

Brown Marmorated Stink Bug; A New Threat to Canadian Crops

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British Columbia Ministry of
Agriculture
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Alberta Farm Fresh School, Feb 28-March 1, 2013

Brown marmorated stink bug (BMSB)

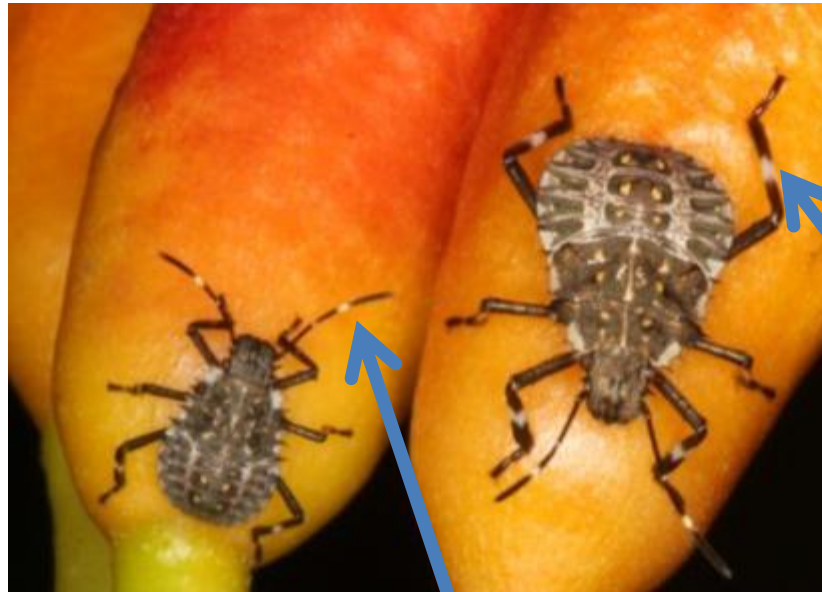
(Halyomorpha halys)

- **Native to Asia.** Has caused crop damage in Japan, Korea, China particularly in last decade.
- Present in eastern USA (Pennsylvania, initially since 1996), and Portland Oregon since 2004.
- Has spread to many states, including California and Washington.
- Very first detection in North America; 1993.
- Pest of crops, and a nuisance to homeowners.

Brown marmorated stink bug identification

<http://www.northeastipm.org/bsmb>

<http://ento.psu.edu/extension/factsheets/brown-marmorated-stink-bug>



White bands on legs and antennae.
White alternating with dark on edge
of abdomen, and on thorax.

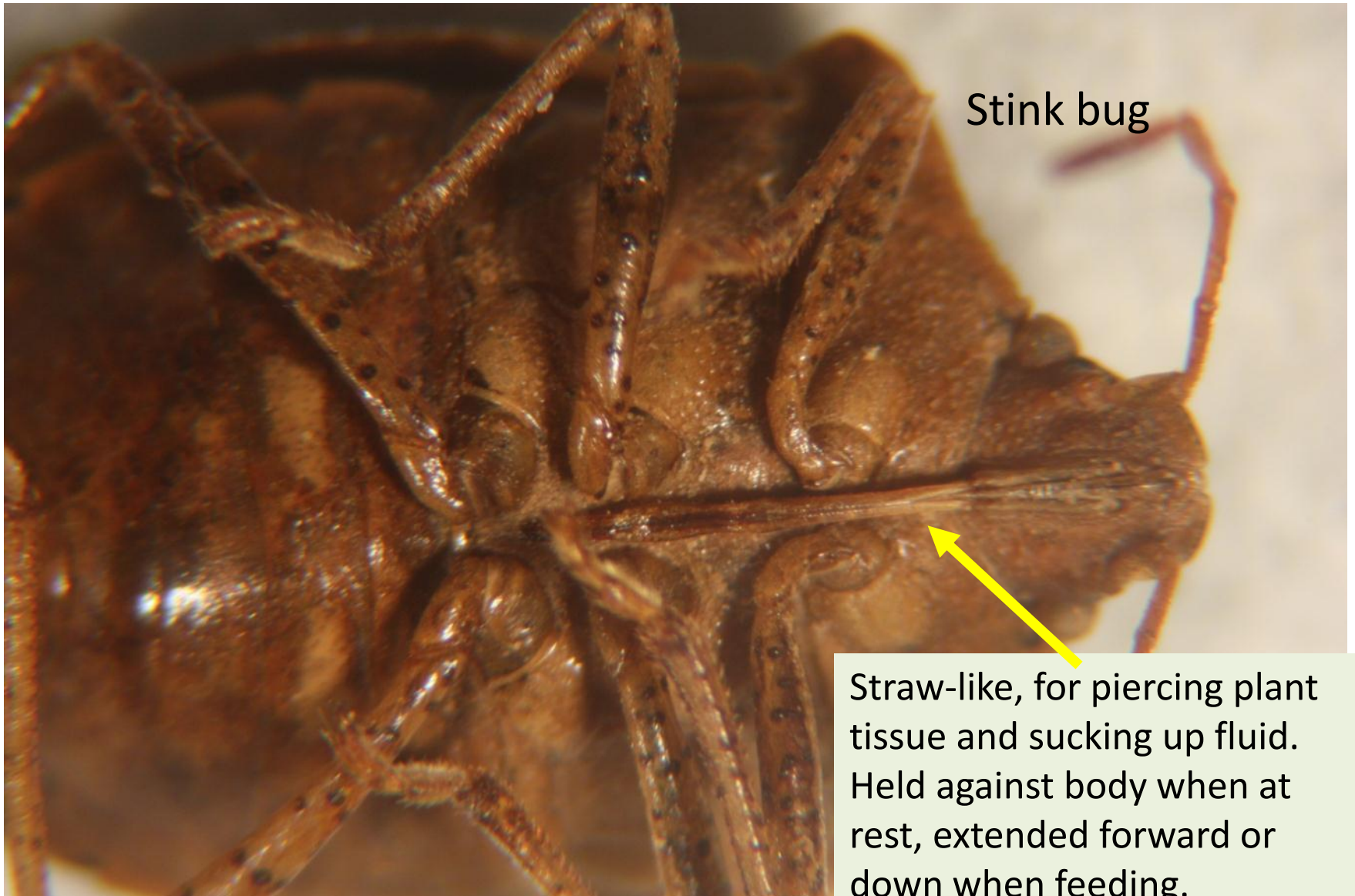
BMSB Life Stages

Slide from Susanna
Acheampong,
BCAgri



**One generation per
year in Canada**

Mouthparts: “piercing and sucking”



Stink bug

Straw-like, for piercing plant tissue and sucking up fluid. Held against body when at rest, extended forward or down when feeding.

Mouthparts: “Piercing and Sucking”



How does BMSB get to new areas?

- “Hitch-hiker”: Moves on vehicles along transportation corridors
- Some natural spread does occur from established areas.

Random interceptions of BMSB:

for example

- **in British Columbia:**
 - shipments of poplar products from the State of Virginia coming into BC, Nov 2011.
 - TV monitors from Virginia to Surrey, Summer 2012.
- **in Alberta:**
 - Shipments of recreation vehicles from eastern USA, PA?.
 - Found in a motorhome after returning from traveling in the eastern USA.

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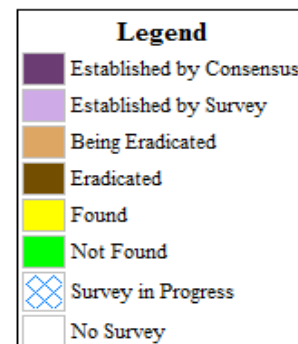
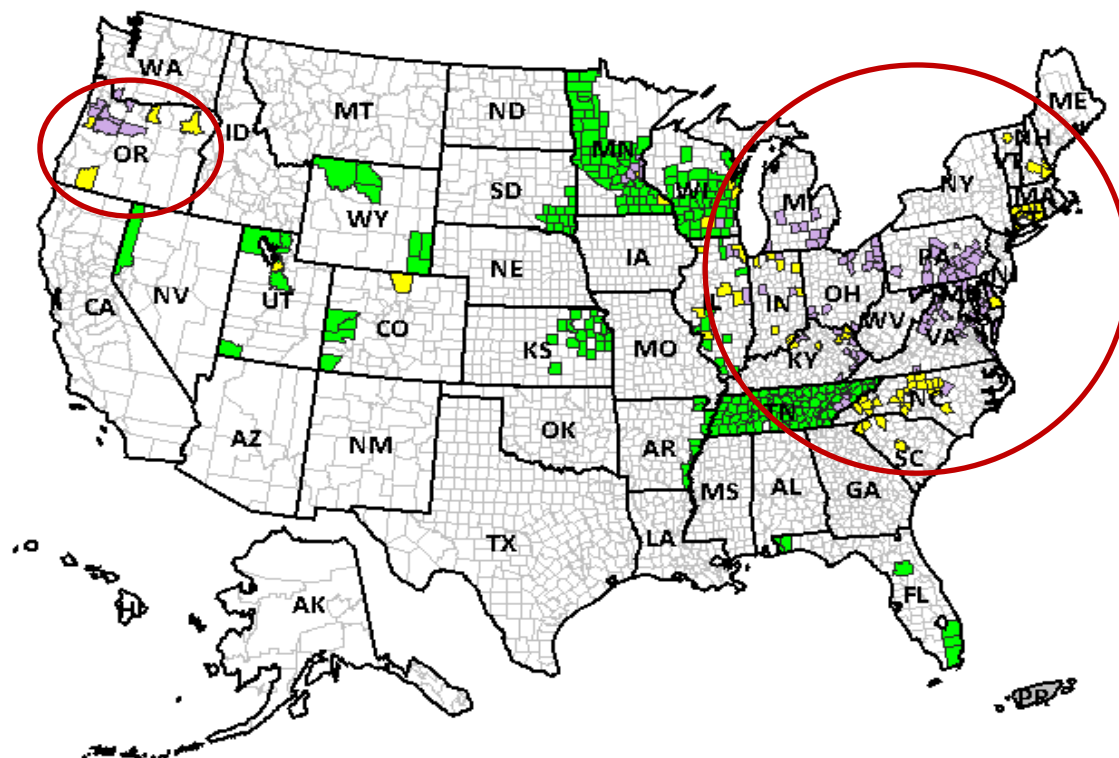
States

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Map views: 2010 to present | [all years](#) | [2013](#) | [2012](#) | [2011](#) | [2010](#) | [2009](#) | [2008](#) | [2007](#) | [2006](#) | [2005](#) | [2004](#)[view summarized survey results for this map pest page](#)**Survey Status of Brown Marmorated Stink Bug - *Halyomorpha halys*
2010 to present**

This map only represents pest survey data submitted to the NAPIS database by participating states in the Cooperative Agricultural Pest Survey (CAPS) program with USDA, APHIS, PPQ.

Data is based on survey observation by calendar year.

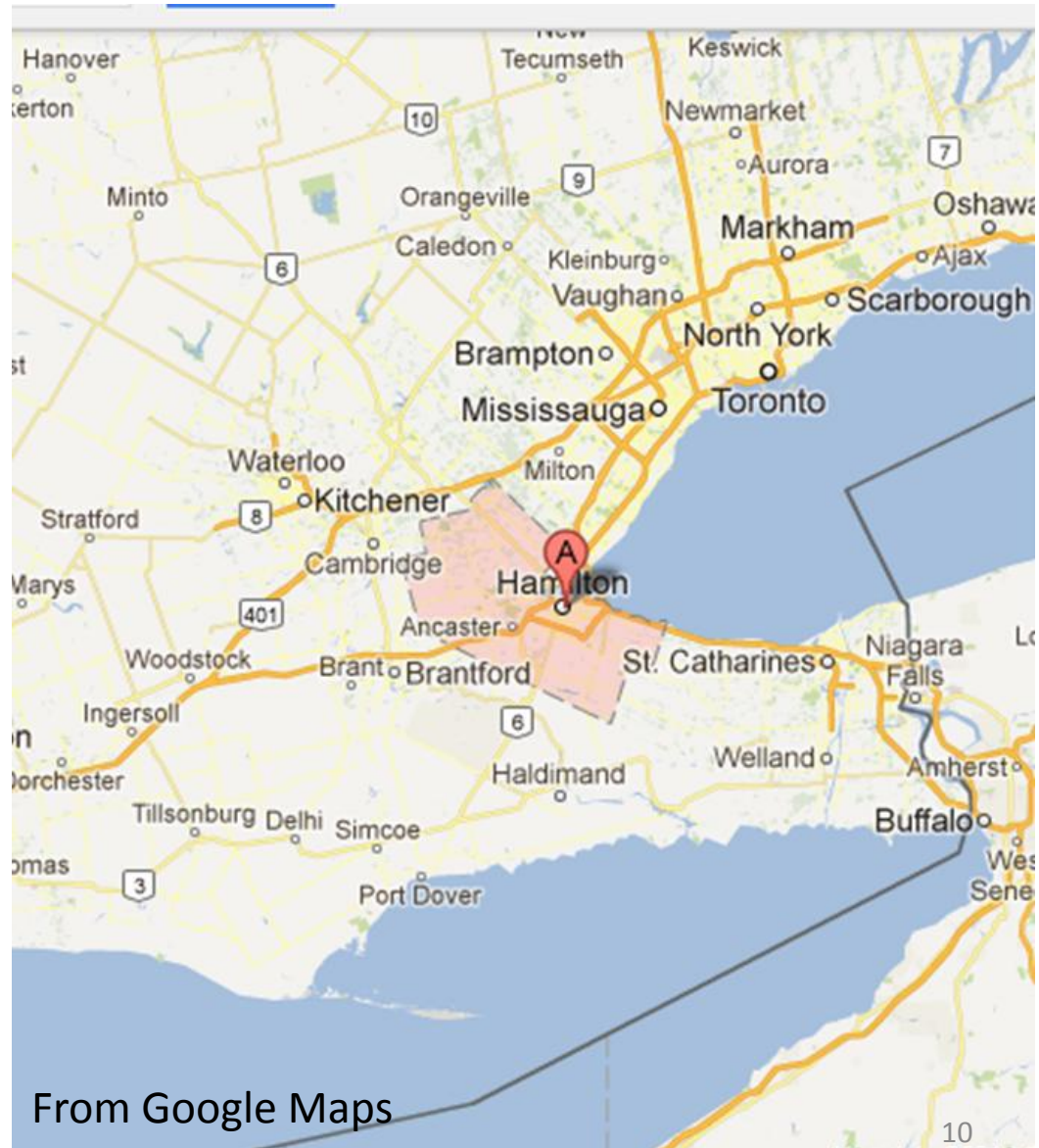
CERIS does not certify the accuracy or completeness of this map.

"Survey in Progress" does not imply that all counties are expected to report.

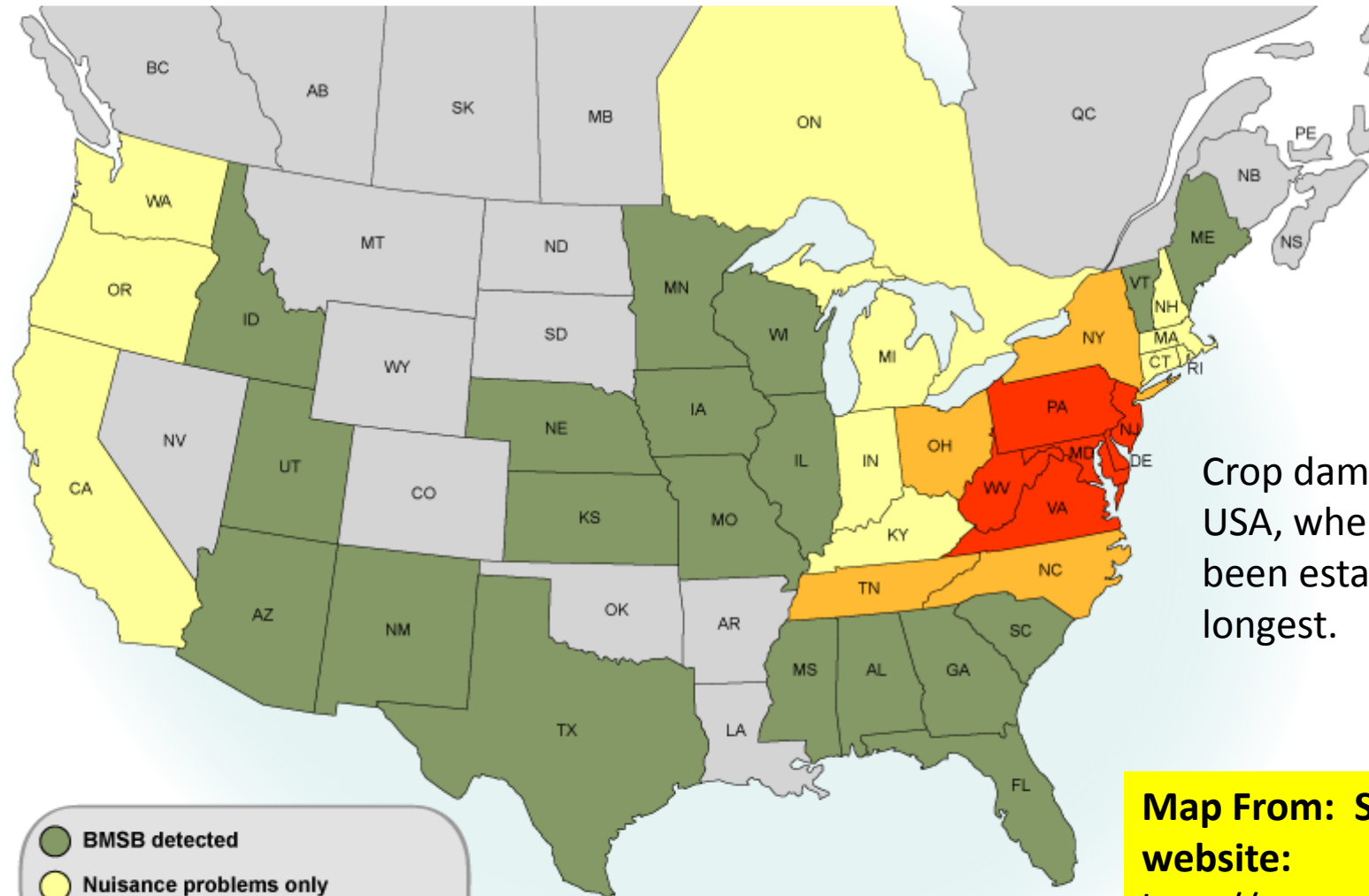
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Ontario: 2010 Hamilton port area

- First confirmed in 2010, and in 2012, eggs found, indicating establishment.
- No known crop damage yet, bug still limited to urban area.



Brown marmorated stink bug (BMSB) has been detected in 39 states, posing severe agricultural problems in six states and nuisance problems in thirteen others. Click on a state or province in the map below to find state-specific resources, contact information, and news, or to report a sighting of BMSB.



Crop damage in eastern USA, where BMSB has been established the longest.

Map From: Stop BMSB website:

<http://www.stopbmsb.org/where-is-bmsb/state-by-state/>

Homeowner detections

- Expected to become a nuisance to homeowners when bugs aggregate in fall/winter first, before it establishes as an agricultural pest.

<http://hyg.ipm.illinois.edu/article.php?id=438>



BMSB gathering on the side of a house.

If/when this bug gets into AB or BC, we expect that this is how we will first find established populations.

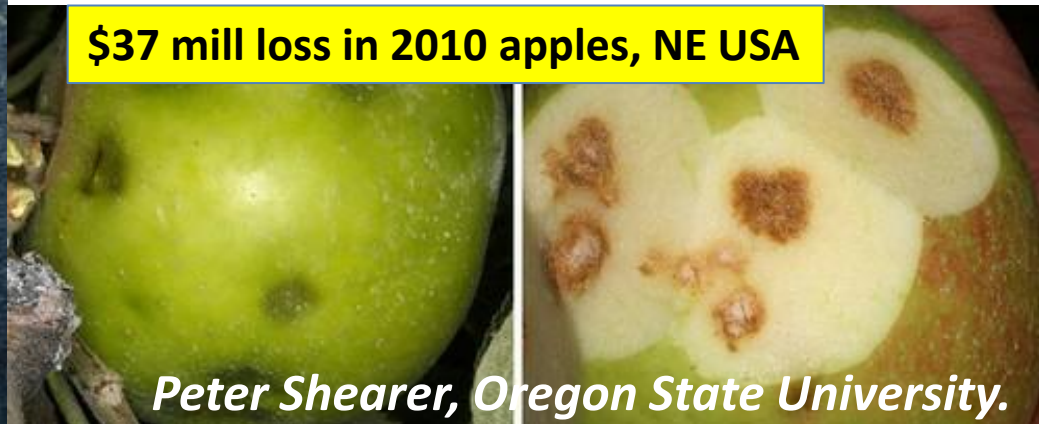
BMSB Hosts

- **Hosts:** very broad, fruit and vegetables (<300 hosts):
 - **Vegetables:** legumes, peppers, tomatoes, corn, soybeans, snap beans.
 - **Fruit:** apples, peaches, figs, mulberries, citrus, persimmons, berries, grapes,
 - **Ornamentals,**
 - **Weeds**
 - **Woody plants,** trees (in eastern North America: elm, oak, locust)

BMSB Damage



\$37 mill loss in 2010 apples, NE USA



Corn is a preferred host in NE USA.



Crop Damage

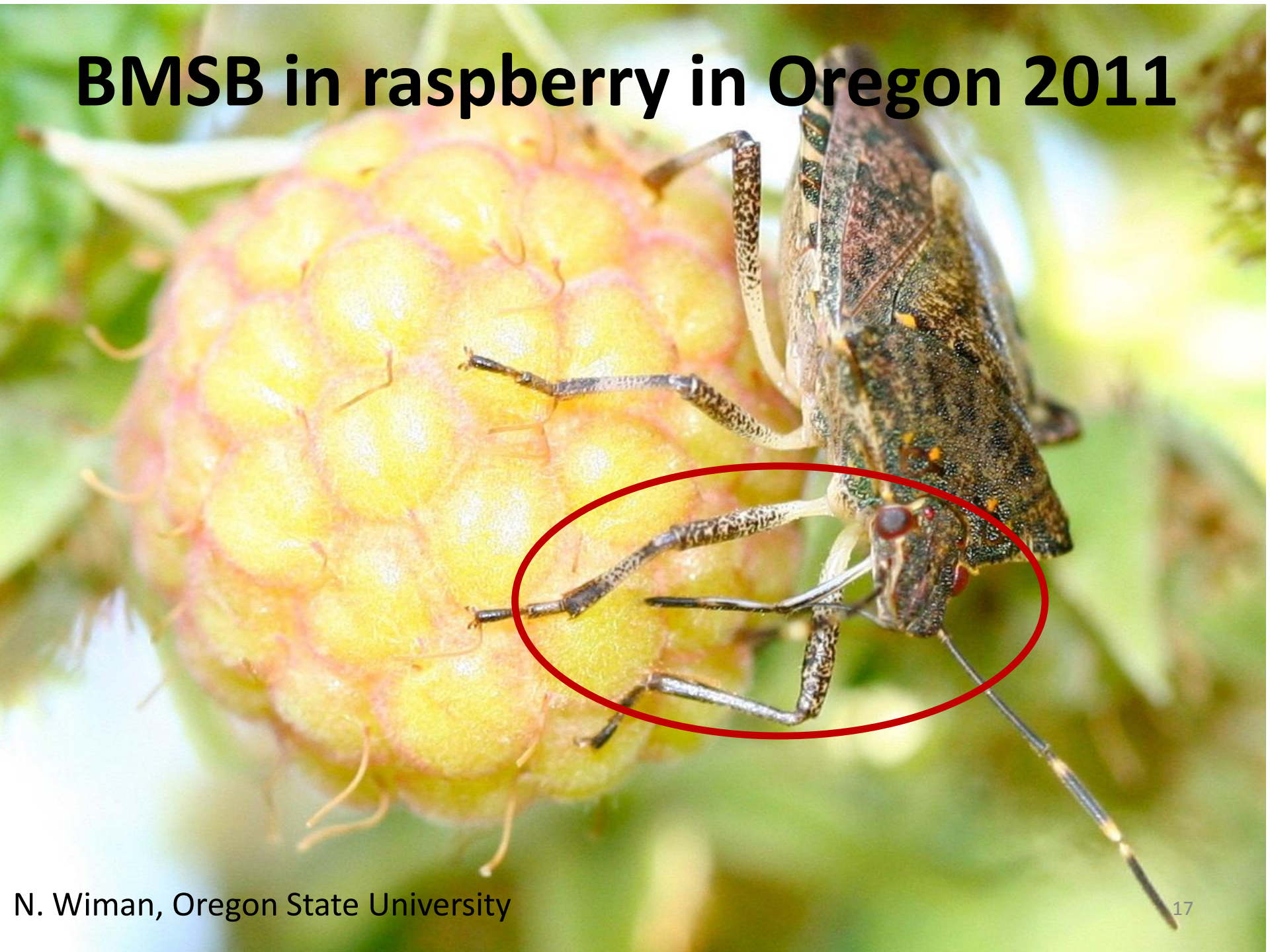
- Feeds on leaves and fruit, causing distortion, cat-facing, necrosis, corkiness.
- Will pierce plant stems.
- Causes off-flavour, i.e. wine grapes.
- Crop injury first reported in Pennsylvania 2008, and got worse in recent years.
- Damage significant in some Asian countries.
- 2011; first report of fruit damage to raspberries in Oregon (outside of Portland).

BMSB in blackberry/raspberry in Oregon 2011



Nik Wiman, Oregon State University

BMSB in raspberry in Oregon 2011



Public outreach; get more eyes out there!

AGRICULTURE

Meet the Minister

Honourable Norm Letnick

Norm Letnick was appointed Minister of Agriculture on September 5, 2012. [Read full biography]

[full profile »](#)

[Factsheets, Letters, Opinion-Editorials](#)

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Keep invasive stink bug out of B.C.



Latest Photos»

View the BC Government's latest photos on Flickr



[more photos](#)



Latest Videos»

VICTORIA - The government of B.C. would like the people of British Columbia to be on the lookout for the brown marmorated stink bug (*Halyomorpha halys*) that will attack tree fruits, berries, grapes, vegetables, corn and ornamental plants.

Results of our 2012 fall press release:

- Media picks up the Press Releases, send the story around BC and Canada (*free advertising!*)
- Lots of calls and emails to BC Ministry.
- Most are non-BMSB, and look-a-likes.
- 1 was actually a positive: several BMSB in boxes of TVs, shipped from Virginia to Surrey, October, 2012.

Brown marmorated stink bug



Conspire stink bug



Spined soldier bug



Green stink bug



Western conifer seed bug



Boxelder bug



Bugs that look like BMSB

Strategies to avoid establishment of new pests

- **Monitor** for pests regularly
 - consider hiring a consultant or staff person who is trained in pest management.
- **Watch for**
 - tell-tale signs for species of concern
 - anything different from normal
- **Report**
 - any new or different insects or damage



If you see anything that looks like BMSB, please capture it, and bring it to Rob or Jim, or send me end a photo!

Strategies to avoid introduction of new pests

- **Prevention is critical**

Sanitation:

- Use clean stock
 - *local will be less risky from a new species perspective*
- Properly dispose of culls and plant debris.
- Ensure *everyone* follows bio-security guidelines
<http://www.agf.gov.bc.ca/cropprot/biosecurity.htm>
- Good weed control;
 - *many bugs live on weeds.*



How to watch for BMSB in BC?

- We are looking for any first detections;
 - like finding a needle in a haystack!
- Check spring host plants
 - Tree of heaven, Sumac?, Cascara?
- Fall (Sept/Oct); watch for bugs massing together in buildings, preparing for winter.
 - some ladybugs do this too.

Overwintering sites

- Under tree bark
- Standing dead trees;
NOT in leaf litter.
- Buildings
 - *most evident and
easiest to find here*
- Can withstand -20°C
winters!



Possible Spring Hosts of BMSB

- Tree of Heaven, Chinese Sumac
- Butterfly bush (buddleia)



Non-crop Hosts

- List of hosts from Oregon, Nik Wiman, Oregon State University:
- Holly was a favorite.
- Others identified are: Lilac, maple, mountain ash, cherry, elm poplar, birch, juniper, raspberry, hazelnuts, rose, etc.

Graphic from Nik Wiman,
Oregon State University

Genus



ilex
acer
unk
prunus
fraxinus
syringa
ailanthus
pyrus
ulmus
populus
betula
cornus
paulownia
rubus
tilea
cedrus
corylus
juglans
mahonia
rosa

BMSB host in Ontario:

- Buckthorn (*Rhamnus*), a non-native plant



- Cascara (*Rhamnus*), a native species. Possible BMSB host in the West?



Watch for fall aggregating bugs!

- <http://hyg.ipm.illinois.edu/article.php?id=438>



Diagnostics; Pest Identification

- BC Ministry of Agriculture Plant Health Lab

<http://www.agf.gov.bc.ca/cropprot/lab.htm>

Suspected new species can be submitted for identification.

If you think you might have Brown marmorated stink bug, collect some and bring/send them to Rob Spencer or Jim Broatch (Alberta Agriculture).



Research underway in USA, Ontario

- **Biology;** variable depending on climate, 1 generation in Ontario, more in southern USA.
- **Monitoring;** no good traps or lures yet for first detections. Beating trays are most useful if you are in an area where BMSB is established.
- **Insecticides;** broad spectrum insecticides work, but bugs are highly mobile and re-invade after sprays.
- **Barriers;** best for homes and buildings, seal up gaps, etc.

Web Resources for BMSB

**Lots of biology, risk, and
identification info!**

- Ontario

<http://www.omafra.gov.on.ca/english/crops/facts/bmstinkbug.htm>

- British Columbia

http://www.al.gov.bc.ca/cropprot/bmsb_alert.pdf

- Oregon

http://www.oregon.gov/ODA/PLANT/docs/pdf/ippm_bmsb_alert2010.pdf

- North East USA, STOP BMSB:

<http://www.stopbmsb.org/index.cfm>

From: the 'Stop BMSB' website:

ABOUT US

Project, people, research...

STINK BUG BASICS

Origins, life stages, photos...

WHERE IS BMSB?

Maps, crops, sightings...

MANAGEMENT

Monitor, deter, manage...

MORE RESOURCES

News, events, training...

Overview

The brown marmorated stink bug, *Halyomorpha halys* (Stål), is a voracious eater that damages fruit, vegetable, and ornamental crops in North America. With funding from USDA's Specialty Crop Research Initiative, our team of more than 50 researchers is uncovering the pest's secrets to find management solutions for growers, seeking strategies that will protect our food, our environment, and our farms.



Updates

[Academy Award for the Brown Marmorated Stink Bug?](#) Well, maybe not this year, but we may be in the running with the hiring of Jim Monahan, a videographer who plans to shoot half a dozen clips on how to recognize, trap, and manage brown marmorated stink bug (BMSB).

[Scientists draw maps to stop stink bug pirates](#) An integrated pest management program running since the 1980s has led to fresh insights about a new invader. Scientists are deploying maps to aid the fight.

[Thawing and freezing: will the winter's volatile weather kill off the stink bugs?](#) Were stink bugs caught off guard by the the January thaw followed by cold temperatures and snow this year? *Source: Washington Post, February 25, 2013*

[Will 2013 be the year of the stink bug?](#) Farmers across the nation are being warned that stink bug populations could explode in 2013 after a slight reprieve in 2012. *Source: Ag Professional, January 30, 2013*

[Stink bug threatens integrated pest management plans, researchers say](#) Scientists want growers to watch for the brown marmorated stink bug this summer which they say could devastate biological pest management in Central Washington tree fruit. *Source: Capital Press, January 25, 2013.*

[Stink bug's resurfacing may squash farmers' hopes for a strong 2013](#) Crop producers received a reprieve from the bugs in 2012, but the insects may be coming back and with a greater spread of attack. *Source: Georgia Public Broadcasting, January 18, 2013*

[After reprieve last year, stink bugs could mount a comeback this spring](#) Experts caution that the brown marmorated stink bug will likely make a reappearance in the Washington D.C. area this year. *Source: Washington Post, January 4, 2013*

[Stink bug population will bounce back in 2013](#) The invasive insects from Asia are poised to come back with a vengeance in 2013. *Source: American University Radio (wamu.org), January 2, 2013*

Funding



United States
Department of
Agriculture

National Institute
of Food and
Agriculture

Specialty Crop Research Initiative

Collaborators

