An Overview of

Japanese Beetle Eradication and Other Invasive Pest Issues in Idaho

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Idaho Department of Agriculture

Canyon Co.
December 12, 2013


Japanese Beetle in Idaho:
Identification and Update

Japanese Beetle (*Popillia japonica*)

- Scarab beetle, native to Japan; found in NJ nursery in 1916.
- Polyphagous; feeds voraciously as both larva and adult.
  - **JB grubs (larvae)** feed on organic matter in the soil and on the roots of grasses, including turf grass.
  - **JB adults** attack both foliage and fruit of more than 300 host plants.
    - Adults skeletonize the foliage.
    - Adults typically aggregate on preferred host plants.


JAPANESE BEETLE
LIFE CYCLE
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC

Life Stages

- JB grubs are creamy white, C-shaped, and 1 inch long when fully grown.
- Grubs can be clumped under the soil of turfgrass.

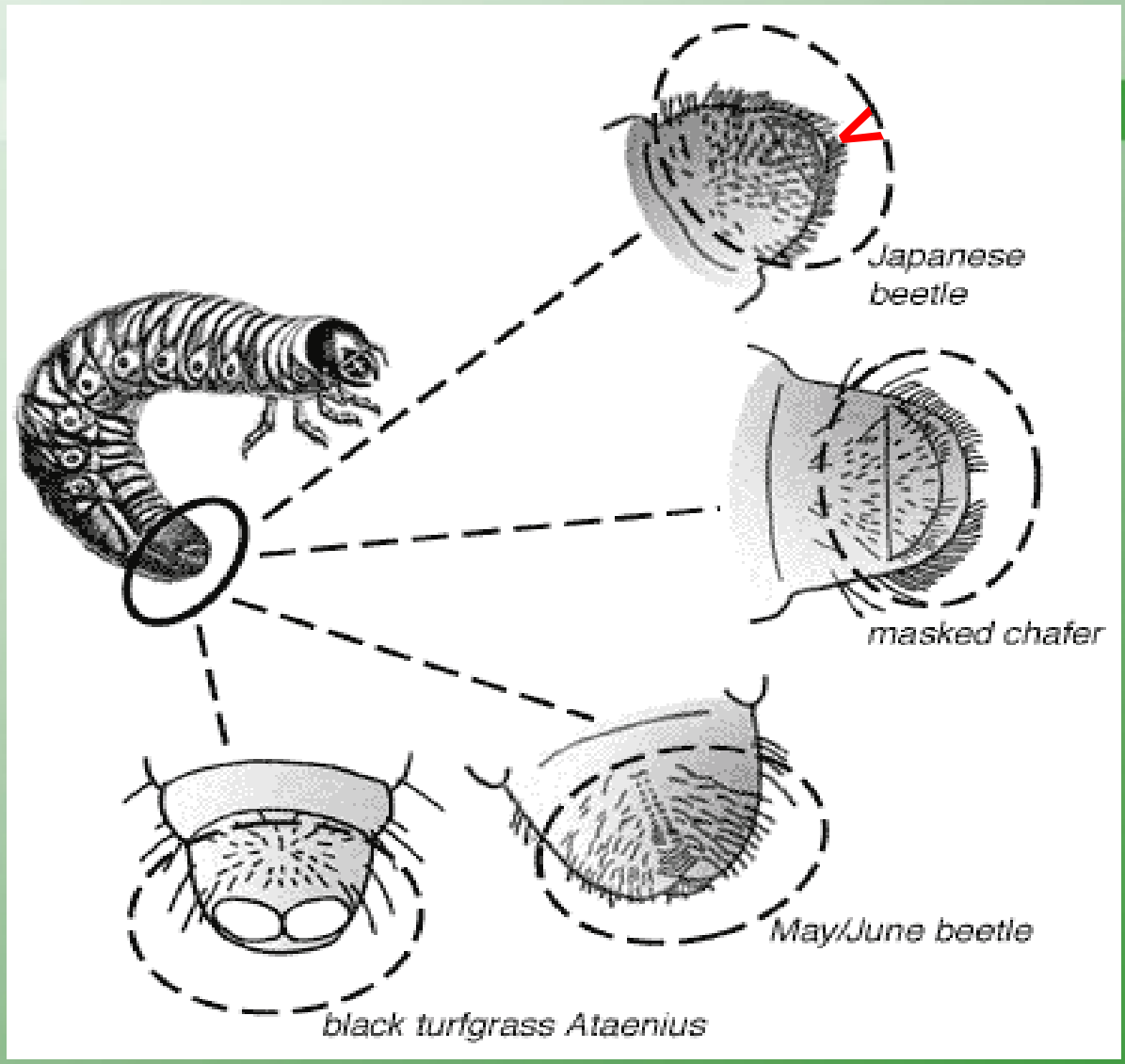
Grub damage to turf is most visible in the fall.

JB grubs

Grub populations between 7 and 15 per square foot can cause significant damage to non-irrigated turf.

Irrigated turf can withstand a higher grub count because the increase in water compensates for the roots chewed off by the grub.

Grub rastral patterns*



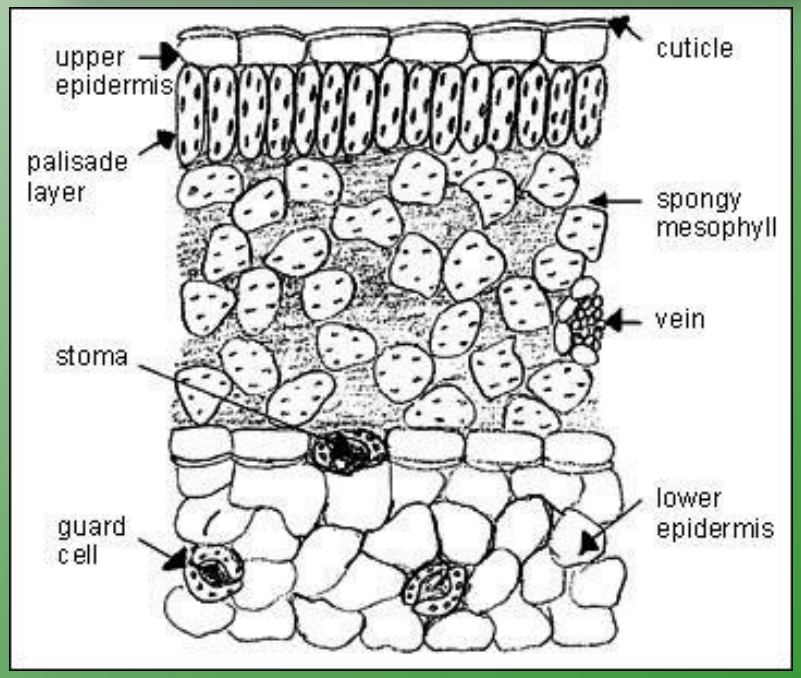
* the pattern on the last abdominal segment of grubs from which hairs grow.

- JB grubs actively feed on grass roots from April - May and from August - November.
- Larvae prune off the roots, impairing the turf's ability to take up water.
- Damage becomes evident during periods of drought ; typically observed in the fall when larval numbers are high.
- A secondary concern is skunks, raccoons, crows and geese, and moles that tear up large patches of turf as they dig for the grubs.

Adults

- JB adults are about 0.6 in long and 0.4 in wide.
- They have iridescent copper-colored elytra and green thoraxes and heads.
- Adults have six white tufts of hair along each side of the body.

- Adult beetles prefer feeding in upper, sunlit leaves.
- Typically feed through the upper leaf surface and the internal mesophyll, leaving the lower surface or epidermis intact.
- Also eat holes through the leaves, as well as eat the leaf margins.



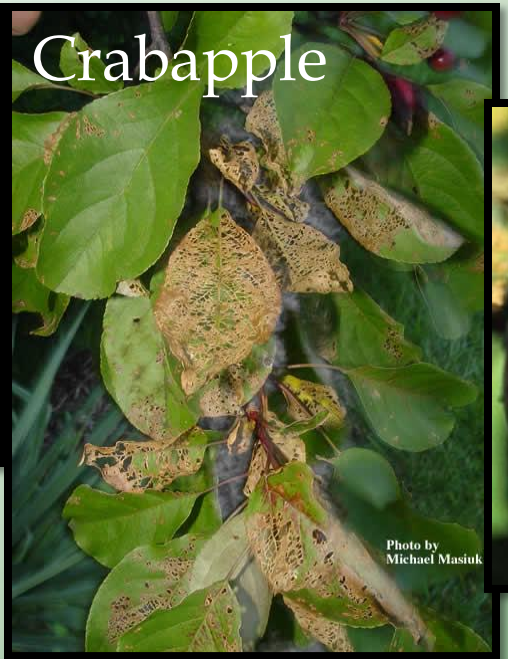
- JB usually attack plants in aggregations, which is why damage is so severe.

Damage on grapes

Damage on roses

JB on assorted ornamental plants


River
birch


Crabapple
Photo by
Michael Masiuk


Apple


Apple


Linden tree

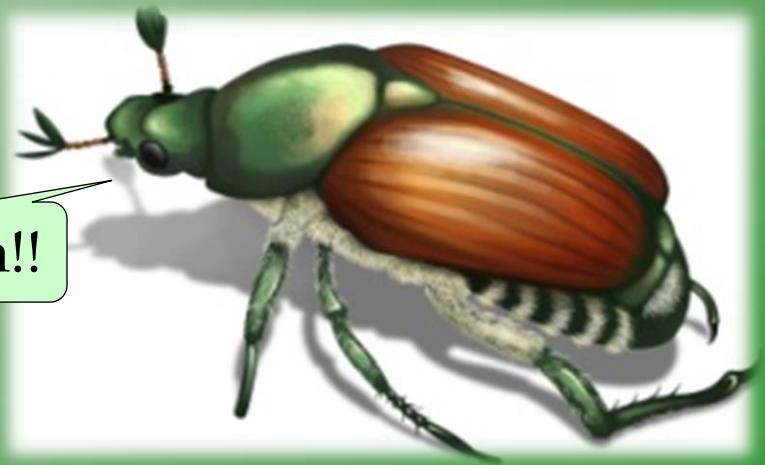

Peach


Cherry

Raspberry and blackberry

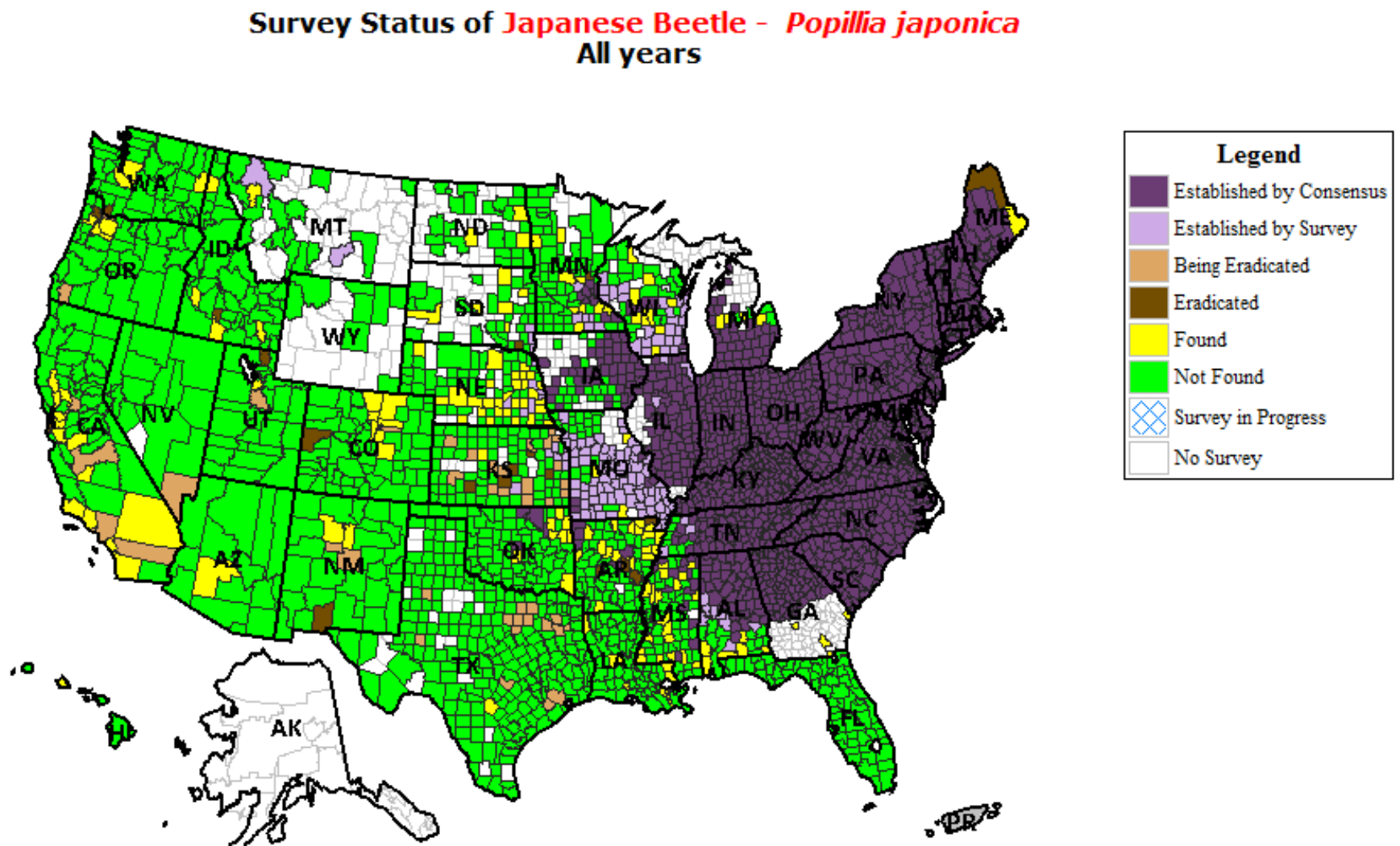
Strawberry

Blueberry

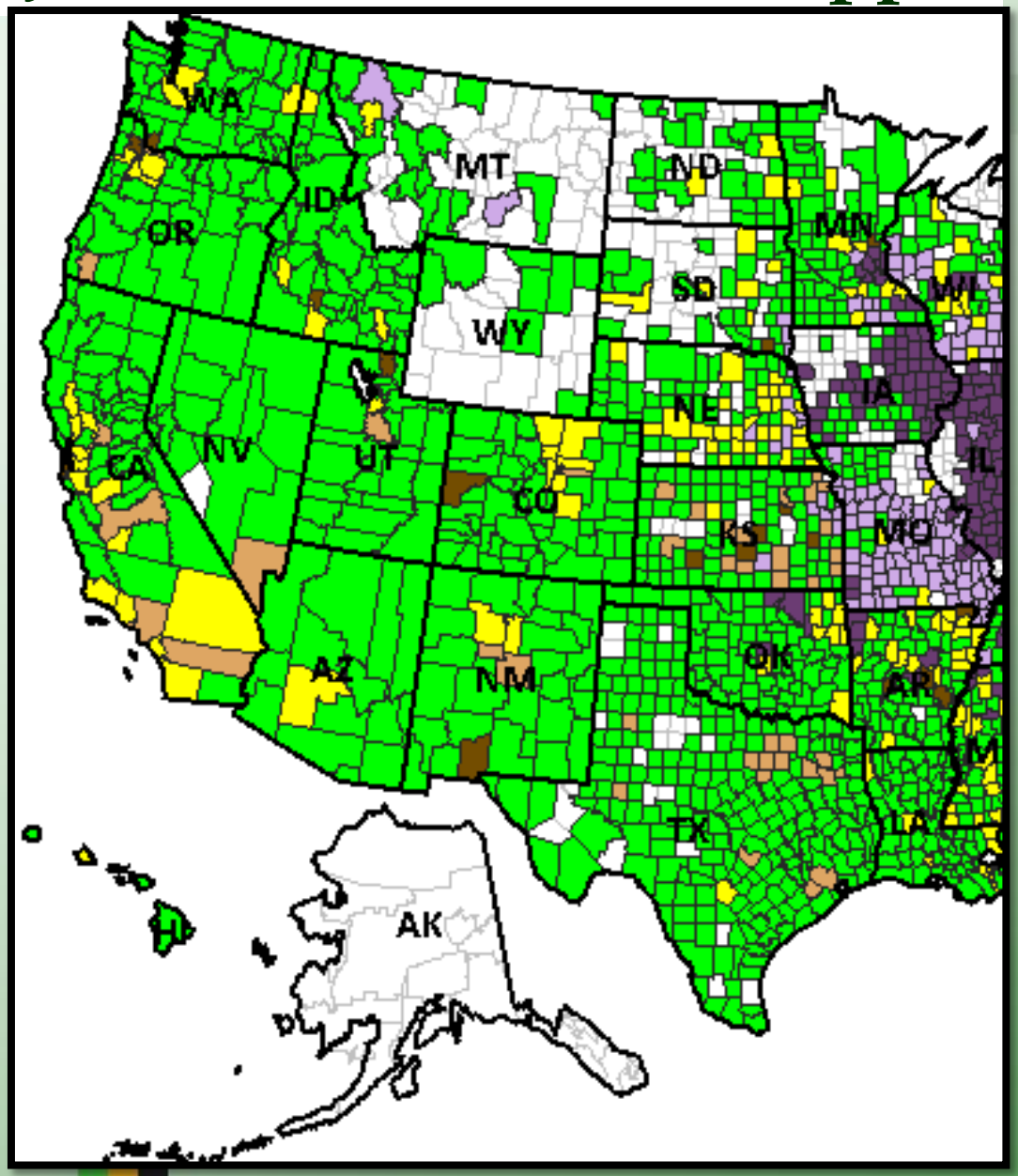


Japanese Beetle Distribution in the U.S.

JB is established throughout the eastern U.S. and parts of Canada. Intermittent populations occur in the western U.S.



JB west of the Mississippi



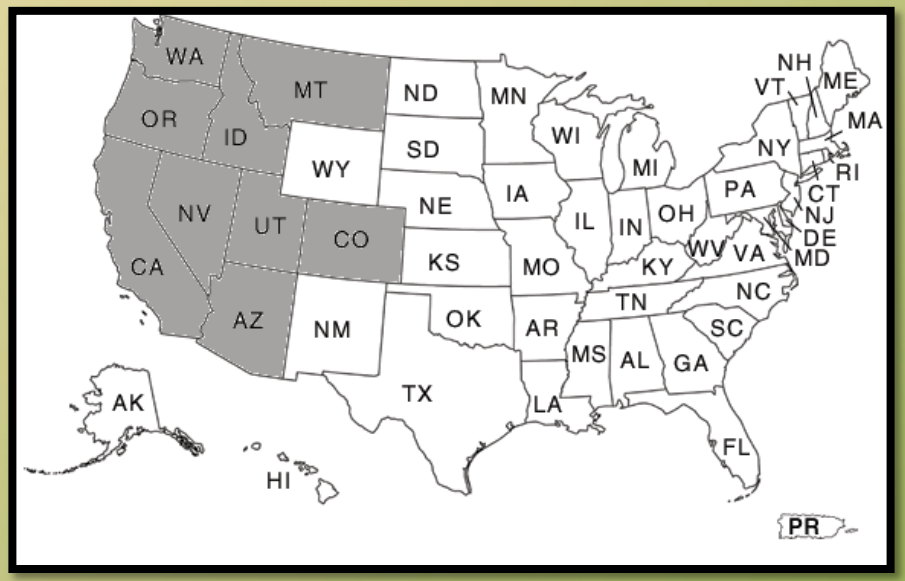
Many states west of the Mississippi River are considered *non-infested*.

Several states west of the Mississippi River are *partially infested* (AR, IA, KS, MO, NB, and OK).

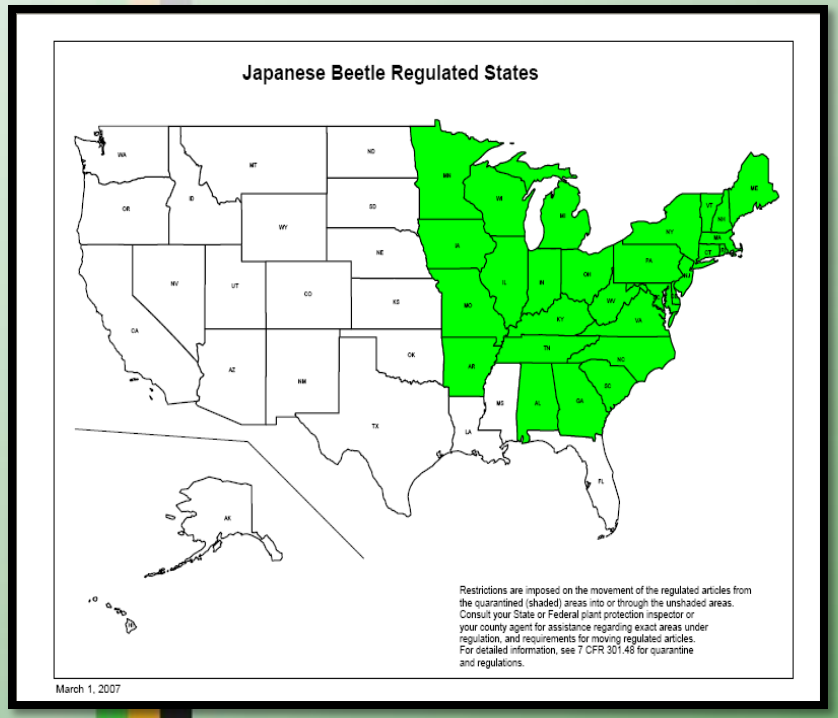
Legend

- Established by Consensus
- Established by Survey
- Being Eradicated
- Eradicated
- Found
- Not Found
- Survey in Progress
- No Survey

Western states protected by the JB Quarantine



Regulated Eastern states



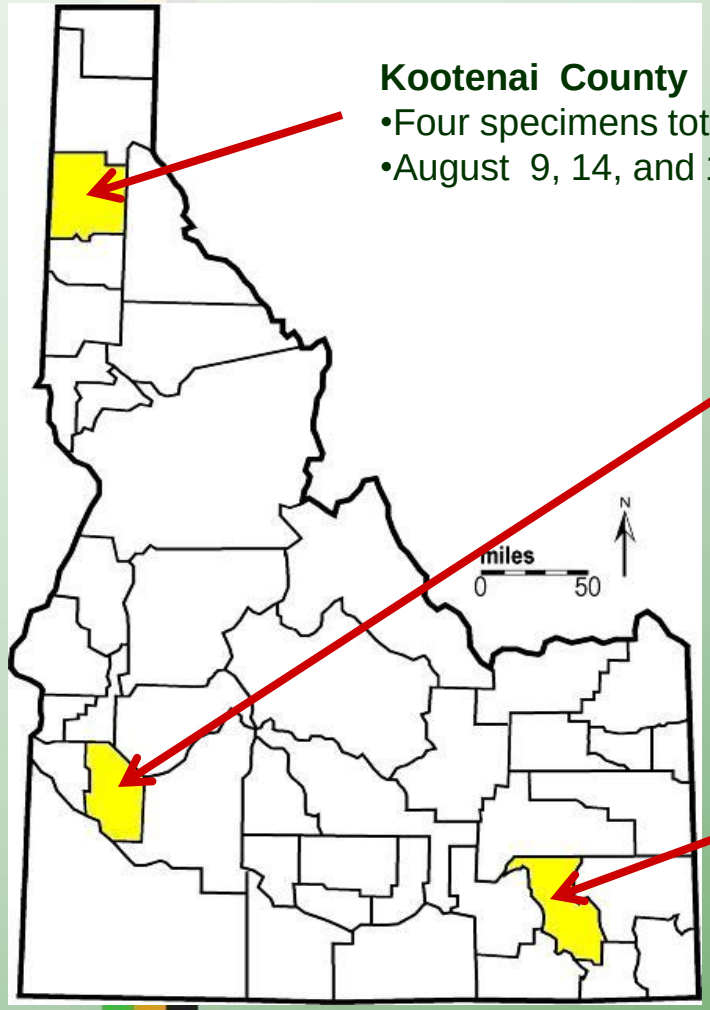
Single specimens of JB were found in or near Idaho nurseries in:

- Ada County in 1992
- Gooding County in 1997
- Twin Falls County in 2011

Current Situation

2012 – 2013

Finds of Japanese beetle in Idaho in 2012 by county.



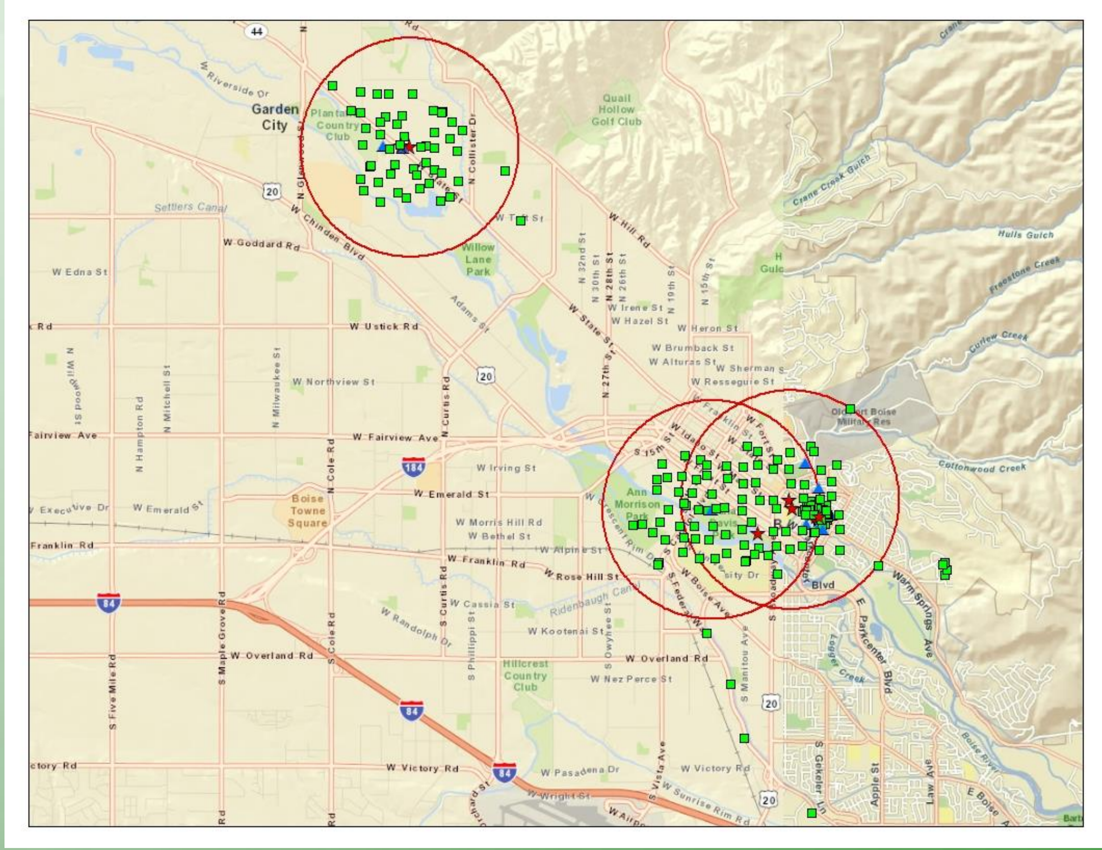
Kootenai County
- Four specimens total at single nursery
- August 9, 14, and 17, 2012

Ada County
- 50 specimens total
  - 29 in residential neighborhoods
  - 15 in city parks
  - 6 at single nursery
- August 11 – September 12

Bannock County
- One specimen total at single nursery
- August 24

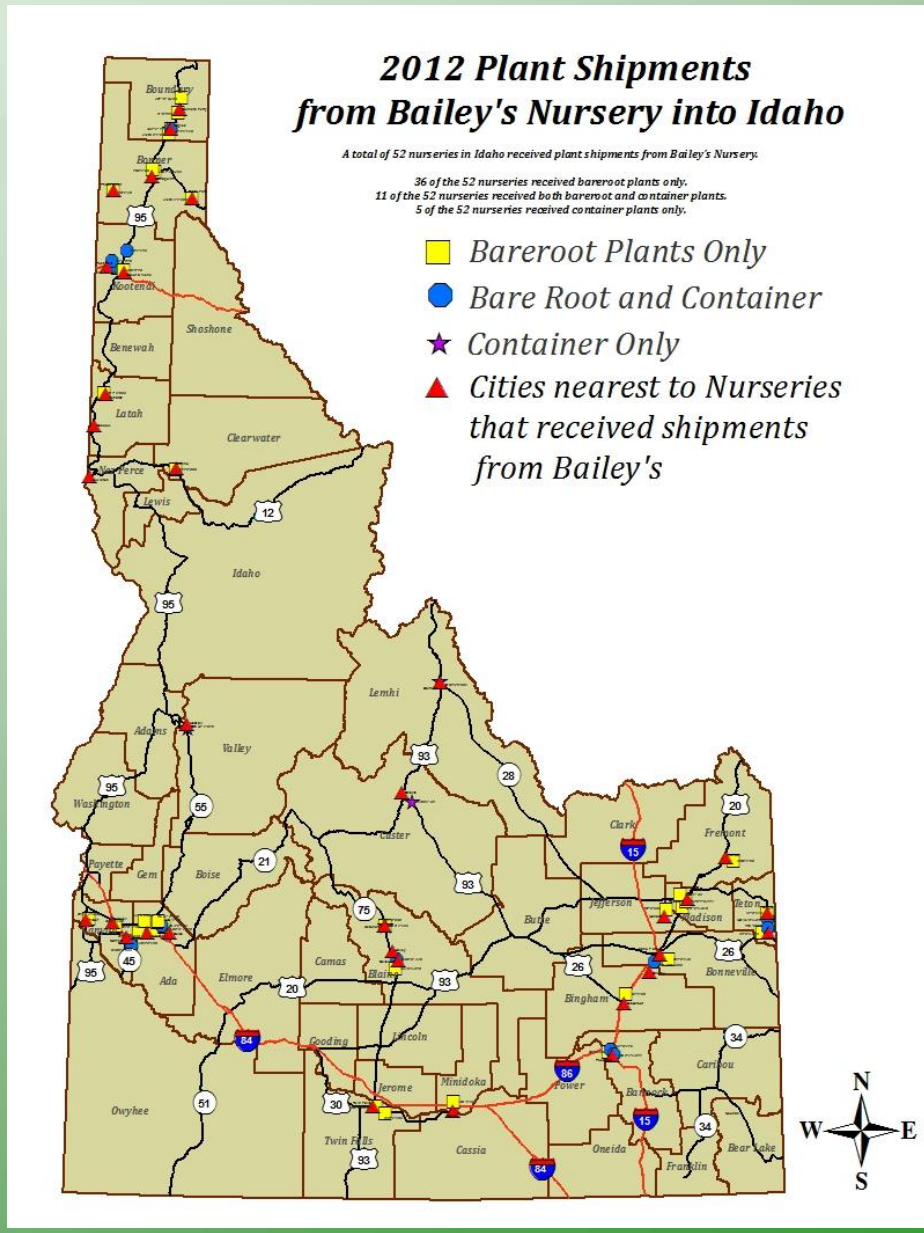
Delimiting Summer 2012

- Started the first week of August.
- Three delimit blocks were set up in the Boise area.
- In each, 49 traps were set per square mile block.

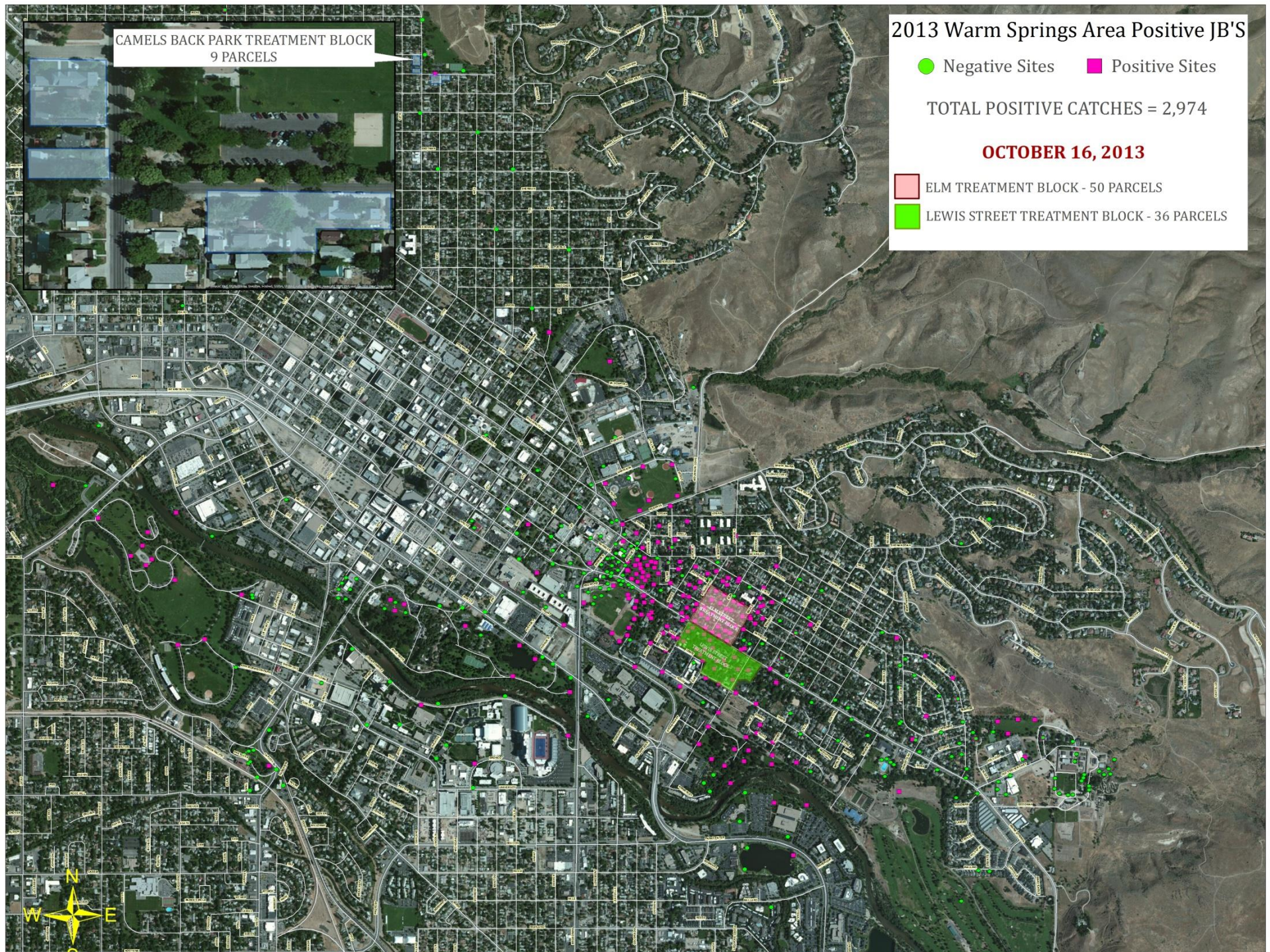


Ten additional traps were placed around the affected nursery in Kootenai County.

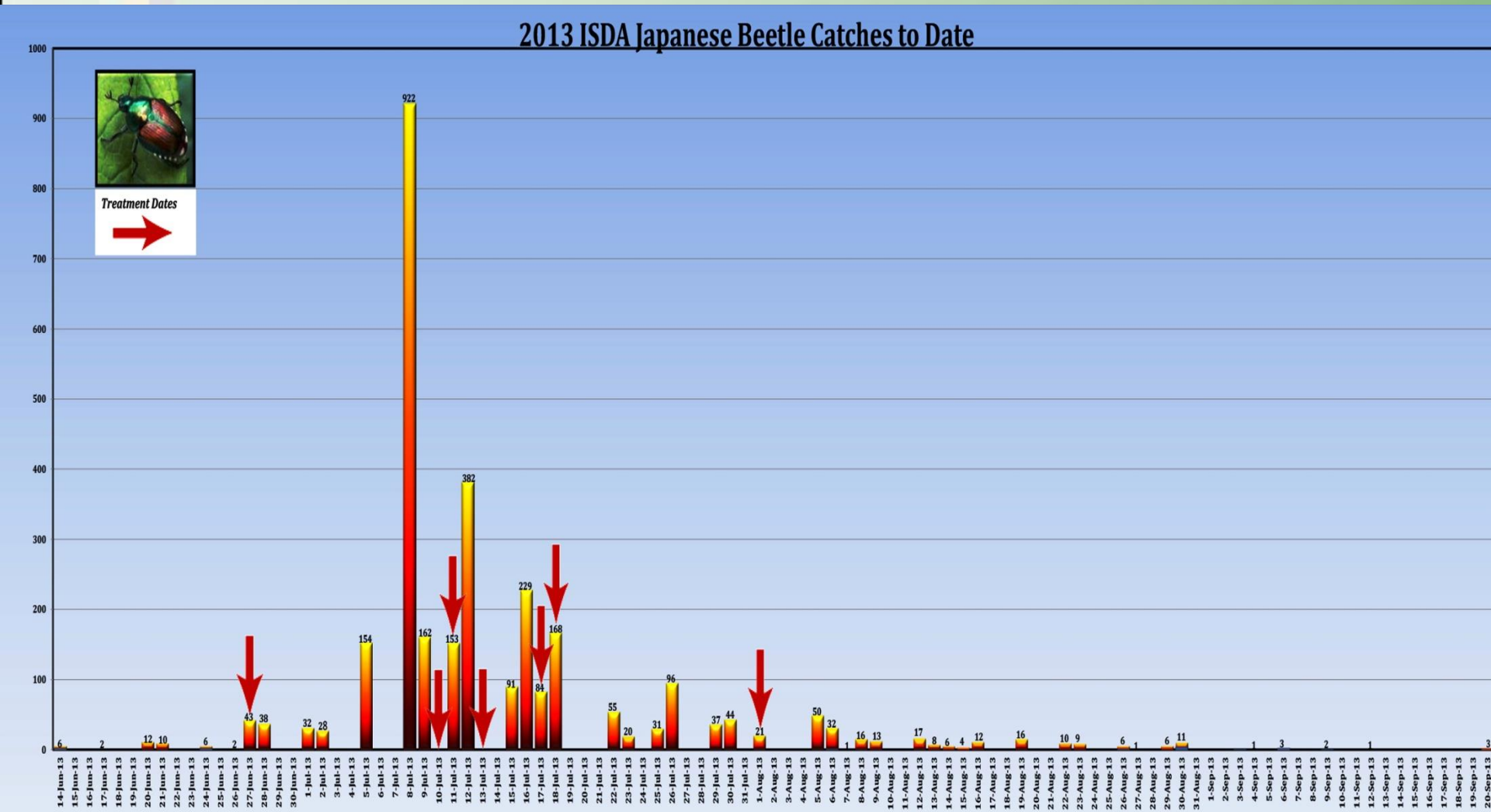
There were 52 nurseries and retail outlets that were targeted for detection (1,050) or delimited (503) trapping in 2013. The only positive traps catches were in Boise




Employees
Only


CAMELS BACK PARK TREATMENT BLOCK
9 PARCELS
2013 Warm Springs Area Positive JB'S
Negative Sites
Positive Sites
TOTAL POSITIVE CATCHES = 2,974
OCTOBER 16, 2013
ELM TREATMENT BLOCK - 50 PARCELS
LEWIS STREET TREATMENT BLOCK - 36 PARCELS
N
W
E

First JB trap catches June 14th, peaking around June 8 -10, 2013



Arena 0.25 G insecticide applied at 160 lbs per acre to all turf areas within the treatment blocks. 943 lbs applied.

Tempo SC Ultra Used at 5.4oz
Per 100 gallons of water used as a foliar treatment of all ornamental host plants. 2,096 gallons applied.

Carbaryl 4L was used only on edible plants in areas where adult beetles and/or feed damage was found. 27.2 gallons applied

Plans for 2014

1) Greatly increase delimit trapping in Boise.
2) Two turf treatments April/May and Mid –July
3) Confine foliar treatments to sites with obvious feeding damage and/or adults present.
4) Continue with and support Boise Parks and Recreation Department with the treatment of Boise City Parks.

What does all of this mean for Idaho's nursery industry?

If JB becomes established in Idaho:

We will lose our current "JB-free" status.

- The entire state, not just places where JB has actually been found, will be quarantined.
- The nursery industry will have to absorb the costs of inspections and treatments for all outgoing material.
- Shipment s to Canada and other quarantined states could be banned.
- It could be a costly, frustrating mess!

We are already close scrutiny by neighboring states that observe JB quarantines (UT, WA, OR, and MT) and Canada.

Elm Seed Bug (Arocatus melanocephalus)

New U.S. Record Confirmed July 2012

Originally from Southern Europe and Italy

Public Nuisance No. 1

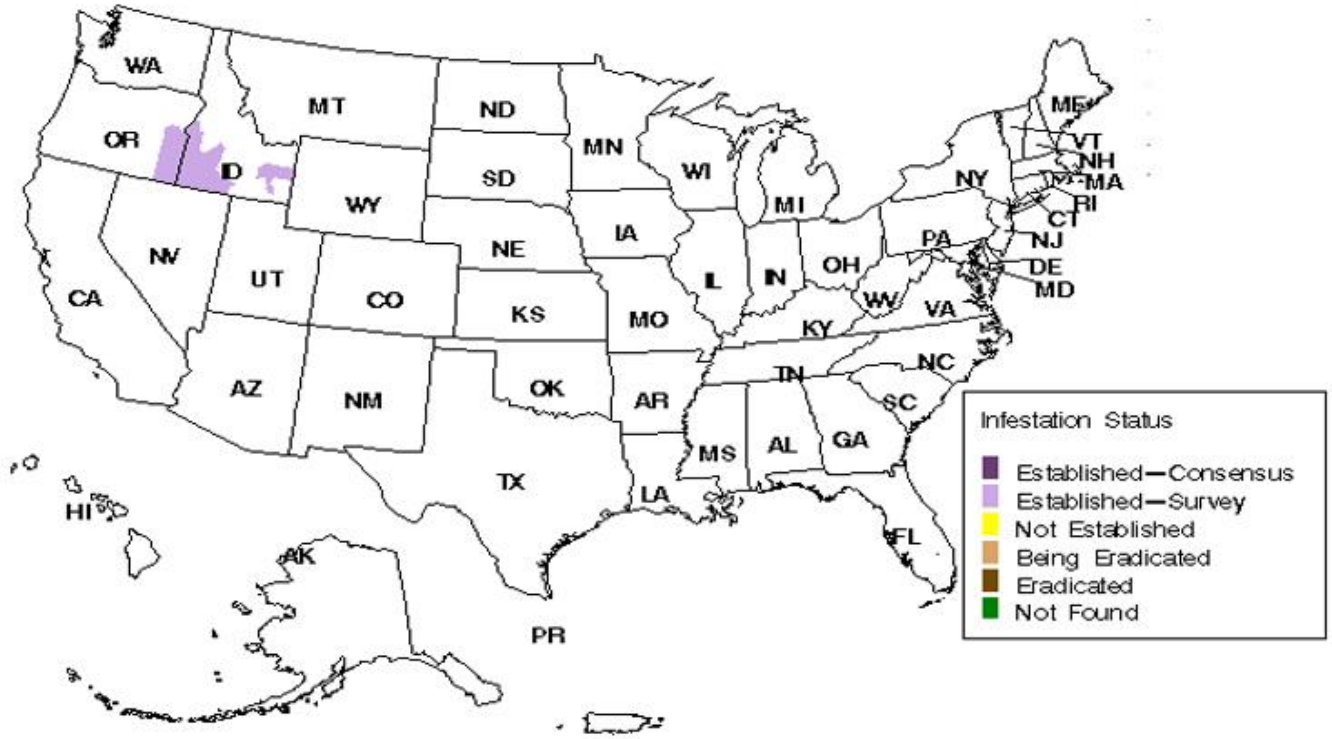
Aggregation habits are similar to that of the Boxelder Bug

Reported Status of

Elm Seed Bug , Arocatus melanocephalus

in US and Puerto Rico

Data retrieved from National Agricultural Pest Information System on 12/04/2013



The Center for Environmental and Regulatory Information Systems does not certify the accuracy or completeness of the map.

The Elm Seed Bug has been subject of intense media attention:

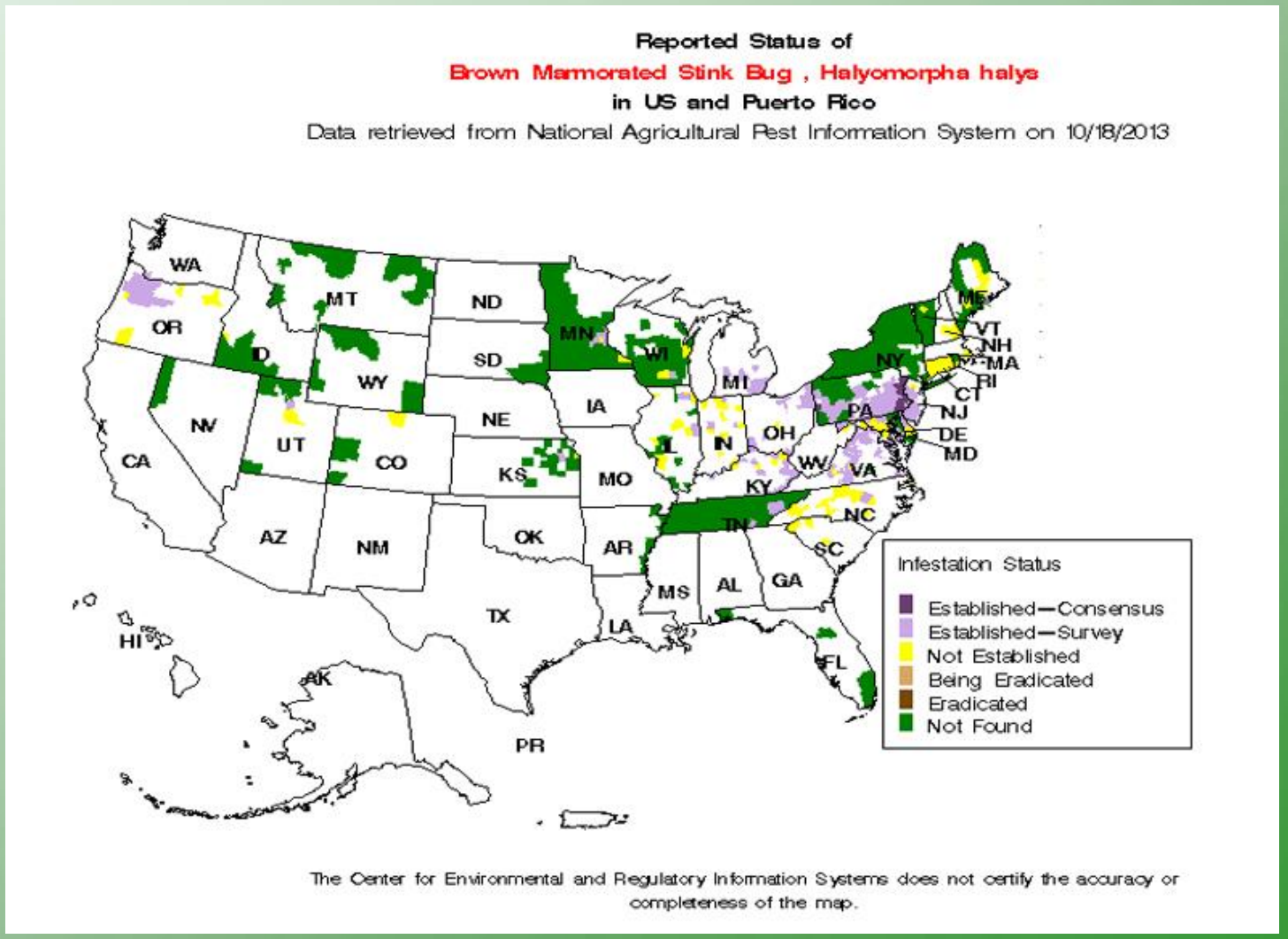
ABC, NBC, NPR, Statesman, YouTube Videos, Press-Tribune…etc……Have all had coverage of this bug and its impact on the home owner.

Invasive Brown Marmorated Stink Bug (*Halyomorpha halys*)

BMSB Feeds on a variety of fruit and vegetables. It also likes to aggregate in large numbers to overwinter. May affect wine production.

Brown Marmorated Stinkbug (Halyomorpha halys) Continues to Move West?

- In February 2012, family from Maryland moved to Nampa, ID.
- On May 20, they contacted ISDA and reported finding several dozen live BMSB in yard furniture and several inside the house.
- Found more in early summer.
- Found more in October.


Reported Status of
Brown Marmorated Stink Bug , Halyomorpha halys
in US and Puerto Rico
Data retrieved from National Agricultural Pest Information System on 10/18/2013
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
GA
FL
SC
NC
VA
PA
NY
ME
VT
NH
MA
RI
CT
NJ
DE
MD
HI
AK
PR
Infestation Status
Established—Consensus
Established—Survey
Not Established
Being Eradicated
Eradicated
Not Found
The Center for Environmental and Regulatory Information Systems does not certify the accuracy or completeness of the map.

The Brown Marmorated Stink Bug has been in Western Oregon for several years and is beginning to become a pest of commercial crops.

It is moving up the Columbia Gorge and has recent been found in Yakima, Tri-Cities area and Hermiston. Some damage to late season vegetable crops was reported last summer around the Tri-cities.

October 20, 2013
From the Wall Street Journal:

Federal Shutdown Raises a Stink—But Not the Kind You Think - *In the Capital, Odorous Bugs Flourish During Government Hiatus*

Small Hive Beetle, *Aethina tumida* Murray

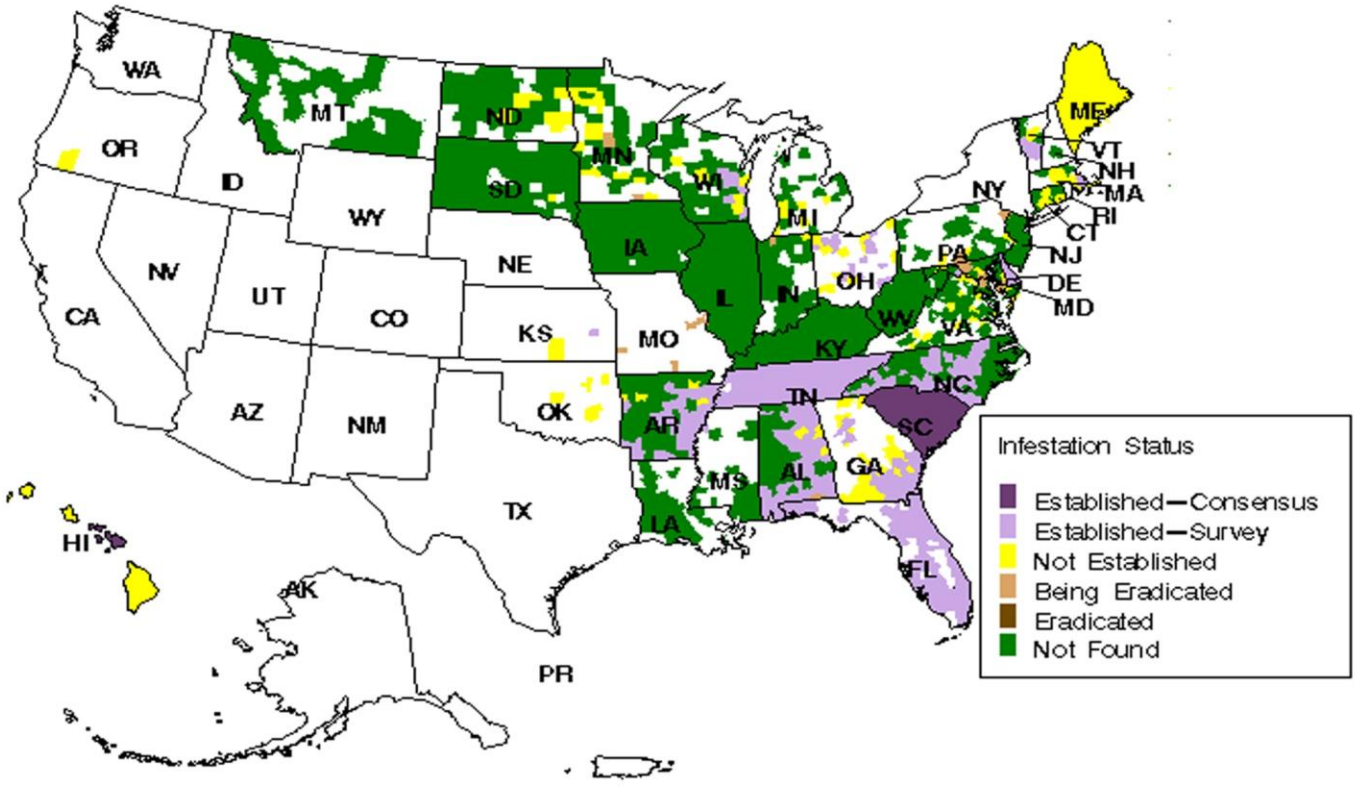
Found in Ada and Payette?
Counties. In backyard hives.

Reported Status of

Small Hive Beetle , Aethina tumida

in US and Puerto Rico

Data retrieved from National Agricultural Pest Information System on 11/04/2013



The Center for Environmental and Regulatory Information Systems does not certify the accuracy or completeness of the map.

Spotted Wing Drosophila in Southwest Idaho

Jim Barbour, Essie Fallahi, Steve Cook, Frank Merickle, Noemi Fernandez-Estalore, Mike Kiester, University of Idaho,

Mike Cooper, Idaho State Dept. of Agriculture

Jennifer Riebe, Private Consultant

Order: Diptera (Fruit flies, house flies, mosquitos, etc.)

Family: Drosophilidae (Pomace or vinegar flies)

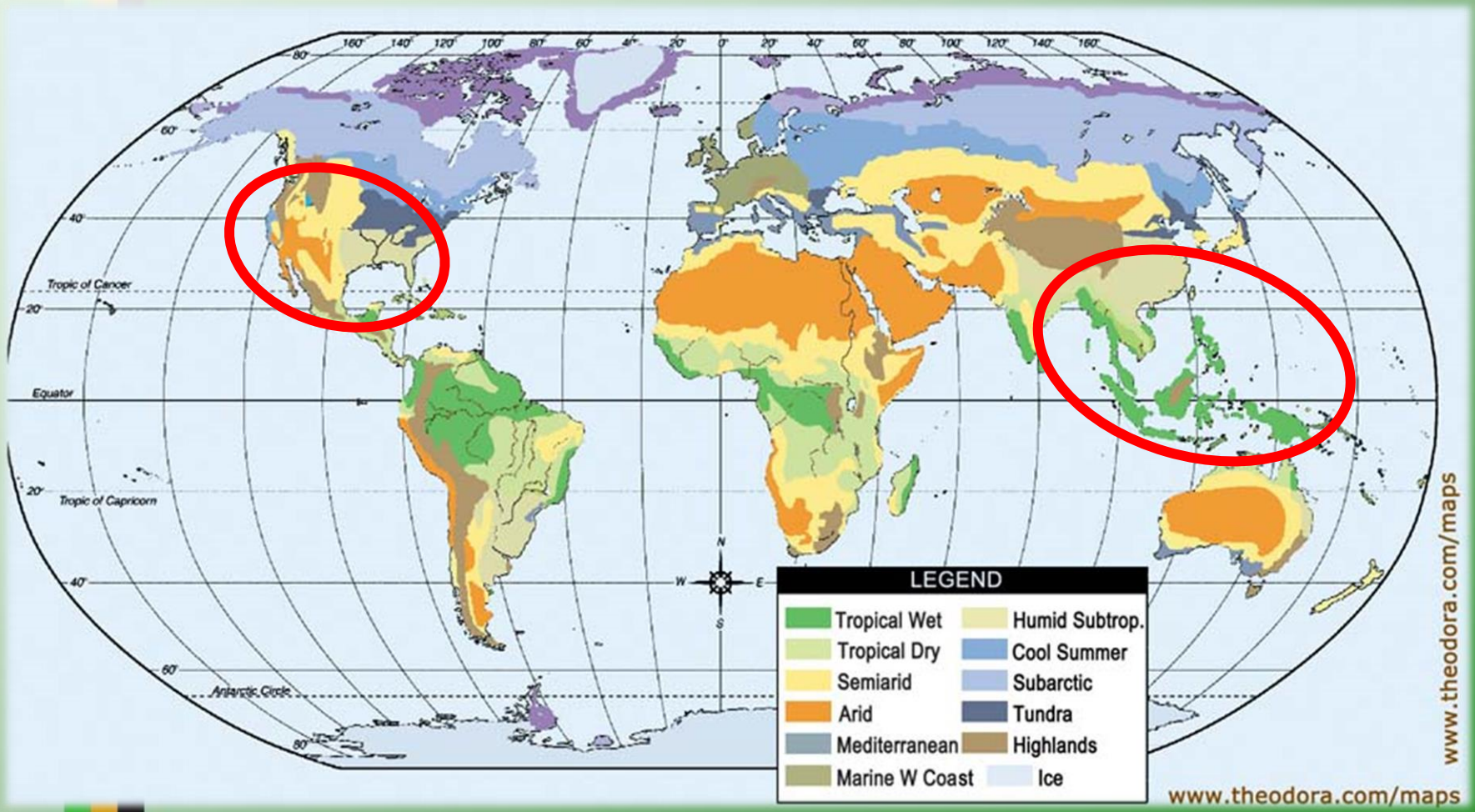
- Females lay eggs in ripening fruits

- Larvae are legless maggots
- Feed in fruits

Spotted Wing Drosophila

Native Range:

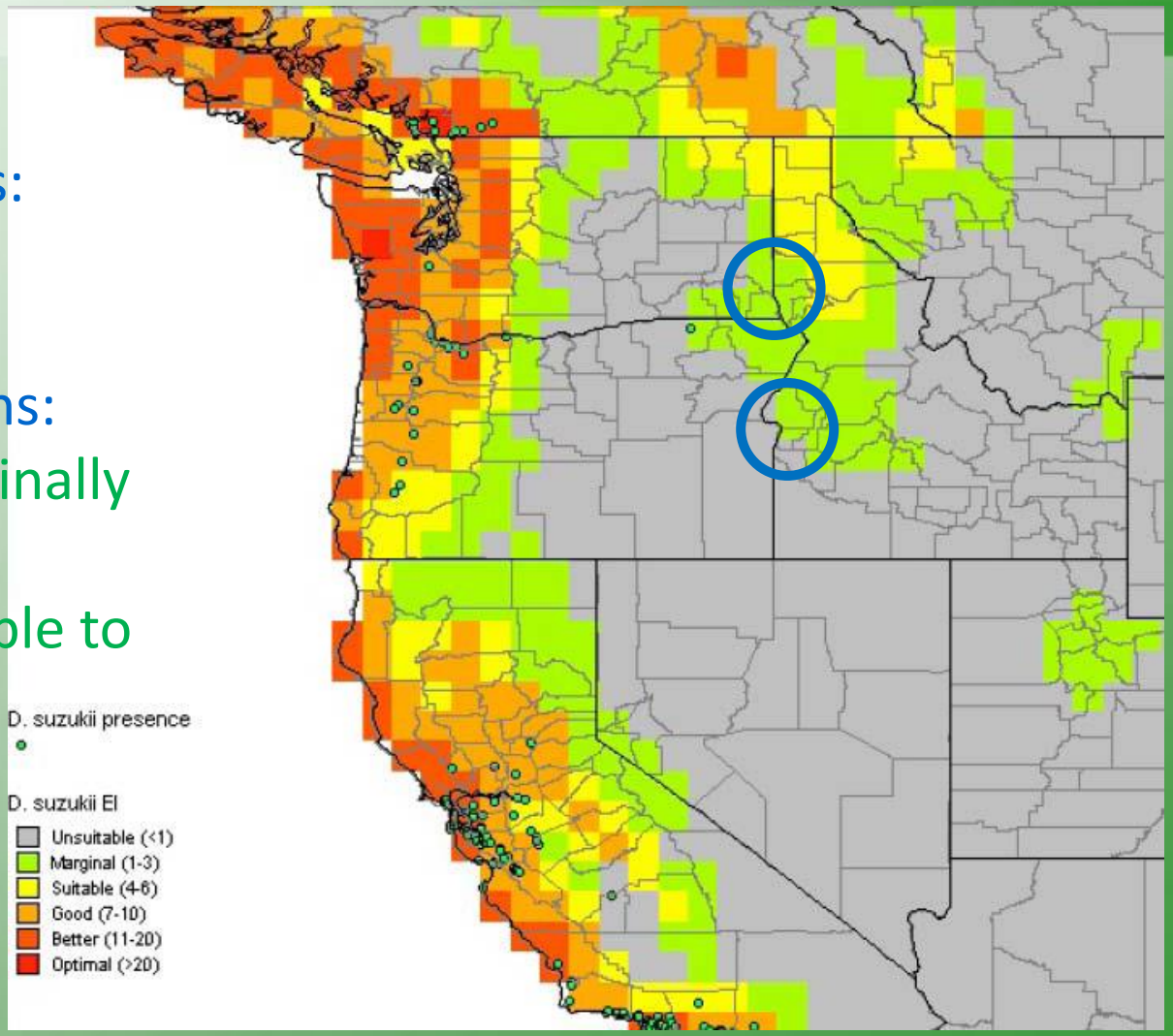
- Southeast Asia (temps 68°-86° F), tropical to moist-temperate climate



Spotted Wing Drosophila

Western US climate suitability

- Western coastal regions: Optimal to marginal
- ID, interior PNW regions:
  N. ID: Suitable to marginally suitable
  S. ID: Marginally suitable to unsuitable



http://swd.hort.oregonstate.edu/files/files/DrosophilaSuzukiiInfestationModel.pdf

From: Spotted Wing Drosophila ID and Management. G. Langellotto. Oregon State university

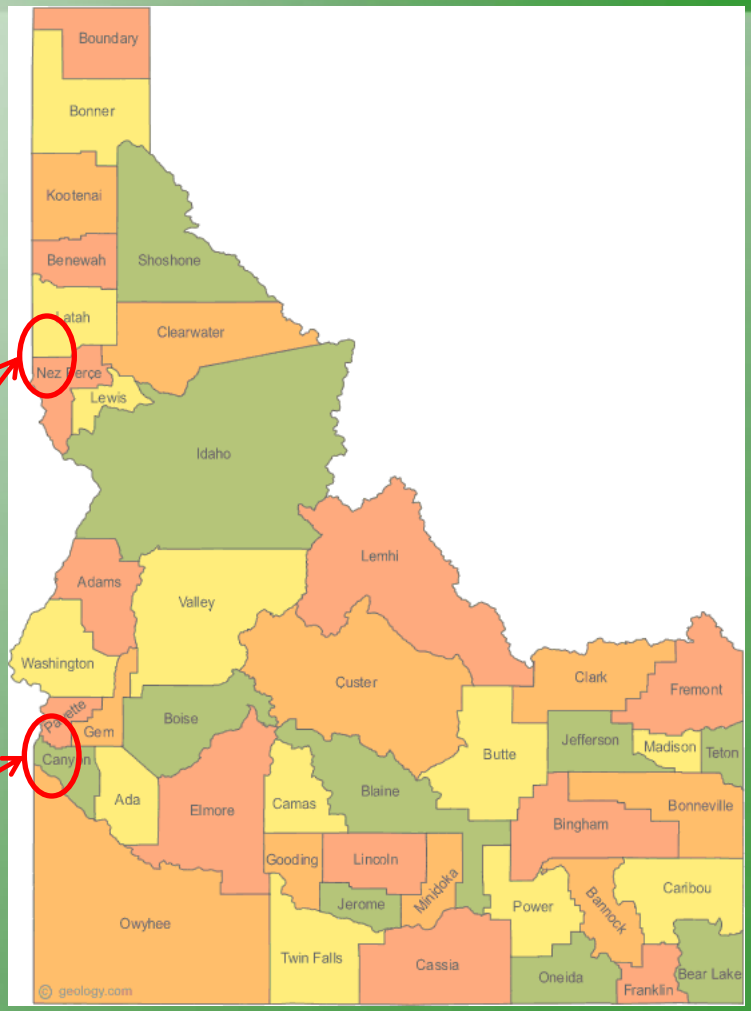
Spotted Wing Drosophila

Presence in Western US

- CA since 2008
- PNW (OR, WA) since 2009
- Utah since 2010 (SLC area)

Presence in Idaho

- 2012: from Latah (Moscow) and Nez Pierce (Lewiston) Cos. In Aug. Very many SWD!
- 2012: Canyon Co. (Parma): In Aug. Only a few SWD
- 2013 Increased numbers, expanded range?



Spotted Wing Drosophila Identification: Male

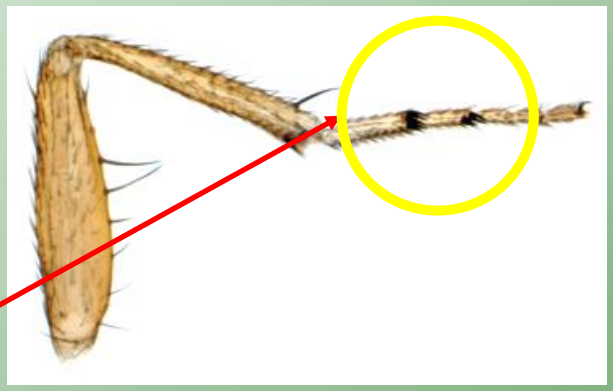
- **Dark spots on leading edge of wing near apex**
- **Around 1st wing vein**

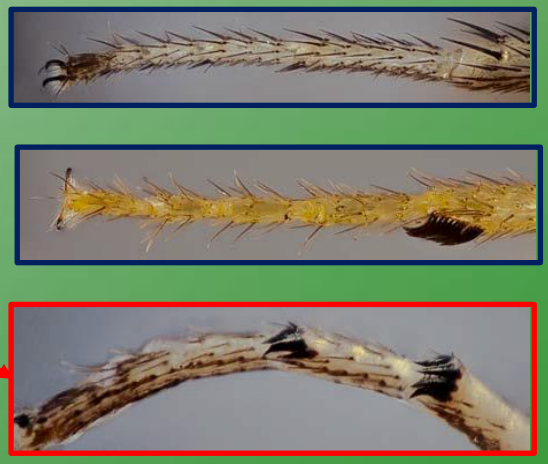
This

Not these

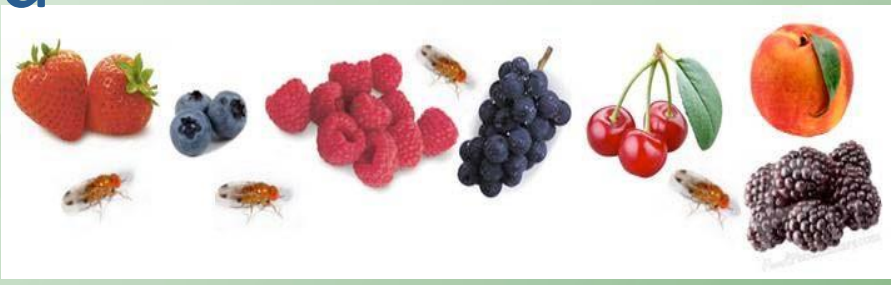
Spotted Wing Drosophila Identification: Male

- Two bands of bristles on front feet (tarsi)





Fruits affected by SWD



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:

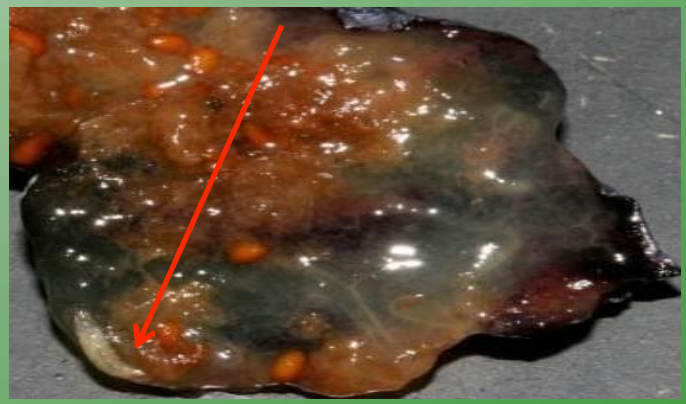
- Mulberry
- Himalayan Blackberry
- Wild rose, Rose Hips
- Ornamental Plums and Cherries
- Flowering cherry
- Snowberry
- Japanese Honeysuckle
- Mtn. Ash
- Pokeweed
- Nightshade
- Japanese Dogwood

Damage from SWD

- Oviposition scarring or spotting on fruit surface. Juice exits out egg hole.
- Fruit can collapse at scarring site, :: 2-3 days after egg laying
- Fruit can soften and bruise. Mold can occur at damaged site.

- Two hair-like filaments attached to egg sticking out of fruit at scar site

- Presence of small white larvae



QUESTIONS ?