



Terrestrial Invasive Species - An Overview

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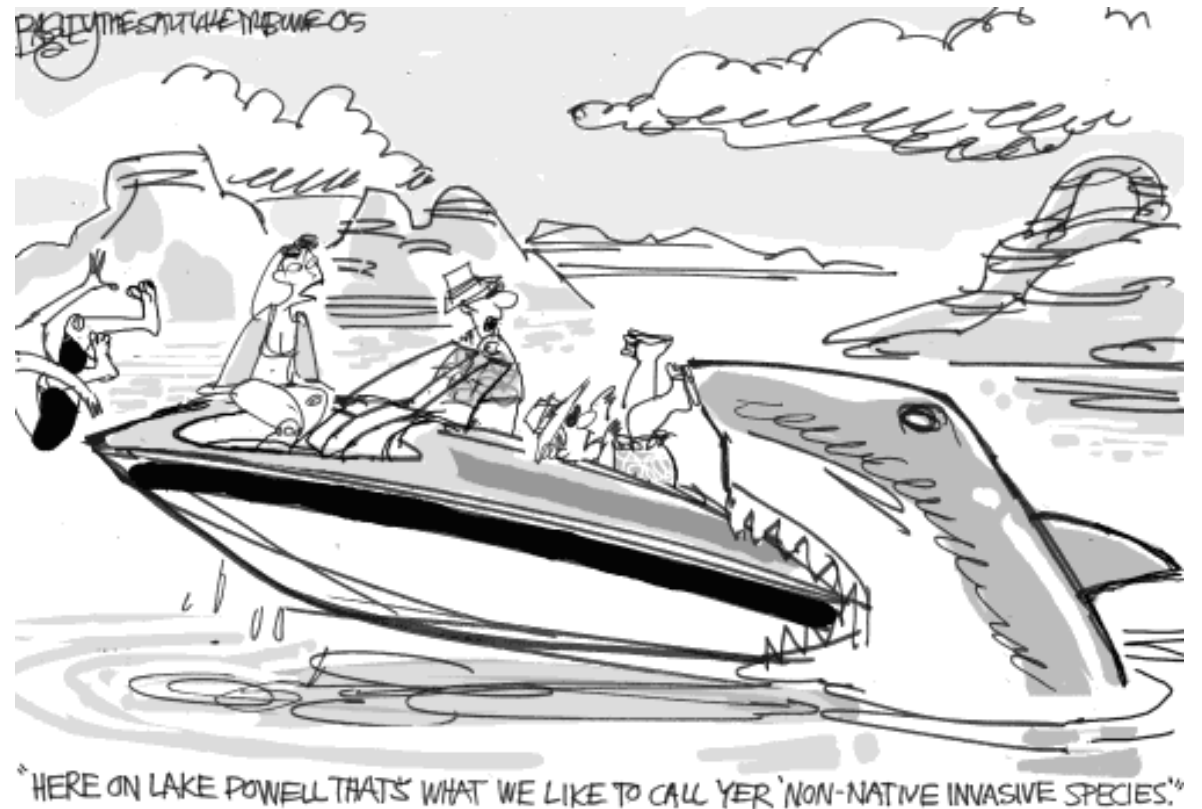
March 6, 2018

Definition of Invasive species

- non-native to the ecosystem under consideration; and
- if introduced, likely to cause economic or environmental harm or harm to human health.

Executive Order 13112
issued Feb. 3, 1999

Slide courtesy of Rob Venette, Minnesota Invasive Terrestrial Plants and Pests Center



Pat Bagley, *Salt Lake Tribune*

Terrestrial invaders are active on land



Photo by Brett Whaley

Slide courtesy of Rob Venette, Minnesota Invasive Terrestrial Plants and Pests Center

Invasive species can harm human health



Slide courtesy of Rob Venette, Minnesota Invasive Terrestrial Plants and Pests Center

Invasive species can harm human health



Slide courtesy of Rob Venette, Minnesota Invasive Terrestrial Plants and Pests Center

Invasive species can harm the environment



Slide courtesy of Rob Venette, Minnesota Invasive Terrestrial Plants and Pests Center

Invasive species can harm the environment



Slide courtesy of Rob Venette, Minnesota Invasive Terrestrial Plants and Pests Center

Invasive species can harm the economy



Slide courtesy of Rob Venette, Minnesota Invasive Terrestrial Plants and Pests Center

Invasive species can harm the economy



Bacterial leaf streak of corn, caused by *Xanthomonas vasicola*, first found in the US in 2016 and confirmed in 2017

Slide courtesy of Rob Venette, Minnesota Invasive Terrestrial Plants and Pests Center

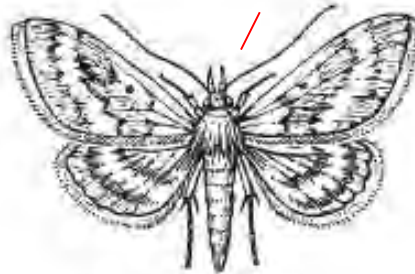
Common pests (easy to forget where they came from)

From Europe
(Italy or Hungary),
arrived early 1900's

Pests of farm crops



boll weevil



European corn borer

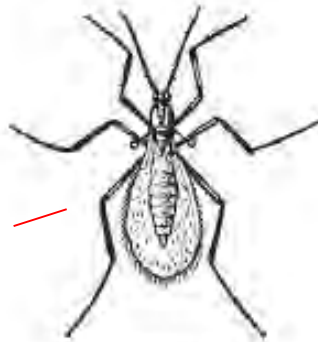
Pests of forests and orchards



western pine beetle

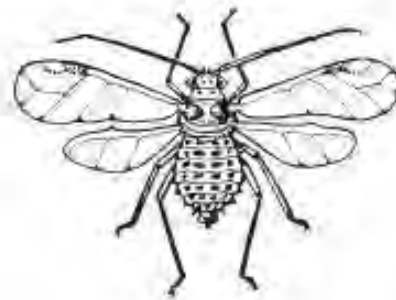
Native to western
North America

From Mexico or
Central America,
arrived 1892



Hessian fly

From Asia
through Europe,
arrived late 1770's



spotted alfalfa aphid

From Middle East,
arrived in 1950's



Mediterranean fruit fly

From Europe,
first arrived 1929
& several times
thereafter

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Terrestrial invasive species, a special problem

No effective natural enemies to control populations

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Valued plants and animals have few defenses

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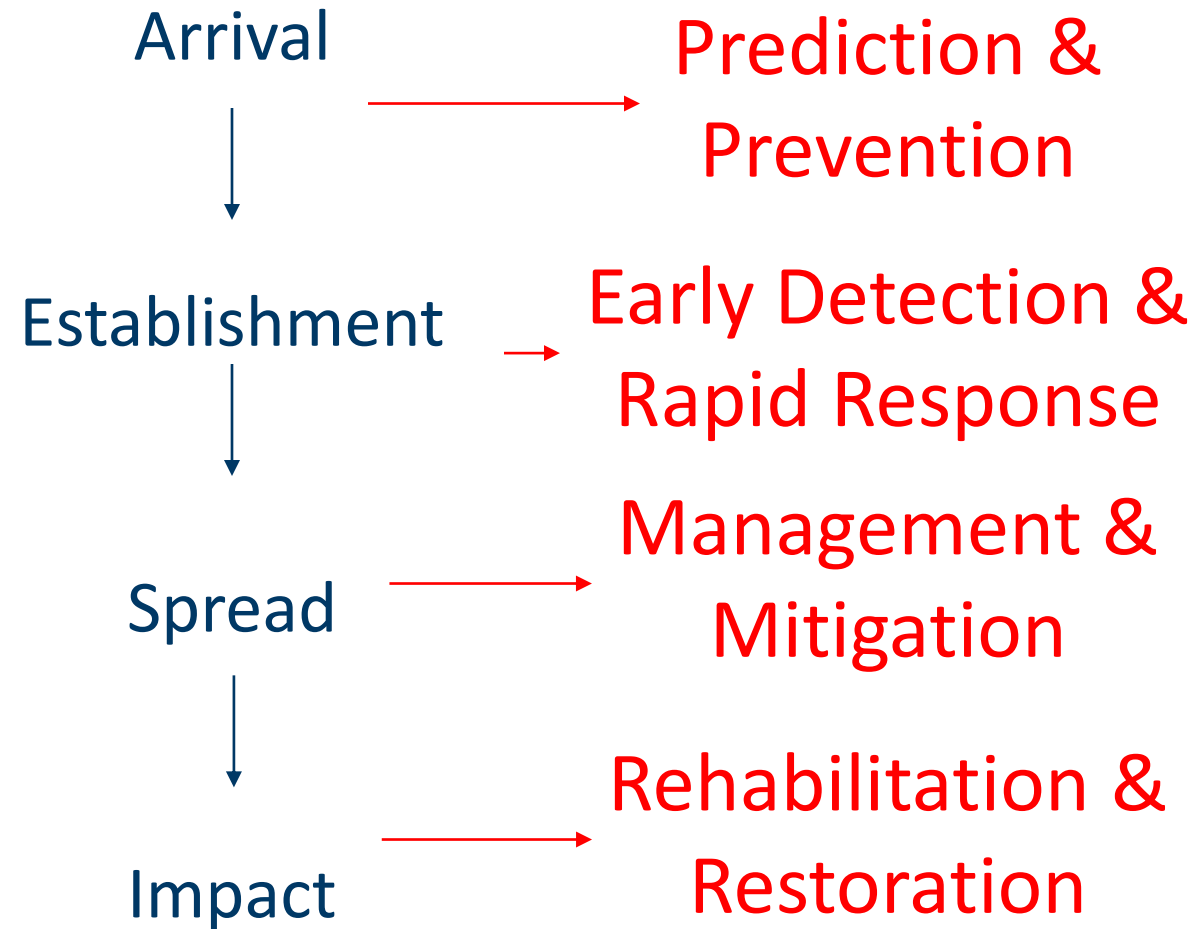
Invaders often bring novel weapons

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Managers (and scientists) often have little experience, limited knowledge, and few specific tools

~\$150 billion loss each year nationally

Stage of invasion affects management strategy



Stages of Invasion

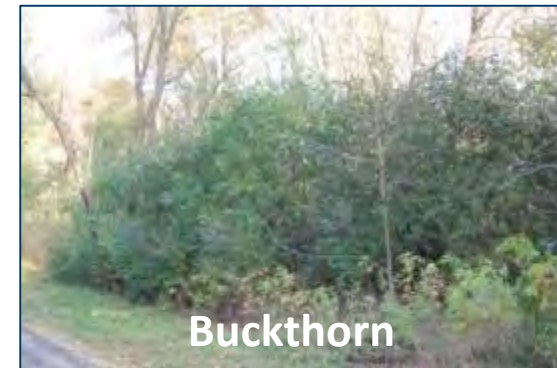
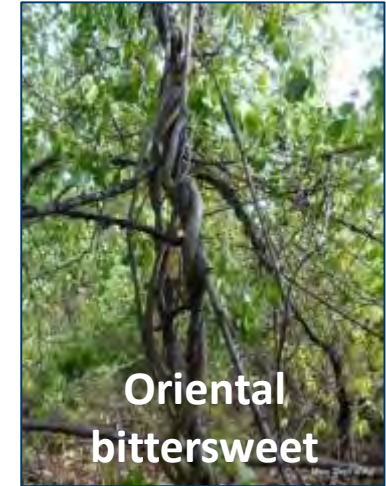
New = not present

Emerging = present but not
widely distributed

Established = widely present



Image: B. Brown



Emerald Ash Borer



Diagnostics



“S” shaped galleries



EAB Larva



“D” shaped exit holes



EAB Adult

European Gypsy Moth



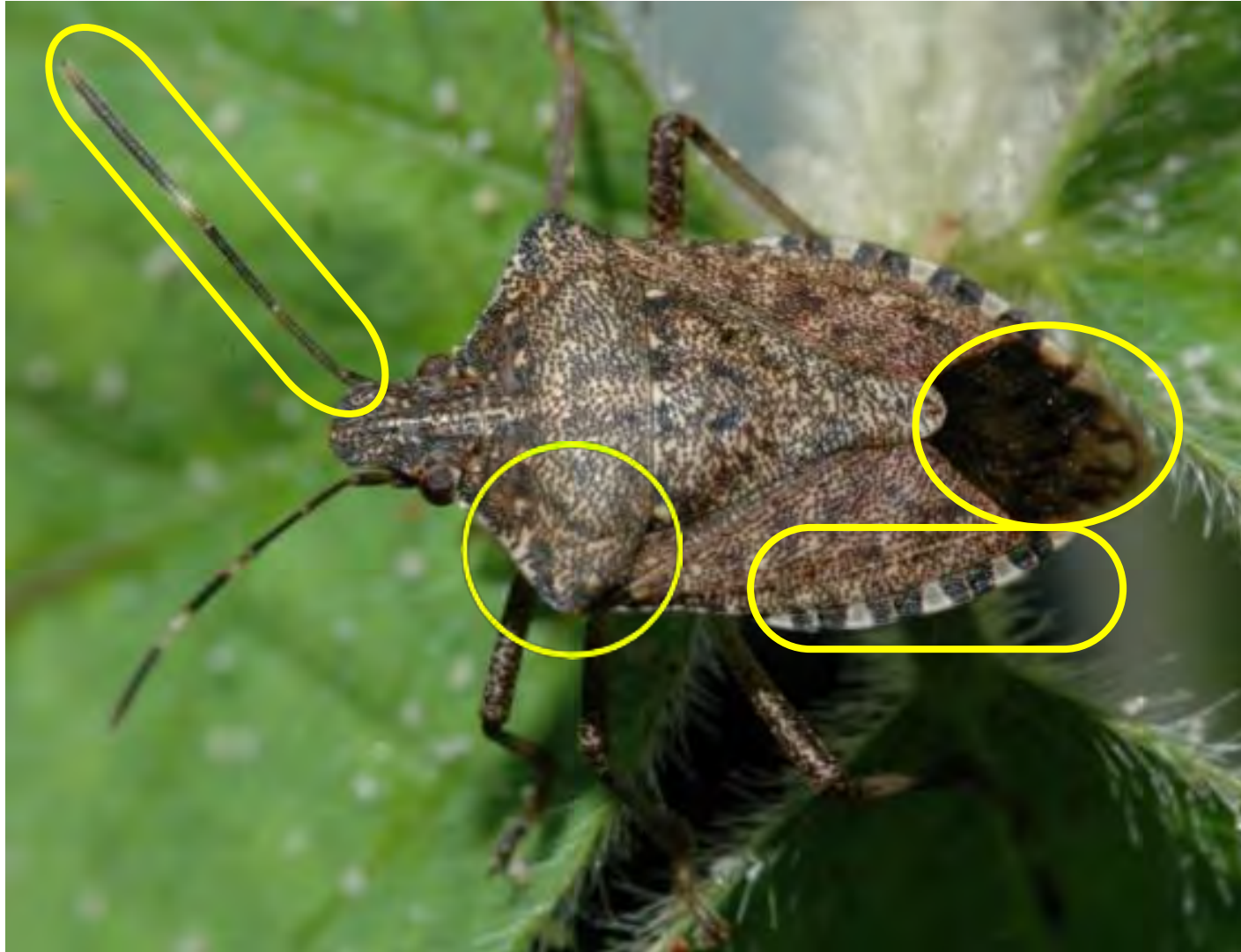
Diagnostics



Tim Tigner, Virginia Department of Forestry

Brown Marmorated Stink Bug





Poison Hemlock (*Conium maculatum*)

- Biennial – rosette year 1, 5-8 feet tall year 2
- Stem has purple spots or mottles
- Leaves pinnately compound and fernlike
- Small white flowers clustered in umbels 3-6 inches in diameter at ends of branches, May-August
- **Very poisonous! Avoid contact and contact MDA if found**



Poison Hemlock



Wild
carrot

Poison
hemlock

Wild
parnsip

Knotweeds – Japanese and Hybrid

- Imported as an ornamental
- Bamboo-like stems form dense thickets
- Stems can grow through pavement and building foundations necessitating costly removal and repairs



Knotweeds are Manageable . . . For Now

Costs United Kingdom £1.6 billion/year
(\$2 billion/year)



Knotweeds – Japanese and Hybrid



Japanese Barberry



Japanese Barberry Escaped Cultivations

- Birds vector seed
- Crowds out native plants and degrades habitat
- Overtakes wooded pastures
- Painful spines





Thank you!

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