Update on New Insect Invaders

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Idaho State Department of Agriculture

Pesticide Applicator Re-Certification Training
Canyon County/Elmore County
December 11, 2014

Agenda for this presentation

- What are Invasive Insects and why do we care about them?
- What is being done about invasives – specifically the role of the Idaho State Department of Agriculture?
- Some information on current invasive insects of concern in Idaho

Insects: Good or Bad?


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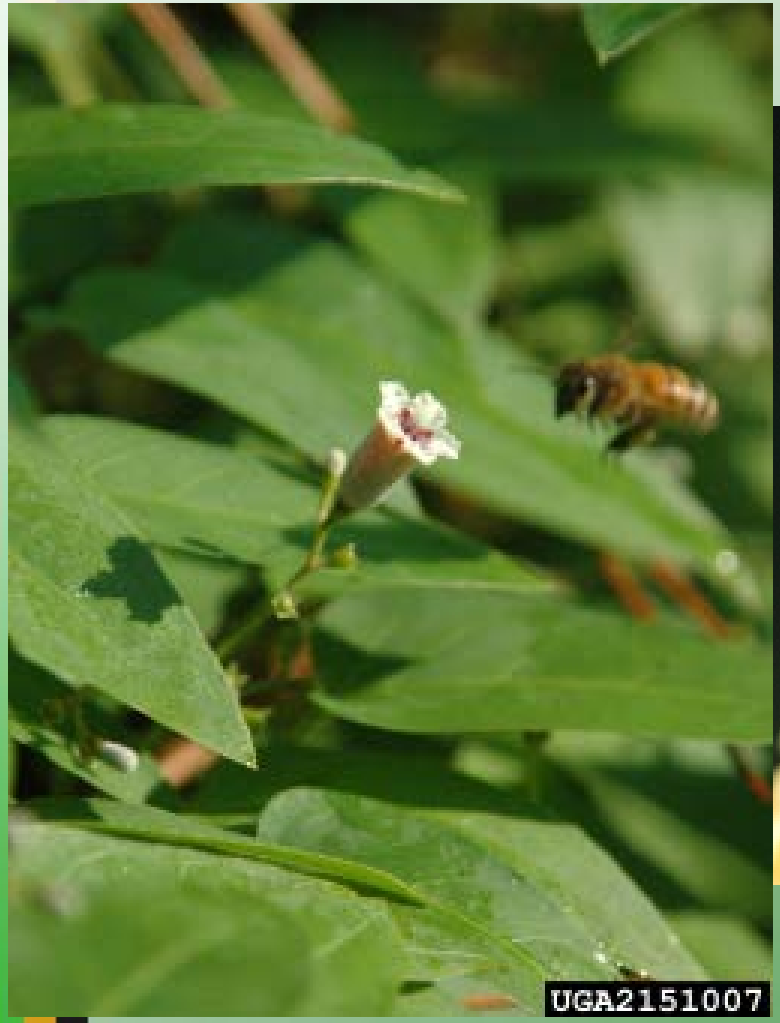
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What is an invasive species?

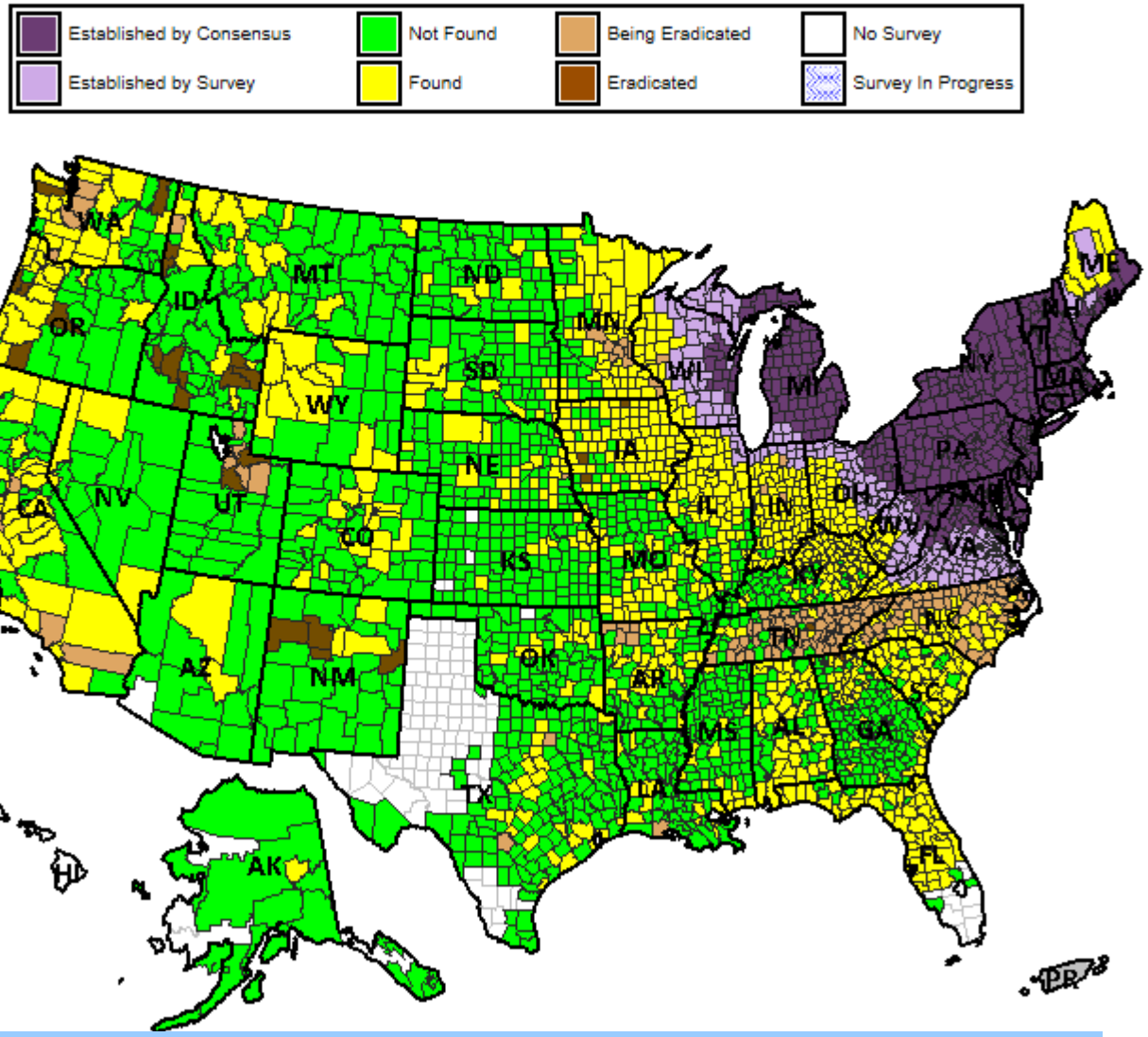
Organisms displaced to an area where they were not originally found but where they are able to establish and thrive at the expense of the local inhabitants. Usually results in environmental and/or economic problems.

Classic examples:

Gypsy Moth

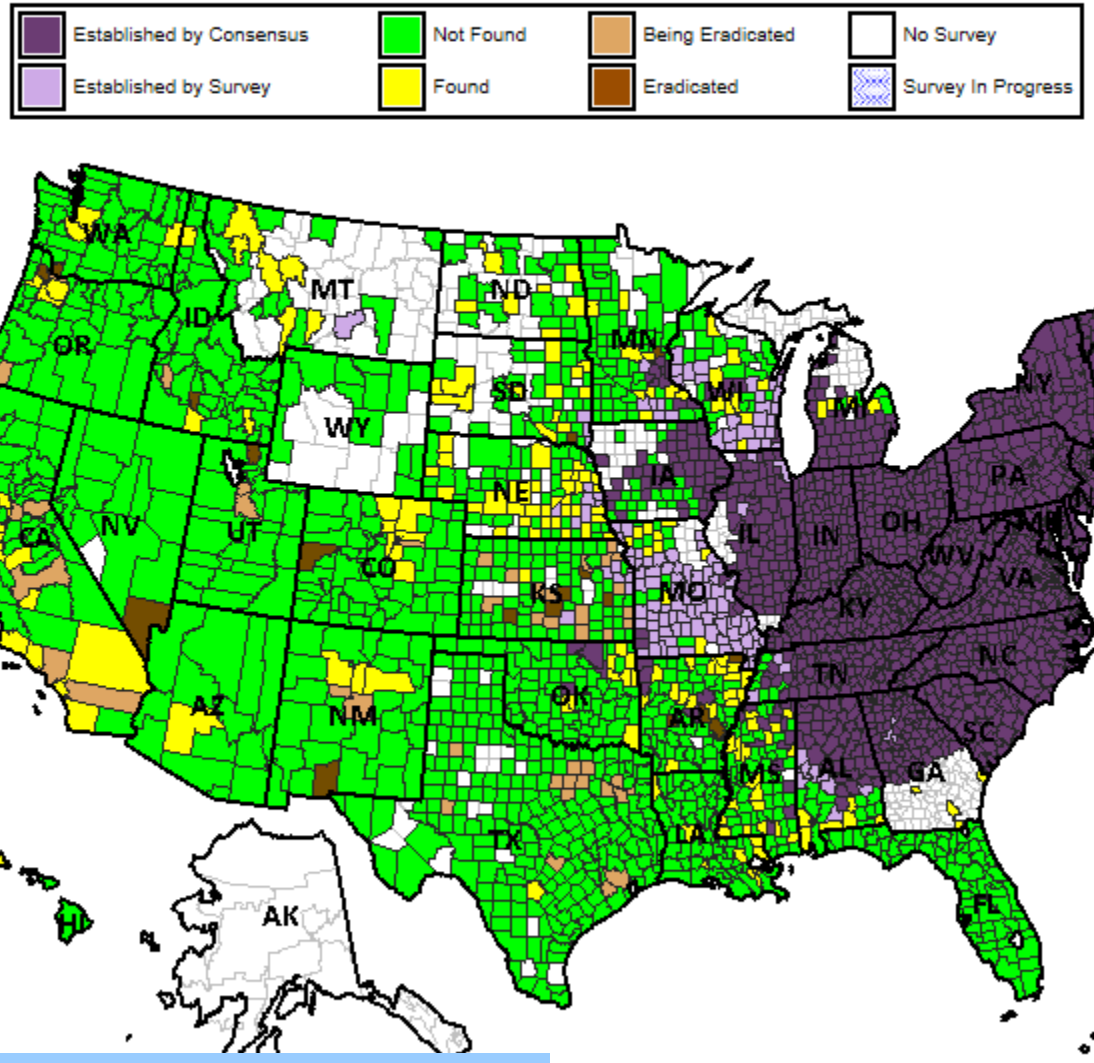
Japanese Beetle

Survey Status of Gypsy Moth - *Lymantria dispar*
All years



Etienne Leopold Truvelot: Amateur Entomologist – 1869 - Boston

Survey Status of Japanese Beetle - *Popillia japonica*
All years



New Jersey plant nursery – 1916

They're still showing up - all the time!

- Hemlock Woolly Adelgid – 1985
- Asian Tiger Mosquito - 1985
- Asian Longhorned Beetle – 1996
- Viburnum Leaf Beetle – 1996
- Asian Citrus Psyllid - 1998
- Brown Marmorated Stink Bug – 1998
- Small Hive Beetle - 1998
- Emerald Ash Borer – 2002
- Sirex Wood Wasp – 2004
- Swede Midge - 2004
- Light Brown Apple Moth - 2007
- Spotted Wing Drosophila – 2008
- Elm Seed Bug – 2009

Welcome the newest kid on the block:

Spotted Lanternfly

Berks County, PA – Sept 2014
Native to China/India/Japan/Vietnam
Recently introduced to Korea
Feeds on grape, apple, pine, stone fruits, Tree of Heaven

Center for Invasive Species Research, U of CA, Riverside reports:

CA acquires ~ 6 new invasives per year

HI & FL acquire ~15 new invasives per year

Invasives cost US $138 billion annually

Can come from another country or move from one area to a new area within the same country

Can move from one place to another “naturally” (self-introduction) – but these days more often than not are “helped” by Man (on purpose or inadvertently).

Problems

- Uncontrolled population growth
- Competition for resources with natives – invasive usually wins
- Native populations decreased or driven to extinction
- Habitat alteration causes collateral damage
- Economic problems from direct costs (product loss) and indirect costs (inspection/control cost & potential damage to environment)

Dealing with invasives

Reactive

Proactive

Many government agencies (including ISDA), conservation groups, research organizations and others are actively involved on a daily basis combating the invasive species threat

Watching!
(Surveying/Monitoring)

Providing Information
(Public Outreach)

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Regulated & Invasive Insect Pests

Plants & Insects
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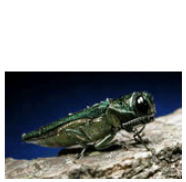
Insect Pest List
Japanese Beetle Project

Forms, Publications, Reports
Laws & Rules
Other Resources
Contact Information

Regulated and Invasive Insect Pests



Idaho agriculture is very diversified with more than 144 different commodities and agricultural products. The value of Idaho 's agricultural production is around $4 billion. Export markets are a significant sector of the agricultural economy with $789.2 million in sales or about 20 percent of the farm gate total from international trade. ISDA has the responsibility to conduct pest survey and detection projects for a wide array of regulated and invasive pest species.

In the context of an integrated pest management system, ISDA works to exclude, regulate and manage new invaders that may have negative economic, public health and environmental impacts. The Pest Survey and Detection Program maintains an important partnership with USDA Plant Protection and Quarantine and the Idaho Department of Lands. Although ISDA staff is involved in many plant health issues, the department's primary mission is to protect Idaho's diverse agricultural interests from new pest threats.

ISDA conducts different types of surveys of selected insect threats including Apple maggot, Cereal leaf beetle, European pine shoot moth, Japanese beetle, Mexican bean beetle, Asian and European Gypsy moth. ISDA staff utilizes appropriate trapping and survey methods that cover the entire state when needed. There is an ongoing effort to release biological control agents to suppress cereal leaf beetle in the major grain producing areas of Idaho. In conducting field inspections for export certification or nursery inspections ISDA staff is constantly on the watch for new exotic pest threats.



Elm seed bug, *Arocatus melanocephalus:* an exotic invasive pest new to the U.S.

Idaho State Department of Agriculture

In summer 2012, the **elm seed bug (ESB)**, an invasive insect new to the U.S., was first identified from specimens collected in Ada and Canyon counties in Idaho. During 2013 it was found to have spread to Elmore, Gem, Owyhee, Payette, and Washington counties as well as Malheur County, Oregon. Commonly distributed in south-central Europe, ESB feeds primarily on the seeds of elm trees, although they have also been collected from oak and linden trees in Europe. The insect does not damage trees or buildings, nor does it present any threat to human health. However, due to its habit of entering houses and other buildings in large numbers to escape the summer heat and later to overwinter, it can be a significant nuisance to homeowners.

Adult elm seed bugs
ISDA photo

Elm seed bug biology

Elm seed bugs spend the winter as hibernating adults, mate during the spring and lay eggs on elm trees. Immature ESB feed on elm seeds from May through June becoming adults by early summer.

Elm seed bugs are most noticeable in springtime as overwintering ESB begin to emerge inside buildings and try to escape, during hot periods in the summer when ESB attempt to enter buildings to get away from the heat, and in the autumn when they enter buildings to overwinter.

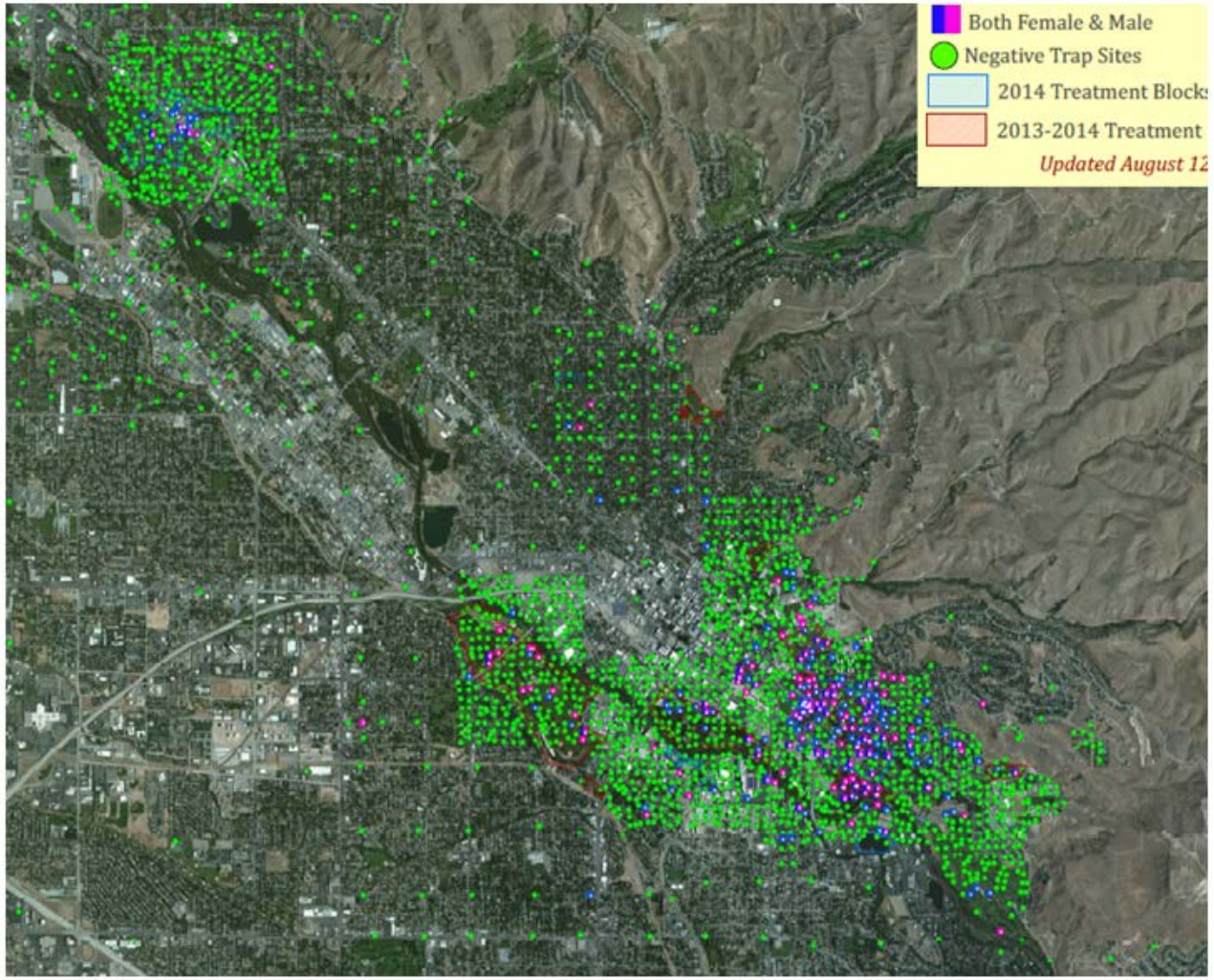
When disturbed or crushed, the bugs produce an unpleasant odor.

Current reported range of Elm Seed Bug in the US
Map from USDA APHIS PPQ



Photos courtesy of Charles Olsen, USDA APHIS PPQ – Bugwood.org

Responding!



DATE: 5/16/14

Official Notice of Scheduled Treatment for Japanese Beetle Control

Your property is scheduled to be treated for Japanese Beetle on **May ,2014**. The treatment will be done by Pro Care Landscape Services - a professional, licensed pesticide applicator under contract with the Idaho State Department of Agriculture (ISDA). An observer from ISDA will also be present during all treatments.

This treatment consists of the application of Acelepryn ® G insecticide granular treatment for the turf areas where the larvae feed. A manufacturer's label for this product can be found at:

Acelepryn ® G:
http://www.cdms.net/LDat/ldB7R001.pdf

or a copy can be obtained at ISDA, 2270 Old Penitentiary Road, Boise ID 83712.

- OVER -

Your job is:

1. **Be informed about invasive pests you might encounter**
2. **If you find what you think might be an invasive of concern contact U of I Extension or ISDA – supplying a good photo or, better yet, a specimen is very helpful**

Who's on the ISDA Invasive Insect radar right now?

Japanese Beetle

Public Enemy #1

- **Scarab beetle, native to Japan - found in NJ nursery in 1916.**

- **JB grubs (larvae) feed on organic matter in the soil and on the roots of grasses, including turf grass.**

- **JB adults feed on both foliage and fruit of more than 300 host plants.**

Life Stages

One generation per year

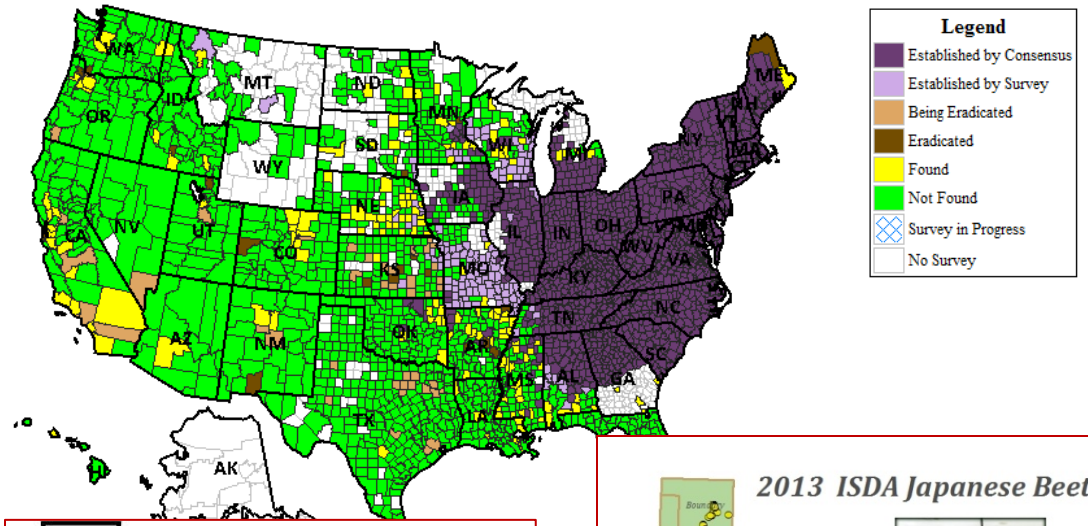
Skeletonization of leaves by adult JB

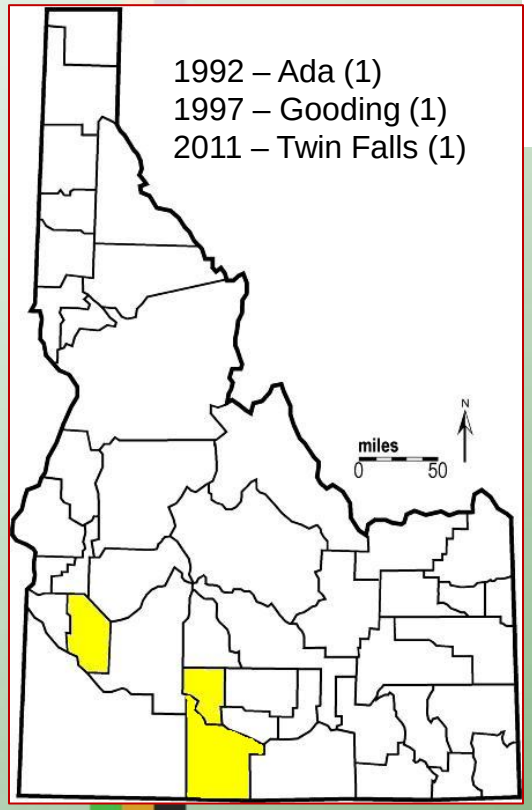
JB adult damage on roses and example of aggregation behavior

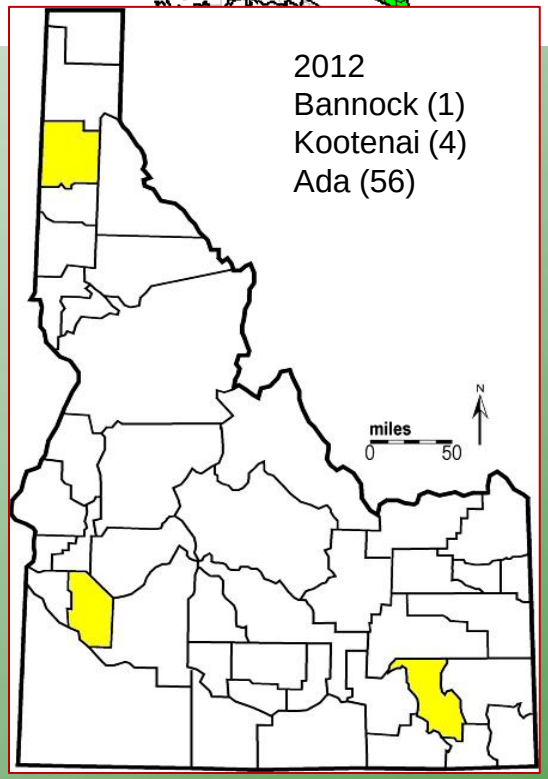
JB larval damage on turf

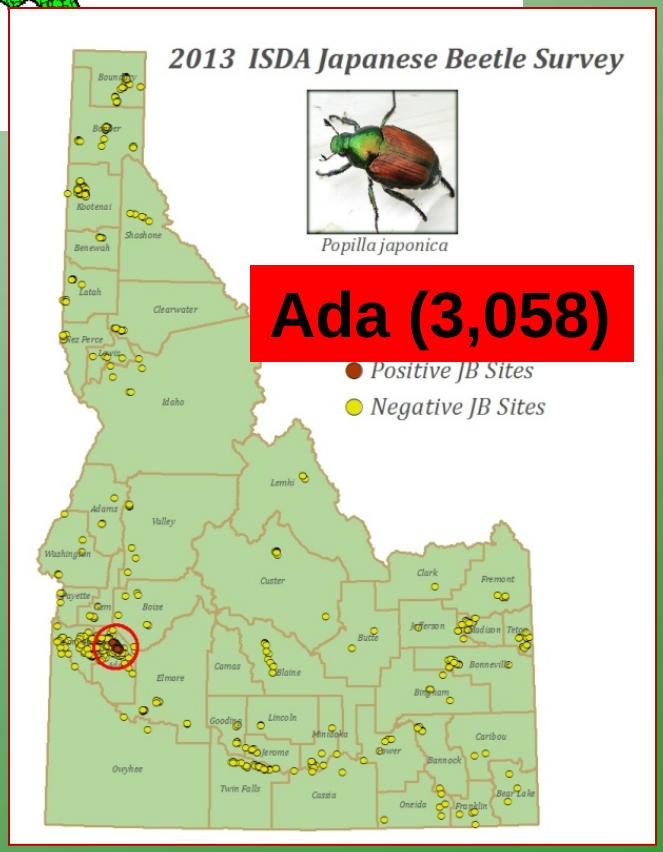
IDAHO STATE DEPARTMENT OF AGRICULTURE

Survey Status of Japanese Beetle - *Popillia japonica*
All years

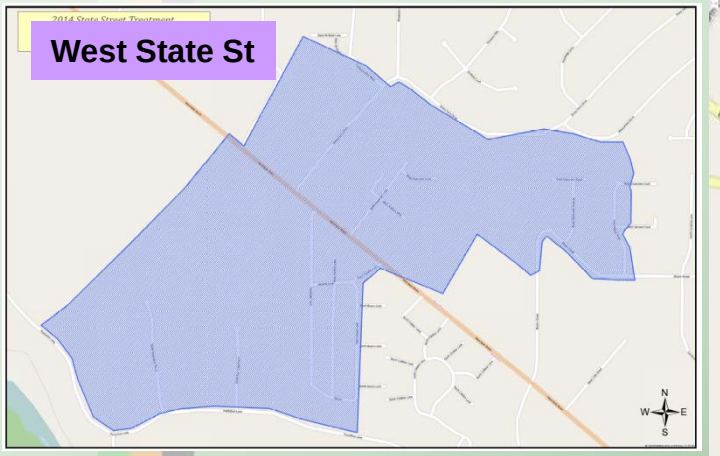






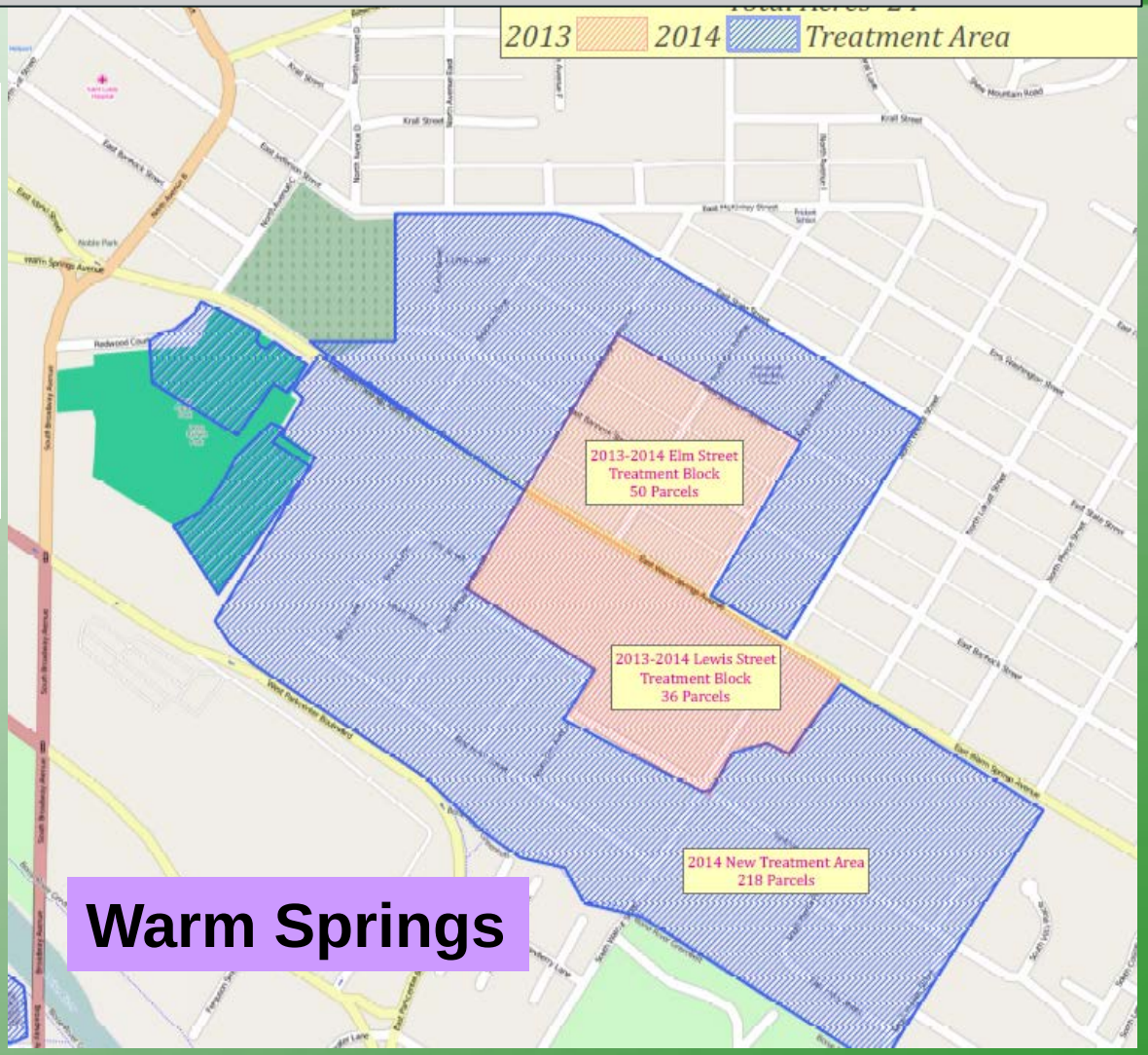


JB Treatment Areas



2013:
~ 100 residential/commercial properties + 14 parks

2014:
~ 500 residential/commercial properties + 14 parks



How Are We Doing?

Overall Beetle catches in traps:

2013: 3,058 2014: 1,283 58%

Warm Springs properties treated in 2013:

2013: 1,930 2014: 91 95%

Average for 6 largest parks treated in 2013:

2013: 78 2014: 23 70%

Gypsy Moth

- Entered US (Boston) in 1869
- Feeds predominantly on hardwoods
- Can strip foliage from trees in forests and urban areas

Cocoons and egg masses transported as “hitchhikers” on property and vehicles

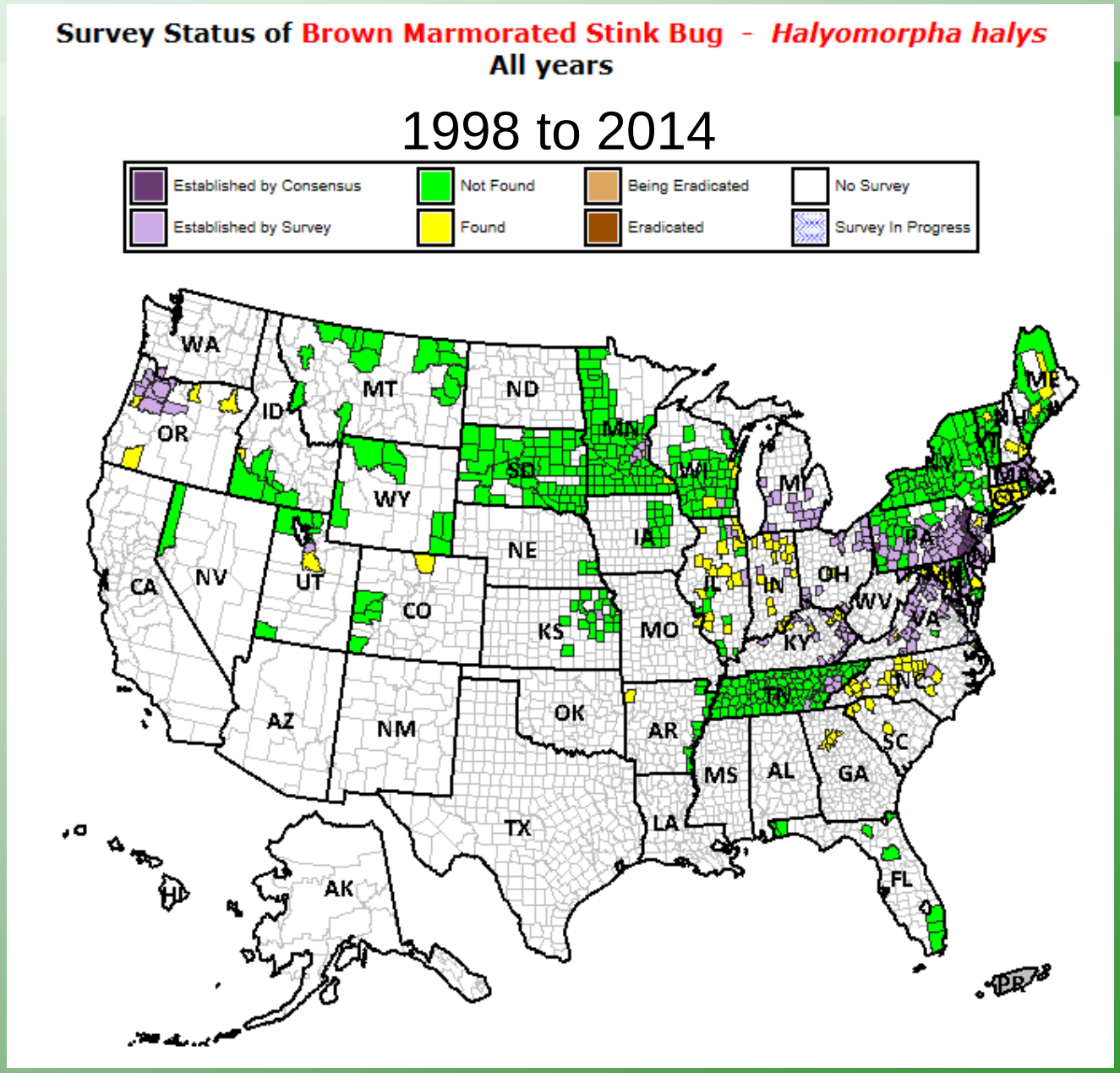
Newly emerged larvae travel by “ballooning”

Brown Marmorated Stink Bug

Native to China, Korea, Japan & Taiwan

First record of detection in US: Allentown, PA - 1998

BMSB feeds on a variety of fruits and vegetables. It may also aggregate in large numbers to overwinter.


Survey Status of Brown Marmorated Stink Bug - Halyomorpha halys
All years
1998 to 2014
Established by Consensus
Established by Survey
Not Found
Found
Being Eradicated
Eradicated
No Survey
Survey In Progress
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
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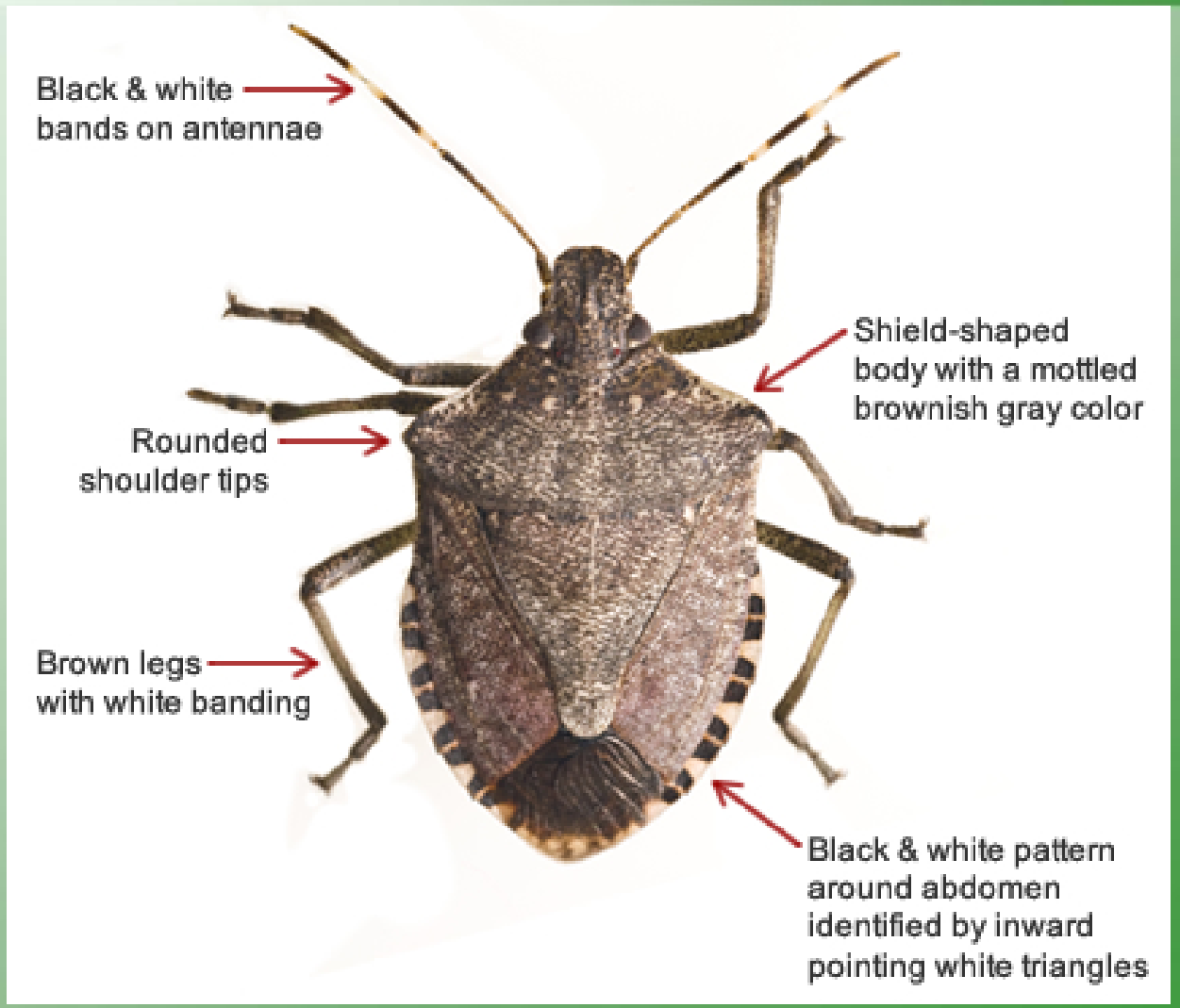

Black & white bands on antennae
Shield-shaped body with a mottled brownish gray color
Rounded shoulder tips
Brown legs with white banding
Black & white pattern around abdomen identified by inward pointing white triangles

BMSB “Look-alikes”

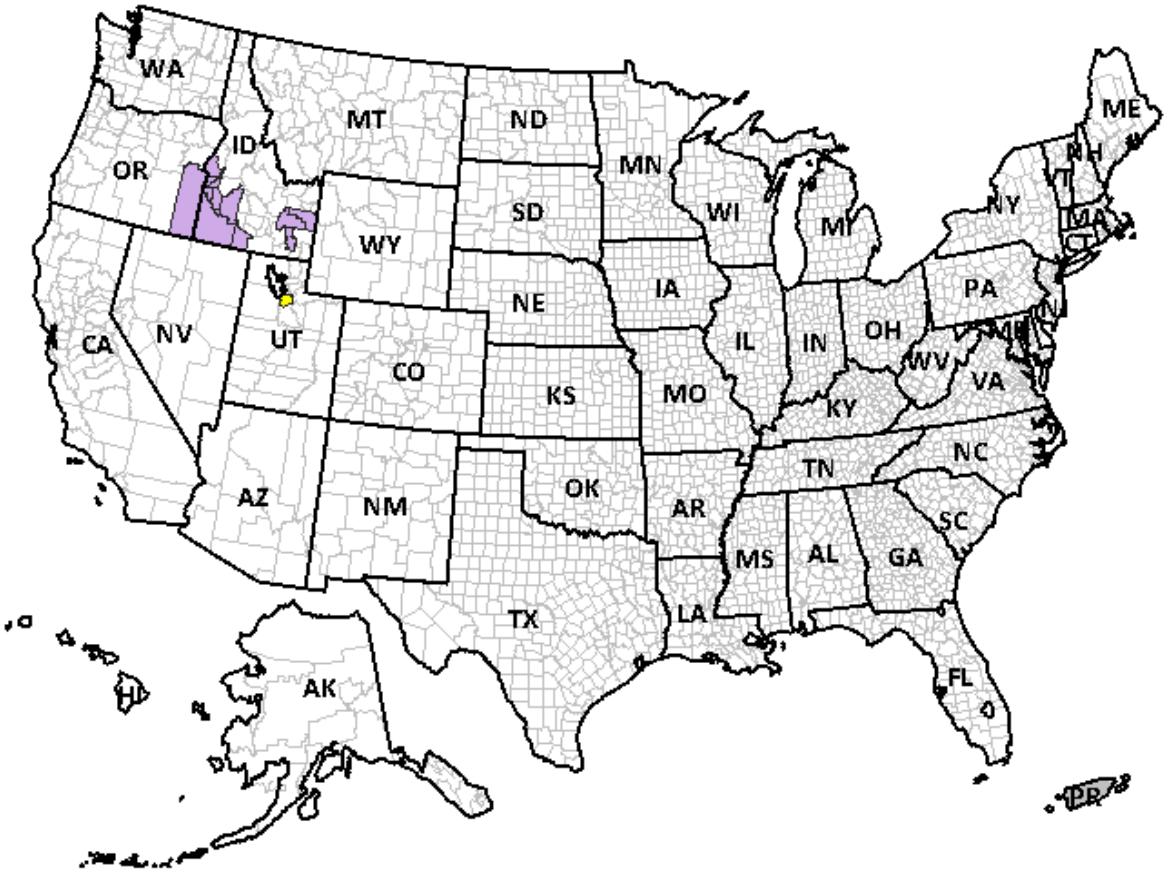
Brown Stink Bug (*Euschistus* sp.)

Spined Soldier Bug (*Podisus* sp.)

Rough Stink Bug (*Brochymena quadripustulata*)

Elm Seed Bug

Idaho's claim to invasive insect fame!



Spotted Wing Drosophila

SWD damage is caused by maggots feeding in the flesh of fruit

What makes SWD more dangerous than all other vinegar flies?

Some fruit on which SWD can feed:

Preferred Hosts

Strawberries
Cherries
Blueberries
Raspberries
Blackberries
Boysenberries
Peaches
Grapes-table & wine

Other Hosts

Nectarines
Asian Pears
Plumcots
Satsyma Plums
Elderberry
Cold Hardy Kiwis
Italian Prunes
Persimmon
Split Tomato,
Fig
Damaged Apple

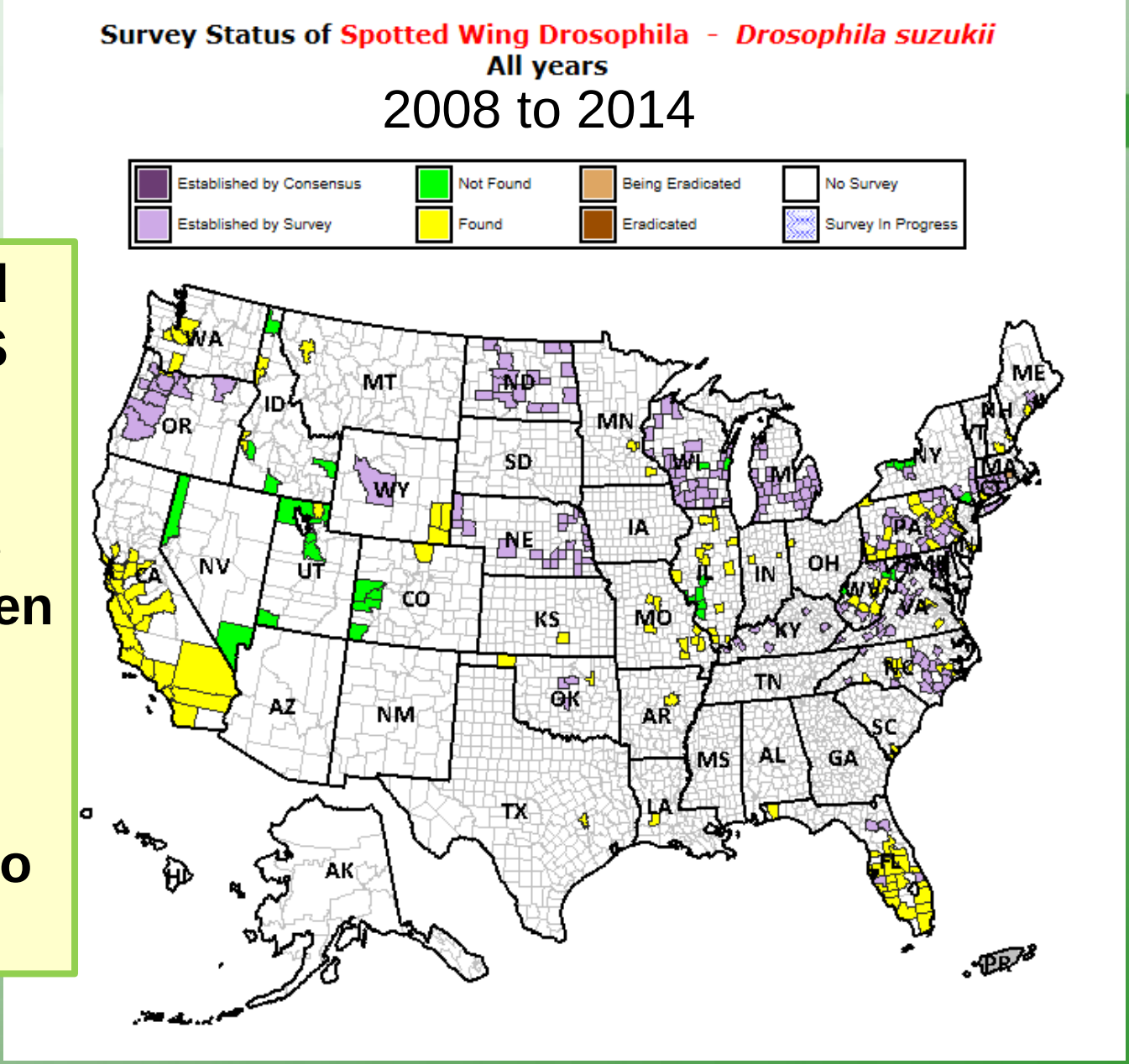
Other non-commercial hosts:

Mulberry
Himalayan Blackberry
Wild rose, Rose Hips
Ornamental Plums and Cherries
Flowering cherry
Snowberry
Japanese Honeysuckle
Mountain Ash
Pokeweed
Nightshade
Japanese Dogwood

First year found on mainland US was 2008 (CA)

That first year's damage has been estimated at $500 million

Found in 4 Idaho counties so far



Asian Longhorned Beetle

Not found in Idaho – yet!

- Feeds primarily on maple, poplar, willow and elm
- Entered US in the wood used for packing crates – moved by natural spread and firewood
- Infested trees are removed and destroyed – so far tens of thousands of them

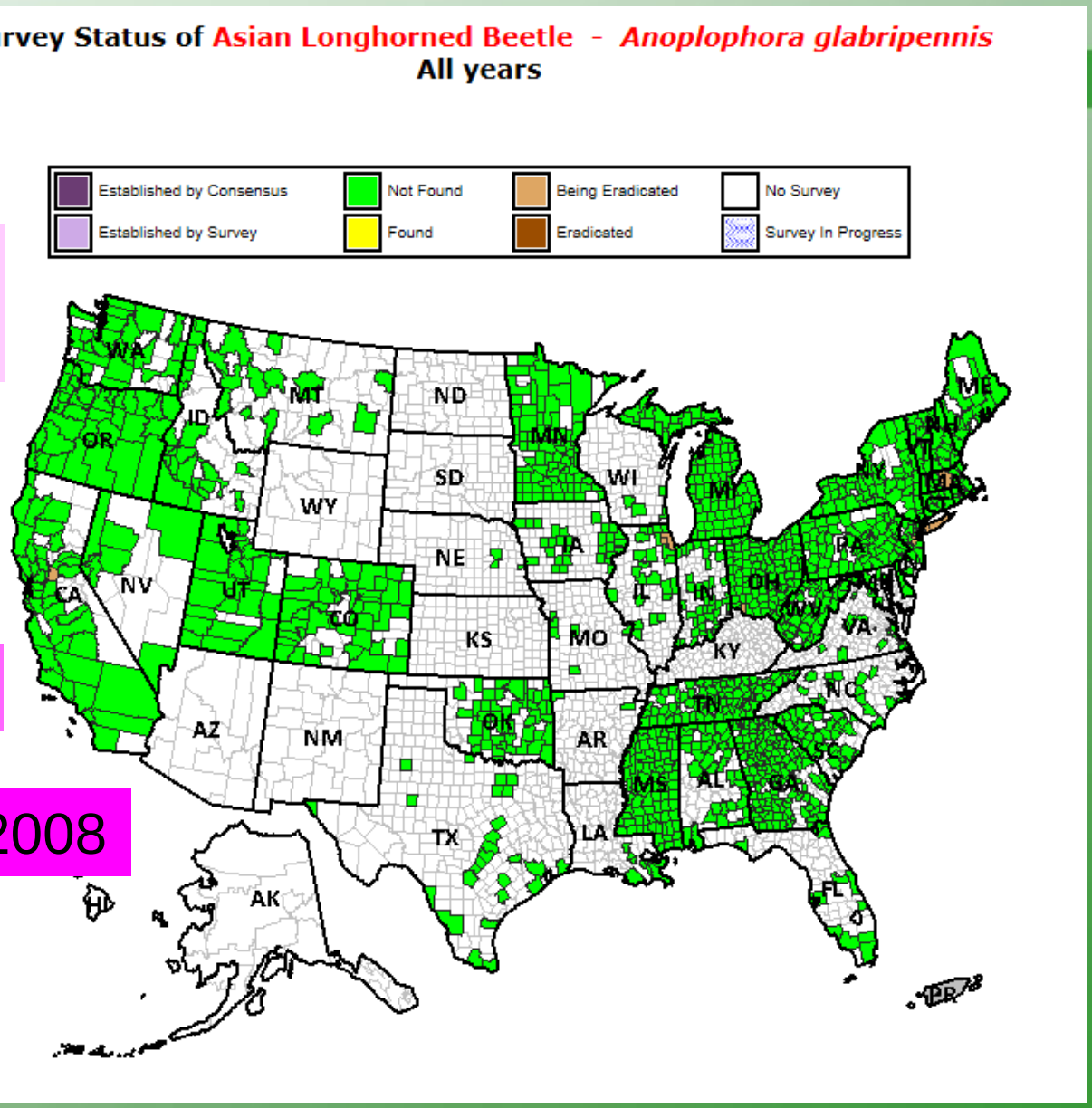
First US capture
In New York in 1996

Second infestation
In Chicago in 1998

Found in CA in 2005

In Massachusetts in 2008

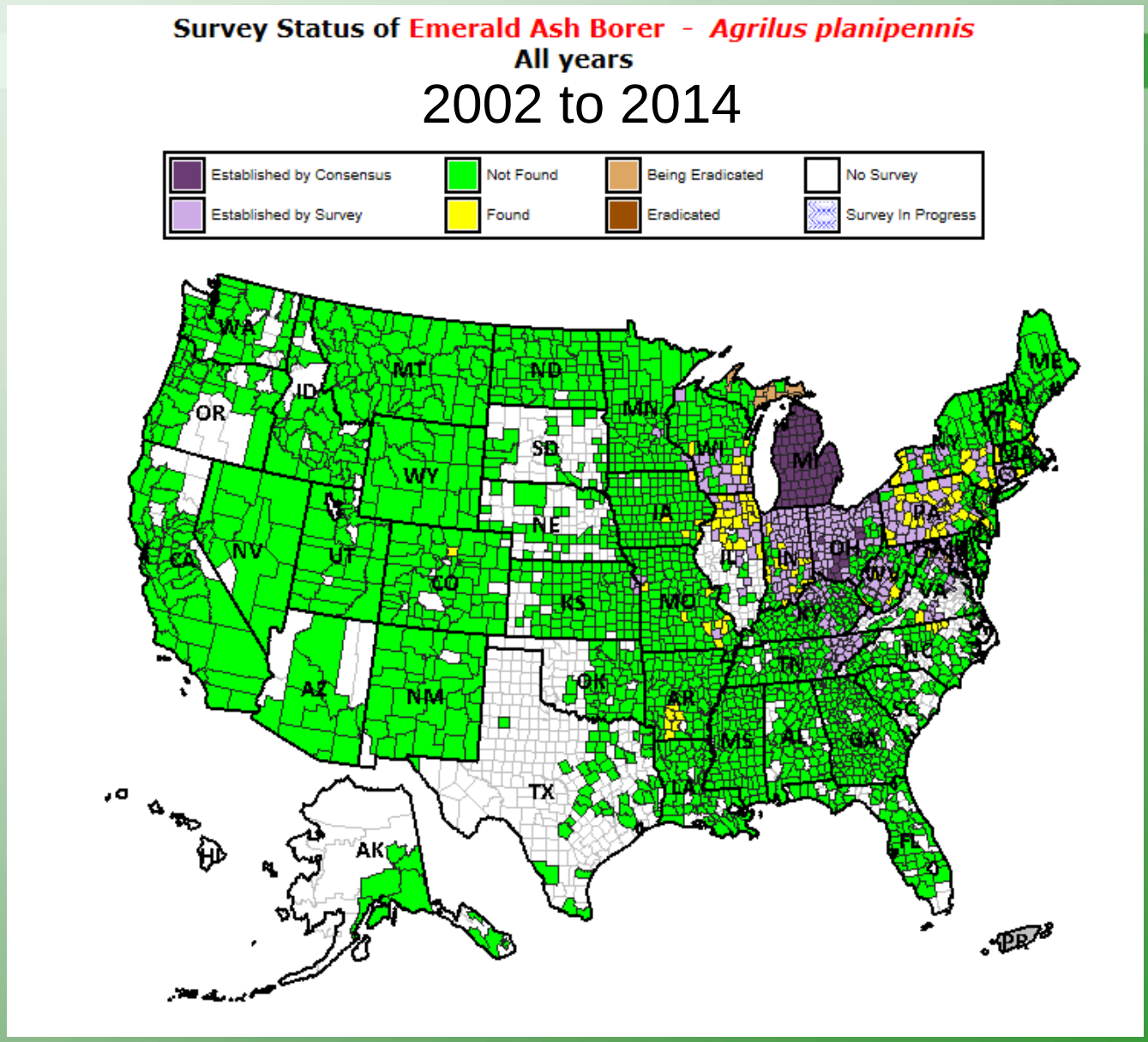
In Ohio in 2011



Emerald Ash Borer

Not found in Idaho – yet!

- Accidentally introduced from Asia
- First detected in US in 2002
- Larvae burrow into wood of North American ash trees – trees die after multiple years of feeding
- During the past decade EAB has killed tens of millions of trees in 23 US states and 2 Canadian provinces


Survey Status of Emerald Ash Borer - Agrilus planipennis
All years
2002 to 2014
Established by Consensus
Established by Survey
Not Found
Found
Being Eradicated
Eradicated
No Survey
Survey In Progress
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
OH
KY
TN
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GA
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MA
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RI
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MD
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AK
HI
PR

NAPIS Data Notification for 10/07/2014

ceris-caps-dnall-bounces@lists.purdue.edu on behalf of Music, Cynthia L

Sent: Wed 10/8/2014 12:44 PM
To: caps-dnall@ceris.purdue.edu
Retention Policy: 45 days - Inbox - Delete (45 days) Expires: 11/22/2014

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This report includes data which have been entered into the National Agricultural Pest Information System (NAPIS) by members of the Cooperative Agricultural Pest Survey (CAPS). Best efforts are made to enter accurate and complete data; however, neither the USDA nor Purdue University certify the accuracy or completeness of the data.

==========
Process date: 10/07/2014
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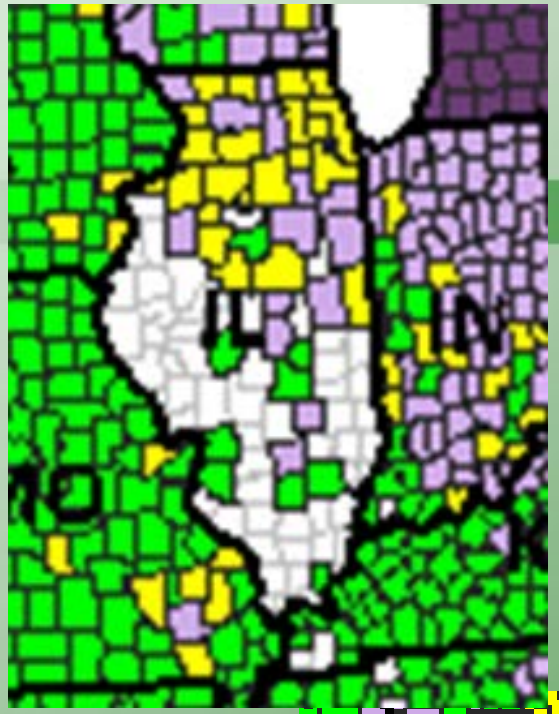
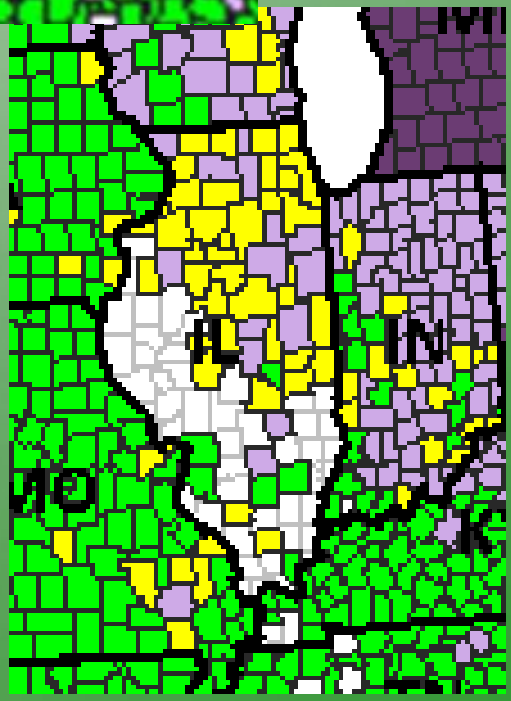
ILLINOIS

Emerald Ash Borer (*Agrilus planipennis*)
Ash (*Fraxinus sp./spp.*)
Designated "New in County"
Pest Status Description: POSITIVE (PRESENT)
NEW OR REINTRODUCED IN THE COUNTY
NOT KNOWN TO BE ESTABLISHED

Observation date: 09/09/2014 IL - Coles County
Observation date: 09/09/2014 IL - Douglas County
Observation date: 09/09/2014 IL - Edgar County
Observation date: 08/25/2014 IL - Ford County
Observation date: 09/03/2014 IL - Logan County
Observation date: 09/08/2014 IL - Marshall County
Observation date: 09/03/2014 IL - Menard County
Observation date: 08/20/2014 IL - Perry County
Observation date: 09/14/2014 IL - Piatt County
Observation date: 09/03/2014 IL - Sangamon County
Observation date: 09/19/2014 IL - Shelby County
Observation date: 09/14/2014 IL - Warren County
Observation date: 08/20/2014 IL - Williamson County
Observation date: 09/08/2014 IL - Woodford County

CAPS survey map





In conclusion:

The Idaho State Department of Agriculture has a long tradition of surveying for and responding to outbreaks of insect pests impacting agriculture and the urban/forest environment. The CAPS (Cooperative Agricultural Pest Survey) program, part of USDA, has strengthened ISDA's ability to carry out effective surveys and be more proactive in monitoring for potential new invasive species.

QUESTIONS ?