all stages of plant are toxic when eaten or in dried hay

Invades and modifies disturbed open habitats- forms dense stands

Control: mechanical (parsnip predator shovel) before seeds set, or use glyphosate spot application







# Common Reed

*Phragmites australis*

**Native To:** Native to U.S., but invasive strains originated in Europe

**First Observed in NY:** early 1900s

**Means of Introduction:** Accidental; Increased disturbances, urbanization

**Impact:** Decreases native biodiversity and quality of wetland habitat

**Control:** mechanical mowing, manipulating water levels, chemical treatments, and fire



Credit: John M. Randall, The Nature Conservancy, Bugwood.org





# Japanese Barberry



Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



Barry Rice, sarracenia.org, Bugwood.org



5456744

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

*(Berberis thunbergii)*



Richard Gardner, Bugwood.org



5457021

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org





# Multiflora Rose

*Rosa multiflora*

**Native To:** Japan, Korea, and eastern China

**First Observed in NY:** 1860s

**Means of Introduction:** Ornamental; For erosion control and as a living fence

**Impact:** Crowds out native species





# Autumn Olive

*Elaeagnus umbellata*

**Native To:** China, Japan, and Korea

**First Observed in NY:** 1830s

**Means of Introduction:** Ornamental; Cultivated

**Impact:** Crowds out native species





# Privet species

Privet Species  
(*Ligustrum* species)



Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

5453223



5403716

Karan A. Rawlins, University of Georgia, Bugwood.org



5453244

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



UGA2128044

Chris Evans, University of Illinois, Bugwood.org



# Oak Wilt

## Ontario County, NY

- Systemic, lethal fungus in sapwood- prevents uptake & movement of water
- SYMPTOMS:
  - Noticeable in canopy first
  - Outside of leaves turn bronze, brown, or dull at top
  - Leaves drop as soon as symptoms first develop
- SPREAD: Sap beetles feed on fungal mats under bark and carry spores, underground root grafts between trees, or infested firewood
- RESPONSE: NYSDEC Forest Health survey and removal



Foliar symptoms (Fred Baker, Utah State University, Bugwood.org)



Red oak most severely affected (die in 2 mo), white oaks die slowly (several yrs)  
4) Invasives ID



# Spotted Lanternfly

*Lycorma delicatula*

**Native To:** China, S. Asia

**First Observed in NY:** Not Yet Here! Found in PA

**Means of Introduction:**

**Impact:** A huge agriculture pest- especially for grapes, feeds on 65 different spp of plants (fruit vines, fruit trees, and maples)

**Control:** within quarantine areas, scrape egg sacs from host, soak in ETOH and thrown away



Spotted Lantern Fly, *Lycorma delicatula*, adult. [Photos: Holly Raguza, Bugwood.org]



4) Invasives ID

Lantern fly egg mass. [Photo: Holly Raguza, Bugwood.org]

# SLF Identification

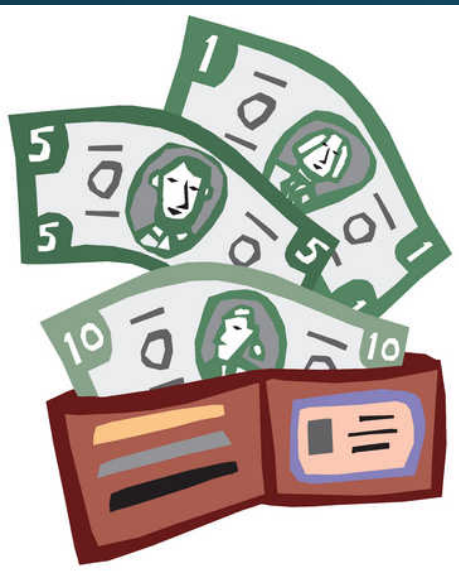
- Nymphs: black with white spots, turn red before transitioning into adults
- Adults: 1 inch long, ½ inch wide at rest, beautiful wings





# Take Away

- 1. **COST** of Invasive species management is a huge burden
- 2. **PLANNING** for invasive species management needs to be built into any campaign, assessment, planning, design plan – IF we **KNOW** where invasives are!
- 3. **VOLUNTEERS** are critical to our program to prevent the spread and impact of invasive species



# Citizen Science & Invasive Species Management

Mapping Training on June 11, 9am

iMap Invasives: [imapinvasives.org](http://imapinvasives.org)

When: Jun 11, 2020 09:00 AM Eastern

Register in advance for this meeting:

[https://hws.zoom.us/meeting/register/tJlpdOiqrTsuHgdlgsU3NoZqiu4BDIm3\\_gJo](https://hws.zoom.us/meeting/register/tJlpdOiqrTsuHgdlgsU3NoZqiu4BDIm3_gJo)

After registering, you will receive a confirmation email containing information about joining the meeting.





# Online Field Guides

- Northeast Aquatic Nuisance Species Panel Online Guide  
<http://www.northeastans.org/online-guide/>
- PA Sea Grant Field Guide to Aquatic Invasives Species  
[http://www.anstaskforce.gov/Documents/AIS\\_Field\\_Guide\\_Finalweb.pdf](http://www.anstaskforce.gov/Documents/AIS_Field_Guide_Finalweb.pdf)
- Invasive Plants of Michigan <http://mnfi.anr.msu.edu/invasive-species/aquaticsfieldguide.pdf>
- iMap Invasives- [Imapinvasives.org](http://imapinvasives.org)
- Weeds Watch Out- Cayuga County  
<http://www.cayugacounty.us/Departments/Water-Quality-Management-Agency/Weeds-Watch-Out/Invasive-Aquatic-Plants>

# Questions?

