Invasive Species

FINGER LAKES PRISM
Partnership for Regional Invasive Species Management

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Invasive Species Defined

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.

Invasive Species Characteristics

- High fecundity
- Aggressively outcompetes more valuable native species
- Free from natural predators
- Second largest threat to biodiversity
- Reduces or degrades habitat or food for native organisms
- Are the leading source of environmental and economic damage across NYS

Photo credits: Left- USEPA from bugwood.org, Right- http://stopthebeetle.info/

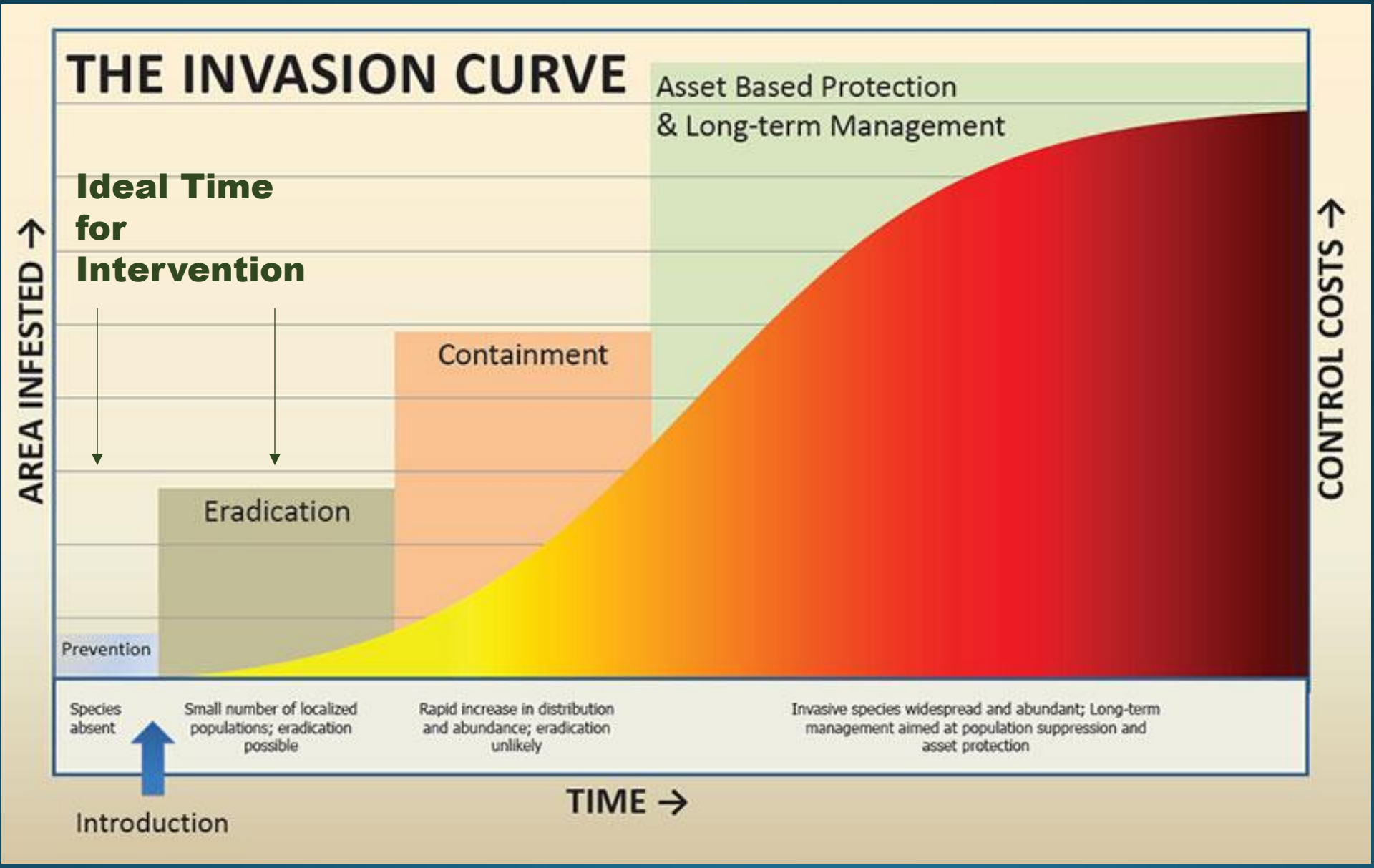


Photo credit: *LeRoy Rodgers, South Florida Water Management District*

Pathways of Invasion

Assisted (Man-Made)

- Recreation
  - Boats, canoes, kayaks
  - Hiking
  - Biking
- Transportation
  - Boats & ship ballasts
  - Roads & other infrastructure
- Living Industries
  - Landscaping/horticulture
  - Agriculture
  - Aquarium/pet trades
- Intentional Releases
- Biological Controls
- Government Programs

Natural

- Wind
- Animals
  - Birds and Mammals
  - Insects (oak wilt)
- Rivers & Streams
- Species Characteristics

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

Recreation as a Pathway

Rusty crayfish Watch Card. Rusty crayfish are thought to be in NYS via bait bucket introduction

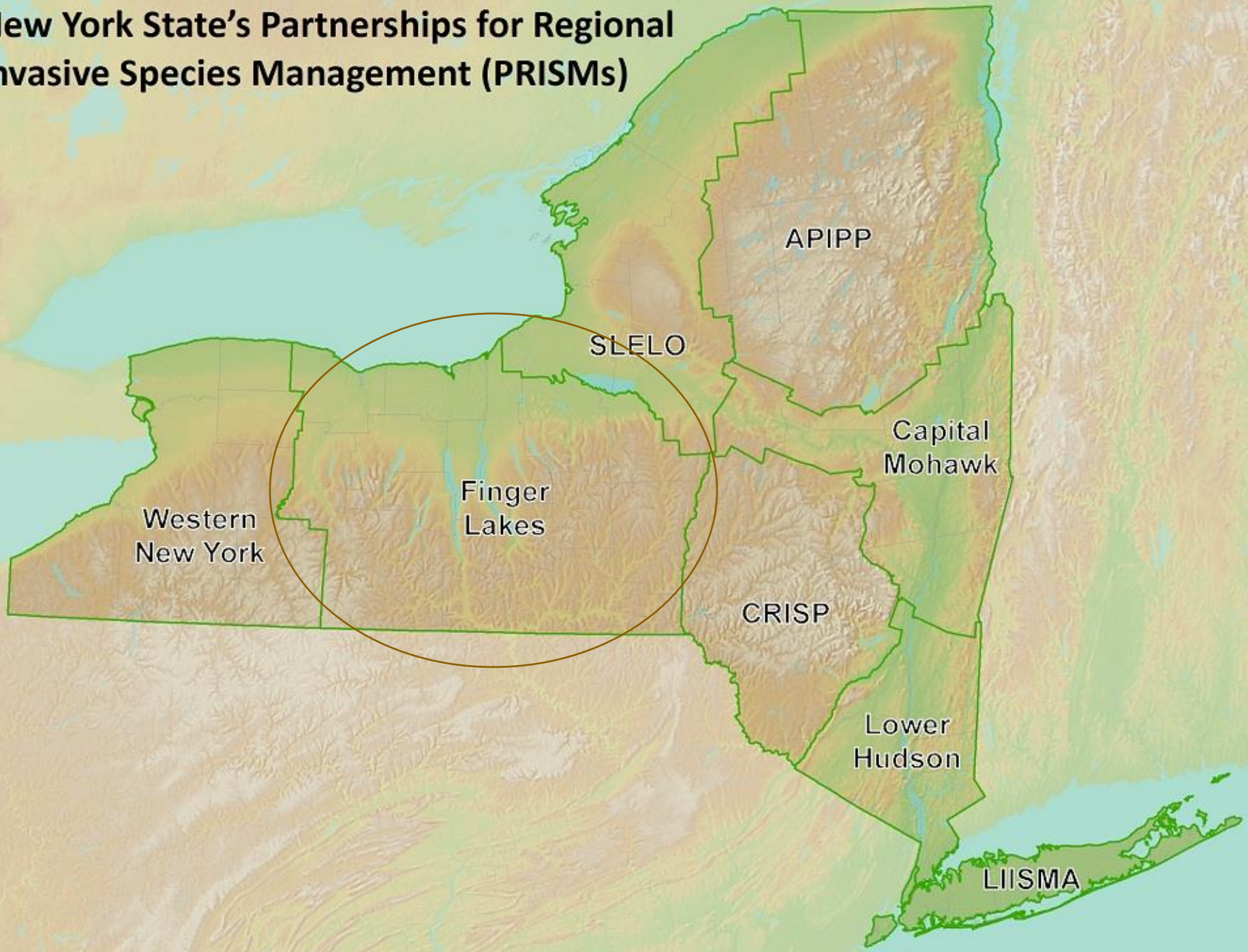
- Finger Lakes - largest NY tourism region outside NYC & environs
- Finger Lakes Tourism = $2.9 billion in 2014
- ¼ of all fishing in NYS=$1 billion in angler dollars
- Pathways: boots, waders, clothing, automobiles, boats, paddles, lifejackets, bilge water

Sign educating public about proper disposal of bait

Photo credit: Oregon.gov

WI AIS Law prohibits the transport of water and live fish

New York State's Partnerships for Regional Invasive Species Management (PRISMs)



Finger Lakes PRISM

- Addresses invasive species in Finger Lakes region
- Helps partners share/leverage limited resources
- Annual small grants program
- Many ways to connect
  - Full partnership meetings
  - Working groups
  - Volunteering
  - Collaboration
  - Small grants
- Builds community awareness & participation

Hilary Mosher
FL PRISM Coordinator

Aquatic Invasives in Honeoye Lake

Zebra Mussel

Eurasian water-milfoil

Curly Pondweed

What else?

Photos: top- Randy Westbrooks; center- Alison Fox, bottom- Leslie Merhoff; All photos from Bugwood.org

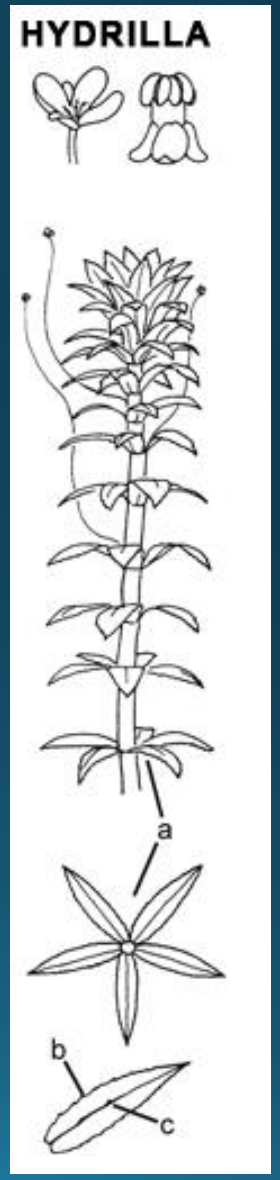
Imminent Aquatic Threats to Honeoye Lake

Hydrilla

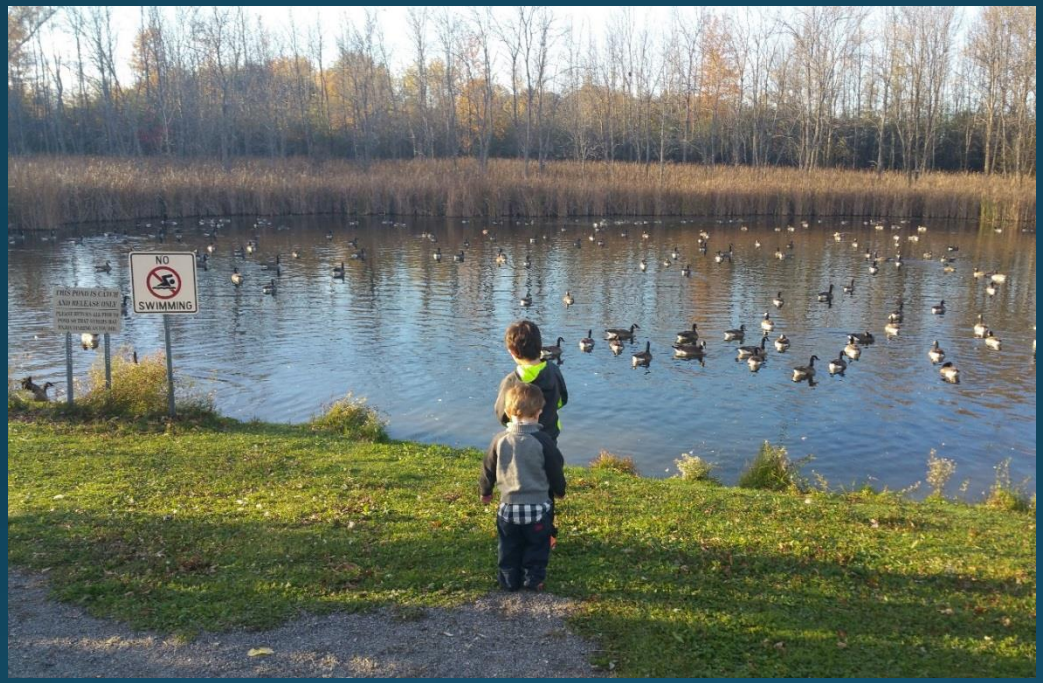
Water chestnut

Hydrilla verticillata Case Study

- Ecology
  - Rapid growth
  - Multiple spreading strategies
  - Chokes out native vegetation
  - Reduces habitat for fish and wildlife
  - Substrate for cyanobacteria?
- Economic
  - Impacts property values
  - Interferes with recreation- swimming, boating, and fishing
  - Reduces flow in drainage canals – flooding risk
  - Costly to control!!
    - Over $174M spent in FL to control Hydrilla over past 25yrs
    - ~$2.5 M/yr to manage hydrilla in SC, $5 M/yr in NC
    - MA - $40,000/yr to manage Hydrilla in a single pond in Barnstable Co.!
- Eradication efforts ongoing in Cayuga Inlet , Erie Canal, and Tinker Nature Park
  - Early ID critical



Hydrilla in Tinker Nature Park



In Henrietta
Project Cost To Date:
Benthic mats and survey: $19,000
Grass carp and delivery:$315
Permit cost: $200 (expected)
Workshop: 30 participants, $350 in in-kind training
TOTAL COST: 19,865

DO Nothing Approach?

- States like Florida and NC spend

$20,000,000- $30,000,000 ANNUALLY just to MOW Hydrilla

- Cayuga Inlet infestation costs

$400,000-$500,000 annually to treat

How much are you willing to pay?

Tax increase?

Volunteer hours?

Decreased recreation?

http://en.wikipedia.org/wiki/Hydrilla

Water Chestnut Case Study

Trapa natans L.

Native To: Europe and Asia

First Observed in NY: 1884

Means of Introduction: Ornamental for garden ponds

Impact: Inhibit boat navigation and decrease habitat diversity

Water Chestnut

<u>New Infestations and Project Cost:</u>

Genesee River –hand-harvest= $1820.32/day volunteers and boats

$1500/day for harvester rental at Cayuga Lake and Little Sodus Bay

TOTAL COST: $4,820.32

Managed Infestations and Project Cost:

Braddock Bay- hand-harvest- 7 days, avg 10 volunteers/day * $23.07/hr volunteer rate + boats =

TOTAL COST: $8579.60

Aquatic/Terrestrial Connection

- Watershed critical to water health
- Stream flow
- Stream/lake temperature
- Nutrient/sediment runoff
- Chemical inputs

Photo: Bill Hecht 2005

Hemlock Woolly Adelgid

Kills hemlocks

Hemlocks:

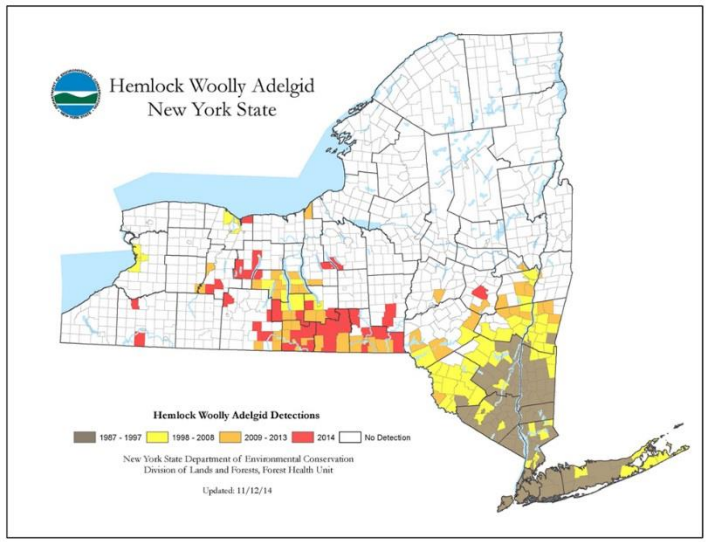
- Shade streams
- Keep water cool
- Even streamflow
- Trout habitat
- Steep slope stability

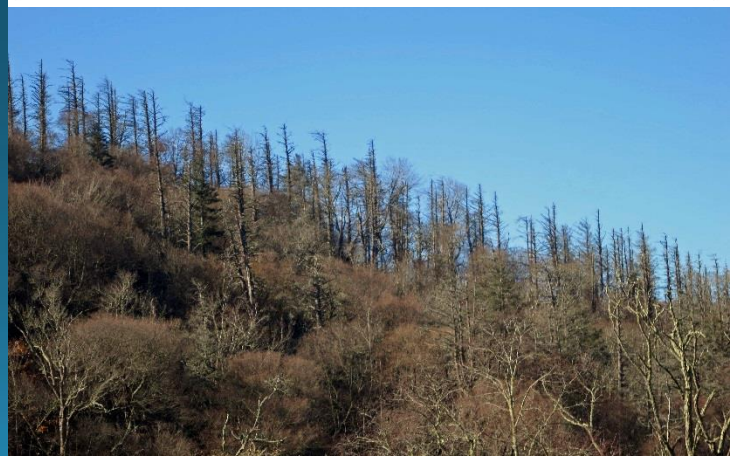
Untreated:

- Warmer water
- Sediment in lake
- Fish issues

Treat:

- Chemical stopgap
- Develop biocontrol





Photos: Top & Bottom- Mark Whitmore; Middle- NY DEC

Japanese Knotweed

- Widespread
- Alters stream flow
- Reduces shade to streams
- Property damage
- Virtually indestructible
- Spreads by fragments
- Control expensive

Photos: Top- Jan Samenek, Phytosanitary Administration; Middle- PA Natural Heritage Program; bottom- unknown

Agricultural Invasive Species

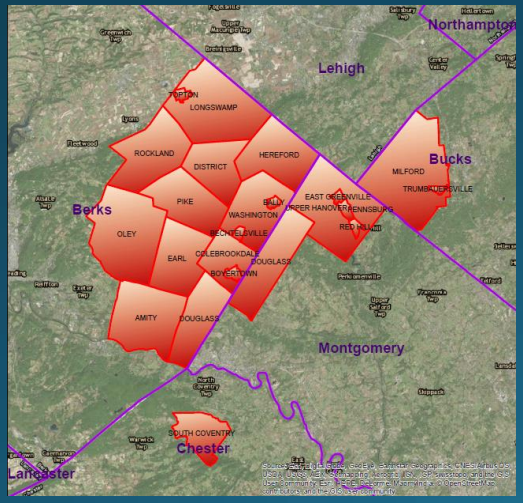
Herbicide resistant weeds in crops
Craig Hicks, USDA APHIS

Spotted Wing Drosphila in Raspberries
Joseph Moisan-De Serres, Québec's MAPAQ

Brown Marmorated Stinkbugs on Tomato
Univ. of Maryland Extension

New Threat: Spotted Lanternfly

- Recently found in PA
- 65 host species
- Fruit, logging, forestry industries threatened
- Natural hitchhiker
- Watch for this insect!



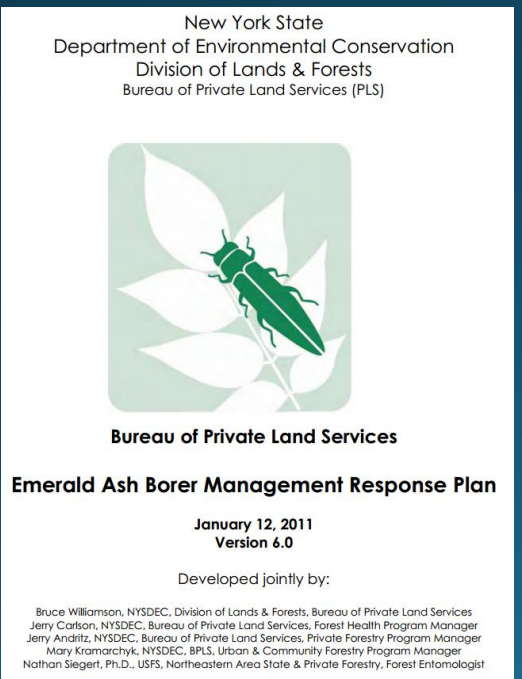
All photos and map courtesy of PA Dept of Agriculture

Early Detection/Rapid Response

- Important to know potential invasives in your landscape
  - Act as early detectors by spotting and reporting invasive species
- Use of iMapInvasives as a detection tool
  - Facilitates the management and sharing of information
  - Supports early detection of new populations

Management Strategies

- We can not afford a 'sit and wait' tactic to invasive species mgmt
- Proactive approach provides the best chance for eradication and the lowest cost
- Need an early detection/rapid response plan
- If something doesn't look right, it probably isn't! Is it invasive?!



New York State
Department of Environmental Conservation
Division of Lands & Forests
Bureau of Private Land Services (PLS)

Bureau of Private Land Services

Emerald Ash Borer Management Response Plan

January 12, 2011
Version 6.0

Developed jointly by:

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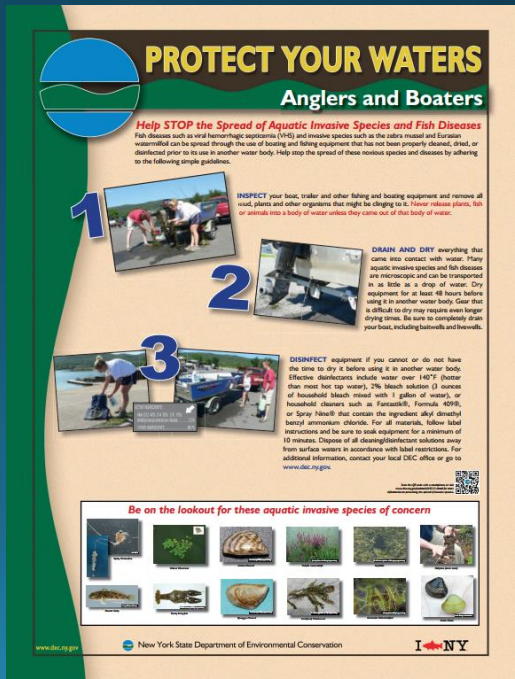
Japanese knotweed growing through asphalt



QUESTIONS?

Photo credits: Katie Lovering