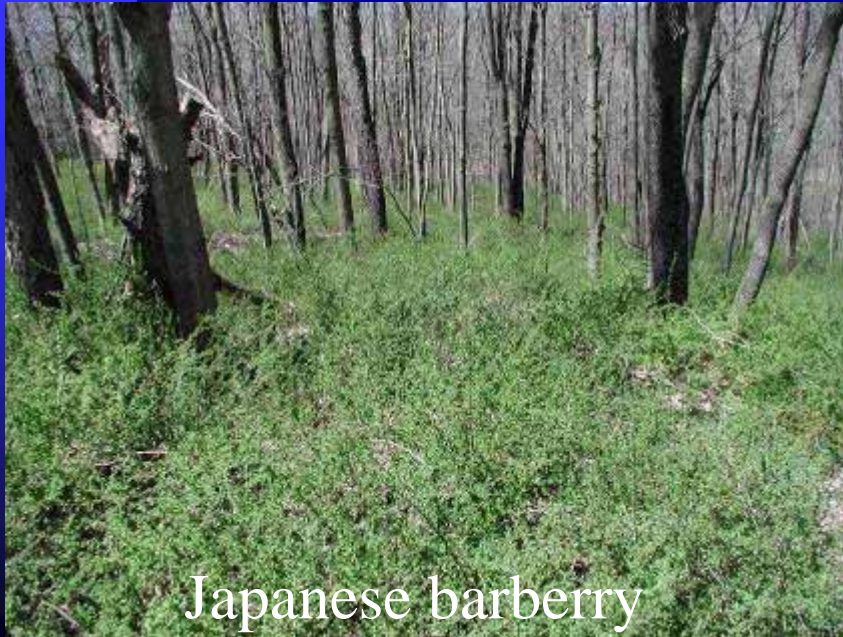


The IPANE Program: New England's Multifaceted Early Detection Network

Leslie J. Mehrhoff
Program Director
University of Washington Botanic Garden
Seattle, Washington **19 SEP 2006**

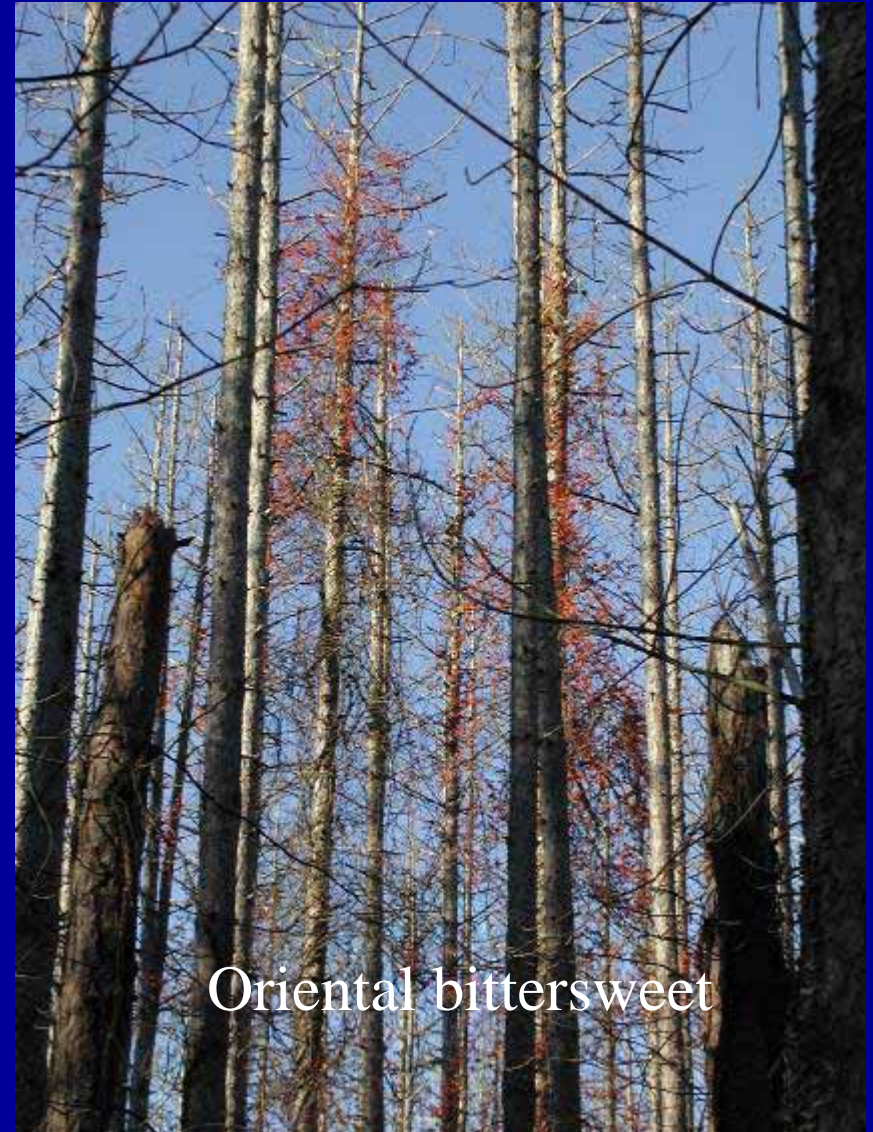
NEW ENGLAND – An invaded landscape



Japanese barberry



Japanese stilt-grass

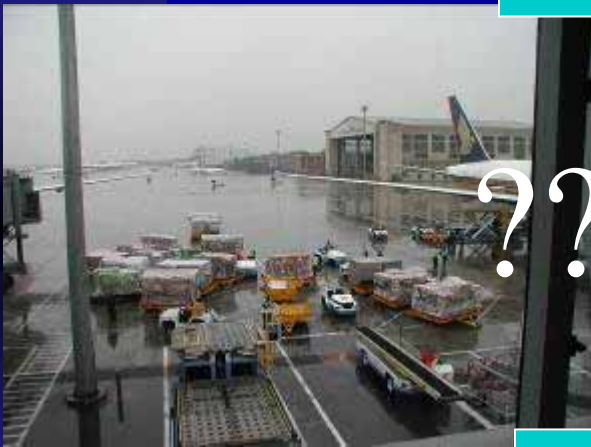


Oriental bittersweet





What we don't know...



??????



**What's next?,
Where will it come from?**

PREVENTION



Stop potentially invasive species from entering region

EARLY DETECTION



Find the incursion before it becomes well established and spreads!

EDRR



THE ED CHALLENGE:
Find these before they
become established

EDRR



THE RR CHALLENGE:
If they do become established,
get them out before they spread



Jockey Hollow, Morristown National Historic Park, New Jersey



Or else!!!

Perception of an Invasive Species



Perception of an Invasive Species



Early detection used to be relatively easy...

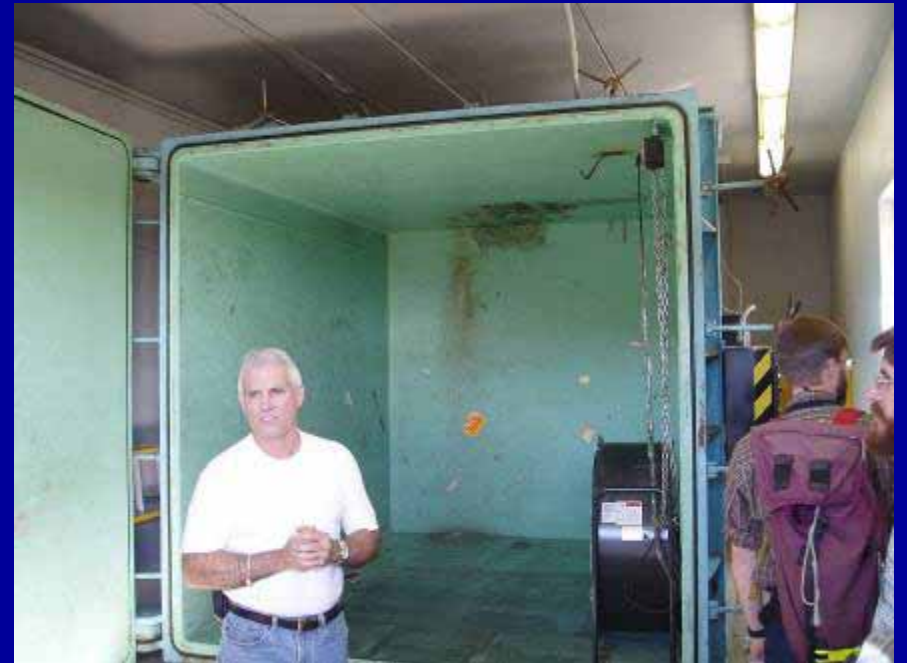


We knew where things were coming from, how they would get here, and even where they were likely to arrive.





APHIS was ready for them!



Nowadays...



A big problem...



Birds don't read books

The other big problem....



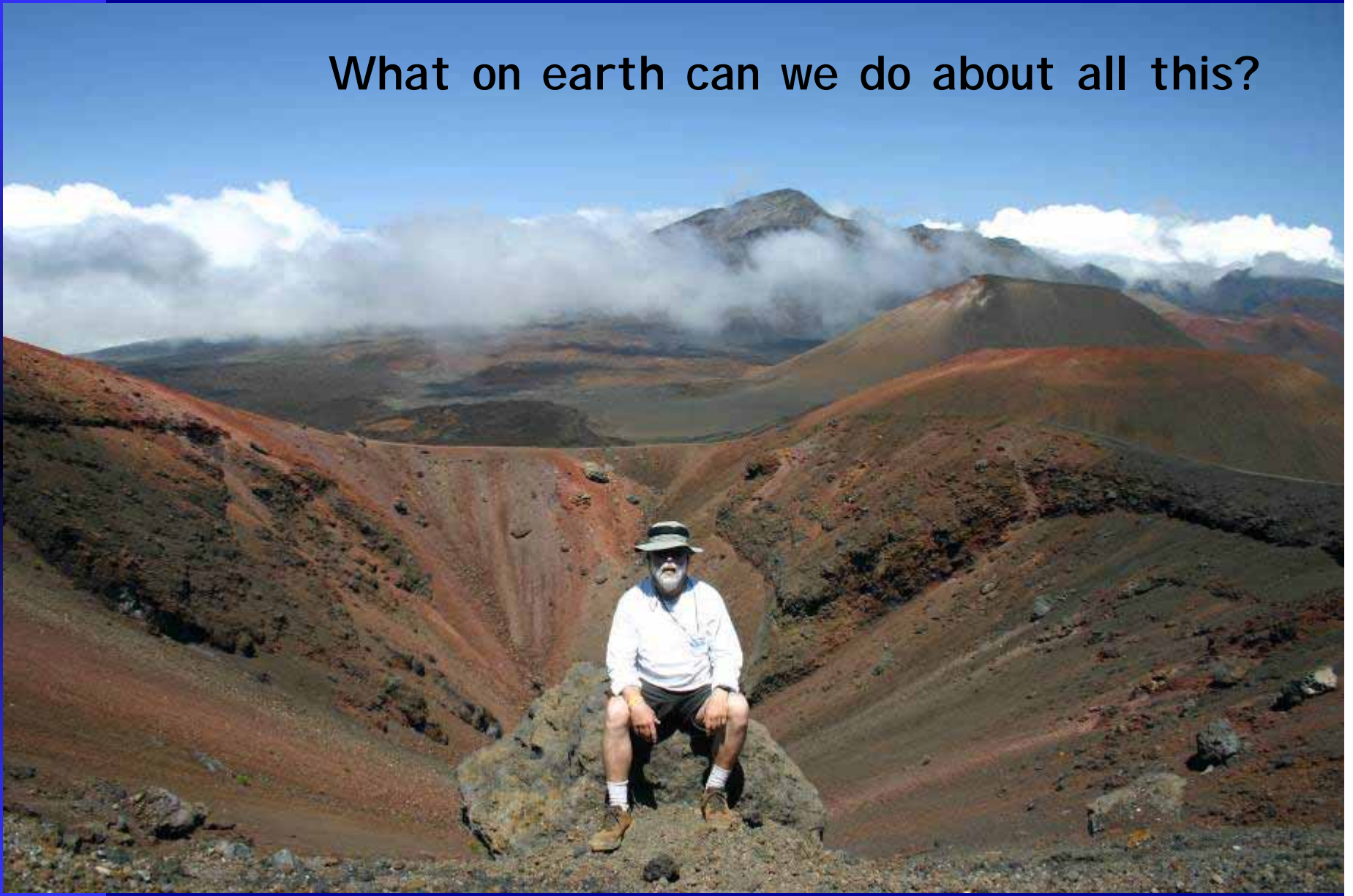
The loss of “old-time”
field botanists who were
New England’s former
Early Detectors

Merritt Lyndon Fernald

Albion Hodgdon
Edwin H. Eames

George Rossbach
Harry Ahles

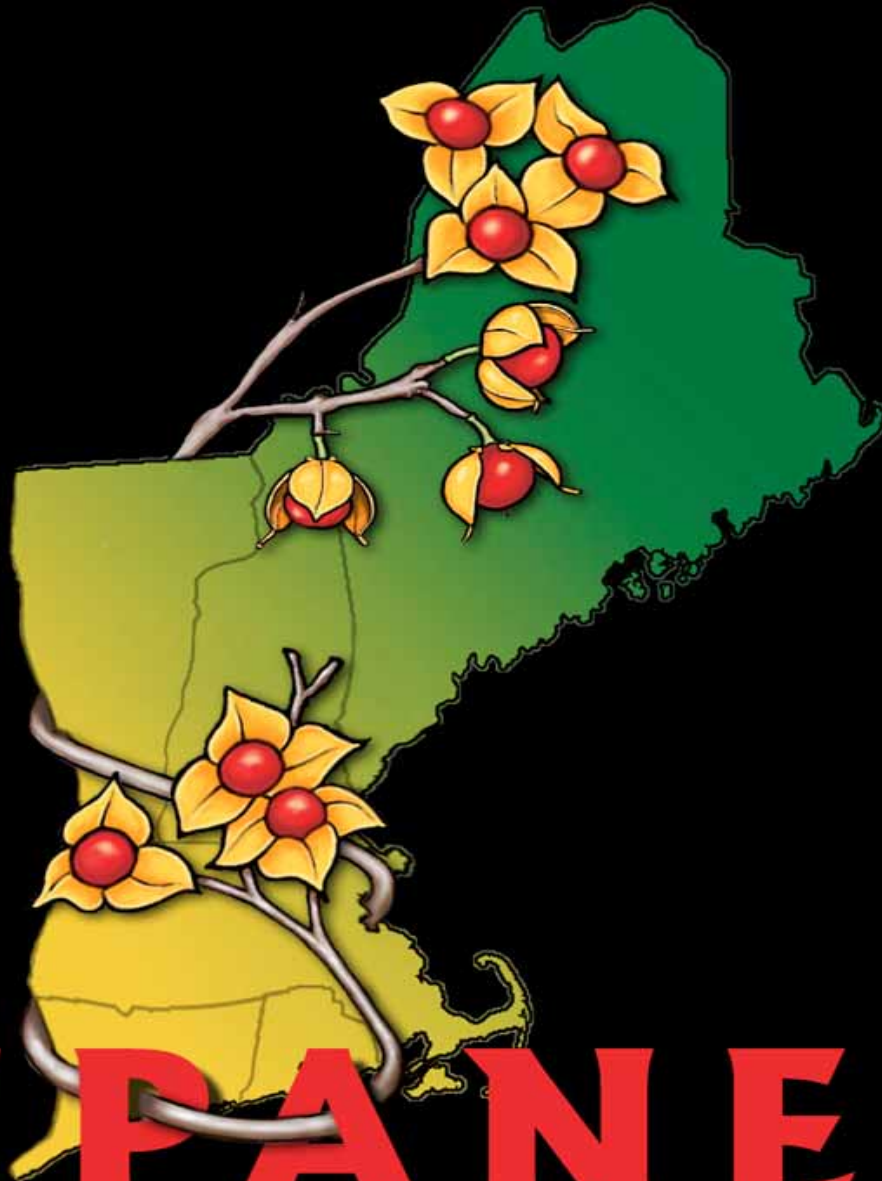
What on earth can we do about all this?







*Tell the truth here



IPANE

Invasive Plant Atlas of New England



In collaboration with -
Randy Westbrooks
and many others

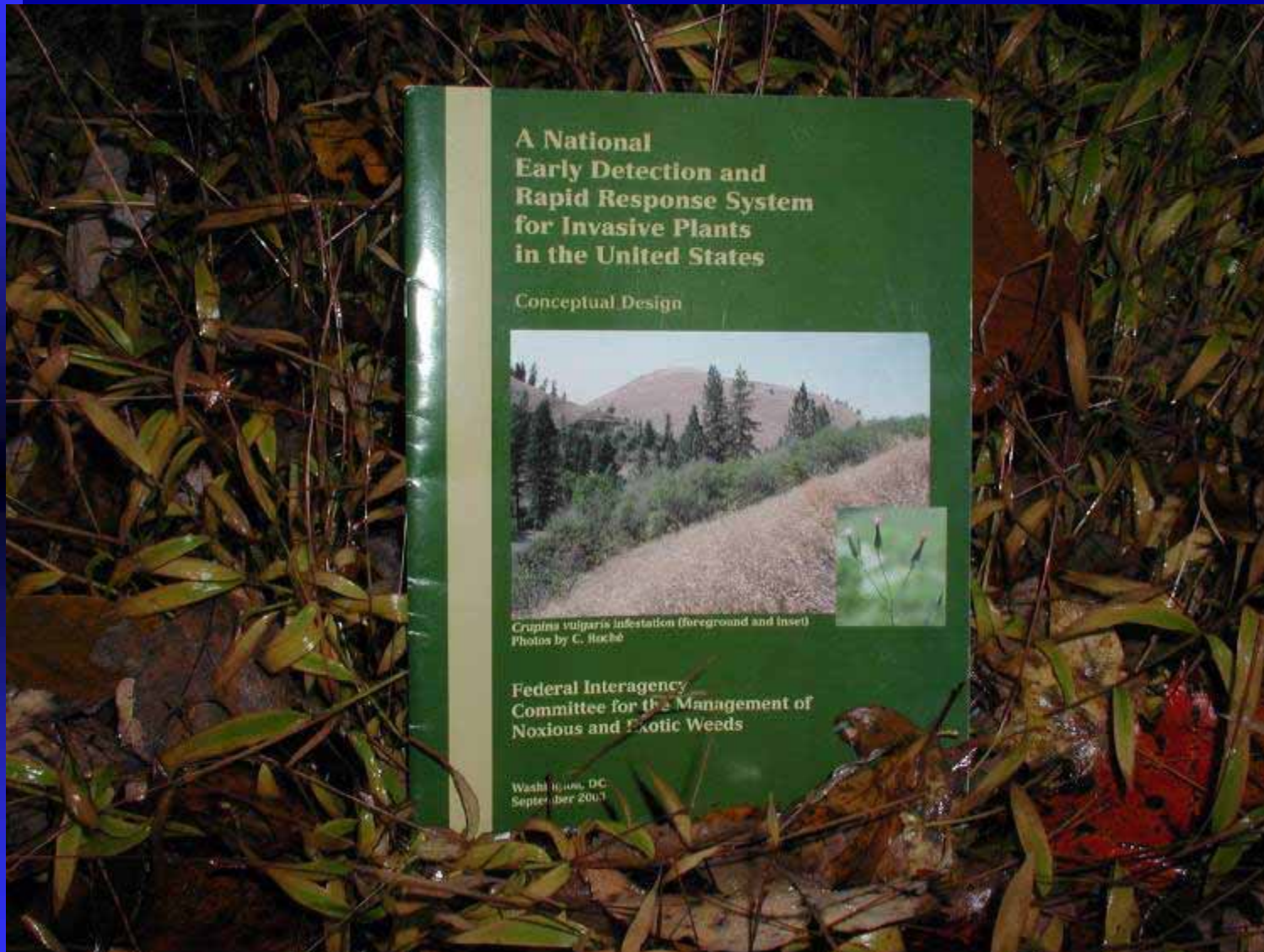
FICMNEW Early Warning and Rapid Response Workshop

June, 2000

- USGS Research Center,
Ft. Collins, CO.
- Sponsored by USDA & USGS
- Broad Stakeholder
Participation
- Five Working Groups
 - ◆ Early Detection
 - ◆ Rapid Assessment
 - ◆ Rapid Response
 - ◆ Outreach and Education
 - ◆ Operational Framework
- Proceedings (2-2001)
- Action Plan (Spring, 2001)



The results of the meeting....



The FICMNEW National EDRR Plan

Why IPANE...

- We need to know...
 - ◆ What IAS are already on the landscape
 - ◆ Where they are
 - ◆ How abundant they are
 - ◆ About their biology in order to control them
- We also need to find new incursions before...
 - ◆ They become well established and spread
 - ◆ The cost or environmental damage of their eradication is prohibitive

The IPANE Equation for Invasives

Early Detection +

Rapid Reporting +

Reliable Data +

Good Science =

Effective Strategic Response

Why IPANE's focus on Early Detection?

- A logical place to start
- Good use of science and the public
- Practical and doable
- Available volunteers who believe we can make a difference

The IPANE Early Detection Vision

IPANE volunteers...



The Front Line of Defense

If IAS get here, we can't let them become established!

The IPANE Grant

An Early Detection
and
Rapid Assessment Network
for
New England

Program Funding:

- United States Department of Agriculture – Cooperative State Research, Education, and Extension Service (competitive grants)

Initial Funding - Initiative for Future Agriculture and Food Systems - \$1.26 million; 4 years

2nd Iteration – National Research Initiative - \$500K; 2 years

IPANE Program Participants

- **University of Connecticut**
 - ◆ **Ecology & Evolutionary Biology**
 - ◆ **Homer Babbidge Library**
 - ◆ **Center for Cartographic Analysis**
Les Mehrhoff, John Silander
- **Silvio O. Conte National Fish and Wildlife Refuge, US F&WS**
Cynthia Boettner, Beth Goettel
- **New England Wild Flower Society**
Ted Ellimen, Bill Brumback

IPANE Advisory Committee

- David Boufford, Harvard University Herbaria
- Chris Dionigi, National Invasive Species Council
- Ann Gibbs, Maine State Horticulturist
- Bill Gregg, USGS (retired)
- John Kartesz, BONAP
- Dick Mack, Washington State University
- Scott Peterson, USDA Plants Database
- Barry Rice, TNC Wildland Weeds Program
- Annie Simpson, USGS NBII
- Tom Stohlgren, USGS NIISS
- Al Tasker, USDA APHIS
- Randy Westbrook, USGS
- Chris Mattrick, USDA FS
- Tom Bewick, USDA CSREES (*ex officio*)

Federal Partners...

- U. S. Department of Agriculture
 - ◆ U. S. Forest Service
 - ◆ PLANTS database
- U. S. Fish and Wildlife Service
- U. S. Geological Survey
 - ◆ Biological Research Discipline
 - ◆ National Biodiversity Info Infrastructure
 - ◆ National Institute for Invasive Species Science
- National Park Service
- FICMNEW

Some Other Partners...

- New England Wild Flower Society
- TNC – Wildland Invasive Species Team
- The Flora of North America Project
- Biota of North America Project
- Northeast Aquatic Nuisance Species Panel
- Global Invasive Species Information Network
- Connecticut Invasive Plants Council
- Massachusetts Nursery and Landscape Association
- Federated Garden Clubs of New England
- Appalachian Mountain Club
- Massachusetts Audubon Society
- Friends of Acadia
- Town of New Milford, CT Conservation Commission

IPANE Goals

- **New England Early Detection Network**
- Gather current & historic distributional data
- Make information available
- Conduct & encourage scientific research
- Increase public awareness
- Train volunteer spotters & citizen scientists
- Develop exportable protocols
- “Interoperability”

IPANE Program Components

- **Regional Early Detection Network**
- Atlas of invasive or potentially invasive plants in New England
- Interactive website
- Herbarium search and data capture
- Volunteer training & data gathering
- Research and predictive modeling
- Outreach (NIPGro)

User Community

- Land Managers
- Conservationists
- Government Agencies
- Regulators & Legislators
- Academia
- Green Industries
- Public

Data Warehouse

IN

- Herbarium records
- Current field data
- Current research
- Invasive species information

OUT

- Species Catalog
- Records databases
- Maps
- Invasive species information

IPANE Databases

- Herbarium specimen database
- Current Field Data
- People database
 - ◆ Trained field volunteers
 - ◆ NIPGro members
 - ◆ Rapid Assessment contact people
 - ◆ State agency contacts

Volunteer Network – primary data gathers

- 450 in 3 years – 25 per state per year
(Approaching 600)
- Half-time volunteer coordinator
- Staff-run introductory, “getting started”, and advanced training sessions
- Block-busting weekends
- Terrestrial and Aquatic species
- On-line reporting forms and volunteer list serve
- Verification and Quality Control mechanisms in place

Volunteer Accomplishments



- Data gathered on over 302 USGS Quads
- >600 program – trained volunteers
- 7575 individual species reports so far
- 3720 field survey forms submitted
- Around 200 training sessions, recruitment talks, and program presentations given (New England and beyond)
- IPANE volunteers increasingly involved in control projects

2005 data

The Invasive Plant Atlas of New England Website

- <http://ipane.org>
- Spontaneous reporting mechanism
- Catalog of species – 120 and growing
- Maps & databases for tracked species
- Project information
- Noxious weed information
- Volunteer support information
- Much more!



Invasive Plant Atlas of New England



The Invasive Plant Atlas of New England's (IPANE) mission is to create a comprehensive web-accessible database of invasive and potentially invasive plants in New England that will be continually updated by a network of professionals and trained volunteers. The database will facilitate education and research that will lead to a greater understanding of invasive plant ecology and support informed conservation management. An important focus of the project is the early detection of, and rapid response to, new invasions.

[:: Invasive Alerts ::](#)



[:: Early Detection](#)



[:: IPANE Species](#)



[:: Data & Maps](#)



New
England
Wild Flower
Society



University of
Connecticut

[:: Site Map](#)

[:: Contact Us](#)

[:: Report a Sighting](#)

Citation Information:

Mehrhoff, L. J., J. A. Silander, Jr., S. A. Leicht, E. S. Mosher and N. M. Tabak, 2003.

IPANE: Invasive Plant Atlas of New England. Department of Ecology & Evolutionary Biology, University of Connecticut, Storrs, CT, USA.

URL: <http://www.ipane.org>

Library-run user survey 2004; “Highly recommended” by CHOICE

Spontaneous & Unsolicited Reports

- “Report a sighting” button on website homepage
- Ability to attach digital images
- Verification levels
 - ◆ IPANE staff
 - ◆ Regional herbaria
 - ◆ BONAP distribution
 - ◆ FNA authors
- Initiate Rapid Assessment process if necessary
- Respond to submitter



Invasive Plant Atlas of New England

Report Sightings



[:: Species List \(Scientific Names\)](#)



[:: Species List \(Common Names\)](#)



[:: Table by States and Life Forms](#)



[:: Report a Sighting](#)

Use this form to alert us to sightings of invasive species and activate our early detection network, or to ask questions of our experts. This is a communication tool: reports are not entered into our database from this form (a complete field form is necessary for inclusion in the database). Please attach a digital photograph if possible.

We require your name, a note to our staff, and either a e-mail address or a phone number. ** indicates a required field

Your Name **	<input type="text"/>
Your E-mail **	<input type="text"/>
Your Phone **	<input type="text"/>
Do you want to send a copy of this message to yourself?	<input type="radio"/> Yes <input checked="" type="radio"/> No
Your note to our staff **	<input type="text"/>
We can also accept pictures as further documentation. They must be either a (.gif, .jpeg, or .png).	<input type="text"/> <input type="button" value="Browse..."/>

[:: Site Map](#)

[:: Contact Us](#)

[:: Report a Sighting](#)

IPANE Catalog

- Scientific and common names
- Diagnostic & incursion photographs
- Descriptive text
- Historical information
- Similar species
- Hard copy references and hot links
- Management links



Invasive Plant Atlas of New England

Catalog of Species Search



Select at least one species. Select at least one common name.

Select species from the list

- Acer ginnala
- Acer platanoides
- Acer pseudoplatanus
- Aegopodium podagraria

Submit Reset

Select common names from the list

- Reed sweetgrass
- Amur honeysuckle
- Amur maple
- Amur peppervine

Submit Reset

Search by Keyword(s)

Search by Keyword

Browse the Catalog of Species Form

Browse by Species

Browse by Life

Select a life form

Submit

SEARCH TIPS: To conduct a search on a partial word, use an asterisk *. *Example:* To search for words beginning with *lepid*, enter *lepid** in the text box.

You may also use *AND* or *OR* or *NOT*. *Example:* *Polygonum OR Lepidium*.

Metadata Model

- Home
- Early Detection
- Catalog of Species
- Data & Maps
- Project Information
- Volunteers
- Related Links
- Noxious Weeds
- Discuss Invasives
- NE Plant Summit

Senecio jacobaea (Tansy ragwort , stinking willie)

[Common Name\(s\)](#) | [Full Scientific Name](#) | [Family Name Common](#) | [Family Scientific Name](#) | [Images](#) | [Synonyms](#) | [Description](#) | [Similar Species](#) | [Reproductive/Dispersal Mechanisms](#) | [Distribution](#) | [History of Introduction in New England](#) | [Habitats in New England](#) | [Threats](#) | [Early Warning Notes](#) | [Management Links](#) | [Documentation Needs](#) | [Additional Information](#) | [References](#) | [Data Retrieval](#) | [Maps of New England Plant Distribution](#)

COMMON NAME

Tansy ragwort, stinking willie

FULL SCIENTIFIC NAME

Senecio jacobaea L.

FAMILY NAME COMMON

Aster family

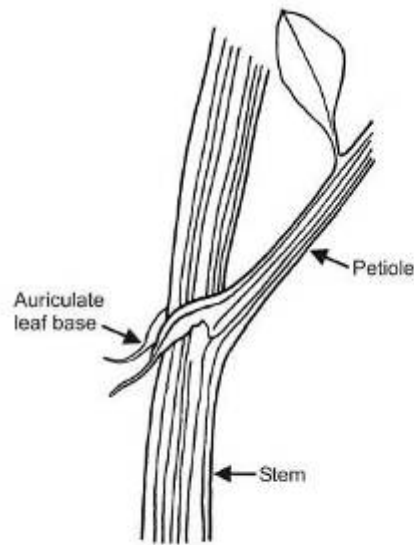
FAMILY SCIENTIFIC NAME

Asteraceae

IMAGES



C. impatiens, *C. parviflora* and *C. pensylvanica* all look very similar. The most important distinguishing characteristic is the sagittate-auriculate leaf bases of *C. impatiens*. These can be seen with the naked eye, but is more clearly visualized with a hand lens. See detail in illustration below.



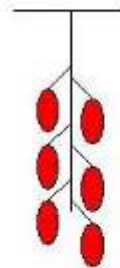
Detail of the sagittate-auriculate leaf base

Cardamine impatiens

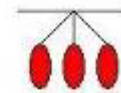
Identification aids

Berberis spp.

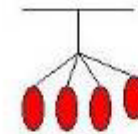
Character	<i>Berberis thunbergii</i>	<i>Berberis</i> × <i>ottawensis</i>	<i>Berberis vulgaris</i>
Branch spines	1 (can have up to 3)	varies	3 (can be 1)
Inflorescence*	sessile umbel	Subumbellate-raceme	Raceme
Leaf margin	Entire	Most often entire**	Serrate
Berry consistency	Dry	Dry	Julcy



Berberis vulgaris



Berberis thunbergii



Berberis × *ottawensis*

Incursion photos –
Informative,
Hard to challenge



Japanese stilt-grass



Burning bush



Water chestnut

IPANE Website Databases

■ HERBARIUM SPECIMEN RECORDS

Records from 20+ herbaria when we finish

Geographic perspective

35,000 geo-reference points

Historic perspective

Earliest records from 1827

Predictive modeling applications



Invasive Plant Atlas of New England

Data and Maps

Acer ginnala	41.75, 120
Acer ginnala	41.75, 120
Acer ginnala	41.75, 120
Acer ginnala	41.75, 120
Acer ginnala	41.75, 120
Acer ginnala	41.75, 120
Acer ginnala	41.75, 120
Acer ginnala	41.75, 120
Acer ginnala	41.75, 120
Acer ginnala	41.75, 120

[:: Data](#)



[:: Maps](#)



[:: Search By Place](#)

Select one species from the list below:

Show names:

- Acer ginnala
- Acer platanoides
- Acer pseudo-platanus
- Aegopodium podagraria
- Ailanthus altissima
- Aira caryophyllea

[Search by place](#)

Select a data source:

Select a data output format:

[:: Site Map](#)

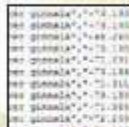
[:: Contact Us](#)

[:: Report a Sighting](#)



Invasive Plant Atlas of New England

Data and Maps



[Data](#)



[Maps](#)



[Search By Place](#)

Species (scientific name): *Acer platanoides*

Number of records: 119

Note: This table was generated using the IPANE data available on 2005-1-20 (E.T.).

ScientificName	State	County	Town	MinorDesignation	GeographyL
<i>Acer platanoides</i>	CT	Hartford	Suffield		-72.6815
<i>Acer platanoides</i>	CT	New London	Stonington		-71.9072
<i>Acer platanoides</i>	CT	Fairfield	Bridgeport		-73.1962
<i>Acer platanoides</i>	ME	Cumberland	Frye Island		-70.311
<i>Acer platanoides</i>	CT	Tolland	Mansfield	Storrs	-72.25
<i>Acer platanoides</i>	CT	Hartford	Hartford		-72.6839
<i>Acer platanoides</i>	CT	Fairfield	Stamford		-73.5527
<i>Acer platanoides</i>	CT	New Haven	North Haven		-72.859



Invasive Plant Atlas of New England

Data and Maps



Data



Maps



Search By Place

Species (scientific name): *Acer platanoides*

Number of records: 119

Note: This table was generated using the IPANE data available on 2005-1-20 (E.T.).

Here is the comma-delimited file. Right click the name of the file below and select "Save Target/Link As..." from the pop-up menu of your web browser to download, or click the name of the file to open it and then choose "Save As..." from the "File" menu.

Comma-delimited file: [t419wtvx.txt](#)

Note:

This text file is in UNIX/LINUX format. That is, the end of line characters are line feeds only instead of the carriage return and line feed combinations. It is problematic as Microsoft

```

scientificName", "State", "County", "Town", "MinorDesignation", "GeographyLongitude", "GeographyLatitude", "Locality", "
"Acer platanoides", "CT", "Hartford", "Suffield", "", -72.6615, 42.0002, "Alcorn's Hartford", "6/8/1960", "", "", "", "Jes
"Acer platanoides", "CT", "New London", "Stonington", "", -71.9072, 41.3651, "Morgan's Field", "5/11/1978", "", "", "", "E
"Acer platanoides", "CT", "Fairfield", "Bridgeport", "", -73.1962, 41.1863, "", "5/1/1895", "", "", "", "Edwin Hubert Eame
"Acer platanoides", "ME", "Cumberland", "Frye Island", "", -70.311, 43.505, "Route 32, West Willington Tolland, Willingt
"Acer platanoides", "CT", "Tolland", "Mansfield", "Storrs", -72.25, 41.8083, "Road to vinyard", "3/5/1911", "", "", "", "A
"Acer platanoides", "CT", "Hartford", "Hartford", "", -72.6839, 41.7657, "railroad right-of-way", "7/16/1977", "", "", "", "
"Acer platanoides", "CT", "Fairfield", "Stamford", "", -73.5527, 41.0967, "Bartlett Arboretum", "4/21/1961", "", "", "", "
"Acer platanoides", "CT", "New Haven", "North Haven", "", -72.859, 41.3818, "338 Quinnipiac Ave., in yard", "8/3/1993", ""
"Acer platanoides", "CT", "Hartford", "Hartford", "", -72.6839, 41.7657, "48 Oxford St., at edge of yard", "7/26/1990", ""
"Acer platanoides", "CT", "Hartford", "Suffield", "", -72.6615, 42.0002, "", "6/30/1960", "", "", "", "Jesse F. Smith", ""
"Acer platanoides", "CT", "Fairfield", "Stamford", "", -73.5527, 41.0967, "UConn branch campus", "10/23/1979", "", "", "", "
"Acer platanoides", "CT", "New Haven", "Southbury", "", -73.2347, 41.4735, "", "8/6/1980", "", "", "", "river shore", "Harry I
"Acer platanoides", "CT", "Hartford", "Suffield", "", -72.6615, 42.0002, "495 No. Main St.", "9/13/1960", "", "", "", "Lawn",
"Acer platanoides", "CT", "Fairfield", "Fairfield", "", -73.2734, 41.1757, "Jennings Woods", "5/7/1940", "", "", "", "Edwi
"Acer platanoides", "CT", "Fairfield", "Stratford", "", -73.1302, 41.2043, "Seaside Park", "8/24/1893", "", "", "", "C. K.
"Acer platanoides", "CT", "New London", "Montville", "Haughton Mountain", -72.1097, 41.4461, "Rts. 32 163 at S end of H
"Acer platanoides", "CT", "Fairfield", "Stamford", "", -73.5527, 41.0967, "Bartlett Arboretum", "10/24/1979", "", "", "", "
"Acer platanoides", "CT", "Tolland", "Mansfield", "Storrs", -72.25, 41.8083, "", "5/31/1920", "", "", "", "George Safford
"Acer platanoides", "CT", "Fairfield", "Redding", "", -73.3933, 41.3044, "Greenbush Rd.", "7/23/1988", "", "", "", "roadside"
"Acer platanoides", "CT", "Tolland", "Mansfield", "Storrs", -72.25, 41.8083, "North Eagleville Rd.", "4/16/1968", "", "", "", "
"Acer platanoides", "CT", "Fairfield", "Fairfield", "", -73.2734, 41.1757, "", "6/7/1940", "", "", "", "Edwin Hubert Eames
"Acer platanoides", "CT", "Tolland", "Mansfield", "Storrs", -72.25, 41.8083, "", "1/1/1800", "", "", "", "Dorothy B. Alin"
"Acer platanoides", "MA", "Norfolk", "Brookline", "", -71.1424, 42.3231, "", "6/30/1901", "", "", "", "P. F. Forbes", "", 0.
"Acer platanoides", "MA", "Franklin", "Deerfield", "", -71.1087, 42.4225, "South Deerfield", -72.6083, 42.4772, "", "8/3/1972", "", "", "", "Step
"Acer platanoides", "NH", "Strafford", "Hilton", "", -71.0138, 43.4526, "", "10/29/1968", "", "", "", "woods", "Albion R. Hodg
"Acer platanoides", "CT", "New London", "Old Lyme", "", -72.8036, 41.8172, "Duck River Cemetery", "6/12/1997", "", "", "", "t
"Acer platanoides", "MA", "Middlesex", "Medford", "", -71.1087, 42.4225, "Tufts University", "6/2/1976", "", "", "", "unspeci
"Acer platanoides", "MA", "Middlesex", "Medford", "", -71.1087, 42.4225, "Tufts University", "6/2/1976", "", "", "", "unspeci
"Acer platanoides", "CT", "New Haven", "New Haven", "", -72.9241, 41.3101, "", "6/23/1999", "", "", "", "utility right-of-way
"Acer platanoides", "CT", "Fairfield", "Norwalk", "", -73.4202, 41.0939, "Sheffield Island, Stewart B. McKinney NWR", "6/
"Acer platanoides", "CT", "Fairfield", "Fairfield", "", -73.2734, 41.1757, "I-95 at Exit 22, Benson Road Fairfield Co.,

```

- Site Map
- Contact Us
- Report a Sighting

IPANE Website Databases

- CURRENT FIELD RECORDS

Ecological & site specific data

Population size and status information

Future predictive modeling applications

On-line data entry ability

Invasive Plant Atlas of New England (IPANE) Survey Form

The New England Wild Flower Society

(Please refer to guidelines for the use of this form)

Terrestrial Version 10/09/02

Site Form _____ Hot Form _____

Assignment Area Site Code _____ Electronic Submission Number _____

Site Information: State _____ County _____ Town _____ Date observed: ____/____/____

Locality (Closest name, *Locality on the 1000 quad. Attach photocopy of map*)

Coordinates (please circle - decimal degrees, minute, sec) Latitude _____ Longitude _____
 Altitude(ft) _____ please circle - GPS or map estimate Datum (e.g. NAD 1927) _____

Habitat Types (please fill in number on back, spend no more than 30 sec to decide)

Edge	Forest continued	Wetlands	Miscellaneous	Miscellaneous
1) Upland/wetland	8) Oak	16) Herbaceous marsh	23) Dune	30) Rocky outcrops
2) Field/forest	9) Floodplain Forest	17) Bog	24) Open field	31) Beach
3) Lake edge	10) N. hardwood	18) Fen	25) Old field	32) Rocky coast
4) Roadside	11) Upland red maple	19) Shrub wetland	26) Stream bank	33) Abandoned lot/old home site
Forests	12) Oak/hickory	20) Cedar swamp	27) Yard/garden	
5) Aspen/birch	13) Pitch pine	21) Red maple swamp	28) Ag. Field	
6) White pine	14) Hemlock	22) Salt marsh	29) right-of-way	
7) Oak/pine	15) Spruce/fir			

34) Other habitat (Please explain, up to 254 characters.)

Is this plot along a trailside? Yes _____ No _____

Site Conditions (please circle)

Canopy Closure	0-25%	26-50%	51-75%	76-100%					
Aspect	North	NE	NW	South	SE	SW	East	West	Flat
Soil Moisture	Xeric (dry)	Mesic (moist)	Saturated	Humidated					

Comments

Reporter:
 Name _____ ID# _____

Funded by the United States Department of Agriculture

Please mail to: Bryan Connolly, Invasive Plant Survey Coordinator, 180 Hemerock Rd., Framingham, MA 01701-2699

Terrestrial field form



Species (Common or scientific name as written in guideline)	Habitat Type (# from table)	Abundance (Check one)					Distribution (Check one)					Percent Cover (Check one)					Reproduction (Check all that apply)					Documented if required (Check one)		
		Single plant	Less than 20	20-99	100-999	More than 1000	Single plant	Evenly spaced	Single patch	Multiple patches	Dense throughout	Less than 1%	1-3%	4-15%	16-50%	51-75%	76-100%	Vegetative	Flowers	Pollinators	Fruit	Seeding present?	Photo graph	Specimen

Associated vegetation:



IPANE Maps

- New maps generated as new data are added
- Herbarium records & current reports
- State, county, town, & site occurrence
- Maintained by NBII – NIN
- ?? Automated



Invasive Plant Atlas of New England

Data and Maps

```
ser ginnala",-72.131
ser ginnala",-73.131
ser ginnala",-74.281
ser ginnala",-75.131
ser ginnala",-76.281
ser ginnala",-77.131
ser ginnala",-78.131
ser ginnala",-79.131
ser ginnala",-80.281
ser ginnala",-81.131
ser ginnala",-82.281
ser ginnala",-83.131
ser ginnala",-84.281
ser ginnala",-85.131
```

[:: Data](#)



[:: Maps](#)



[:: Search By Place](#)

Select one species:

Show names:

- Acer ginnala
- Acer platanoides
- Acer pseudo-platanus
- Aegopodium podagraria
- Ailanthus altissima**
- Aira caryophylla

[Search by place](#)

Select your study area:

- The whole New England area
- One or more states
- One or more counties
- One or more towns (county sub-divisions)

[:: Site Map](#)

[:: Contact Us](#)

[:: Report a Sighting](#)

ant Atlas of New England

Select a map type (see [map examples](#)):

- Existence of species
- Specimen/observation location map
- Choropleth map for specimen counts
- Choropleth map for specimen density

Select mapping data source(s):

- Herbarium specimens
- Field records
- Both (only available for specimen/observation location maps)

Submit

Reset



Invasive Plant Atlas of New England

Data and Maps

```
set coordinates="71.9, 131
set coordinates="71.9, 131
set coordinates="71.9, 131
set coordinates="71.9, 131
set coordinates="71.9, 131
set coordinates="71.9, 131
set coordinates="71.9, 131
set coordinates="71.9, 131
set coordinates="71.9, 131
set coordinates="71.9, 131
```

[:: Data](#)

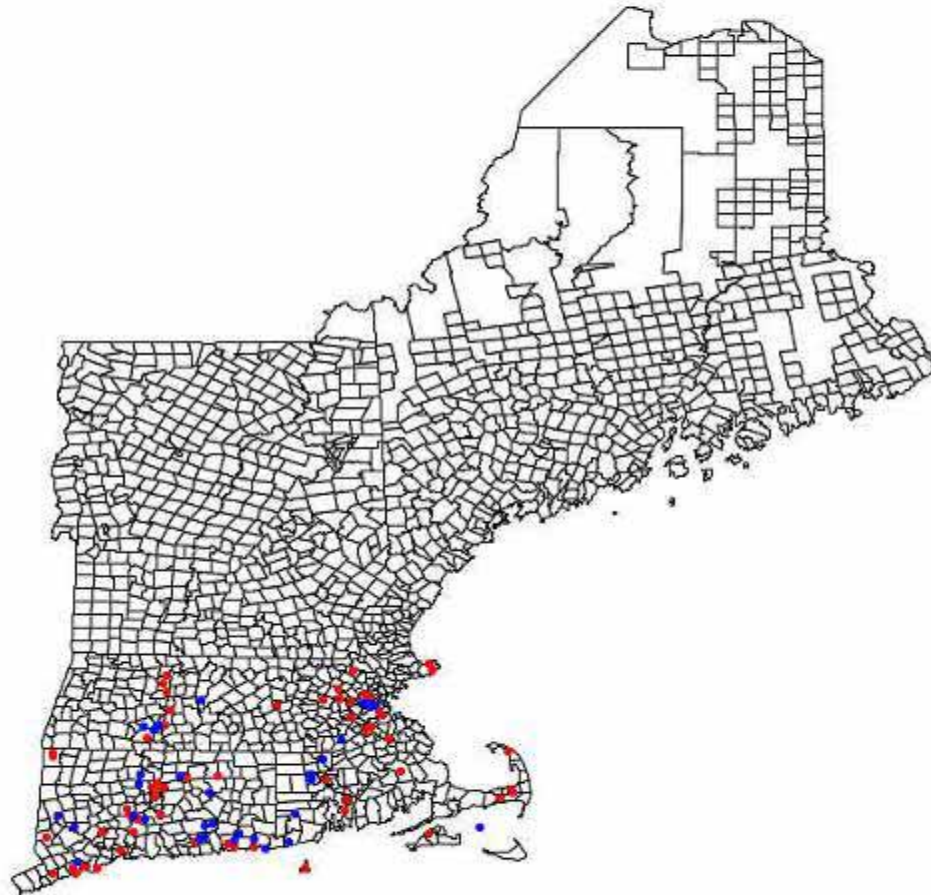


[:: Maps](#)



[:: Search By Place](#)

Distribution of *Ailanthus altissima*

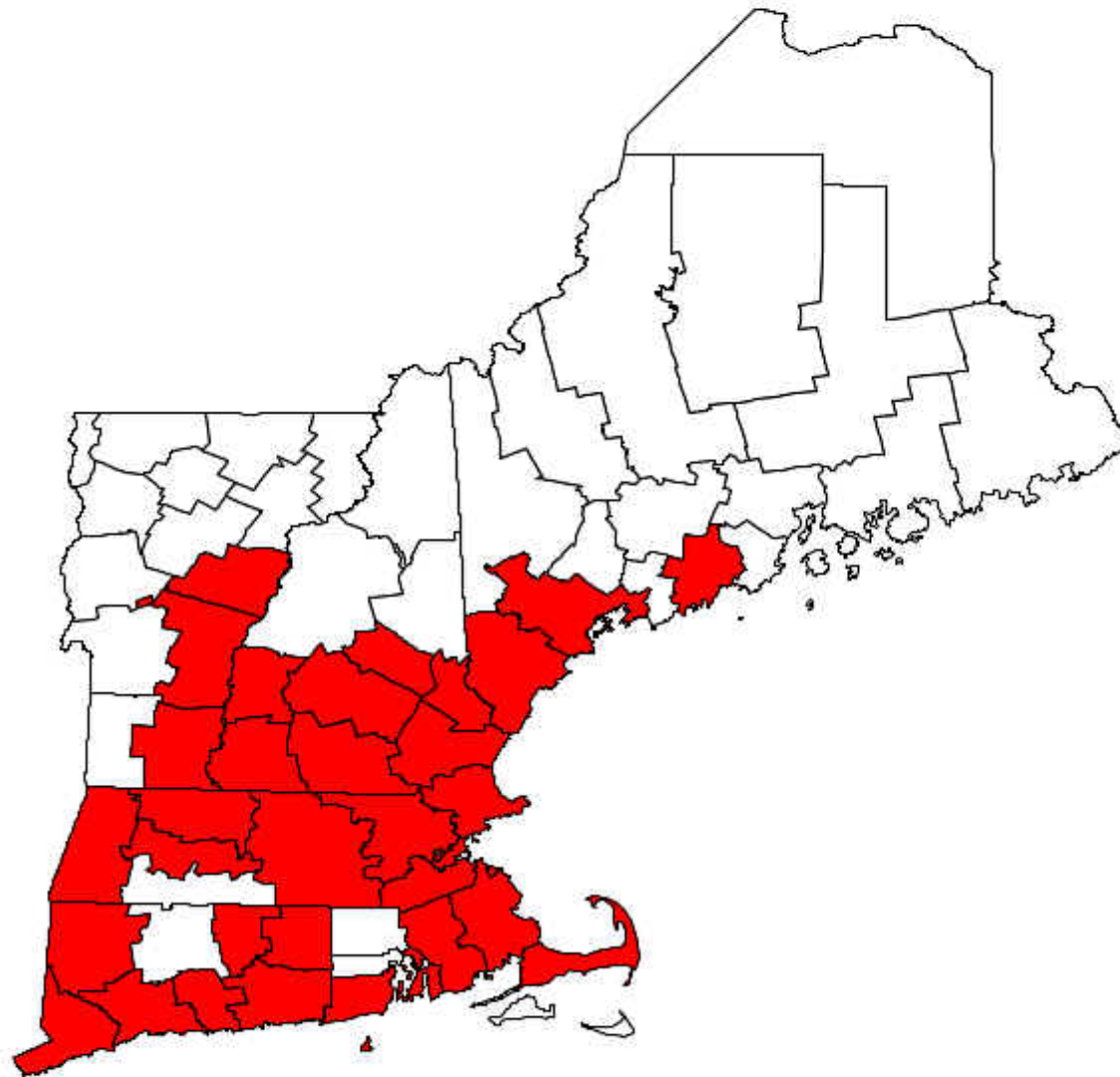


Occurrence

- Herbarium specimens
- Field records

This map was generated using the IPANE data available on 2005-1-20 (E.T.). Prepared by the IPANE project.

Distribution of *Cynanchum louiseae*

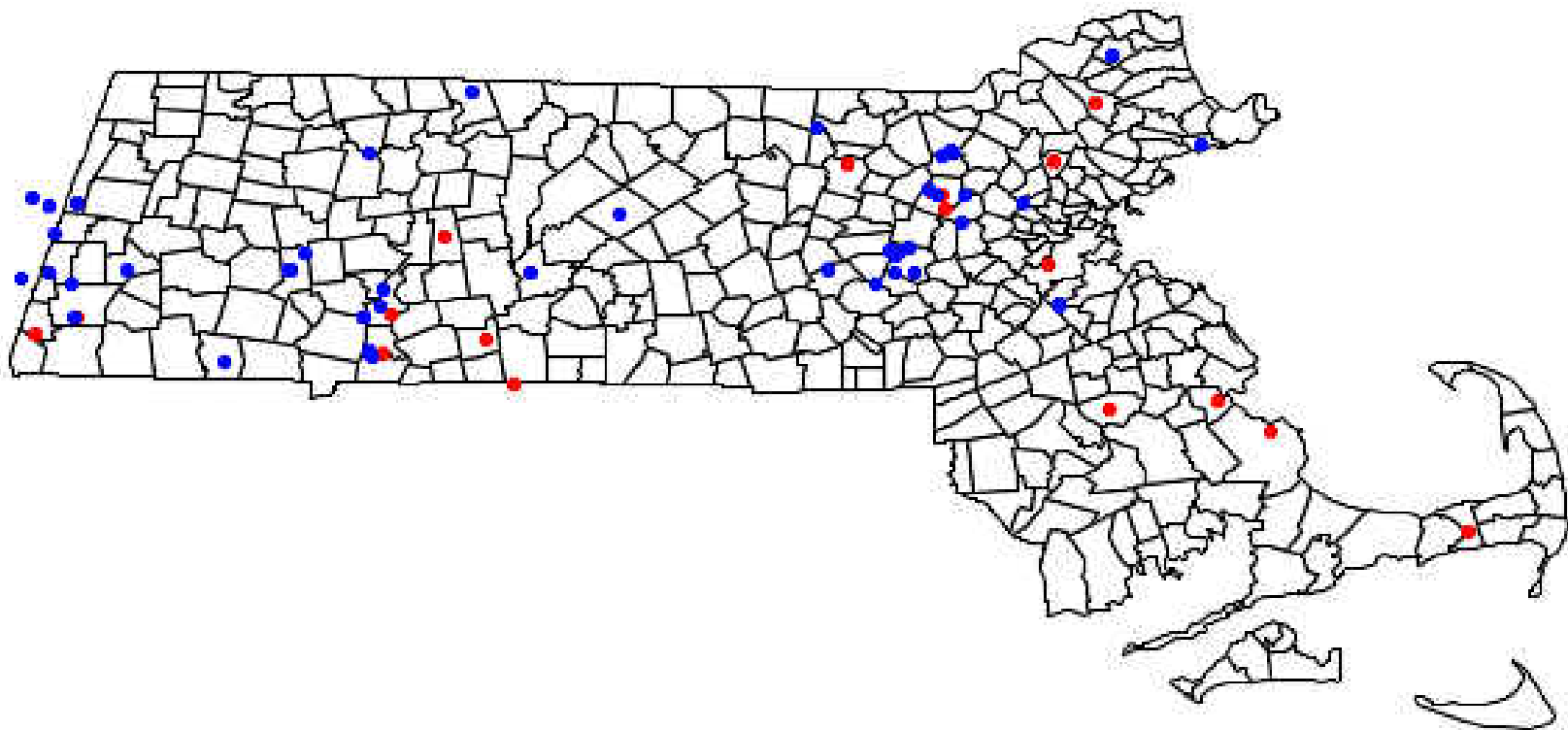


This map was generated using the IPANE data available on 2005-1-20 (E.T.).
Prepared by the IPANE project.

Counties
 Absence
 Presence



Distribution of *Euonymus alatus*



Occurrence

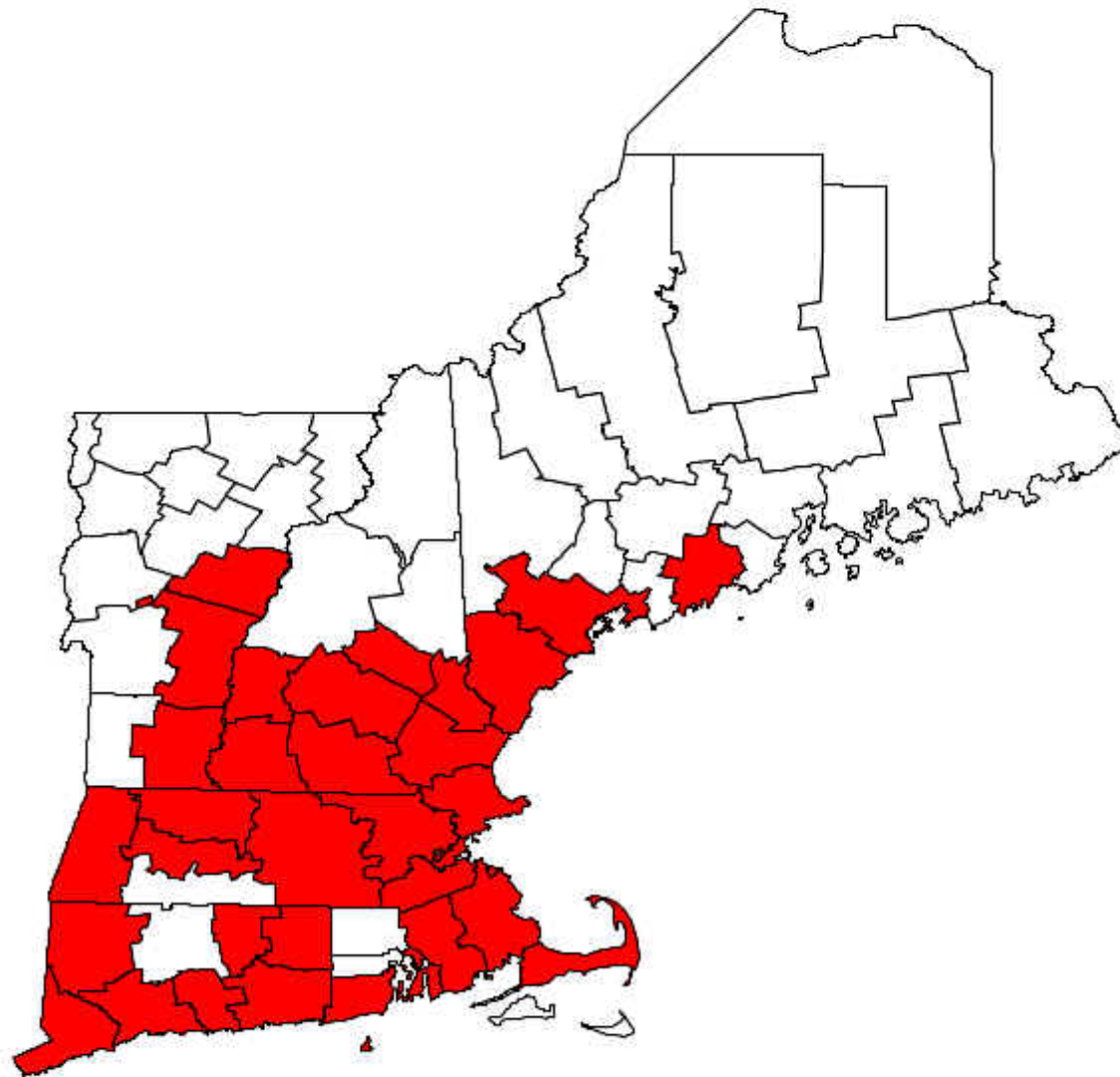
- Herbarium specimens
- Field records

This map was generated using the IPANE data available on 2005-1-20 (E.T.).
Prepared by the IPANE project.

IPANE Early Detection Information

- List of “Early Detection Species”
- Table of species’ status in all 6 states
- **Table of species’ status in all 67 counties**
- Regularly updated
- Early detection protocols
- How to report a possible new incursion
- **“Weeds To Watch For”**

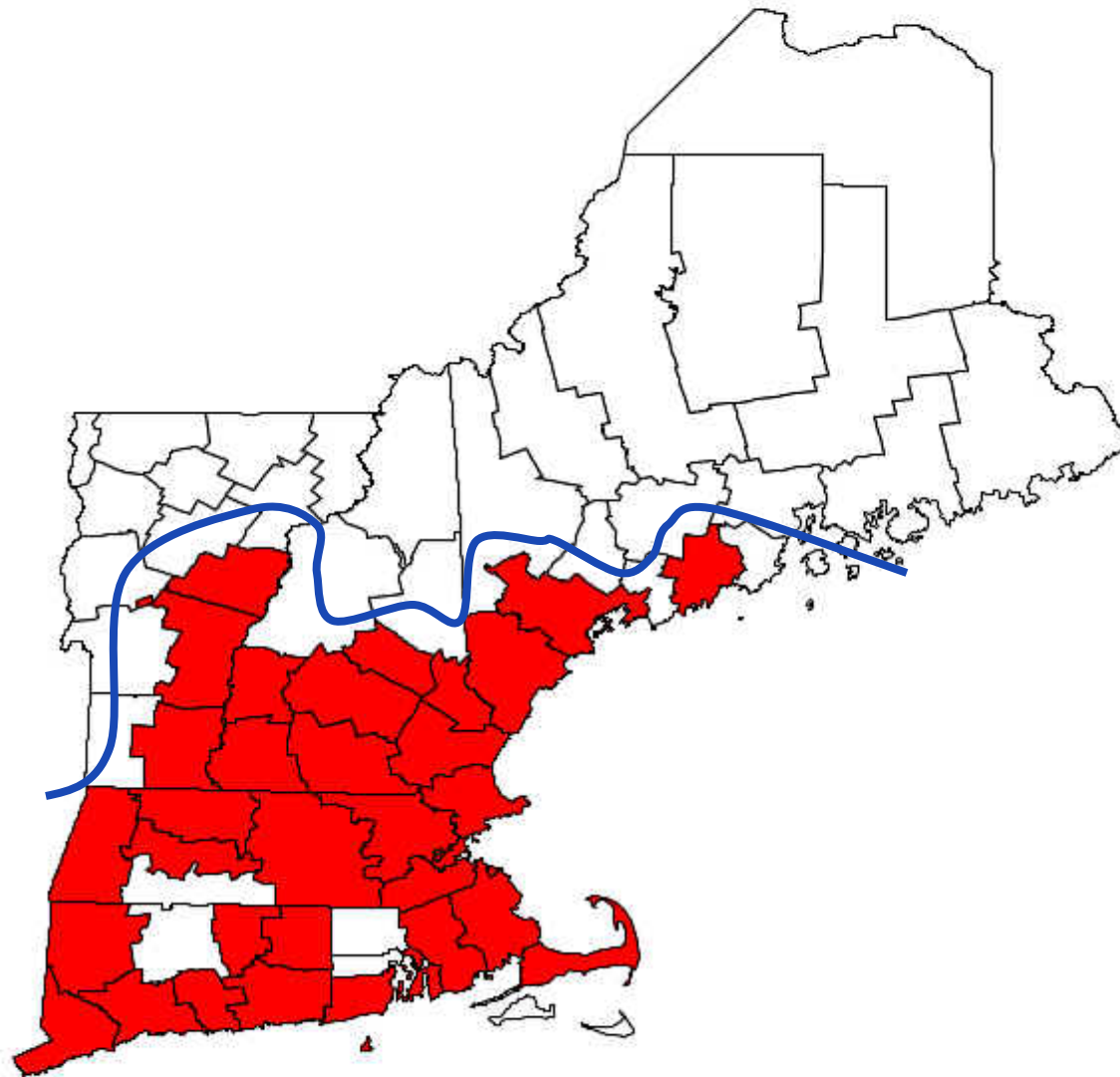
Distribution of *Cynanchum louiseae*



This map was generated using the IPANE data available on 2005-1-20 (E.T.).
Prepared by the IPANE project.

Counties
Absence
Presence

Distribution of *Cynanchum louiseae*



This map was generated using the IPANE data available on 2005-1-20 (E.T.).
Prepared by the IPANE project.

Counties
Absence
Presence

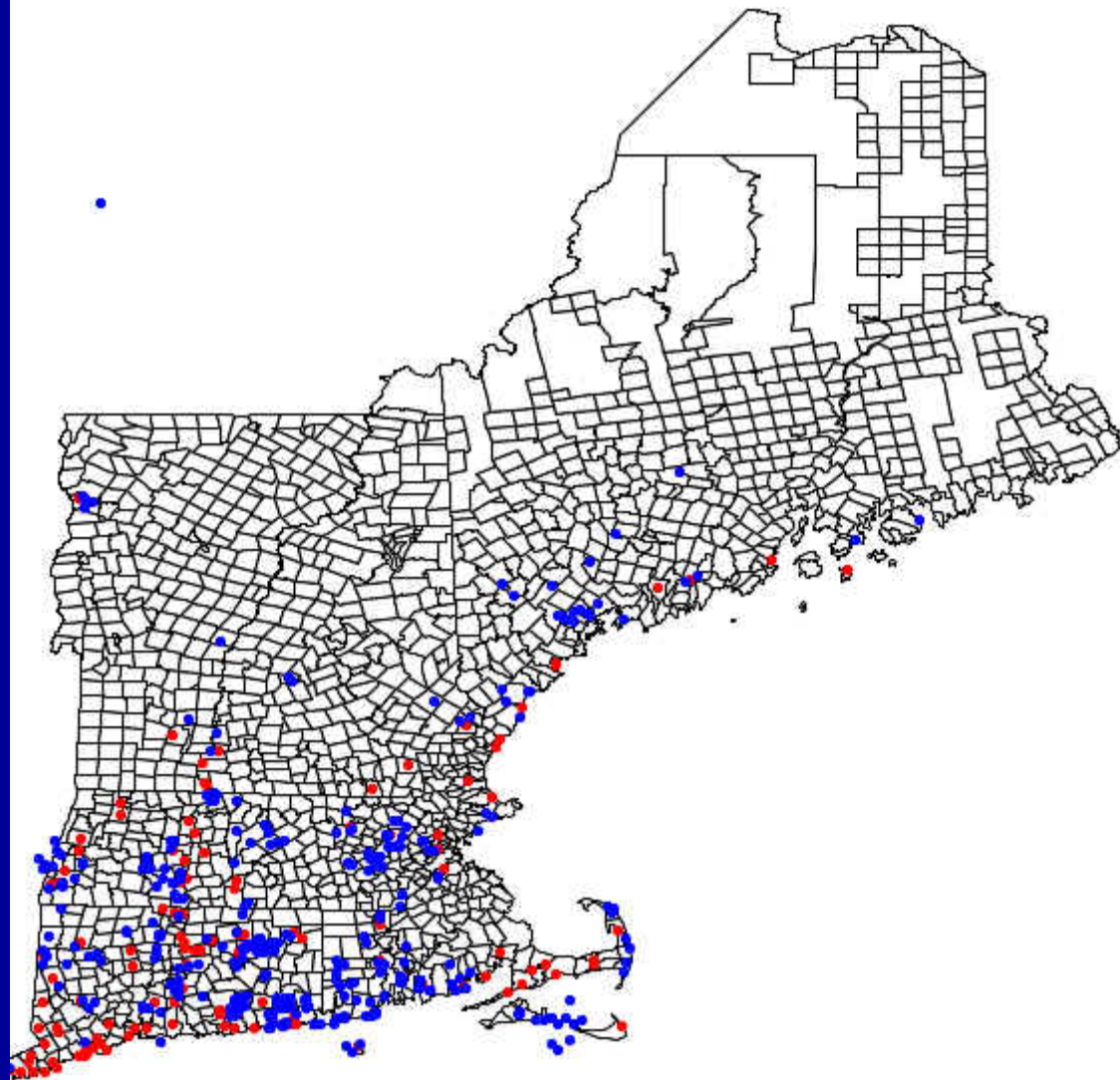
Using predictive models to “focus” early detection efforts



Oriental Bittersweet

Celastrus orbiculatus

Distribution of *Celastrus orbiculatus*



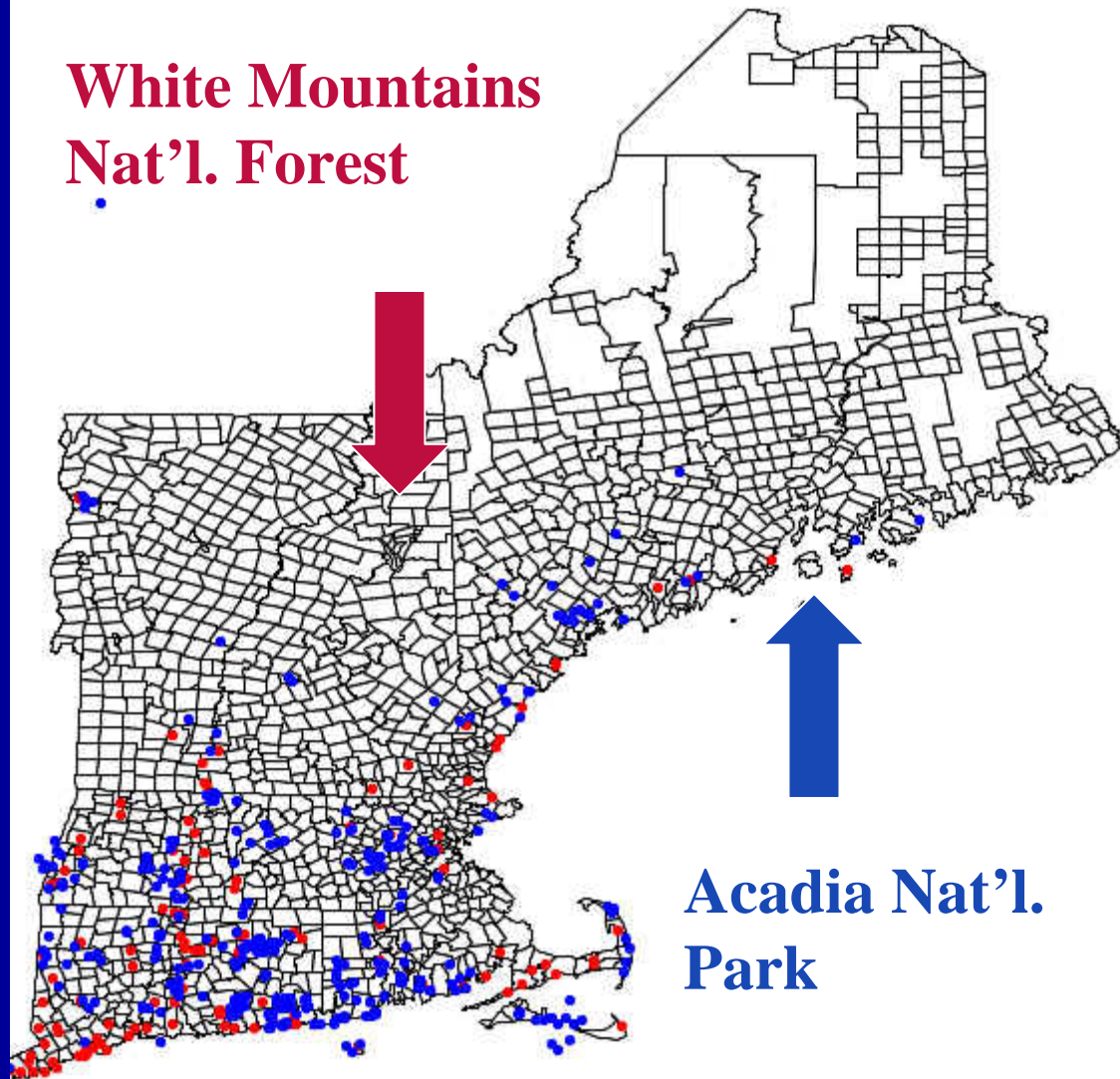
This map was generated using the IPANE data available on 2005-1-20 (E.T.).
Prepared by the IPANE project.

Occurrence

- Herbarium specimens
- Field records

Distribution of *Celastrus orbiculatus*

**White Mountains
Nat'l. Forest**



**Acadia Nat'l.
Park**

Occurrence

- Herbarium specimens
- Field records

This map was generated using the IPANE data available on 2005-1-20 (E.T.).
Prepared by the IPANE project.

The predicted distribution of *Celastrus orbiculatus* across New England: comparison of regular multiple regression (GLM) versus Bayesian regression

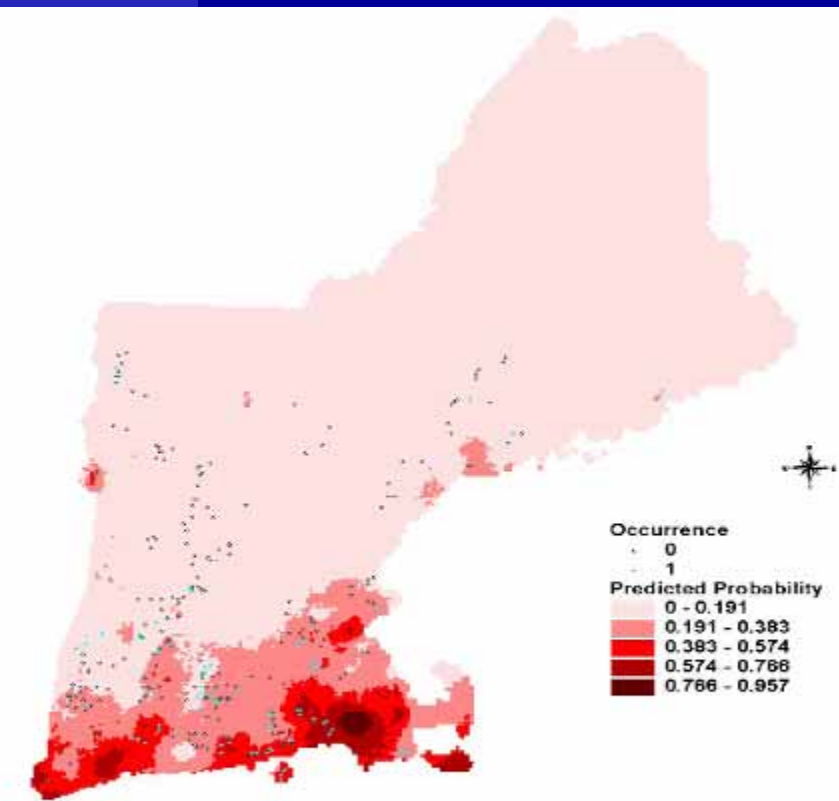
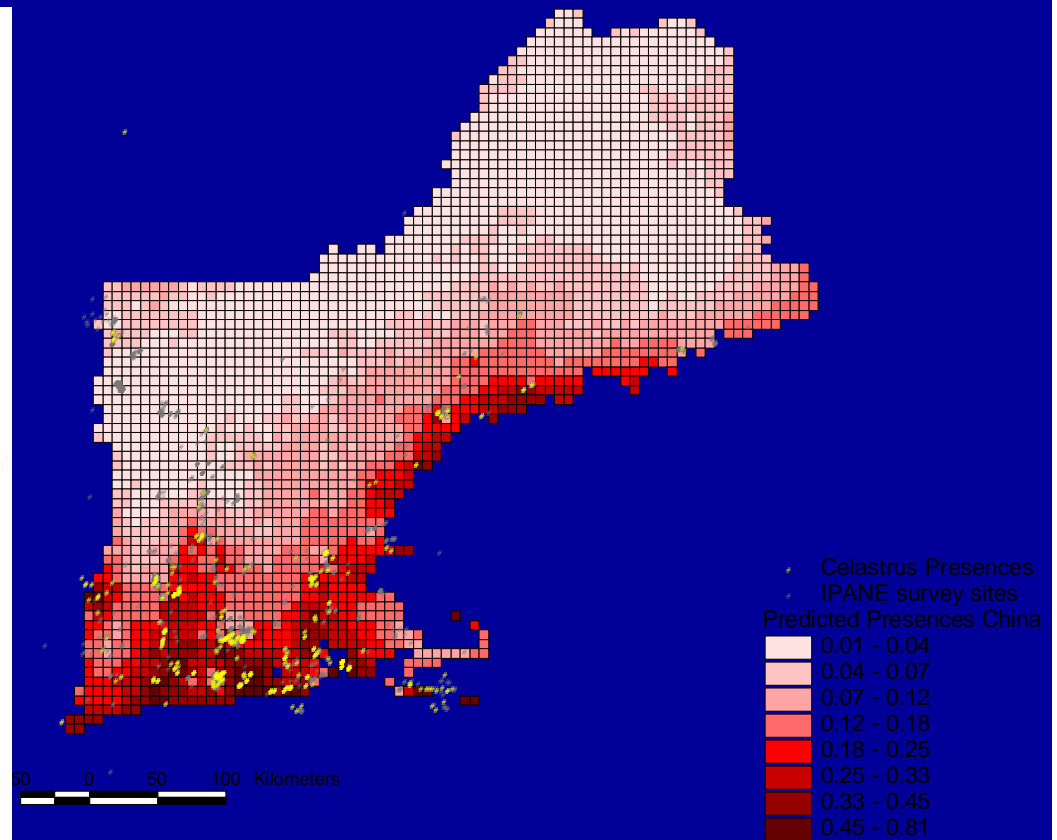


Figure 3. Predicted probability of *Celastrus orbiculatus* with occurrence overlaid.

GLM model predictions



Bayesian model predictions

from John Silander *et al.*



Focused searches by IPANE volunteers

Local Early Detection Network Pilot Projects

- White Mountains National Forest
 - ◆ Forest Service
 - ◆ Appalachian Mountain Club
- Mount Desert Island
 - ◆ Acadia National Park
 - ◆ Friends of Acadia
 - ◆ Garden Club of Mt. Desert

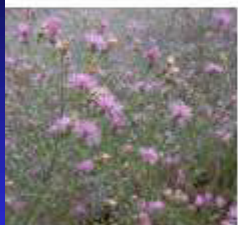
White Mountains National Forest LEDN brochure



Japanese barberry (*Barberry thunbergii*) is a dense deciduous shrub 2-8 ft tall, with spiny branches. The leaves are oval and narrowest at the base.

It has pale yellow flowers from mid April to mid June and its red fruits mature from July to October. It is one of the earliest plants to leaf out in the spring.

Garlic mustard (*Alliaria petiolata*) is a biennial herb. In the first year, it forms a green rosette of leaves during the winter, and up to a one-foot tall plant in the second year. The alternate leaves are toothed and have a garlic odor when crushed. The flowers are borne in the leaf axils and have four white petals. The fruits are small, round, and have four white seeds.



Knapweeds (*Centaurea* sp.) are perennial herbs with purple, pink, or white thistle-like flowers. They have alternate leaves that decrease in size towards the top of the plant, and various numbers of upright stems that emerge from the basal leaves.

They have alternate leaves that decrease in size towards the top of the plant, and various numbers of upright stems that emerge from the basal leaves.



Japanese honeysuckle (*Lonicera japonica*) is a perennial woody vine with



Glossy buckthorn (*Fraxinus velutina*) is a deciduous shrub or small tree growing in wet and sunny locations. It has dark green alternate leaves with strong veins. It has yellow-green flowers, and round fruits that turn from red to black. Common buckthorn (*Rhamnus cathartica*) is a similar species but has opposite leaves and thorns, and should also be reported.

Japanese stiltgrass (*Microstegium vimineum*) is an annual grass up to 2 meters tall. Its leaves are light green with a silvery central vein, and taper at both ends. Elongate inflorescences form in mid-September. (This species is easily confused with *Loeria virginica*, a native perennial grass).



Oriental bittersweet (*Celastrus orbiculatus*) is a perennial woody vine that climbs on other vegetation. It has elliptic, alternate leaves that spiral around the stem, small greenish flowers, and bright orange and yellow fruits.



bright orange and yellow fruits.

Japanese honeysuckle (*Lonicera japonica*) is a perennial woody vine with



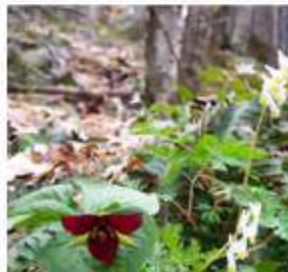
Invasive Species Alert!



Help us detect new arrivals of non-native,

Early Detection of Invasive Species

The White Mountain National Forest encompasses many pristine areas that are home to native plant and animals. Non-native species that are introduced into such areas can cause severe damage, including the displacement of native species and alterations of the forest ecosystem. Many invasive species are introduced to new areas by humans, intentionally or inadvertently. By avoiding inadvertent introductions and detecting and reporting invasions early, you can be a great asset in protecting this forest from such invasions. Some of the species listed in this brochure already occur in nearby areas, while others have never been reported in the State. Please use the detachable form to the left to report the occurrence **any** of these species.



Hemlock woolly adelgid (*Adelges tsugae*) is a small insect that feeds Eastern Hemlock (*Tsuga*

canadensis). White egg masses resembling little pieces of cotton are found at the bases of needles on infested trees. The needles then become discolored (grayish green) and eventually drop from the branches.

Emerald Ash borer (*Agrilus planipennis*) is a beetle whose white larvae feed on the cambium of Ash trees (*Fraxinus* spp.). Adults create D-shaped exit holes in the bark. Damaged trees often slough off their bark and have crown dieback.



Swallow-worts (*Cynanchum louisae*, *C. rossicum*) are perennial vines with dark green, shiny, opposite leaves. The flowers grow in the leaf axils and are 5-lobed. *C. louisae* has dark purple flowers, and *C. rossicum* has paler, reddish purple ones. The fruits are milkweed-like pods filled with seeds with white hairs that blow in the wind.

Japanese knotweed (*Polygonum cuspidatum* / *Fallopia japonica*) is a tall (1-3 meters) perennial weed of wetlands and riversides that forms dense stands. It has



Invasive Species Reporting Form

Please list the name(s) of species you are reporting:

Date: _____

The exact location where you observed the species (include latitude and longitude if you know them):

Your contact information, in case we need additional directions or information:

Name: _____ Phone number: _____

Email: _____

Address: _____

Easy response capability; partner's responsibility to follow up.

On the Horizon....

- Additions to IPANE list and re-classification for some currently listed species
- Pocket PC data entry and submission capability & early detection tool
- Predictive models on the IPANE website
- Local ED networks with public participation
- Going global – Asian “exchange” data
- **IPANE junior??**

NBII



- National Biodiversity Information Infrastructure
 - ◆ Partnering with Northeast Information Node
- Data and map maintenance and enhancement
- Financial support
- Website maintenance

Developing new technologies



Pocket PCs for
data entry or as
an ED tool.

Global Invasive Species Connections

- GISIN – Global Invasive Species Information Network
- GISP – Global Invasive Species Programme
- IPANE – Asia website

North American endemic



EDRR - too late!



Hydrocotyle umbellata (APIACEAE)

Water pennywort

Remember, it works both ways...



Little blue-stem (*Schizachyrium scoparium*) on Maui, Hawai'i

“We the children need your help in protecting the environment”



Children's World Summit on the Environment,
Toyohashi, Aichi, Japan 29 JUL 2005

PLIGHT OF LAKE VICTORIA

Africa and the Lake Victoria Basin



Lake Victoria is the second largest fresh water lake in the world. It is found in the east of Africa, shared by 3 countries: Kenya, Uganda and Tanzania. 50 million people derive their livelihood from this lake.



WHAT DOES WATER HYACINTH DO?

- ★ Reduction of fish in the lake
- ★ Interference with fishing
- ★ Interference with transportation
- ★ Reduces oxygen - kills underwater animals
- ★ Reduces biodiversity by blocking sunlight
- ★ Interference with water supply
- ★ Breeding habitat for dangerous organisms

THREATS TO THE LAKE

Lake Victoria is facing many problems such as:

- ★ OVER-FISHING
- ★ DIRECT POLLUTION FROM FACTORIES AND SHIPS THAT PASS THROUGH
- ★ WATER HYACINTH IS A MAJOR THREAT



WHAT CAUSES THIS?

- ★ ICRAF have discovered that nitrogen and phosphorus rich sediments are feeding water hyacinth.
- ★ Water hyacinth forms in low lying deforested river banks.



SOLUTION

- ★ To stop water hyacinth from growing we should plant lot of trees in these areas.
- ★ Vegetation prevents proliferation.
- ★ People should be responsible and not drop waste in the lake water.

Done by:
Ranjani Dharmarajan

2006 Tunza Children's Conference on the Environment
Putrajaya, Malaysia

ALL THIS WORKS!



Rorippa austriaca – “actual” first New England report

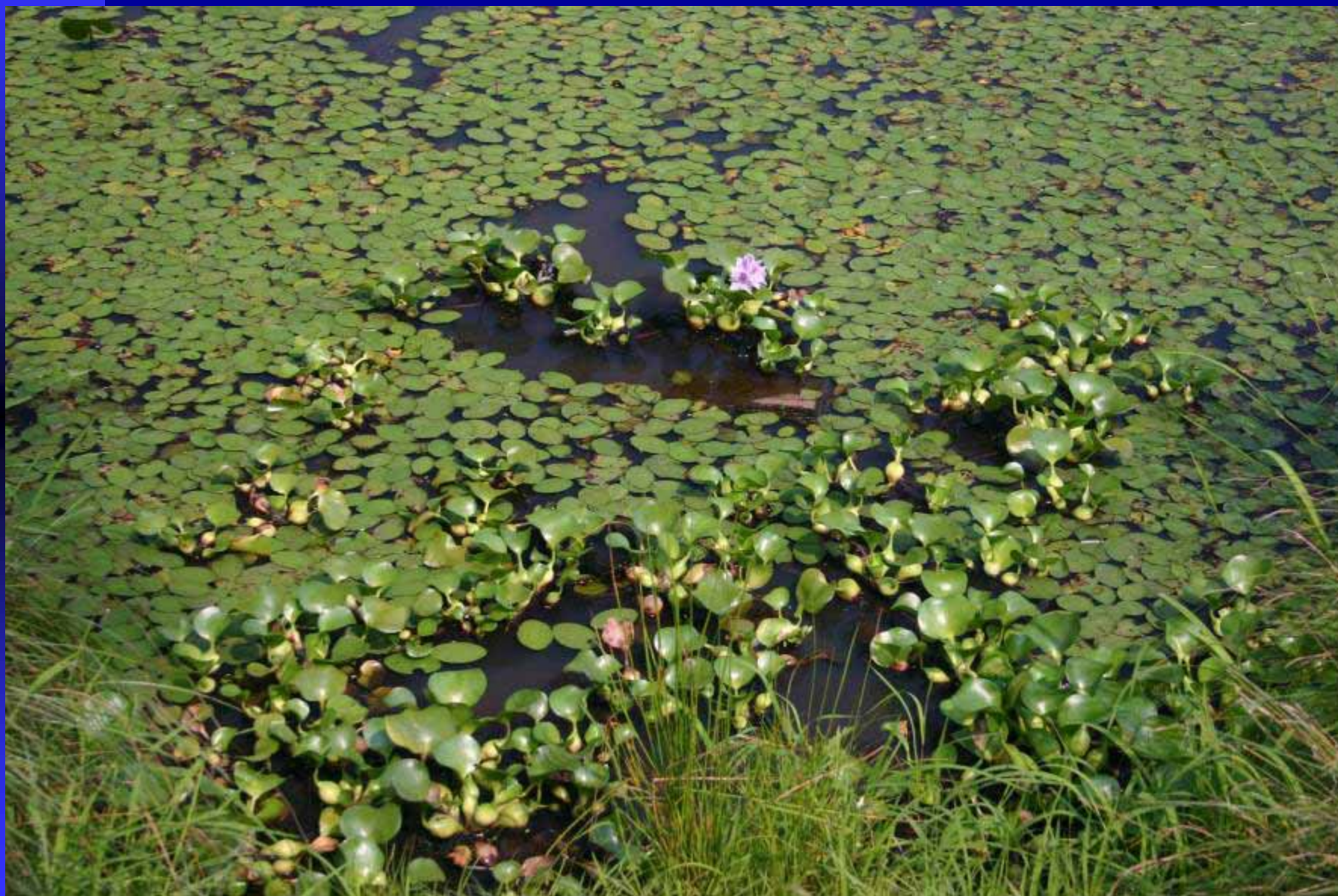


Reported: 2006



KUDZU IN CONNECTICUT
reported to IPANE website
“Report a Sighting”

2006 Water hyacinth site discovered by IPANE volunteer



Rapid Response



Mile-a-minute incursion; new county, possible northern-most station



Reported by IPANE volunteer 6 OCT 2004



Pulled and sprayed 29 SEP 2005



Satellite occurrence pull 17 OCT 2005



IMPACT: this year – direct, 55 bags removed

IMPACTS: future - awareness, more volunteers

IPANE's Role In A National Vision

- Interoperability
- State or regional approach
- Uniform data standards
- National data base for shared information
- Ecological forecasting
 - ◆ Predictive modeling
 - ◆ Risk assessment

Early Detection ?



Probably a tad too late!

Contact us -

- <http://ipane.org>
- ipane@uconn.edu
- Les@ipane.org

