

OCCASIONAL INVADERS

Western Conifer Seed Bugs, Box Elder Bugs and Multicolored Lady Bugs



Judy Rosovsky

State Entomologist

Vermont Agency of Agriculture, Food
and Markets (VAAFM)

judy.rosovsky@vermont.gov

802-279-2212

Western Conifer Seed Bug (WCSB)

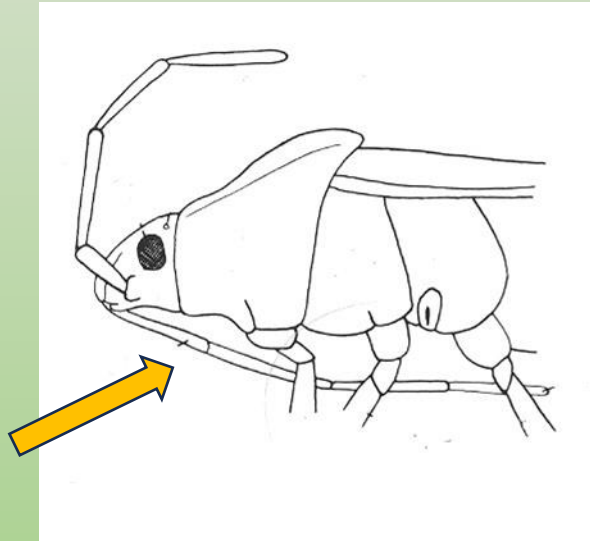
Big insect with a long name

Leptoglossus occidentalis

Leaf-footed insects

Hemipterans

Sucking-piercing
mouthparts



Seek shelter for the winter

Good resource - <https://extension.psu.edu/western-conifer-seed-bug>

Photo ©atchalmers, CCX4.0, <https://www.inaturalist.org/photos/363851103>

**To explore the Vermont Agency of Agriculture, Food and Markets, please visit: www.agriculture.vermont.gov



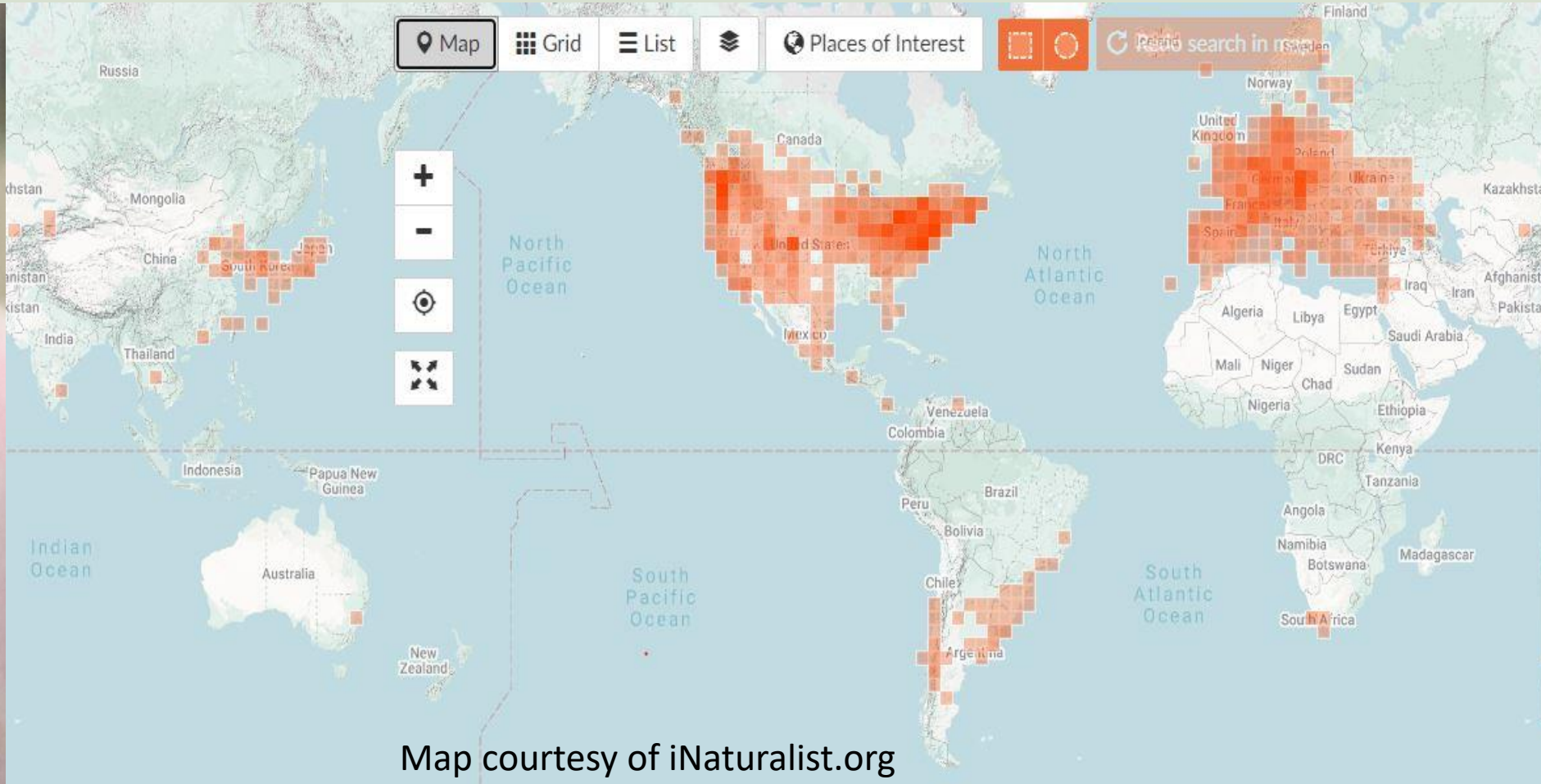
Western Conifer Seed Bug

Origin



© annamauramc, CC BY NC,

<https://www.inaturalist.org/photos/342691684>

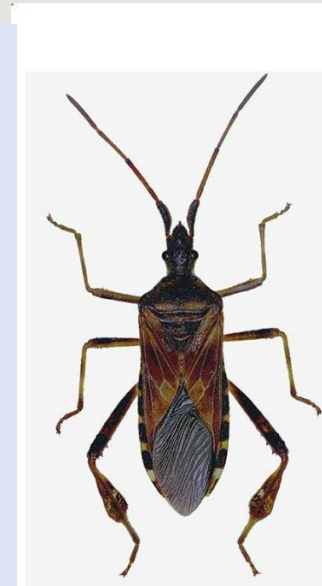
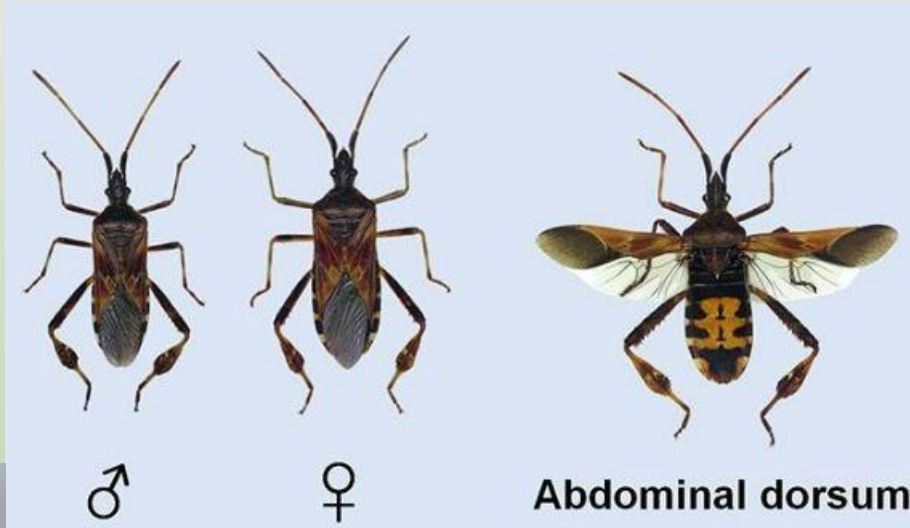


They eat stone pine nuts in Italy, so a parasitoid from the US may be introduced to Europe as a biocontrol. See <https://www.colorado.edu/asmagazine-archive/node/2028> for more information

WCSB

Life cycle

Eggs laid in spring



Overwinter as
adults



Egg



1st instar



2nd instar



3rd instar



4th instar



5th instar

Eat needles, cones, seeds of pines, spruces, firs, Douglas firs and hemlock

Are seed pests and may affect forest regeneration

Not considered a major forest tree pest in US

Other species in this genus can be agricultural pests

They do not bite or sting or transmit diseases to humans

WCSB ID

Look-a-likes

Authored by Steve Jacobs, 2002; reviewed 2013; revised by Michael Skvarla, 2023.

<https://extension.psu.edu/western-conifer-seed-bug>



Photo ©atchalmers, CCX4.0,

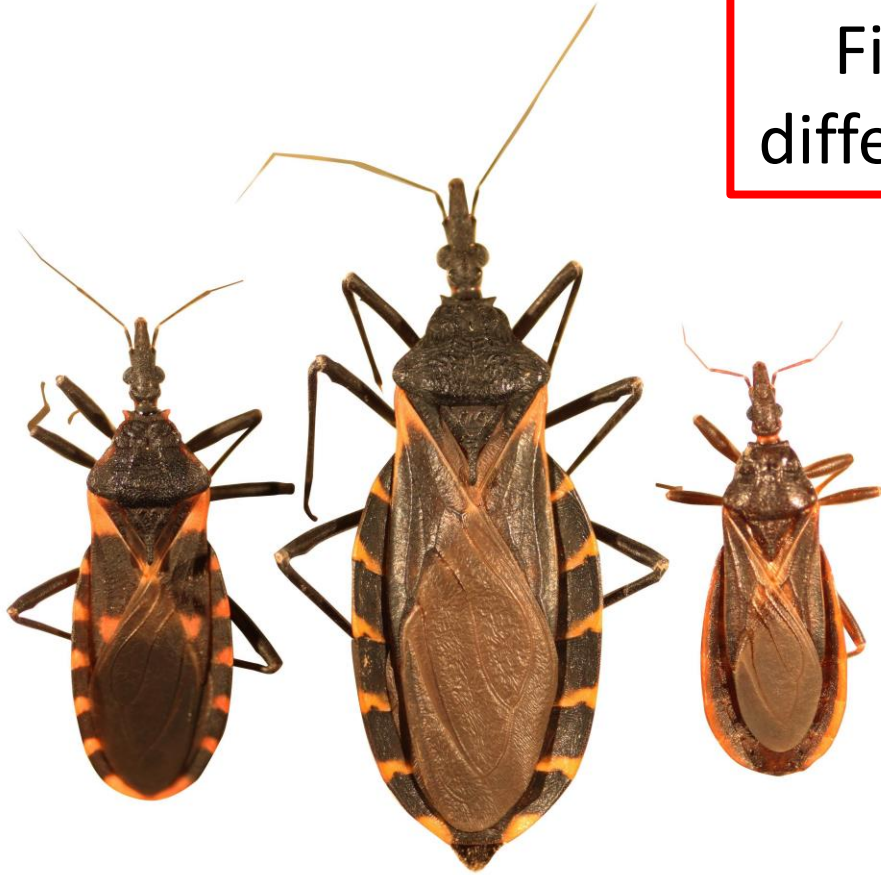
<https://www.inaturalist.org/photos/363851103>



WCSB- Note

They are not kissing bugs!

Find 3
differences



(Photo: Gabriel L. Hamer)

WCSB



Western conifer seed
bug, *Leptoglossus
occidentalis*, family
Coreidae

Photo ©atchalmers,
NC BY CCX4.0,
[https://www.inaturalist.
org/photos/363851103](https://www.inaturalist.org/photos/363851103)

Three species of kissing bugs that can be found in Texas. Left to right: *Triatoma sanguisuga*, *Triatoma gerstaeckeri*, *Triatoma protracta* – family Reduviidae

Western Conifer Seed Bug (WCSB)

Why leaf-footed?



Camouflage

Courtship

Fighting for females

And escaping predation



Box Elder Bugs

Common fall home invader



Photo © Lauren Westendorf, NC BY CC, iNaturalist.

Boisea trivittatus

(Trivittatus = 3 stripes)

Family Rhopalidae
(Scentless plant bugs)

Hemiptera, true bugs

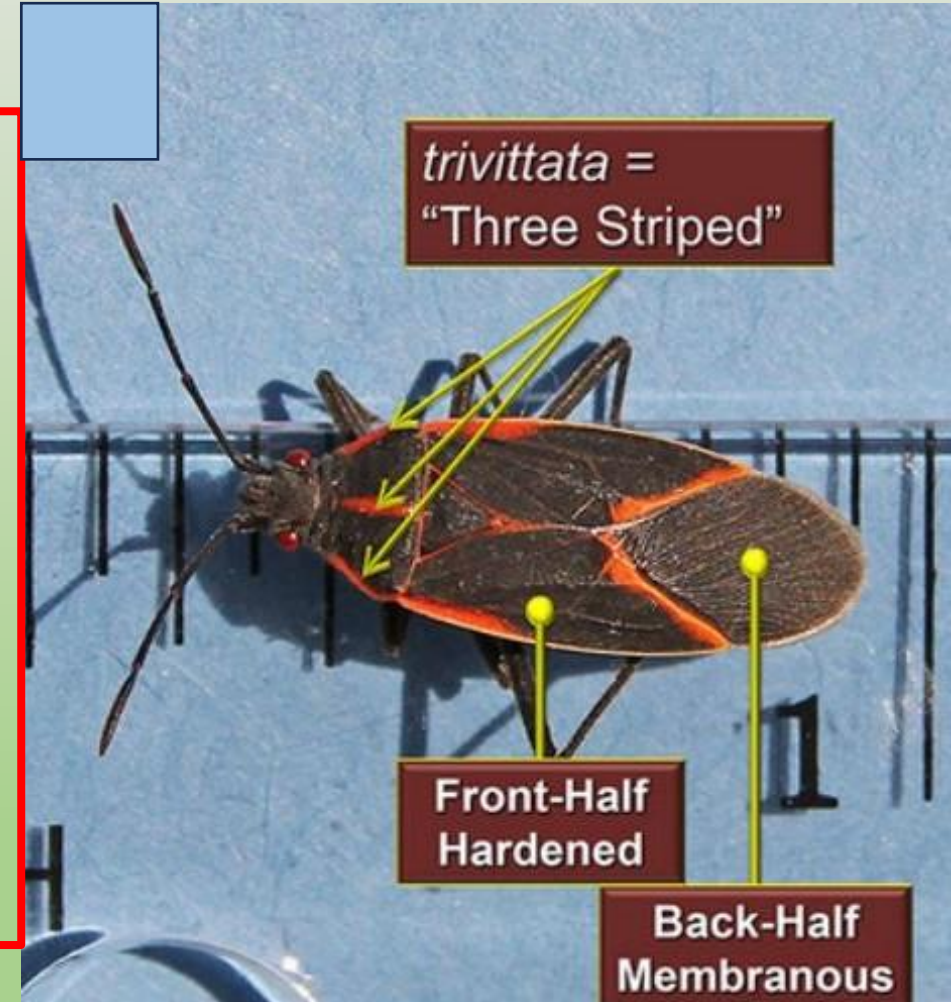


Photo by Joe Boggs, OSU Extension

Box Elder Bugs

Common fall home invader

Seek shelter for the winter

Aggregate and aggravate

Photo by C. Stridsberg



Photo by C. Stridsberg



Photo by Stu Benedict, <https://www.trulynolen.ca/stop-boxelder-bugs-invading-home/>

Box Elder Bugs

Range and Comparison w/Western BEB

Western BEB

Box Elder Bug



Leptocoris rubrolineatus



Boisea trivittatus

Range map of Eastern Plant Bug, iNaturalist

Box Elder Bug

Look-a-likes



Box elder bug adult; photo © Bill Keim,
<https://www.inaturalist.org/photos/438197151>



Boxelder bug lookalikes: (Left to right) large milkweed bug (*Oncopeltus fasciatus*), small milkweed bug (*Lygaeus kalmii*), and false milkweed bug (*Lygaeus turcicus*).

Images from <https://www.uvm.edu/sites/default/files/Extension-Community-Horticulture/Resources/BoxElderBugsOct2022.pdf> by M. Skinner

**To explore the Vermont Agency of Agriculture, Food and Markets, please visit: www.agriculture.vermont.gov

Box Elder Bugs

Life Cycle and Life Stages



Adults overwinter

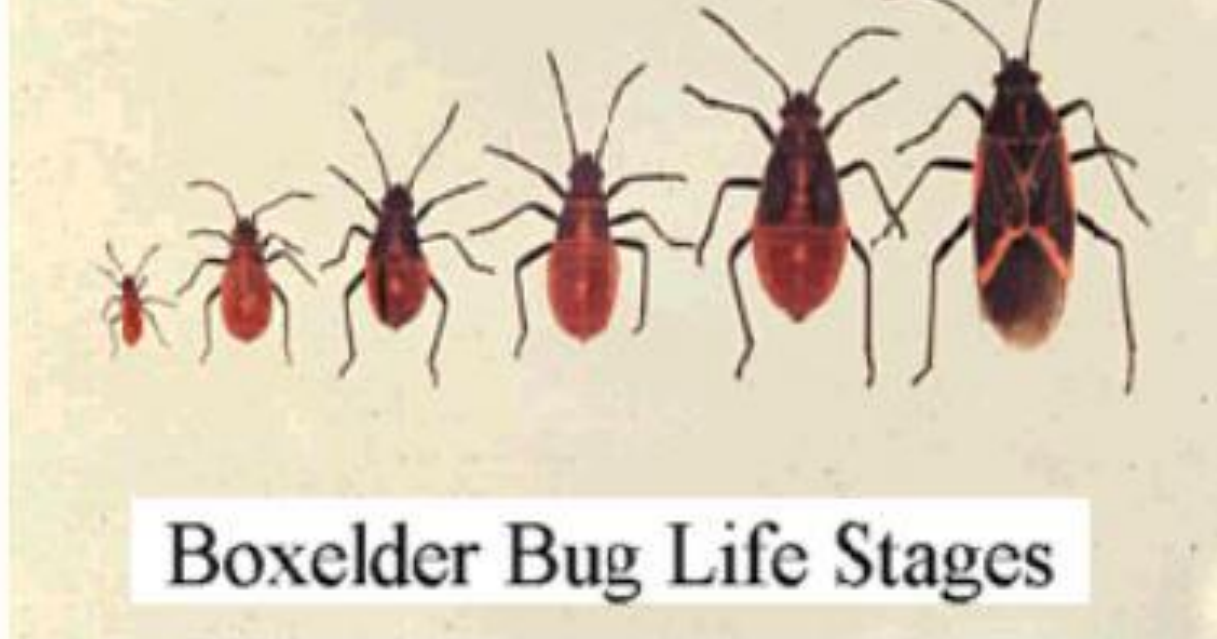
Emerge, feed, mate

Lay eggs

Eggs hatch in 10-14 days

Nymphs go through 5 instars

Can have 2-3 generations/yr



Nymphs
don't
fly

Image from <https://byf.unl.edu/topics/boxelder-bugs> -
U of Nebraska-Lincoln Backyard Farmer

Box elder bugs

Hosts, food and damage

Hosts:

Box elders

Maples

Ash

Stone fruit trees

Strawberries

Grapes

Nuts

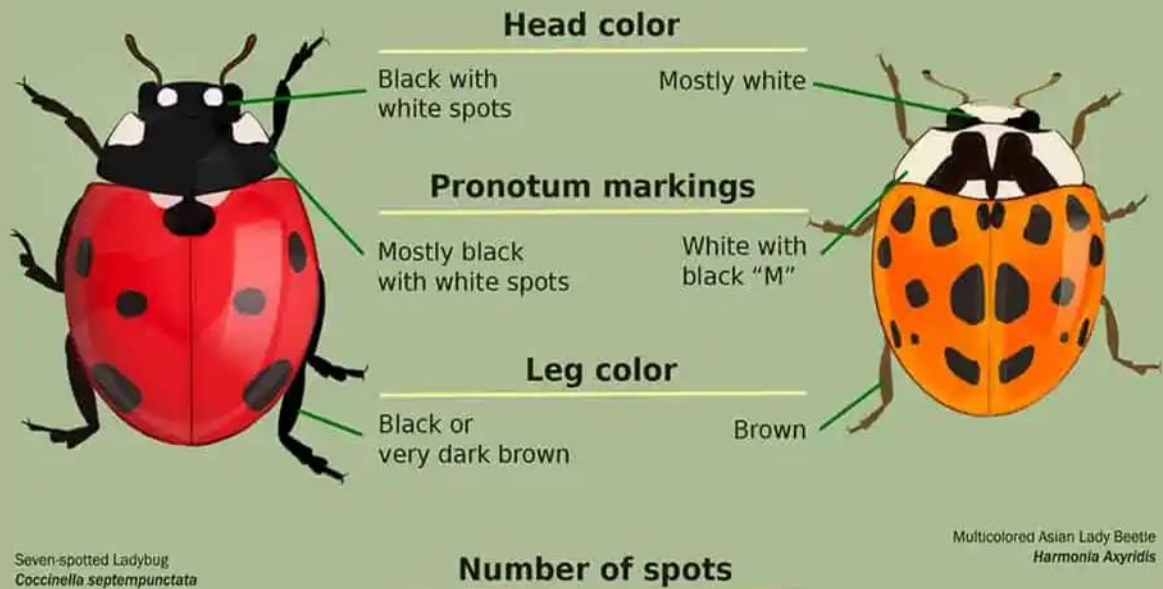
Seeds, foliage, twigs



Multicolored Introduced Lady Beetles

Indigenous Lady Beetles vs Multicolored Introduced Lady Beetles

Note black M on light head



Seven-spotted Ladybug
Coccinella septempunctata

Multicolored Asian Lady Beetle
Harmonia axyridis

Two-spotted Ladybug: 2 spots
Seven-spotted Ladybug: 7 spots
Convergent Ladybug: 0–12 spots

Asian Lady Beetle: 0–22 spots

 **PH&G**



<https://www.vulcantermite.com/pest-profiles/learn-to-tell-the-difference-between-ladybugs-and-asian-lady-beetles/>

<https://peppershomeandgarden.com/ladybug-vs-asian-beetle/>

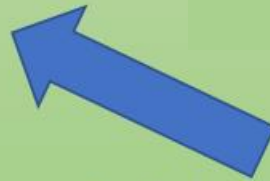
Introduced lady beetles and 2 native LB's



Multicolored Asian Lady Beetle (MALB)



Variegated lady beetle, photo from VT Atlas of Life



Look for the black M on the white background on the MALB



Photo: © Chloe and Trevor Van Loon, iNaturalist.com, (CC By 4.0)

Convergent Lady Beetle

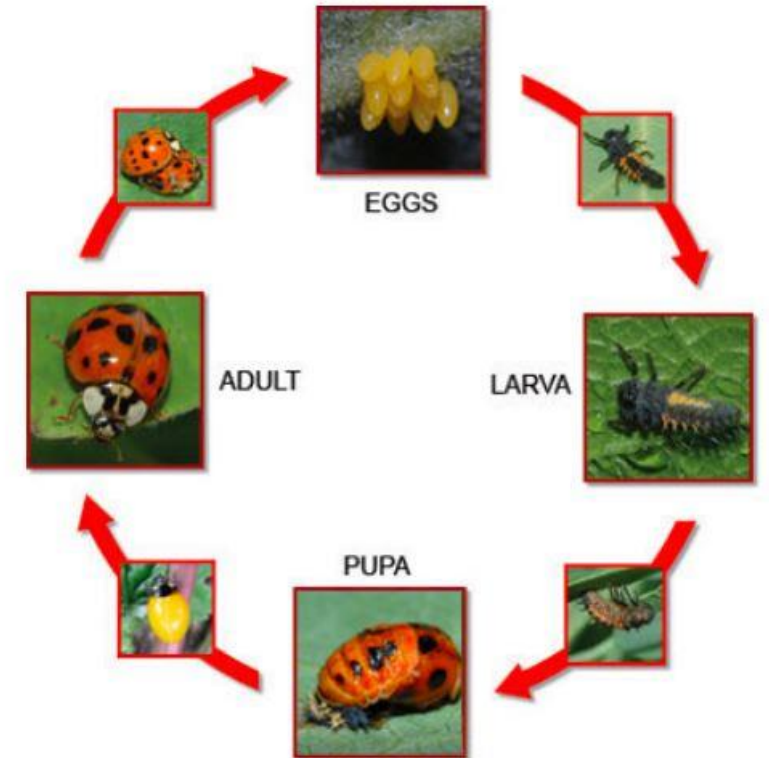
Multicolored lady beetle

Life cycle

Coleopterans so egg, larva, pupa, adult
May take 3-4 weeks to complete



MALB pupa by JR Baker



Multicolored lady beetle

Coming your way this fall

In Japan the MALB's overwinter
in large groups on mountain
outcrops.

In the US they are drawn to
light colored buildings.



Multicolored Asian Lady Beetle

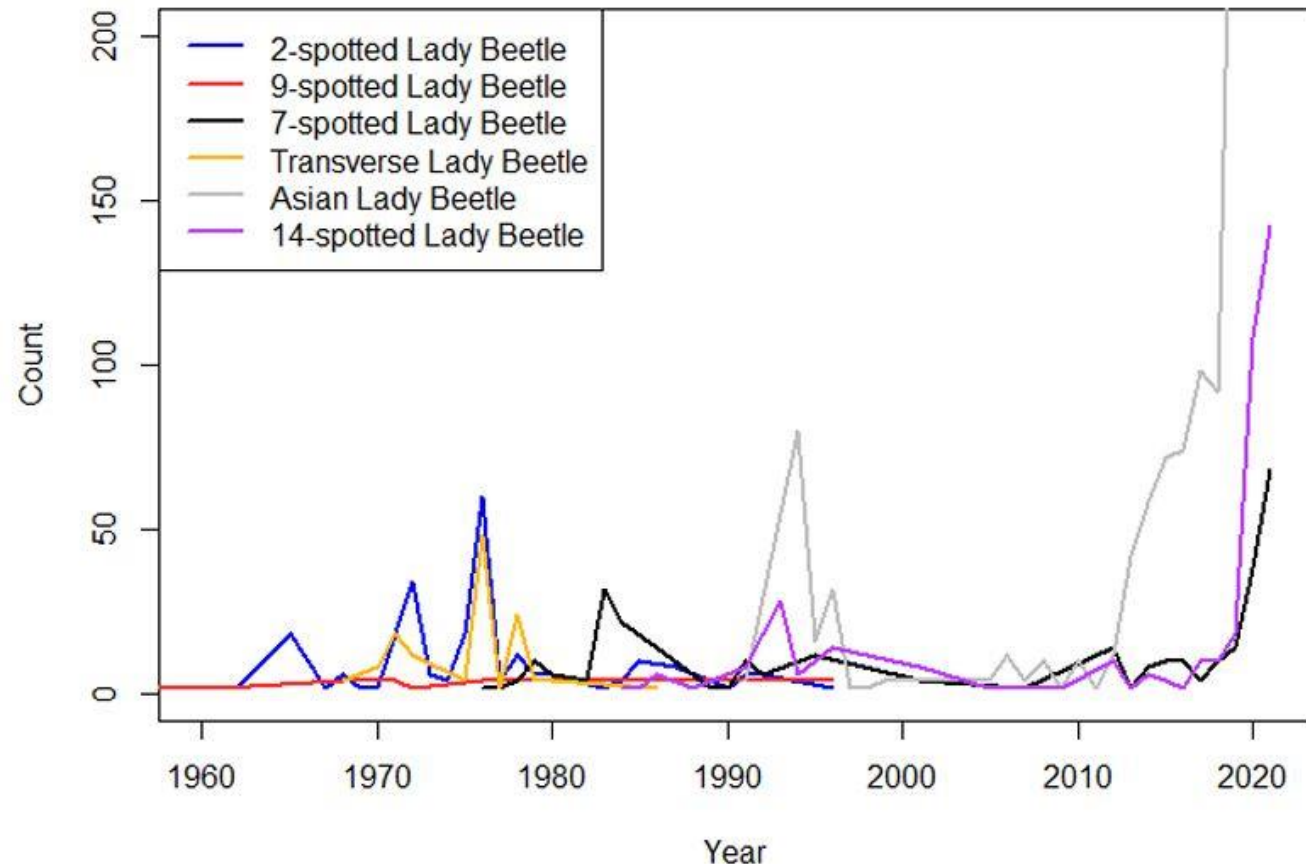
Harmonia axyridis

Introduced as a
biocontrol for
aphids

Both beneficial and
nuisance

Now implicated in
decline of
indigenous species

Figure 2. Annual records from 1960 to 2021 for three native species of conservation concern (Transverse Lady Beetle, Two-spotted Lady Beetle, and Nine-spotted Lady Beetle) and three introduced species (Seven-spotted Lady Beetle, Fourteen-spotted Lady Beetle, and Asian Lady Beetle). The native species have not been recorded in Vermont since 1986 for Transverse Lady Beetle and 1996 for both Two- and Nine-spotted Lady Beetles. The total count of Asian Lady Beetles is not included from 2019-2020 due to extreme high counts $n=613$ in 2020 and $n=769$ in 2021.



Lost ladybug project

[Http://www.lostladybug.org/index.php](http://www.lostladybug.org/index.php)



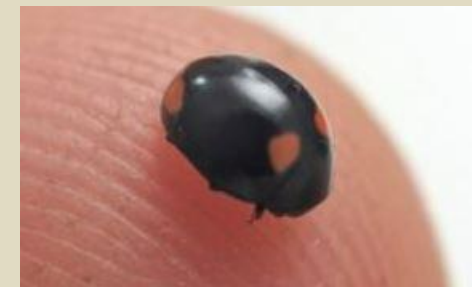
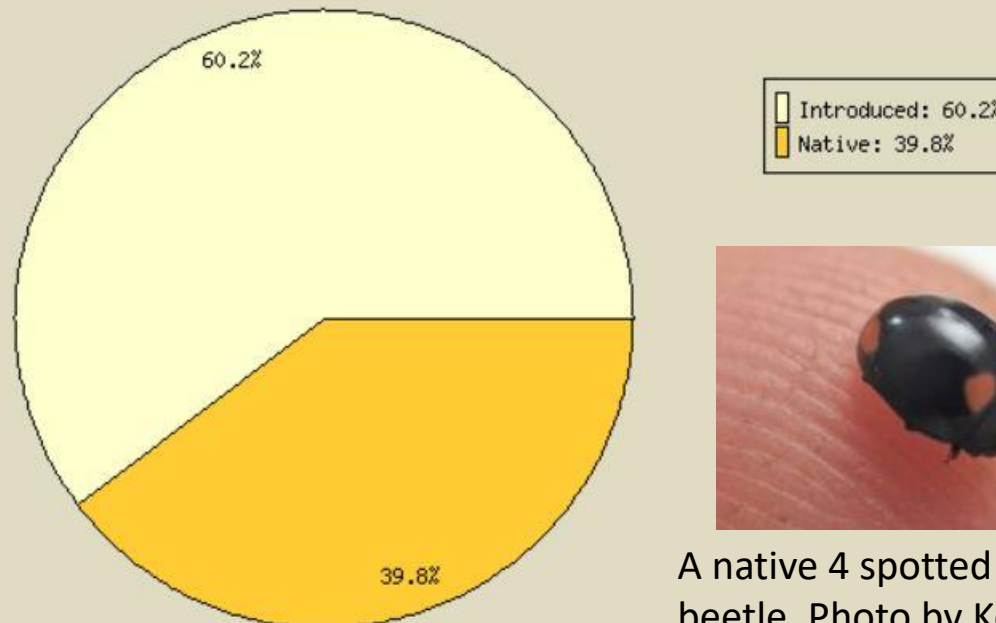
LLP DATA & MAPPING

- Data and Mapping
- Data Export
- Summary by Species
- Summary by Country
- Contributors List
- LLP Research & Publications
- Pie Charts**

Pie Charts



Native v introduced species
Total number of samples = 36431



A native 4 spotted spurleg lady beetle. Photo by Kent McFarland

Multicolored lady beetle

Friend or foe?

Have a parasite to which they are immune but infects other LB's

Eats soybean aphids and other pests

Cannibalize each other if food resources limited

Reflex bleeding – secrete alkaloid rich (nasty tasting) fluid from leg joints – can adversely affect crop flavor, stains furniture and clothes

Taste nasty, can cause allergic or irritation reaction

Don't sting or carry human diseases but can bite

Don't eat wood or fabric

Have natural enemies in US that help control the population

Many want to shelter in your house



Summary

Two Hemipterans and a Coleopteran
All 3 smell bad
None are tree killers
All 3 have some pest characteristics
They all want to come and visit your house

Any Questions?

References

For western conifer seed bug

Life cycle and aggregating pheromone from <https://museumpests.net/wp-content/uploads/2019/03/Western-Conifer-Seed-Bug.pdf>

Info on hosts and damage from <https://www.maine.gov/dacf/php/gotpests/bugs/factsheets/wcsb-cornell.pdf>

[https://www.researchgate.net/publication/240840657 Evidence for a male-produced aggregation pheromone in the western conifer seed bug Leptoglossus occidentalis Heidemann Hemiptera Coreidae](https://www.researchgate.net/publication/240840657_Evidence_for_a_male-produced_aggregation_pheromone_in_the_western_conifer_seed_bug_Leptoglossus_occidentalis_Heidemann_Hemiptera_Coreidae) Blatt and Borden, 1996.

<https://bygl.osu.edu/node/1946> no damage

Article that life cycle images came from:

Lee, J.W.; Huh, M.J.; Nam, I.; Park, J.H.; Lee, D.H.; Lee, M.W.; Park, I.K. Morphological and biological characteristics of the Korean population of *Leptoglossus occidentalis* Heidemann (Heteroptera: Coreidae), an invasive insect pest of conifer cones. *J. Asia-Pac. Entomol.* **2023**, 26, 102057.

<https://www.sciencedirect.com/science/article/abs/pii/S1226861523000213>

<https://www.getlostpest.com/ever-heard-of-a-leaf-footed-bug-what-you-need-to-know/> leaf foot info

References

For Box Elder Bug

<https://hort.extension.wisc.edu/articles/boxelder-bug-boisea-trivittatus/> Good general information

<https://extension.unh.edu/resource/boxelder-bug-fact-sheet> Good images especially of eggs

Wikipedia https://en.wikipedia.org/wiki/Boxelder_bug

https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev2_043721.pdf FS factsheet

<https://www.uvm.edu/sites/default/files/Extension-Community-Horticulture/Resources/BoxElderBugsOct2022.pdf>

Good article with helpful references by M Skinner, UVM Extension

<https://extension.psu.edu/boxelder-bug> Penn State U Extension article

<https://ohioline.osu.edu/factsheet/HYG-2106> says they don't feed on male trees ash, maple, fruit trees sometimes

Western BEB *Leptocoris rubrolineatus* <https://treefruit.wsu.edu/crop-protection/opm/western-boxelder-bug/>

References

For Multicolored Lady Beetle

<https://extension.umn.edu/nuisance-insects/multicolored-asian-lady-beetles> General info

<https://extension.psu.edu/multicolored-asian-lady-beetle-ladybug> Introduced as a biocontrol

<https://www.ars.usda.gov/oc/br/lbeetle/index/> Ag Research Service information on MALB introductions and biology

<https://vt.audubon.org/news/lady-beetles-vermont-invasions-extirpations-and-discoveries> Pupko call to action

<https://val.vtecostudies.org/wp-content/uploads/2022/02/VT-Lady-Beetle-Atlas-2020-2021-1.pdf> Data on LB's

<https://crops.extension.iastate.edu/blog/erin-hodgson/mostly-good-guy-multicolored-asian-lady-beetle> pro's and cons and 'reflex' bleeding

https://en.wikipedia.org/wiki/Harmonia_axyridis microsporidian parasite

https://entnemdept.ufl.edu/creatures/beneficial/multicolored_asian_lady_beetle.htm overwinter in mtns in Japan

<https://biocontrol.entomology.cornell.edu/predators/Harmonia.php#:~:text=In%20Japan%2C%20Harmonia%20axyridis%20is,in%20Japan%20and%20mainland%20China>. Pupal stage 5-6 days

References

Fun websites

<https://bygl.osu.edu/node/2375> Great images of WCSB and BEB

<https://uwm.edu/field-station/bug-of-the-week/leaf-footed-bugs/>

Bug lady on Coreid weaponry

Mallis, A. 2011. Handbook of Pest Control, Tenth Edition, Saunders College Publishing. Lost Ladybug.org (2014). The Lost Ladybug Project. Wikipedia. (2014). The Free Encyclopedia: Harmonia axyridis. National Geographic.com (2013). News Watch – Invasive Lady Beetle Kills Off Competition Using Parasites. Natural History Museum.org (2014). Los Angeles. Lost Ladybug Project – Identifying Ladybugs. Penn State University Entomology (2013). Multicolored Asian Lady Beetle Factsheets. From <https://www.heartspm.com/blog/asian-lady-beetles-vs-native-ladybugs/>