Brown Marmorated Stink Bug

By Richard W. Hoenisch

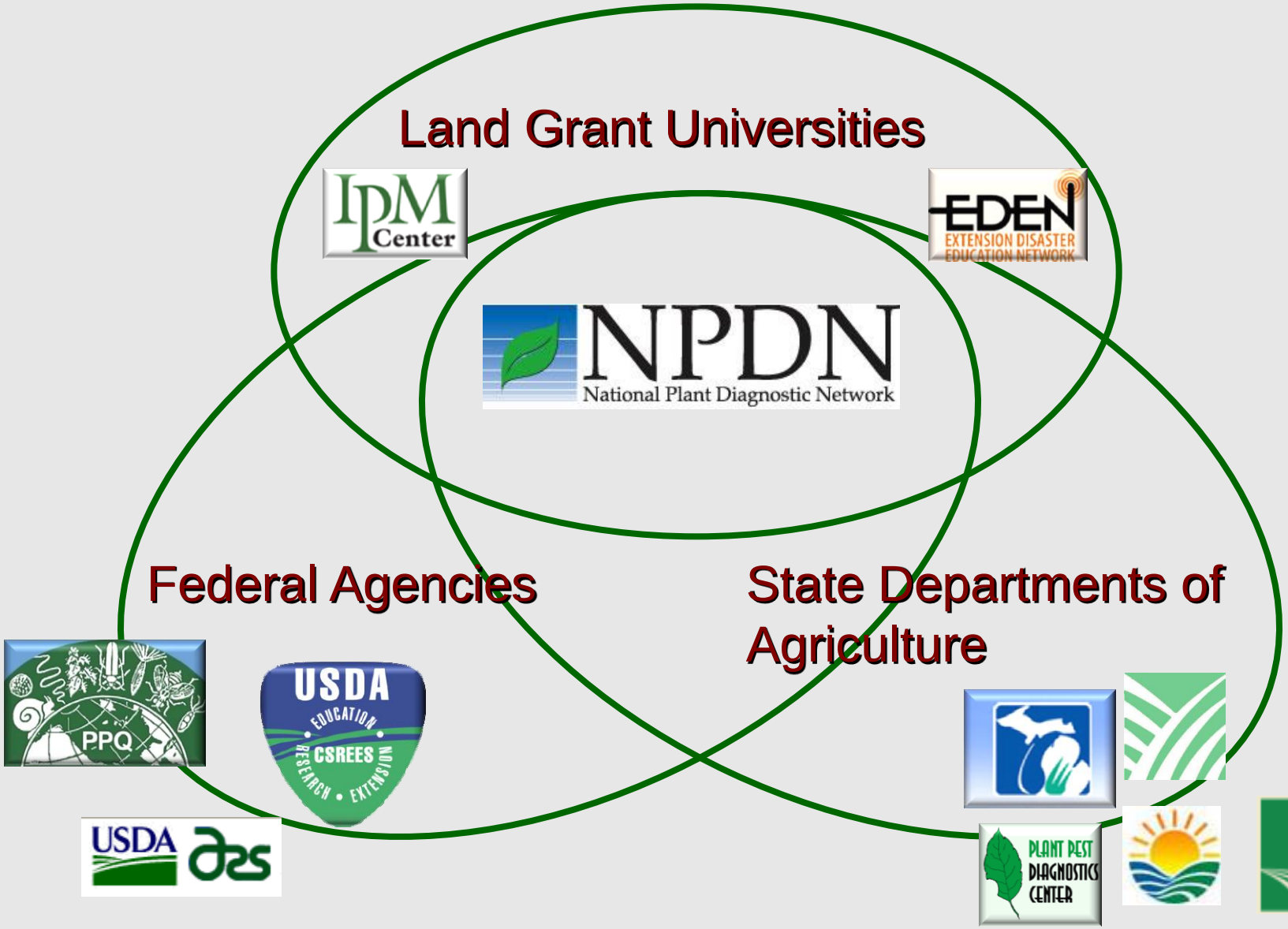
National Plant Diagnostic Network

UC Davis – Department of Plant Pathology

WPDN Western Plant Diagnostic Network

NPDN National Plant Diagnostic Network

Interagency Partnerships

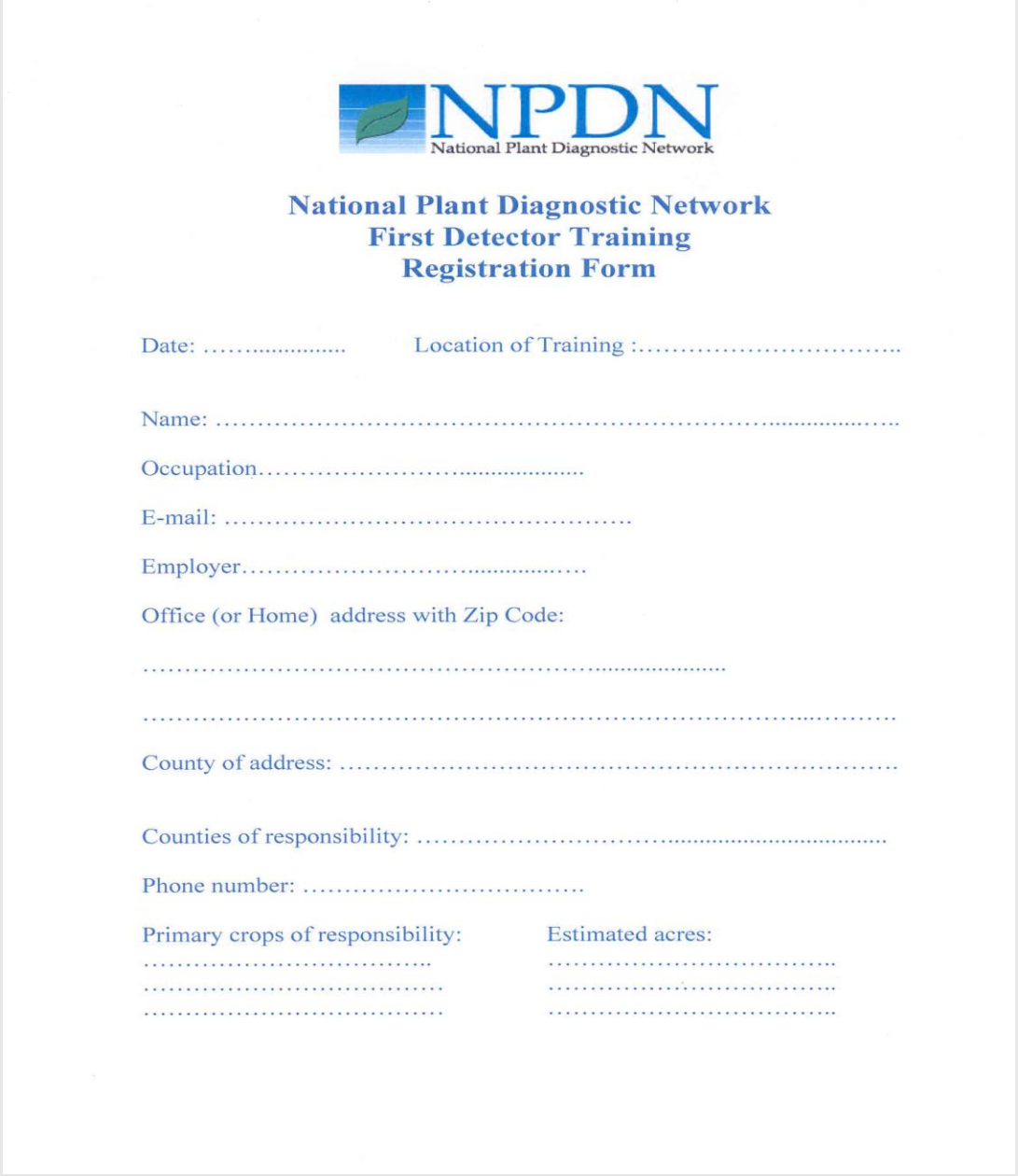


Who are First Detectors?

Anyone involved in:

- Agriculture
- Food Processing
- Horticulture
- Forestry
- Ecology

- **NPDN First Detector Registration**
- **Please print clearly & complete all the information**
- **Confidential!**



NPDN
National Plant Diagnostic Network

National Plant Diagnostic Network
First Detector Training
Registration Form

Date: ……..... Location of Training :……..

Name: ……..

Occupation…….....

E-mail: ……

Employer…….....…

Office (or Home) address with Zip Code:

……

……

County of address: ……

Counties of responsibility: ……

Phone number: ……

Primary crops of responsibility:	Estimated acres:
……	……
……	……
……	……

NPDN
National Plant Diagnostic Network

Certificate of First Detector Training Completion

is hereby granted

Tom Jefferson

for completion of core "First Detector" training modules.

January 28, 2014 *Modesto, CA*

This certificate has been approved by
Martin Draper, PhD, NPDN Chair and
Rachel McCarthy, MS., Chair of NPDN Training and Education

Training Session Coordinator

Brown Marmorated Stink Bug
Halyomorpha halys Stål, 1855
Family Pentatomidae, Order Hemiptera

Mel Evans/AP Photo)

BMSB Origin and Spread

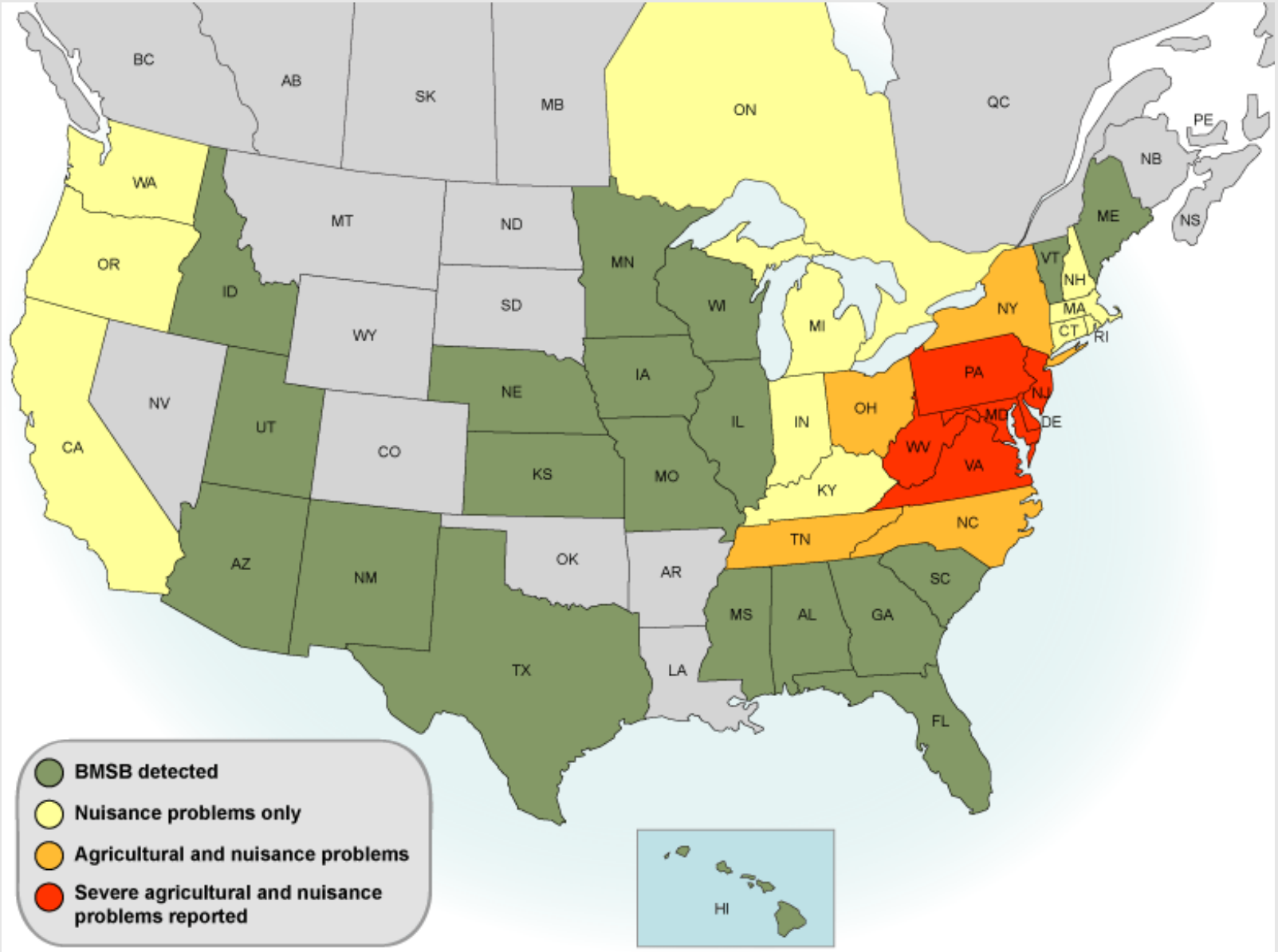
First collected in 1998 in Allentown, Pennsylvania, but probably arrived several years earlier.

Accidentally introduced into the United States from China or Japan. It is believed to have "hitched a ride" as a stowaway in packing crates.

By 2009, this agricultural pest had reached Maryland, West Virginia, Virginia, Tennessee, California, Oregon, and Washington

Photo courtesy Curtis Young OSU

Distribution of BMSB in USA



Map courtesy of Tracy Leskey

BMSB in California

as of October 2013

Established in CA in 2006, in Los Angeles county at:
Pasadena & San Marino, 2006
Alhambra 2007
Los Angeles & Temple City 2008

Sacramento, September 12, 2013
Yuba City, September 20, 2013

BMSB- The Classic Hitchhiker


Image source: USDA-ARS


Photo by Bob Casey


Photo from MacGardens


Photo from MacGardens


G. Brust

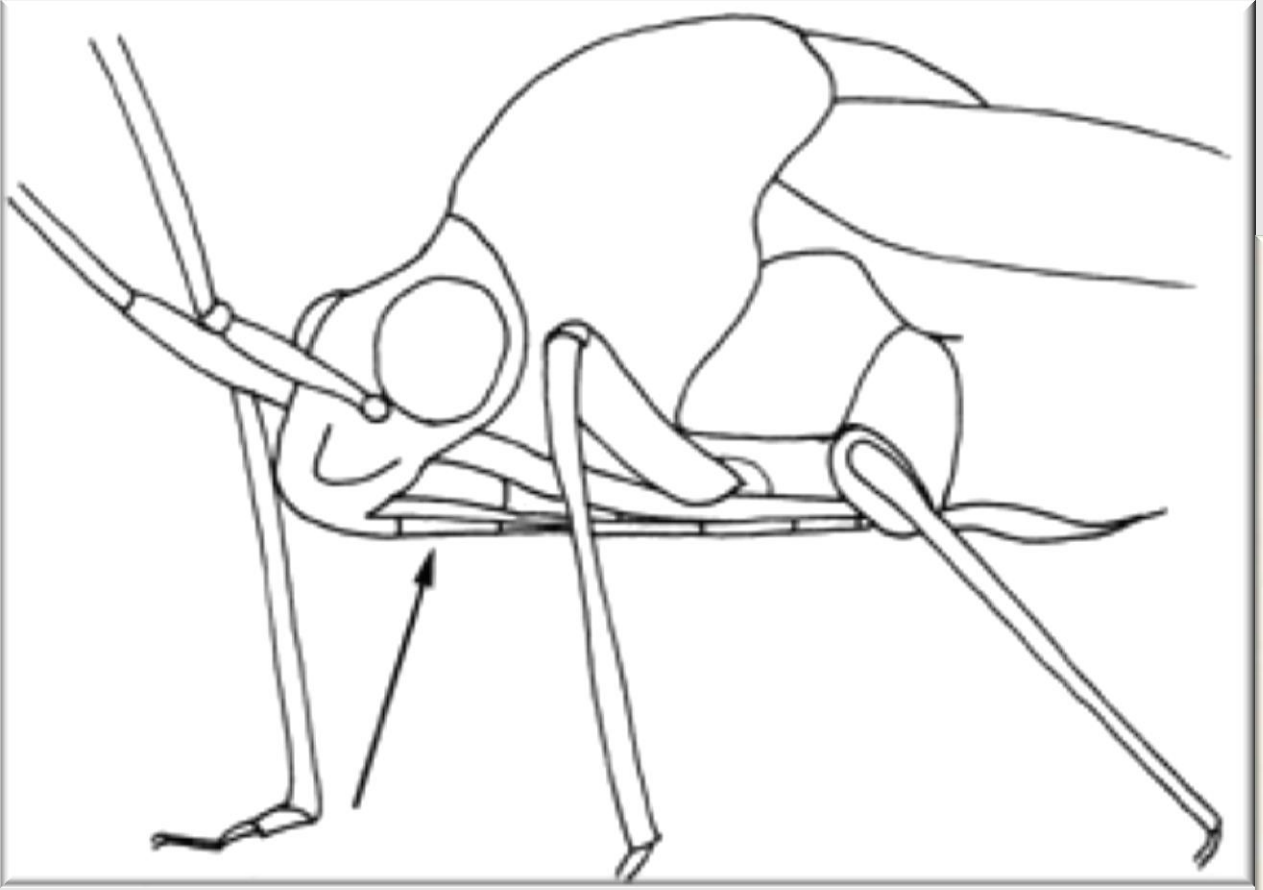
Photos from University of Georgia Entomology


Photo courtesy of the University of Maryland

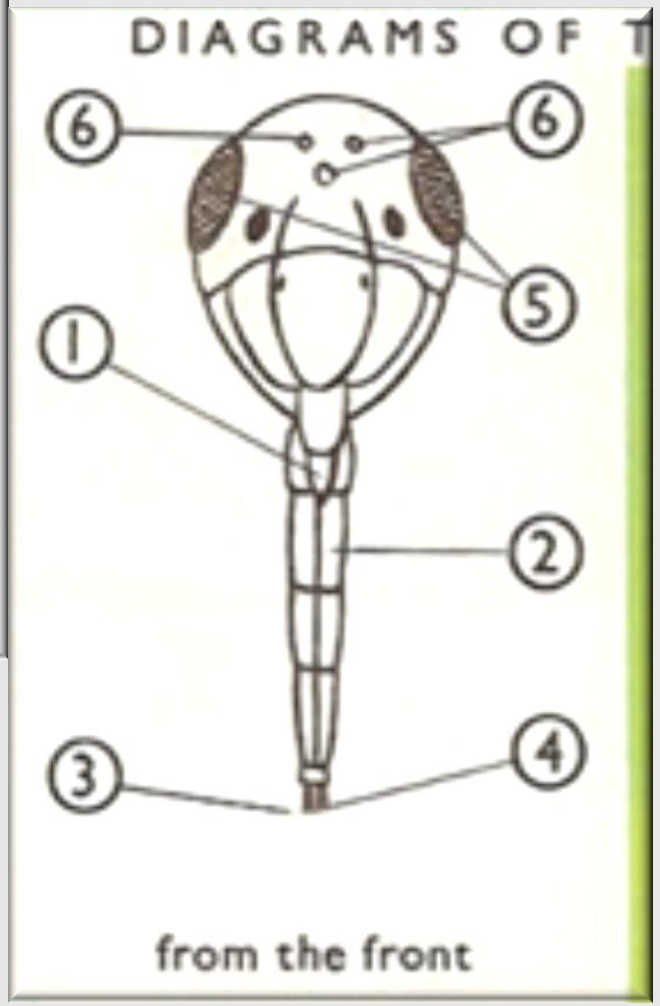

Photo from Jentsch Lab, Cornell


Photo courtesy of Virginia Tech

Fruit and Vegetable Damage



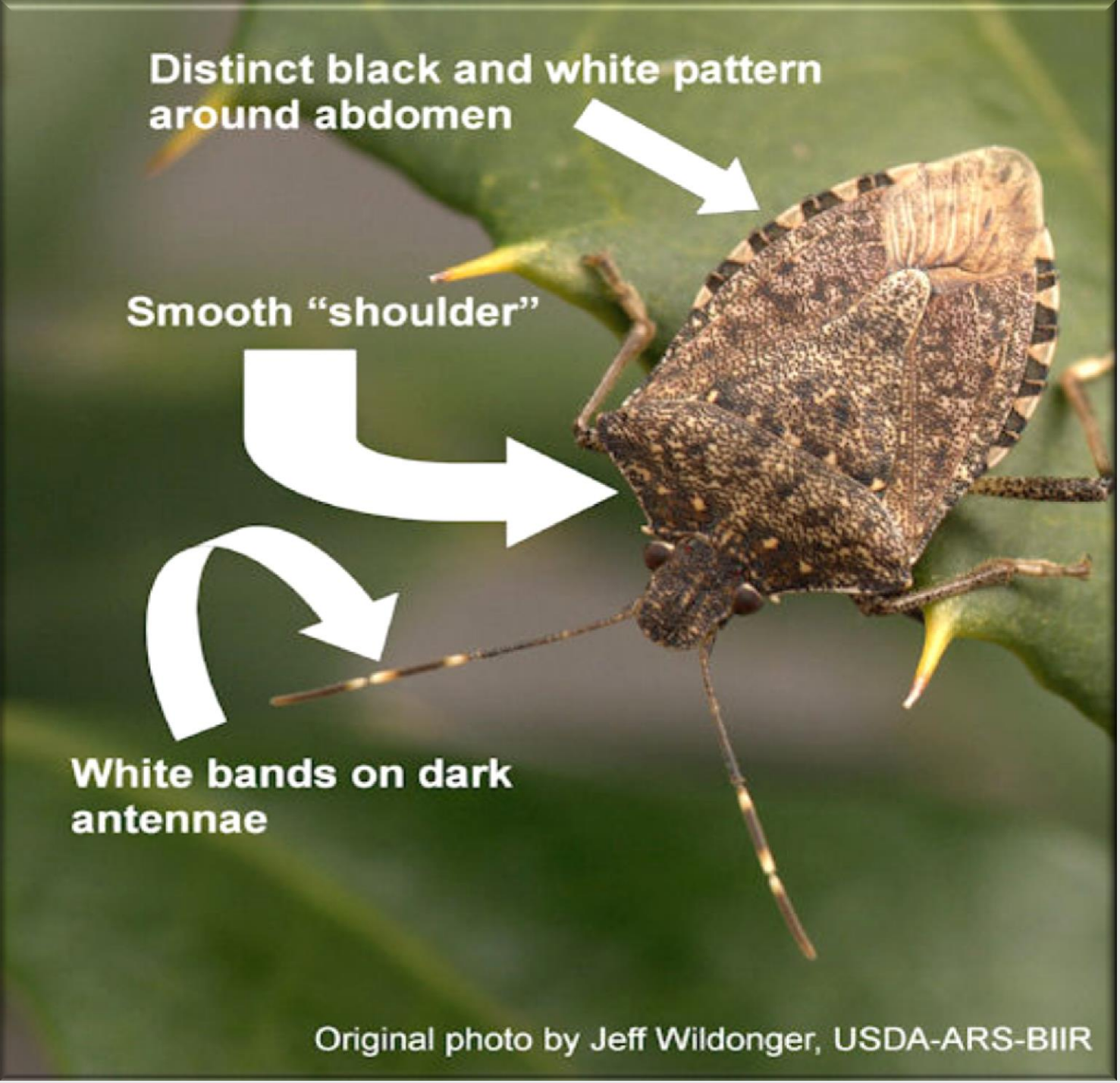
Mouthparts of Hemiptera - rostrum marked with arrow



BMSB and Bagrada Bug Mouthparts

UGA5018057

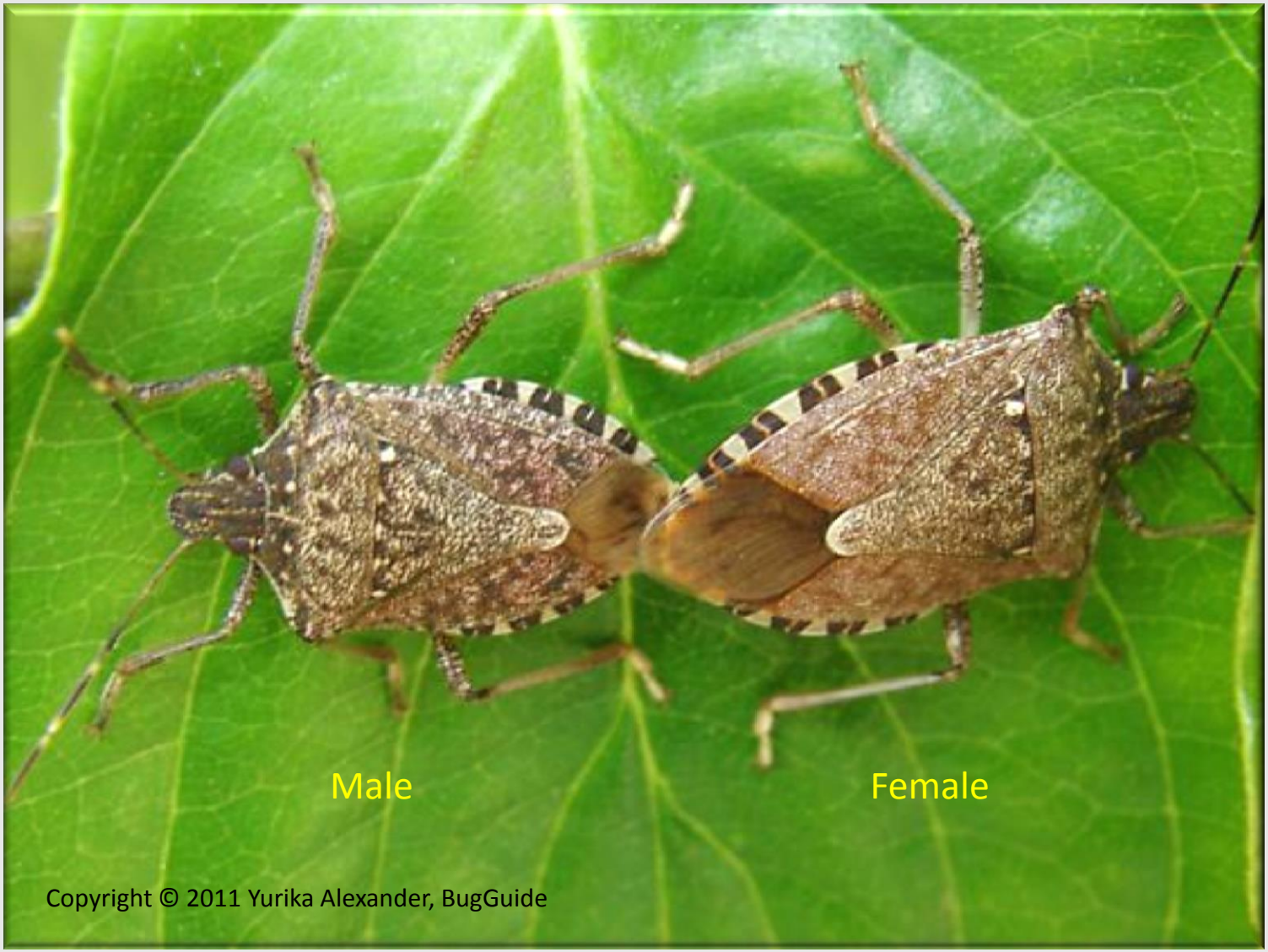

Photo by Stephen Ausmus, USDA


Distinct black and white pattern around abdomen
Smooth "shoulder"
White bands on dark antennae
Original photo by Jeff Wildonger, USDA-ARS-BIIR

BMSB ID

BMSB look-alikes

BMSB Mating



Reproduce Prodigiously

"Normal (native) stink bugs reproduce only once a year, this one reproduces so much more often," said Bob Stuart, of Stuart's Fruit Farm in Somers PA. "They're like a locust plague. They can do a lot of injury before you can control them."

Aggregation Behavior

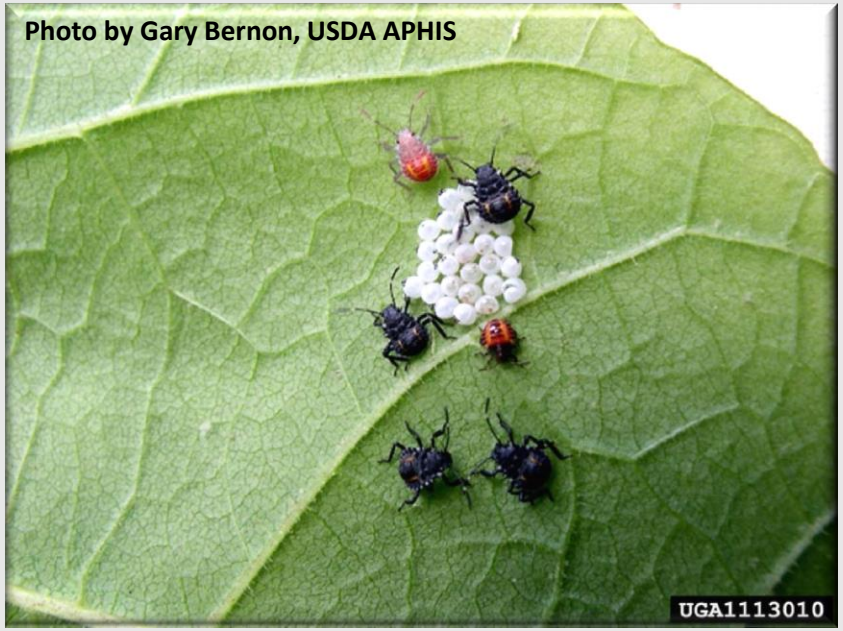
Aggregation Behavior

Photos by DD and Jim Cathcart
and courtesy of Chuck Ingles, Sacramento County Farm Advisor

Aggregating BMSB on Chinese Pitasch tree in Sacramento, CA.
During the cooler months, the adults overwinter by aggregating in houses, underneath the eaves, or in leaf litter (like many other stink bugs).

BMSB Lifecycle

Four BMSB instars and two adult stages



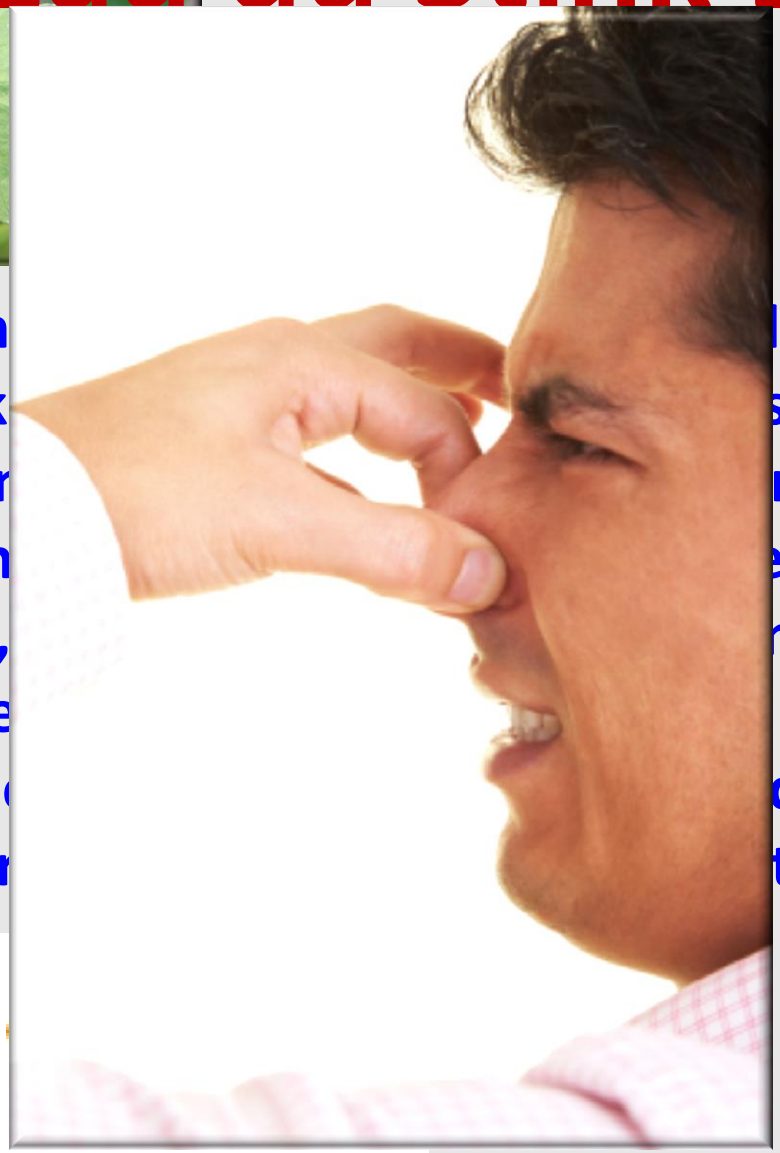
BMSB Nymphs. The red one just molted.

BMSB Hatchlings

Tiny BMSB hatchlings on rose leaf, Philadelphia PA

Hatching Out of Egg Cluster

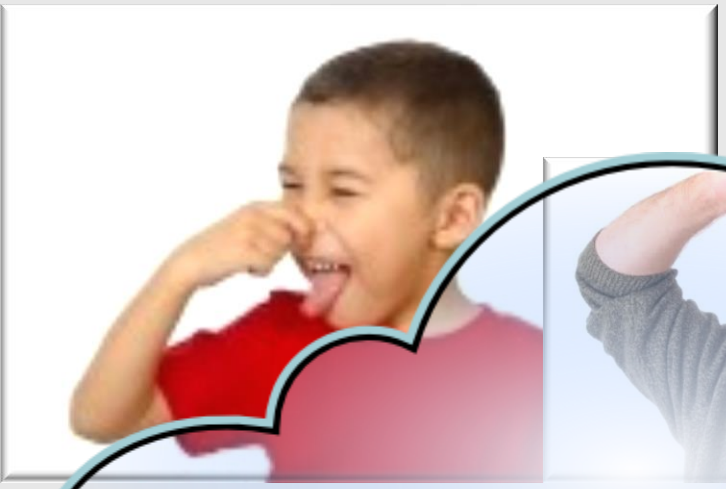
Eau du Stink Bug

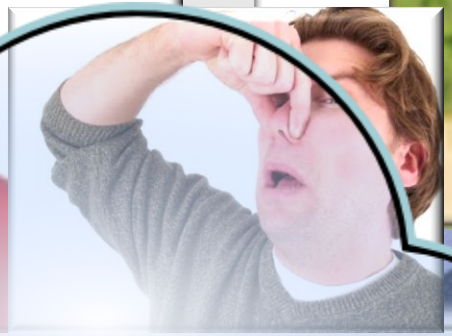


The odor from th decenal and trans-2-octenal.The stink sweet, vile odor through holes in its abdor meant to prevent it from being eaten r, simply jostling the bug, cornering it, mpting to remove it from one's house is a surefire way of expelling its noxi described as very strong bitter thinner.


Photo by ngorevic

Eau de






©JackSpence2008

Indoors for the Winter

Photo by Leske 2010

The BMSB love the inside of buildings

BMSB Residential Control

- **Use caulk and other sealant compounds to seal entry points such as cracks around windows, doors, siding and chimneys.**
  Repair or replace damaged screens to prevent easy access.

- **Install weather stripping and door sweeps to the windows and doors of your home.**

- **Use a vacuum to remove live *and* dead stink bugs that are already indoors. Avoid crushing the bug. When crushed, stink bugs emit a pungent odor that can remain in your home for hours. Use a vacuum that is "dedicated" to stink bug removal.**

- **When practical, remove vegetation from around the exterior of your home. Stink bugs often use vegetation as staging sites and feeding sites prior to entering the home.**

BMSB Agricultural & Horticultural Control

On June 24, 2011 EPA approved, for emergency use, the neonicotinoid class insecticide dinotefuran for use on the Eastern Seaboard states. It can be applied only by ground and no more than twice a year.

SCORPION
35SL Insecticide

Pesticides for BMSB

Commercial growers will need to use preventative insecticide sprays to control stink bugs in tomatoes. The following are labeled products:

Brigade (almonds)
Carzol (apple)
Dimethoate (pears, apple)
Danitol – (pears, apple, tomato)
Lannate (tomato)
Lorsban (almonds)
Monitor (tomato)
Thionex (apple, tomato)

Pheromones

- Aggregation pheromone attracts males, females and nymphs
  - » Being patented by USDA-ARS
- Also sex pheromone (= harlequin bug)
- Both being used together now

Slide courtesy of Chuck Ingels

Slide courtesy of Chuck Ingels

Phermone Trap

Traps & Lures (AgBio, Inc.)

Lures: Aggregation (USDA): $4.25
Harlequin bug (sex pher.): $5.00
(both last 30 days)

Vaportape (kill bugs in trap)

Slide courtesy of Chuck Ingels

Phermone Trap

Dead-Inn Traps (AgBio, Inc.)

Grower
48” tall, $30

Professional
24” tall, $20

Homeowner
16” tall, $17

Phermone Traps

Rocket Trap (Rescue)

Slide courtesy of Chuck Ingels

Experimental Light Traps

USDA-ARS

Slide courtesy of Chuck Ingels

Biocontrol

The Peter Jentsch lab at the Cornell Hudson Valley Field Station is working on biocontrol with a fungus, *Beauveria bassiana* (brand name Mycotrol-0) achieving a 80% mortality rate in BMSB

Predacious Insects

A female parasitoid wasp, *Trissolcus mitsukurii,* from Asia. This species is one of several parasitoids being evaluated as potential biocontrols of BMSB

An adult parasitoid insect emerging from an egg of a stink bug. After a parasitoid female wasp lays an egg into a stink bug egg, the parasitoid offspring (one per egg) develops inside the egg, eating it from the inside out.

Websites

http://cisr.ucr.edu/brown_marmorated_stinkbug.html
UC Riverside Center for Invasive Species

http://www.northeastipm.org/working-groups/bmsb-working-group/bmsb-information/

http://www.stopbmsb.org/more-resources/video-series/
10 videos by Dr. Tracy Lesky and the USDA working group

http://www.stopbmsb.org/stink-bug-basics/


Photo by Stephen Ausmus

Northeastern IPM

https://www.wpdn.org/newsletters See Summer 2013 and Winter 2011
Western Plant Diagnostic Network newsletters

Bagrada Bug
Bagrada hilaris (Burmeister 1835)

Family: Pentatomidae (Stink bugs)
Order: Hemiptera (true bugs)

Common names: bagrada bug, painted bug, painted stink bug, African stink bug


Photo by Delbert Crawford
Bagrada bugs in San Pedro, California

Bagrada Bug Feeding

The rostrum is described as “needle-like” in its ability to piece plant tissue

Photo by e_monk