Invasive Species: A Challenge to the Environment, Economy and Society

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Invasive Plants and Insects

PLANTS

- Autumn Olive
- Garlic Mustard
- Japanese Barberry
- Japanese Honeysuckle
- Japanese Knotweed
- Mile-a-minute Weed
- Mugwort
- Multiflora Rose
- Norway Maple
- Oriental Bittersweet
- Privet
- Shrub Honeysuckles
- Star-of-Bethlehem
- Tree-of-heaven
- Wineberry
- Winged Euonymus

INSECTS

- Asian Longhorned Beetle
- Brown Marmorated Stink Bug
- Emerald Ash Borer
- Lily Leaf Beetle
- Hemlock Woolly Adelgid
- Spotted Wing Drosophila
- Viburnum Leaf Beetle
- Southern Pine Beetle

EARTHWORMS

What are invasive species?

- Non-native
- Terrestrial and aquatic
- Cause environmental harm in minimally-managed areas
- Cause economic harm
- Cause harm to human health
- Introduced accidentally or intentionally
- (Plants) Escaped from cultivation
  - Naturalized

What makes a plant invasive?

- Aggressive growth habit
- Prolific seed production
- Rapid vegetative spread
- Disperses wide distances
- Lack of natural enemies

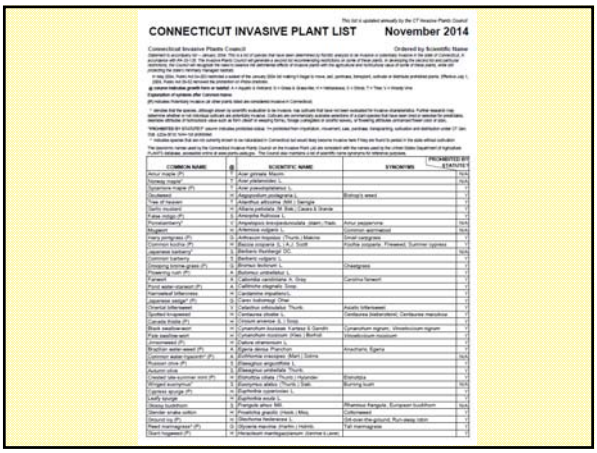
Photo by Les Mehrhoff

All invasive plants are non-native, but not all non-native plants are invasive

Yellow Flag Iris
Non-native plant
INVASIVE

Siberian Iris
Non-native plant
NON-INVASIVE

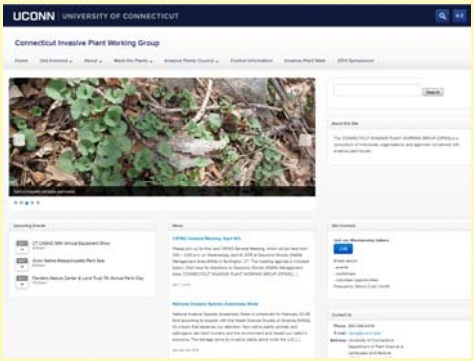
BIODIVERSITY


CONNECTICUT INVASIVE PLANT LIST November 2014

Poison Ivy **Native Plant**

Toxicodendron radicans

Connecticut Invasive Plant Working Group
www.cipwg.uconn.edu



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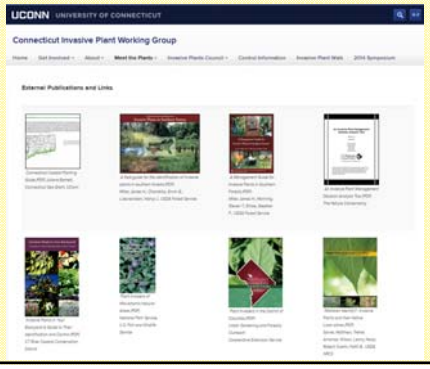


Invasive Plants

- Identification
- Management
- Use of alternative or replacement plants
- Actions

Autumn Olive

Elaeagnus umbellata

Garlic Mustard

Alliaria petiolata




Japanese Barberry

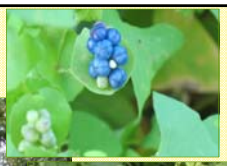
Berberis thunbergii


Japanese Honeysuckle *Lonicera japonica*




Japanese Knotweed *Fallopia japonica*


Mile-a-minute Weed *Persicaria perfoliata*



Mugwort ***Artemisia vulgaris***

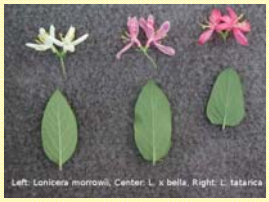
Multiflora Rose ***Rosa multiflora***

Norway Maple ***Acer platanoides***

Oriental Bittersweet ***Celastrus orbiculatus***

Privet ***Ligustrum* spp.**

Shrub Honeysuckles (*Lonicera* spp.)


Star-of-Bethlehem
Ornithogalum umbellatum




Tree-of-Heaven
Ailanthus altissima


Wineberry *Rubus phoenicolasius*

Winged Euonymus or Burning Bush
Euonymus alatus


Legislative Update Bamboo

- Bamboo is not an invasive plant
  - CT Statute Section 22a-381e
    - Planting and Sale of Running Bamboo
    - Liability

Management of Invasive Plants

- Physical/Mechanical Control
- Cultural Control
- Biological Control
- Chemical Control

✓ Monitor, Monitor, **Monitor**

Trees and Shrubs
Mechanical Control

- Hand-pull young seedlings (when soil is moist)
- Use tools for large shrubs or small trees
- Cut with saw at ground level at flowering
  - Continue with re-sprouts for several years
- Repeated cutting/mowing reduces spread but does not eradicate

Elaeagnus umbellata Autumn Olive

Ailanthus altissima Tree-of-heaven

Lonicera spp. Shrub Honeysuckle

Trees and Shrubs
Chemical Control

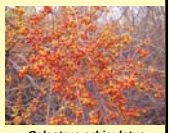
- Apply herbicides late summer/early fall
- Brush-B-Gon (triclopyr) or Roundup (glyphosate)
  1. Cut tree; paint undiluted herbicide on stump
  2. Cut and spray re-sprouts

Woody Vines
Mechanical Control

Ampelopsis brevipedunculata Porcelainberry

Celastrus orbiculatus Oriental Bittersweet

- Hand-pull or dig young plants in spring
  - All roots must be removed
- Cutting vines entangled in trees will:
  - Kill top growth
  - Reduce seed production
  - Minimize strangulation of other woody plants
  - Promote shoot resprouting if not cut frequently



Celastrus orbiculatus Oriental Bittersweet

Herbaceous Plants
Mechanical Control

Monitor annually to prevent establishment

Garlic Mustard

Plants easily hand-pulled year-round
- Prior to seed formation
- Bag if capsules present

Japanese Knotweed
- Hand-pull young plants
- Don't dig – rhizome fragments form new shoots
- Repeated cutting 3-4 X per year for 3 years
  - Combine shading with cutting (black or clear plastic)

Asian Longhorned Beetle
***NOT* confirmed in CT**

- Individuals ¾ to 1 ½ inches long
- Jet black body mottled with white spots on back
- Long antennae with distinctive black and white bands each segment
- When alive, feet and antennae may have a bluish tinge
- Kills hardwood trees slowly
  - maple, box elder, horse chestnut, buckeye, willow, elm, birch

Asian Longhorned Beetle (ALB)

- Very destructive, introduced insect
- Larvae tunnel in heartwood, weaken/kill hardwoods
  - Maples, birch, poplars, elms, willows
- Firewood movement spreads the larvae

Life Cycle

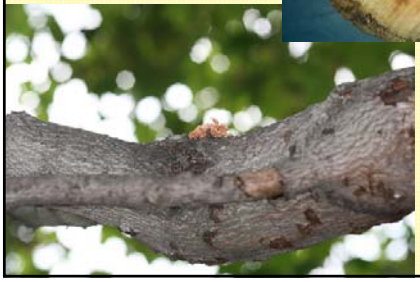
Asian Longhorned Beetle

- 1 inch long
- Adults shiny black with white markings
  Black/white banded antennae 1 to 2 x body length
- Adults present July to October
- Larvae go through several instars, attaining the size of a little finger.

EGG LAYING

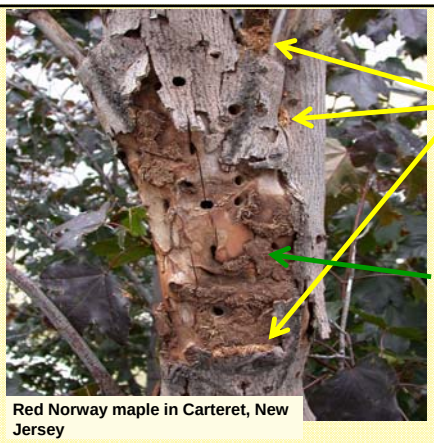
Oval to round pits in the bark are chewed out by the female beetle. A single egg is deposited in each niche.

Larvae tunnel through cambial layer and into the heartwood of the tree.



Larvae overwinter protected in the heartwood; pupate May to June

Adults emerge from exit holes in late June to July.

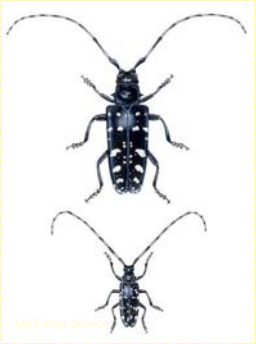


Red Norway maple in Carteret, New Jersey

Asian Longhorned Beetle (ALB) asianlonghornedbeetle.com

ALB "Look-Alike"

Asian Longhorned Beetle



White-Spotted Sawyer

White dot at base of wing covers

White dot at base of wing covers

Emerald Ash Borer (EAB)

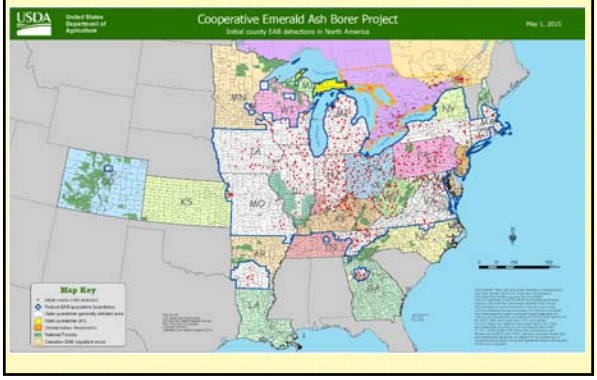
Emerald Ash Borer (EAB)

- New pest in CT (2012); 38 towns in 6 counties
- 1/2 inch long
- Only attacks ash (*Fraxinus* sp.)
- Larvae tunnel into and feed on cambium
- Adults emerge and feed in summer

Trapping

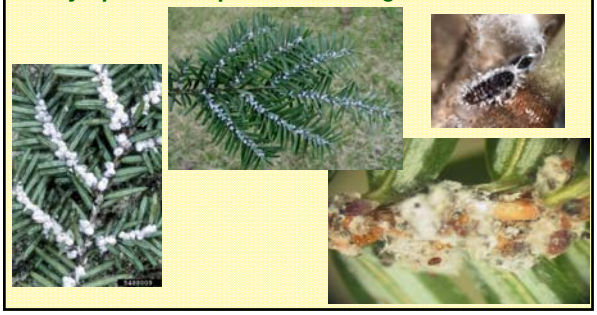
Serpentine Galleries

Emerald Ash Borer (EAB)



Hemlock Woolly Adelgid

- Order Homoptera
- Overwinter as adults
- Nymphs feed April-June and again in October

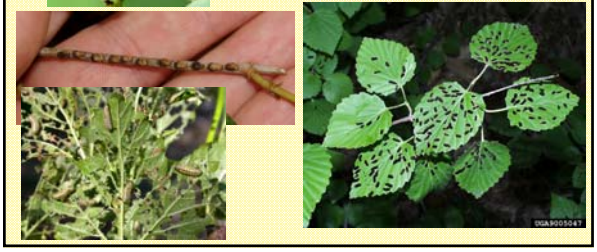


Southern Pine Beetle

- Order Coleoptera
- Causes significant economic damage in the South
- First confirmed in CT in March 17, 2015
- 2 – 4 mm in length
- Prefers hard pines; may attack white pines, hemlock, spruce
- Feeding damage may kill trees in 2 to 4 months

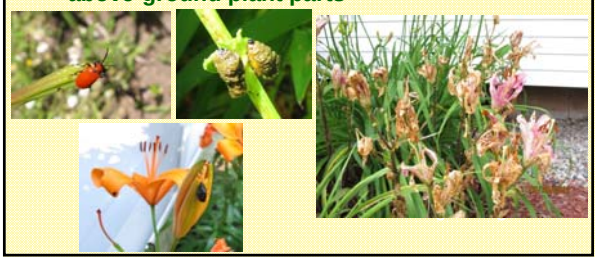
Viburnum Leaf Beetle

- Order Coleoptera
- Overwinter as eggs on ends of branches
- Adults and larvae feed on *Viburnum* spp.



Lily leaf beetle

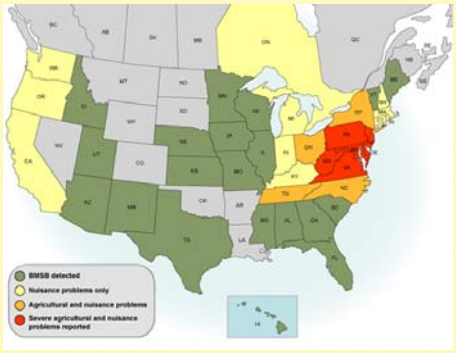
- Overwinter as adults; usually 1 generation
- Eggs hatch 7-10 days; larvae feed ~ 3 weeks
- Larvae carry excrement on their backs
- Adults (6-9 mm) and larvae (10 mm) feed on above-ground plant parts



Brown Marmorated Stink Bug (BMSB)

Brown Marmorated Stink Bug (BMSB)

- First confirmed in PA 1996; CT 2008



Brown Marmorated Stink Bug (BMSB)

Brown Marmorated Stink Bug (BMSB)



Brown Marmorated Stink Bug (BMSB)

Traps


Spotted Wing Drosophila

- ✓ New CT fruit pest (since 2011)
- ✓ 2-3 mm long; females with serrated ovipositor
- ✓ Adult males: black spot on each wing
- ✓ Developing larvae (maggots) feed inside ripening fruit; fruit destroyed quickly
- ✓ Attacks small fruits, peaches



Earthworms

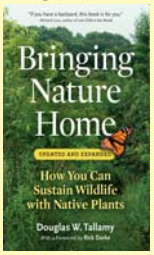
- Most earthworms were introduced from Europe
- Crazy snake worm (*Amynthas agrestis*)
  - ✓ From Eastern Asia
  - ✓ Large, fast-moving
  - ✓ Rapidly consume leaf litter, change soil structure
  - ✓ No effective controls

Bringing Nature Home

How You Can Sustain Wildlife with Native Plants

by Douglas Tallamy (2007, 2009)

- Lists of Native Plants for New England
  - Trees
  - Shrubs
  - Vines
  - Wetland plants
  - Groundcovers
  - Herbaceous plants
  - Grasses, sedges, rushes
  - Ferns
- Host plants of butterflies and moths

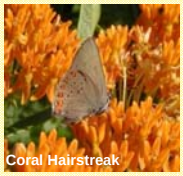


Butterfly Garden

- Milkweed, butterfly weed
- Coneflowers
- Asters
- Violets
- Sedges
- Deer-tongue grass
- Blueberries
- Spicebush
- Oaks
- Willow
- Birch
- Elm

Plant natives in your yard to attract wildlife and increase biological diversity

- Oaks can support 534 different species of butterflies and moths
- Willows: 456
- Birch: 413
- Elm: 213



- *Phragmites* (non-native): 5

(Tallamy 2009)

Contacts

The University of Connecticut

Department of Plant Science and Landscape Architecture
- www.plantscience.uconn.edu
- www.ipm.uconn.edu

Cooperative Extension System
- www.extension.uconn.edu

Home and Garden Education Center
- www.ladybug.uconn.edu

The Connecticut Agricultural Experiment Station
- www.ct.gov/caes

Acknowledgements

Information and photos from the following individuals and organizations were used for this presentation:

- Joan Allen, Mary Concklin, Donna Ellis, and Leanne Pundt (UConn)
- Carole Cheah, Richard Cowles, Sharon Douglas, Katherine Dugas, Rose Hiskes, Jim LaMondia (CT Agricultural Experiment Station)
- USDA APHIS
- Bugwood (www.invasive.org)
- Go Botany (https://gobotany.newenglandwild.org/)
- University of Delaware

Questions?

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