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RESEARCH & EXTENSION
University of Arkansas System

Arkansas Invaders: Invasive Species in Arkansas Forests

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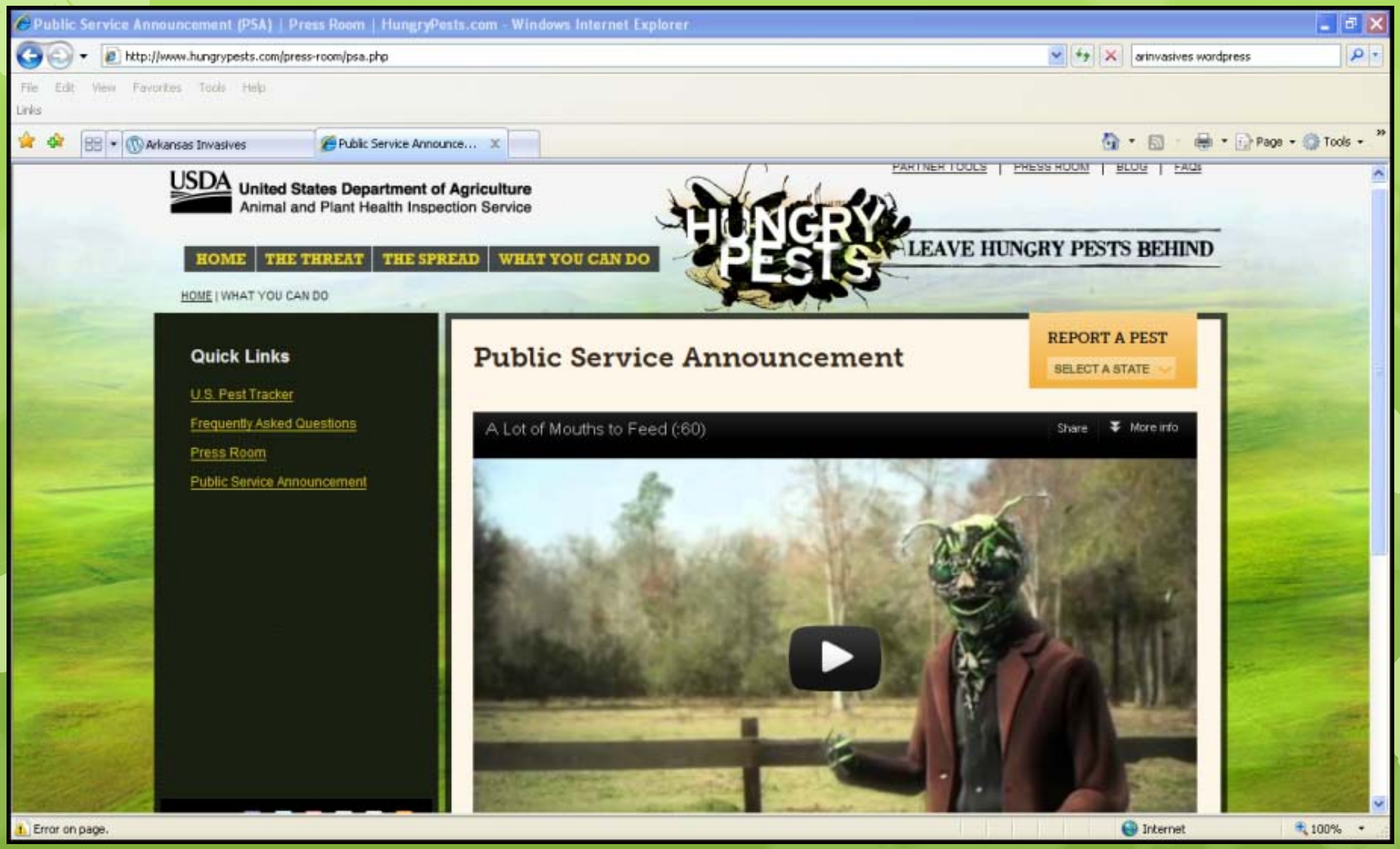
Cooperative Extension Service

Arkansas Forest Resources Center

Bug Man Video

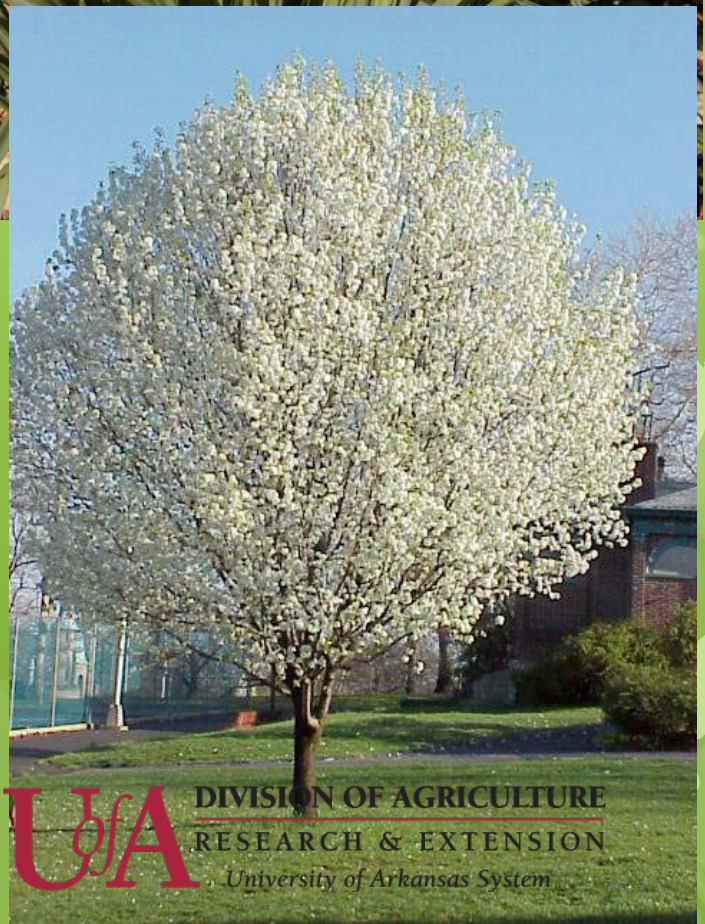
http://www.hungrypests.com/press-room/psa.php



Introduction

- Definition of Invasive
- Problem with Invasives
- Top Invasive Plants
- What's coming
- What to do
- Useful websites

Which of these is an Invasive?



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What about these?

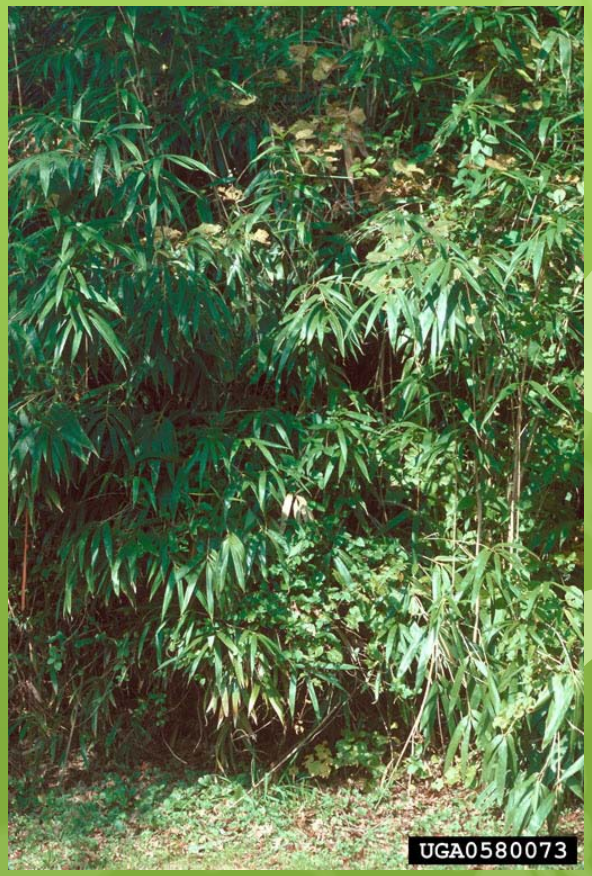
What is an Invasive Species?

- **ALL OF THEM!!! OR ARE THEY?**
- According to the USFS:

  "..a species that is non-native or alien to the ecosystem under consideration and whose introduction does or is likely to cause economic or environmental harm or harm to human health."

Invasive Exotic Species

- Not all invasive species are exotic
  - Eg. Sweetgum, elm, E. Red Cedar+.
- Not all Exotics are invasive
  - Eg. Japanese Maple, Catalpa
- BUT many are
  - Eg: Kudzu, Honeysuckle, Privet



What's the problem?

- Replace rare & endangered species
- Hybridize w/native plant species
- Kill trees & shrubs
- Prevent forest regeneration
- Harbor plant pathogens, such as bacterial leaf scorch (*Xylella fastidiosa*)
- Kill of entire species: ie disease like Chestnut Blight

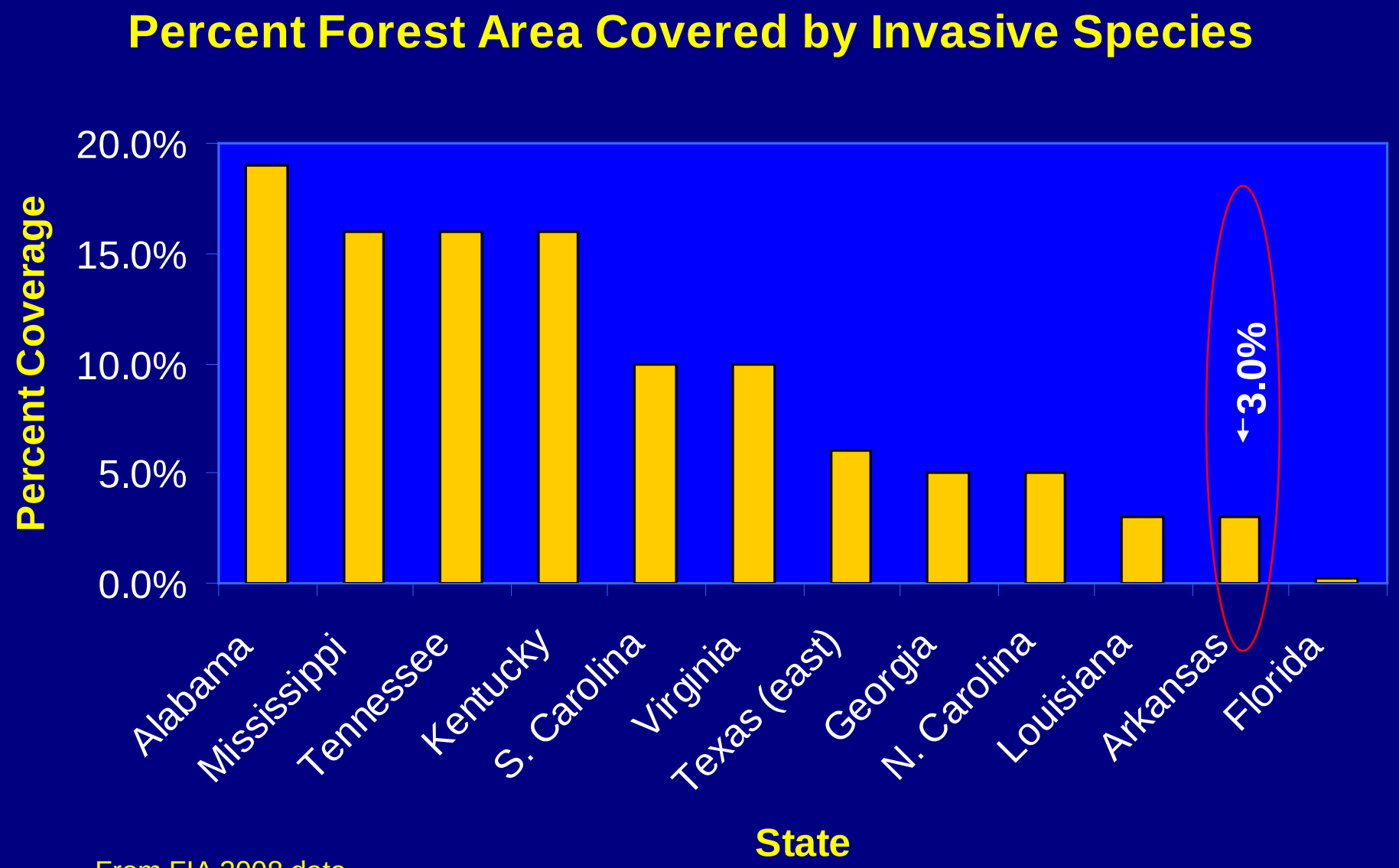
Other Damage

- Compete with native species.
- Alter hydrological patterns & stream function
- Change fire regimes
- Might contain toxins that may be lethal to certain animals.
  - For example, **garlic mustard** can be lethal to a native butterfly species.

Cost of Invasives

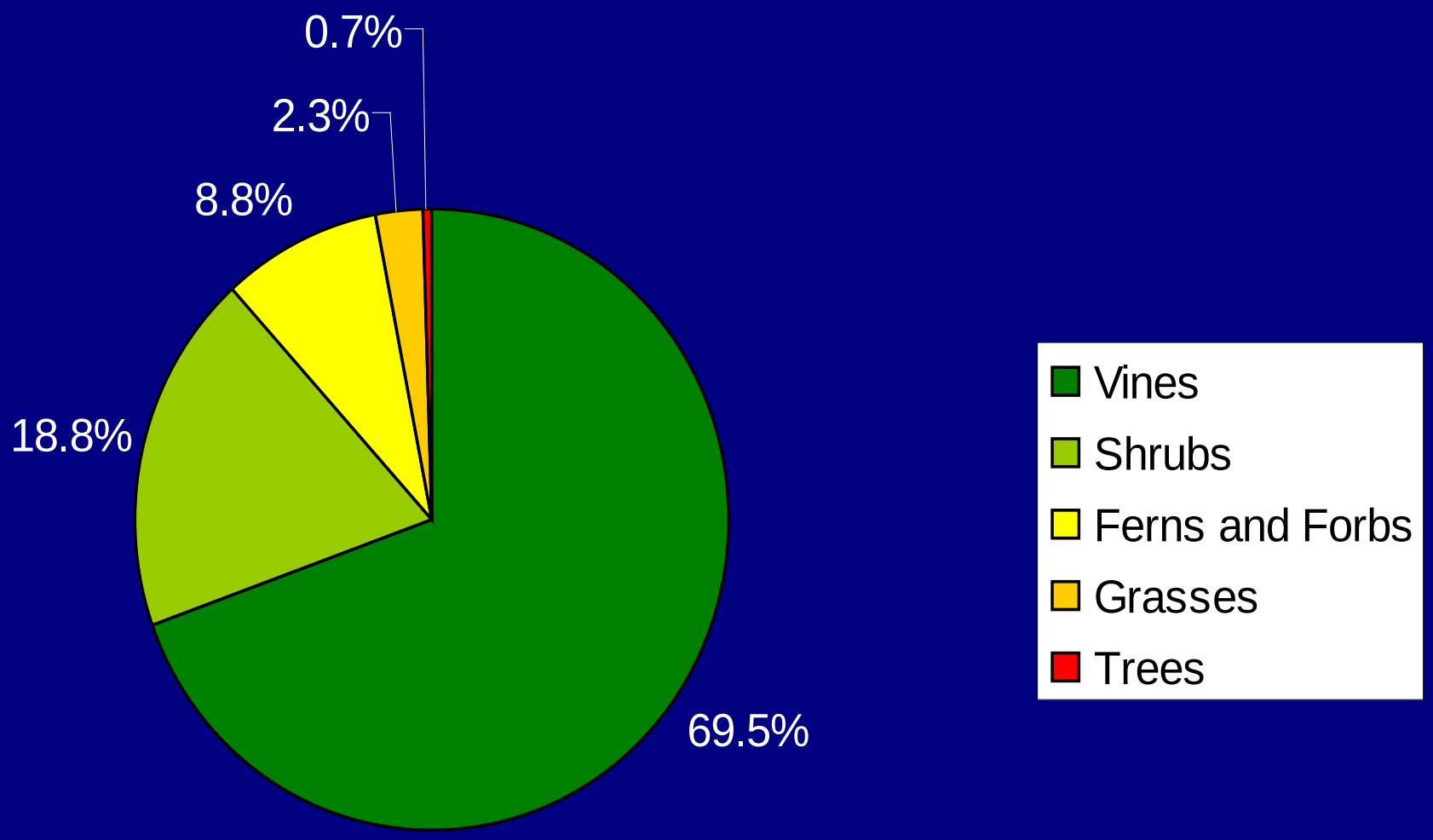
- Spreading over approximately 1,729,730 acres per year
- Invasive plants cost **$35 billion** in damages & treatment each year!!

What about Arkansas?



From FIA 2008 data

Non-native Invasive Species Presence by Plant Type for Arkansas



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Top Five Invasive Plants

- Mimosa
- Privets
- Japanese Honeysuckle
- Tall fescue
- Non-native Lespedeza
- These species occurred on the most forested acreage based on FIA data.
- http://www.invasive.org/fiamaps/

Silktree or Mimosa (*Albizia julibrissin*)

- **Nature:** Small legume tree to 30-50 ft tall
- Reproduces by abundant seeds and root sprouts.
- **Origin:** Introduced from Asia in 1745.
- **Uses:** A traditional ornamental.
- Good News: a virus
- Bad News: Horticulturalists are breeding resistant cultivars

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Chinese Privet (*Ligustrum sinense*)

- **Nature:** Shade-tolerant, tall shrubs or small trees growing to about 30 ft tall
- Semi-evergreen w/showy clusters of small white flowers
- **Origin:** Introduced in the early to mid 1900's from China and Europe, respectively.
- **Uses:** Traditional Southern ornamental shrubs. Deer browse _Chinese privet sprouts.

Honeysuckles (*Lonicera japonica*)

- **Nature: M**ulti-stemmed and arching-branched
- Leaves opposite, usually oval to oblong in shape, and range in length from 1 to 3 inches.
- Japanese and bush honeysuckles both problems
- **Origin:** All from Asia. Introduced in the 1700's and 1800's.
- **Uses: U**sed as ornamentals and wildlife plants
- **Despite the wildlife use: it is NOT NATIVE & NOT recommended**

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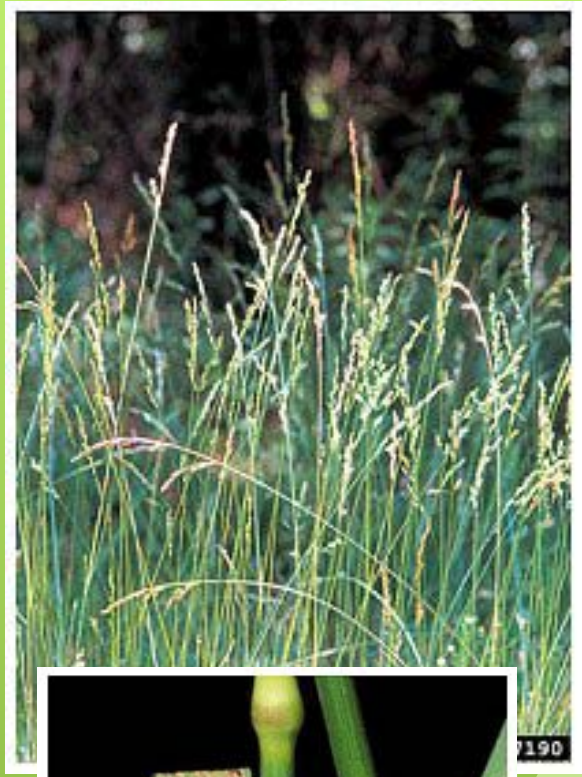
Tall Fescue

- Erect tufted cool-season perennial grass 2 to 4 feet tall, green in winter and spring, during which it is the most common green bunchgrass
- *Festuca arundinacea* Shreb., *Lolium arundinaceum* (Schreb.) S.J.
- Marketed as Kentucky 31 –
- Very common pasture forage – very controversial
- Considered harmful to wildlife
- Prevents other species from growing



Chinese Lespedeza *Lespedeza cuneata, Bicolor Lespedez*

- Warm season, perennials
- Erect growth: 3 to 5½ feet in height
- Leaves alternate along the stem & each leaf is divided into three smaller leaflets, about ½ to 1 inch long
- Planted for soil erosion prevention
- Other non-native Lespedeza: bicolor
- Native species do exist

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Herbicide options

- Lots of Options
  - Roundup Pro, Glyphos, Glyphos Plus, Touchdown Pro
  - Roundup Super Conc.
  - Garlon 3A, Garlon 4
  - Brush Killer
  - Brush-B-Gon
  - Pathfinder II
  - Vine-x
- Banvel
- Crossbow
- Escort
- Oust
- Spike 80 DF
- Transline
- Veteran 720

Alternative Control

- Mechanical: problem is that roots are very large and very deep for some species
- Best to use mechanical and chemical treatment together
- Fire doesn't work too well: Can at least provide access to the site
- Goats a good option for Kudzu

Potential Invasive Species

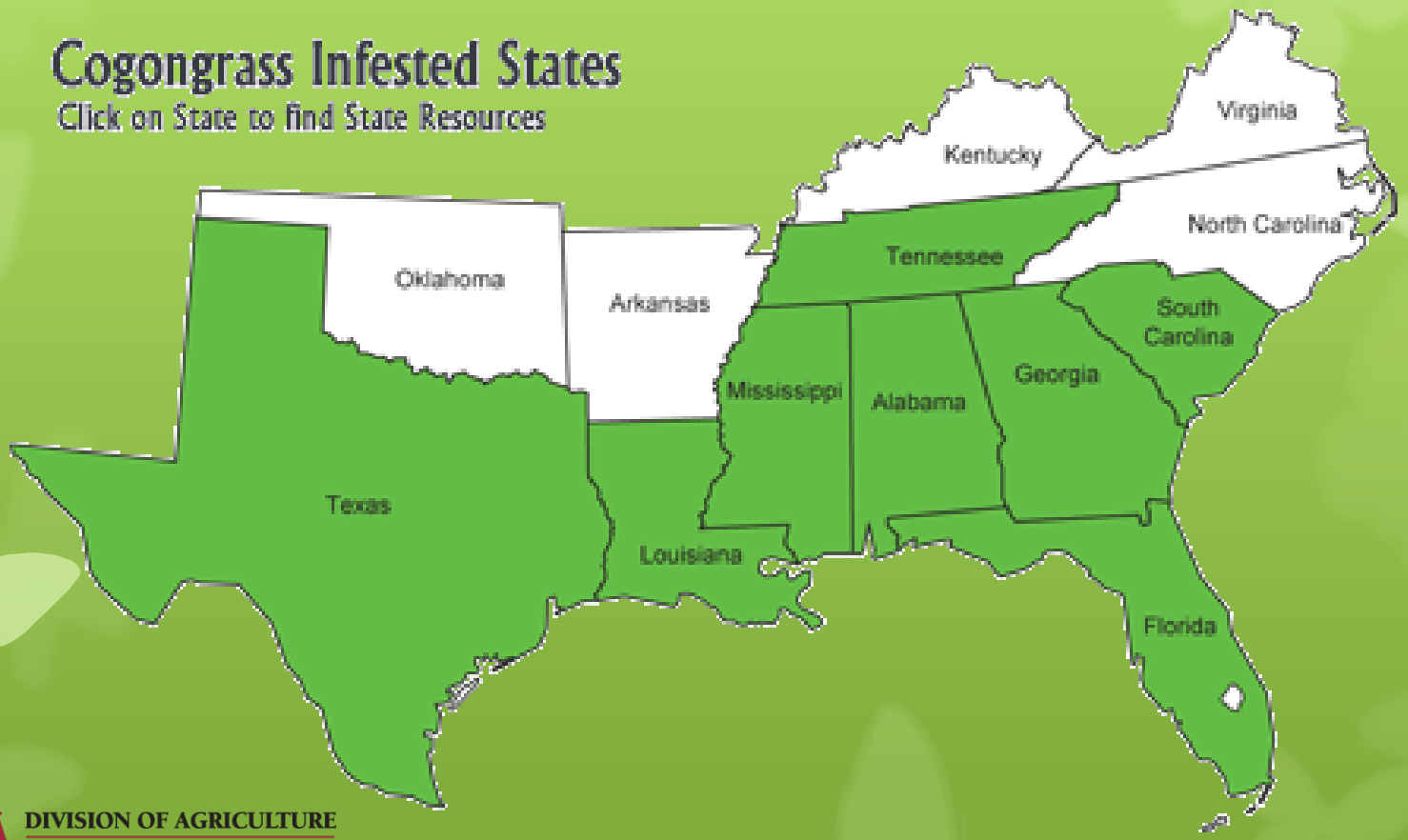
- Cogon Grass
- Emerald Ash Borer
- Sirex Wasp
- Asian Long Horn Beetle
- Gypsy Moth
- Thousand Cankers Disease

Cogongrass *Imperata cylindrica*

- Federal Noxious Weed
- Fire hazard
- No wildlife value
- Reduces tree seedling growth & establishment
- Very difficult to remove once established
- Wind and equipment spread

Web site for information

http://www.cogongrass.org/



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Whitish midrib often off-center
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Very Dense Mat of Rhizomes

Will grow in any site that is not cultivated or permanently wet

- Natural areas
- Turfgrass
- Ornamental plantings
- Rights-of-way
- Pastures
- Forests
- Orchards
- Ditchbanks
- Roadsides

What about Japanese Bloodgrass

- *Imperata cylindrica* 'Rubra'
- Same as *Imperata cylindrica which is Cogongrass?*
- When in doubt… the ASTB has banned the sale of this grass… it can (& probably will) revert to it's invasive nature. DON'T DO IT!!!

Emerald Ash Borer

Agrilus planipennis

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- Adults feed on ash foliage - cause little damage
- Larvae feed on the inner bark of ash trees
  - disrupt tree's ability to transport water & nutrients

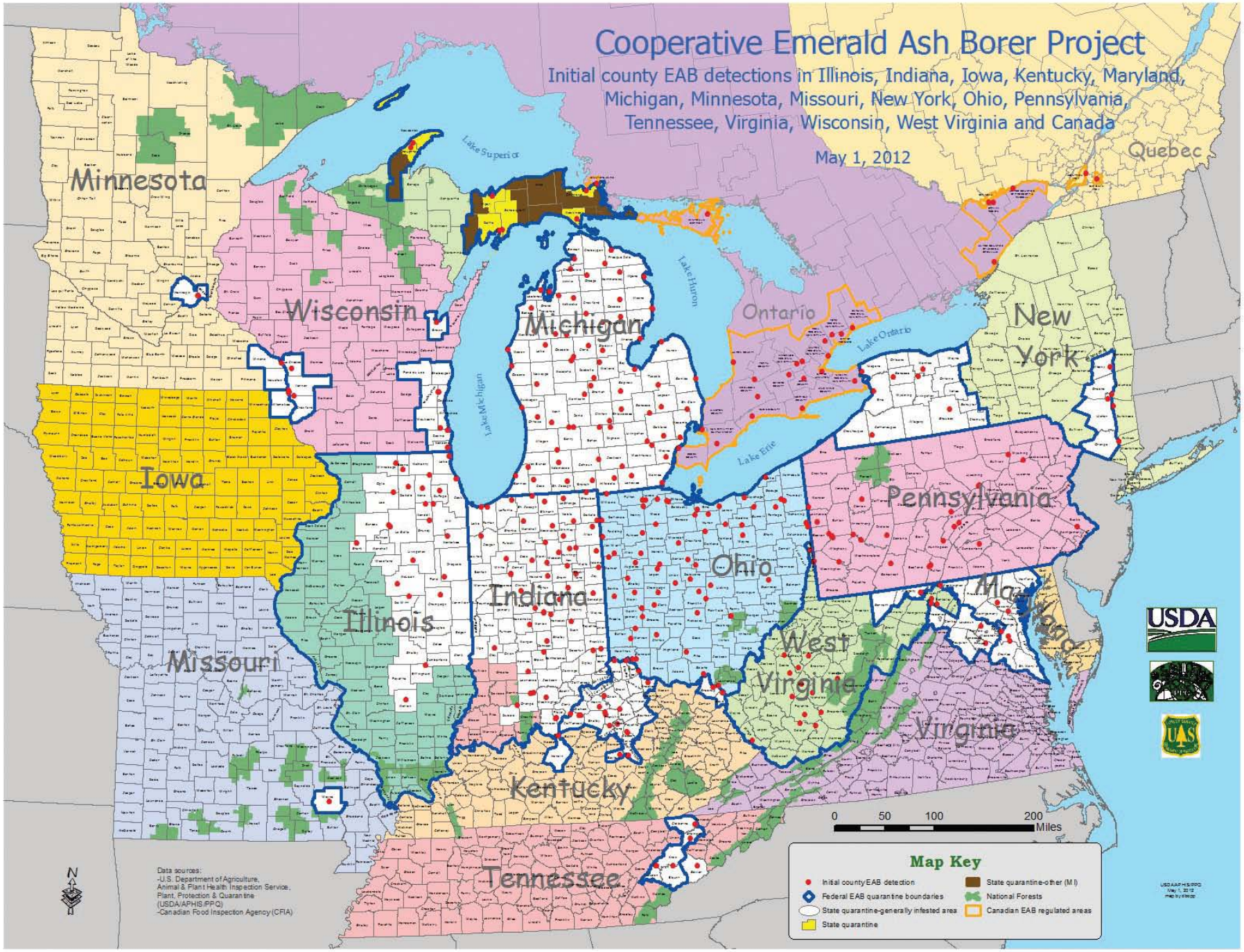
- After 1yr infestation D-shaped exit holes on branches & trunk
- Bark may split vertically above larval feeding galleries
- Stress likely contributes to vulnerability & rapid decline

J. Smith, USDA APHIS PPQ

J. Smith, USDA APHIS PPQ

Impacts Since 2002

- Killed tens of millions of ash trees in southeastern Michigan alone
- Tens of millions more lost in Ohio, Illinois, Indiana, Pennsylvania, West Virginia, Missouri, Wisconsin, Virginia, Ontario, and Quebec.
- Found in Summer 2008 in Southern MO
- Cost municipalities, property owners, nursery operators and forest products industries tens of millions of dollars

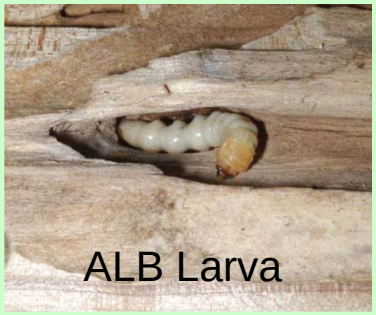

Cooperative Emerald Ash Borer Project
Initial county EAB detections in Illinois, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Tennessee, Virginia, Wisconsin, West Virginia and Canada
May 1, 2012
Minnesota
Wisconsin
Michigan
Iowa
Illinois
Missouri
Indiana
Ohio
Kentucky
Tennessee
West Virginie
Virginia
Pennsylvania
Maryland
New York
Ontario
Quebec
Lake Superior
Lake Huron
Lake Michigan
Lake Ontario
Lake Erie
0 50 100 200 Miles
Map Key
Initial county EAB detection
Federal EAB quarantine boundaries
State quarantine-generally infested area
State quarantine
State quarantine-other (MI)
National Forests
Canadian EAB regulated areas
Data sources:
-U.S. Department of Agriculture, Animal & Plant Health Inspection Service, Plant, Protection & Quarantine (USDA/APHIS/PPQ)
-Canadian Food Inspection Agency (CFIA)
N
USDA

EAB Management Plans

- **USDA quarantines**
  - Michigan, Illinois, Indiana, Maryland, Missouri, Ohio, Ontario, Pennsylvania, **Quebec**, Virginia, West Virginia, and Wisconsin)
  - Fines to prevent potentially infested ash trees, logs or hardwood firewood from moving out of areas where EAB occurs.
- No EAB in Arkansas yet but State Plant Board and partnering agencies have a plan to monitor EAB
- National Website: http://www.emeraldashborer.info/

Asian Longhorned Beetle
Anoplophora glabripennis

- ALB (invasive sp.) probably hitchhiked to U.S. within hardwood crates/pallets used to import goods from Asian countries
- 1st discovered Brooklyn, NY – 1996
  - now found in greater New York City area
  - nearby N.J. suburbs
  - in & around Chicago, IL
  - in Worcester, MA area
  - & in Toronto, ON



- ALB Adults are active only during summer & early fall
- A mated female chews 35-90 depressions for oviposition into bark of host tree & lays a single egg under bark at each site

- Control - infested and nearby host trees cut & chipped to kill all immature stages of ALB
- Imidacloprid as a protectant

Thousand Cankers Disease

- A new pest complex could pose a major threat to walnut trees (*Juglans spp.).*
- *The black* walnut twig beetle (*Pityophthorus juglandis) transmits a Penicillium-like fungus (Geosmithia)* cause what is termed "thousand cankers disease."
- Although not yet detected in Arkansas, it is killing large numbers of eastern black walnuts in various western states.
- http://www.thousandcankerdisease.com/
- Found in TN in 2010

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Thousand Cankers Disease

- Beetles feed on trees & transmit spores of the fungus to the tree
- At each feeding location, the fungus will form a canker.
- The tree declines & dies about thousands to beetles attacks and therefore cankers
- Cankers are not evident on the exterior bark of the tree
- Initial attacks by the beetle are extremely difficult to detect.
- http://www.thousandcankerdisease.com/

Web Resources

- http://www.invasive.org/
- http://www.invasive.org/video/plants.html
- Weeds Gone Wild
  - http://www.nps.gov/plants/alien/index.htm
  - http://www.invasivespeciesinfo.gov/resources/org.shtml
  - http://urbanentomology.tamu.edu/ants/rasberry.html
- AR: new web site in progress…. Stayed tuned. Will look like: http://www.texasinvasives.org/

AR Invasives.org

- Data Base to submit possible sightings
- Info. on species of concern
- Maps
- Video, etc.
- Will be doing trainings, newsletters, etc.

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Questions?
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