Efforts to redistribute adventive populations of *T. japonicus*

Presented by Nik Wiman,
Oregon State University

Funding

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Specialty Crop Research Initiative

Collaborating Institutions

NC State University · PennState · OSU Oregon State · University of Maryland · University of Georgia · Washington State University · Northeastern IPM Center · Cornell University · UtahStateUniversity · University of Kentucky · Rutgers University · The Ohio State University · UC Davis · University of Minnesota · VirginiaTech · Berkeley · Michigan State University · UC Riverside

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Where it all began…

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SHORT COMMUNICATION

JOURNAL OF Hymenoptera RESEARCH

Trissolcus japonicus (Ashmead) (Hymenoptera, Scelionidae) emerges in North America

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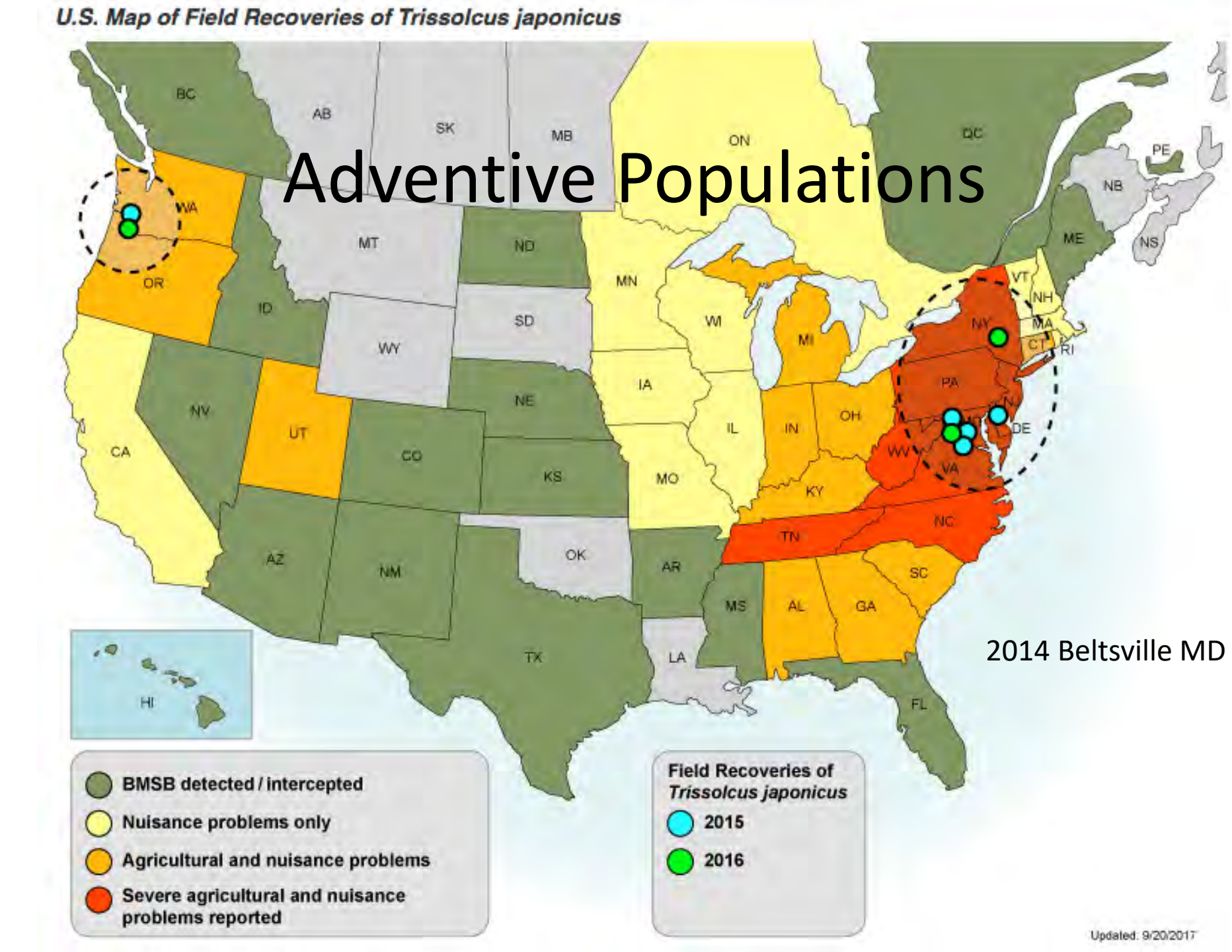
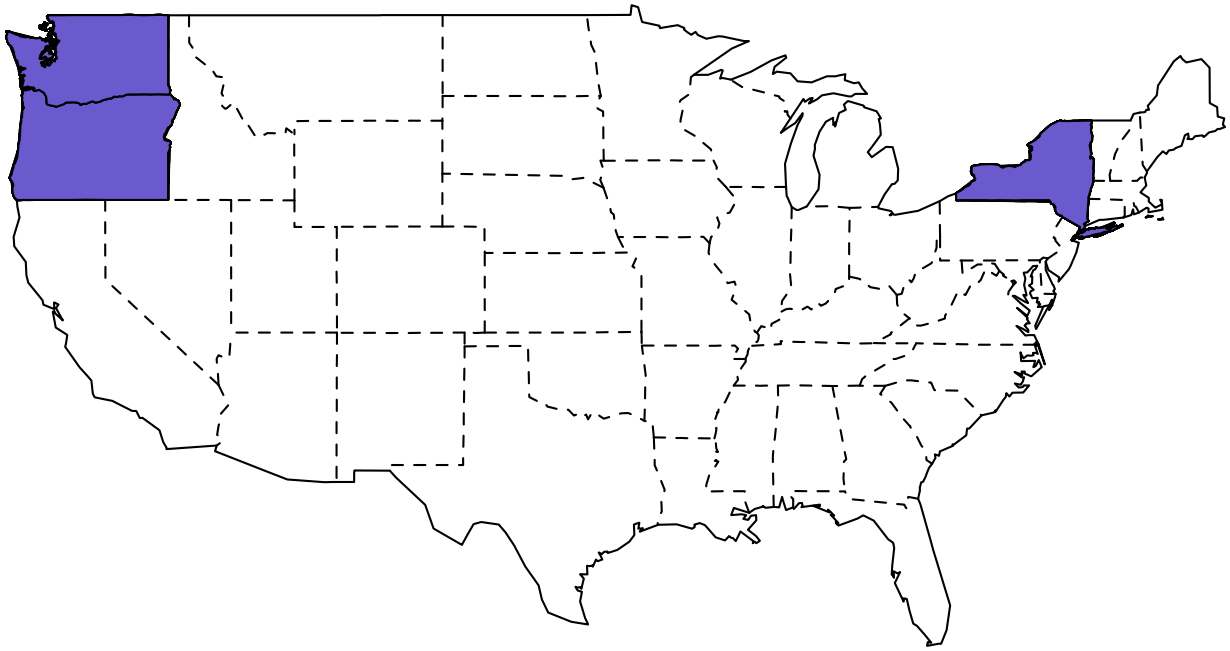

U.S. Map of Field Recoveries of Trissolcus japonicus
Adventive Populations
BC
AB
SK
MB
ON
QC
PE
NB
NS
ME
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
GA
FL
SC
NC
VA
PA
NY
VT
NH
MA
CT
RI
DE
HI
2014 Beltsville MD
BMSB detected / intercepted
Nuisance problems only
Agricultural and nuisance problems
Severe agricultural and nuisance problems reported
Field Recoveries of Trissolcus japonicus
2015
2016
Updated. 9/20/2017

Redistribution Efforts

- New York State - Cornell
- Washington State - WSU
- Oregon - OSU



Expanding the Range of the Parasitoid Wasp, Trissolcus japonicus, (Hymenoptera: Scelionidae) in NYS.

Photograph: Elijah J. Talamas, ARS USDA.

Photograph: **Christopher Hedstrom**
USDA-APHIS Quarantine Facility, Corvallis, Oregon

Debbie Breth

CCE-LOFT (Retired)

Peter Jentsch

CALS - HVRL

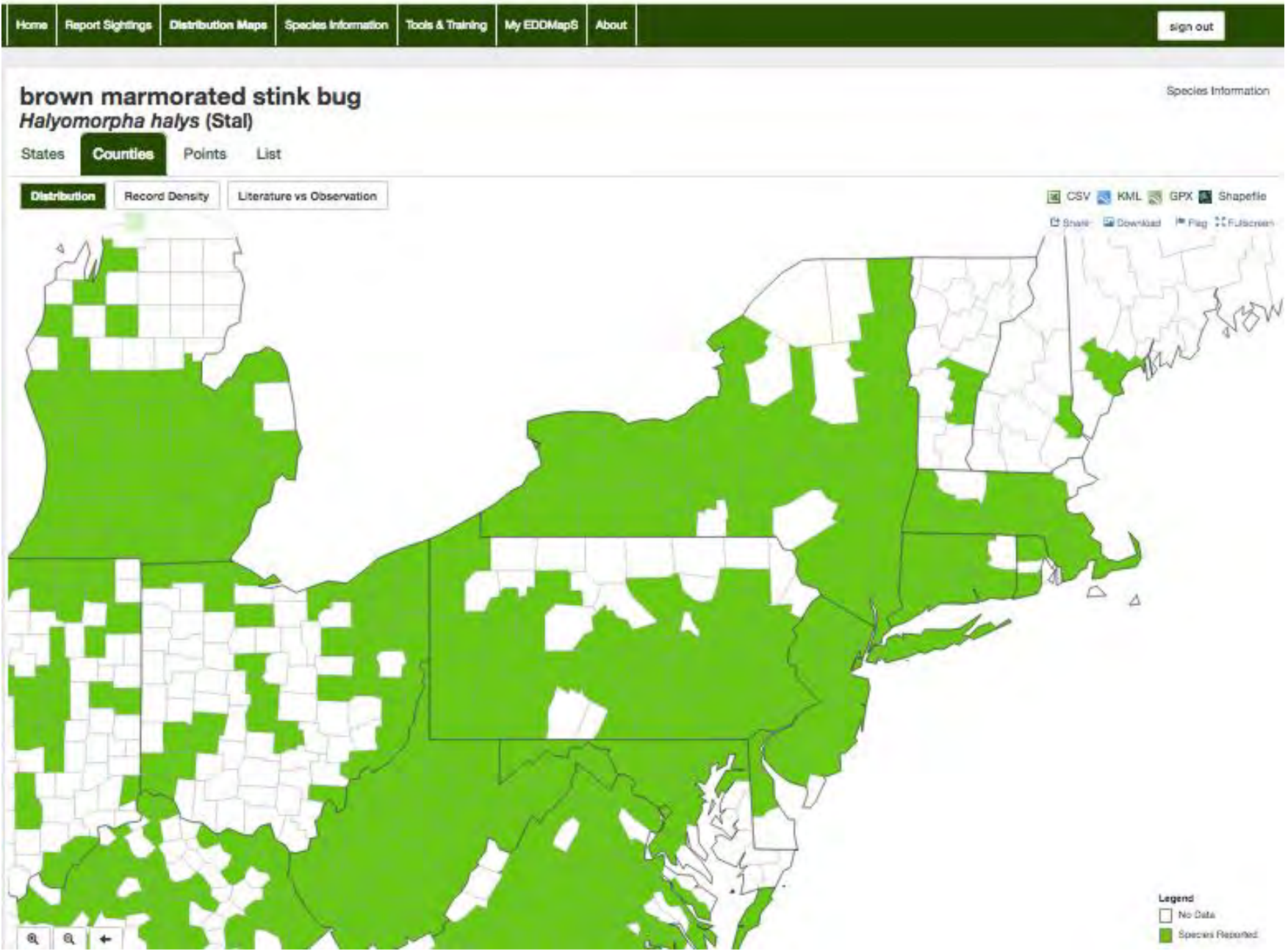
Art Agnello

CALS - NYSAES

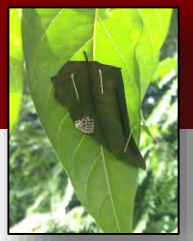
Tessa Grasswitz

CCE-LOFT

BMSB have been detected in all but 6 of 62 counties in NYS

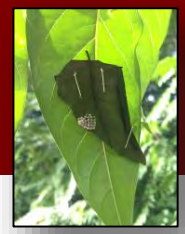


2017 Baseline Sentinel Egg Survey of Native and Invasive Parasitoids in New York State



- *T. japonicus* was first found in Marlboro, NY on 15th Aug. 2016
- In 2017 sentinel eggs were placed along the perimeter of 10 farms in Wayne, Orleans, Ontario, Columbia, Ulster, Dutchess counties using 5d intervals from July 28th – Oct 1st .
- Weekly recollection of eggs were held at 55%rH, 14-10 D/L, 25 ° C. Emergence of parasitoids were identified by E. Talamas.
- Adult parasitoids reared from sentinel egg masses given a 90% honey-water solution of 1μl droplets on petri dish cover for rearing.

2017 Baseline Sentinel Egg Survey of Native and Invasive Parasitoids in New York State



Parasitoid emergence frm Ulster and Orleans Counties in NY

Ulster Co. - Marlboro, NY emergence **:**

Trissolcus euschisti 23rd June (N=1)

Telenomus podisi 30th June (N=3)

Trissolcus japonicus 7th July (N=96).

Orleans Co. Kendall, NY emergence **:**

Telenomus podisi 30th June (N=3)

2017 Redistribution of *Trissolcus japonicus* in New York State

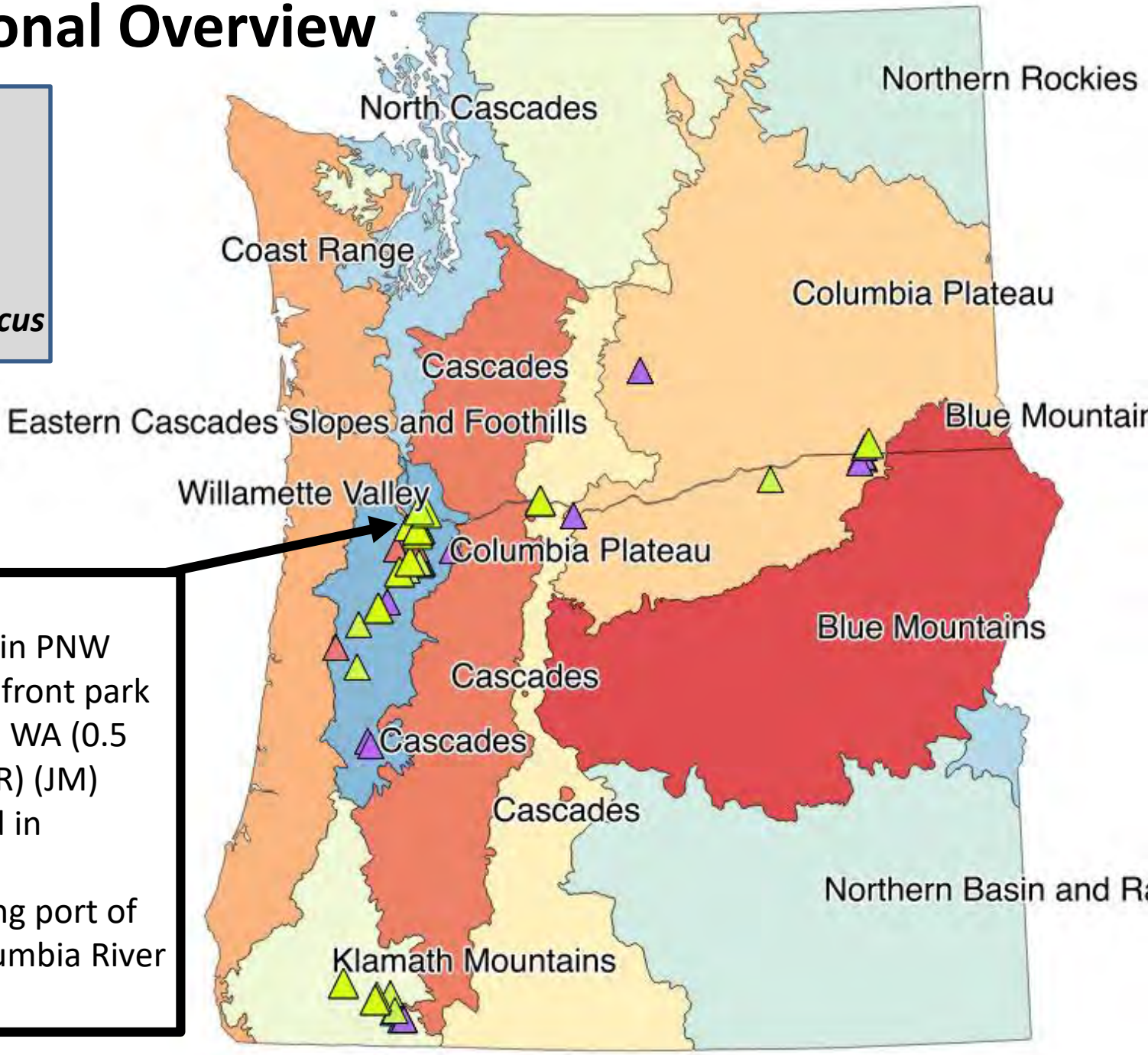
- Adventive *T. japonicus* Marlboro emergence on 7th July 2017 were used to develop lab colonies.
- 1st parasitized eggs sent to cooperators on 15th September.
- Samurai Wasp redistribution made to 32 sites, on 25 farms in 5 NY counties, employing 87 BMSB clusters placed in 7 host plant spp. along wooded perimeter of orchards until 1st Nov.
- Sentinel eggs placed in 2 redistribution sites in Orleans and Monroe Counties found paratized with *T. japonicus* on 15th Sept., confirming successful emergence and host finding.


Sentinel Egg Placement
Samurai Wasp Release Sites
Kingston
Toronto
Lake Ontario
Orleans Co.
Monroe Co.
New York
Columbia Co.
Ulster Co.
Dutchess Co.
Connecticut
Orange Co.
Pennsylvania
Long Island Sound

PNW Regional Overview

2017

Confirmed
Trissolcus japonicus



- Original Find in PNW 2015: A river front park in Vancouver, WA (0.5 miles from OR) (JM)
- 2016 – Found in Portland (CH)
- Major shipping port of entry via Columbia River

BMSB Parasitoid Survey and the first *Trissolcus japonicus* release in WA

Joshua Milnes and Elizabeth Beers

WSU Tree Fruit Research & Extension Center 1100 N. Western Ave.

Wenatchee, Washington

First release of Samurai wasp in Washington State

- **Release made in Yakima, WA, October 2017**
- **21 parasitized egg masses were placed in the field**

Parasitoids Released in Franklin Park Yakima

- Three sites were surveyed for parasitoids both native and exotic during the summer of 2017

Parasitized BMSB Egg Masses Placed on Host Trees

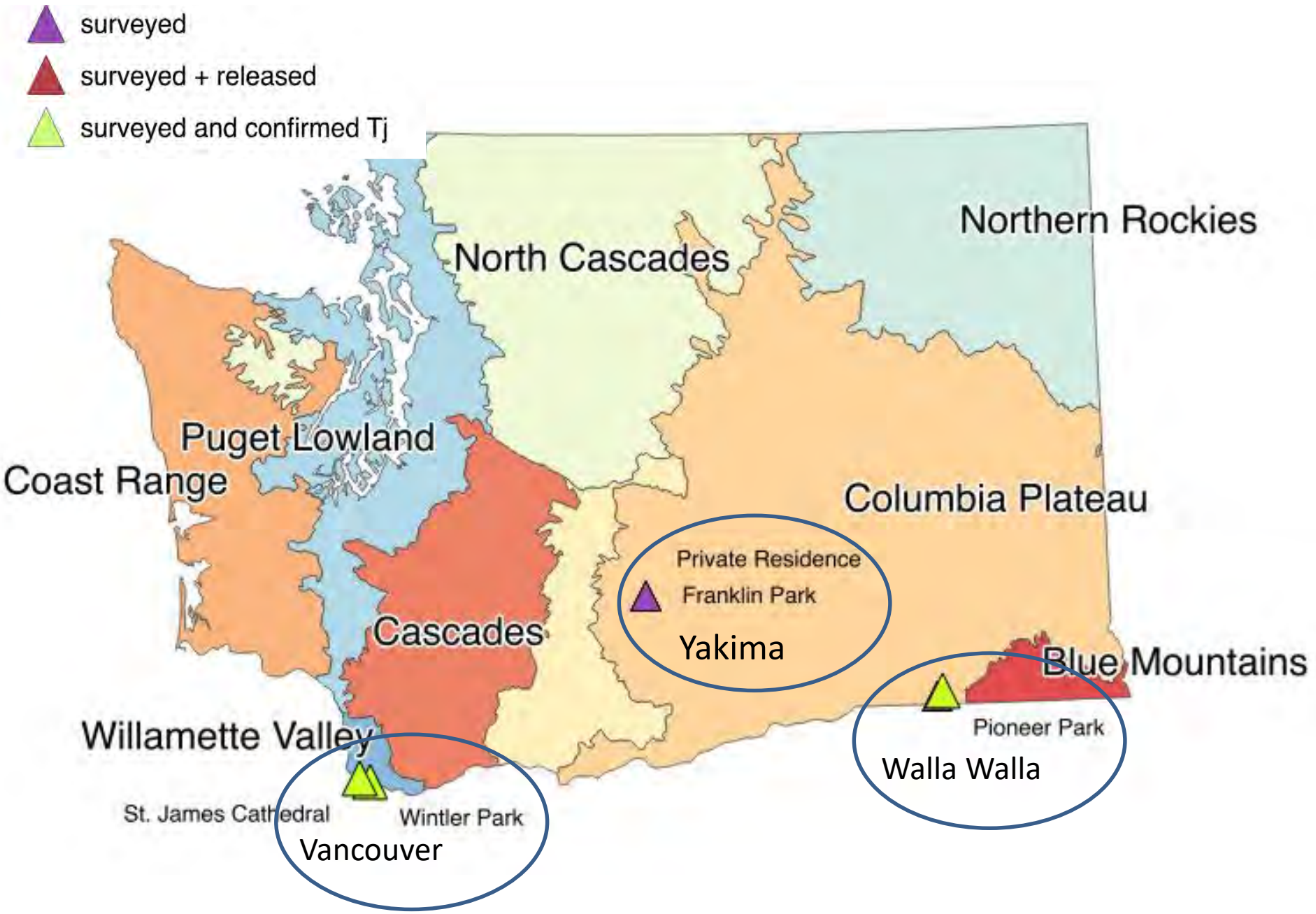
Site 1. Catalpa tree

Site 2. Sycamore maple tree

Site 3. Vine maple tree

- 7 BMSB SEMs were placed on three different hosts (21 BMSB egg masses total)
- Each SEM was parasitized by the samurai wasp before placement

WSU Parasitoid survey areas



Trissolcus japonicus discovery and redistribution in OR

Chris Hedstrom, David Lowenstein, Heather Andrews, Erica Rudolf, Vaughn Walton, Rick Hilton, Clive Kaiser, and Nik Wiman

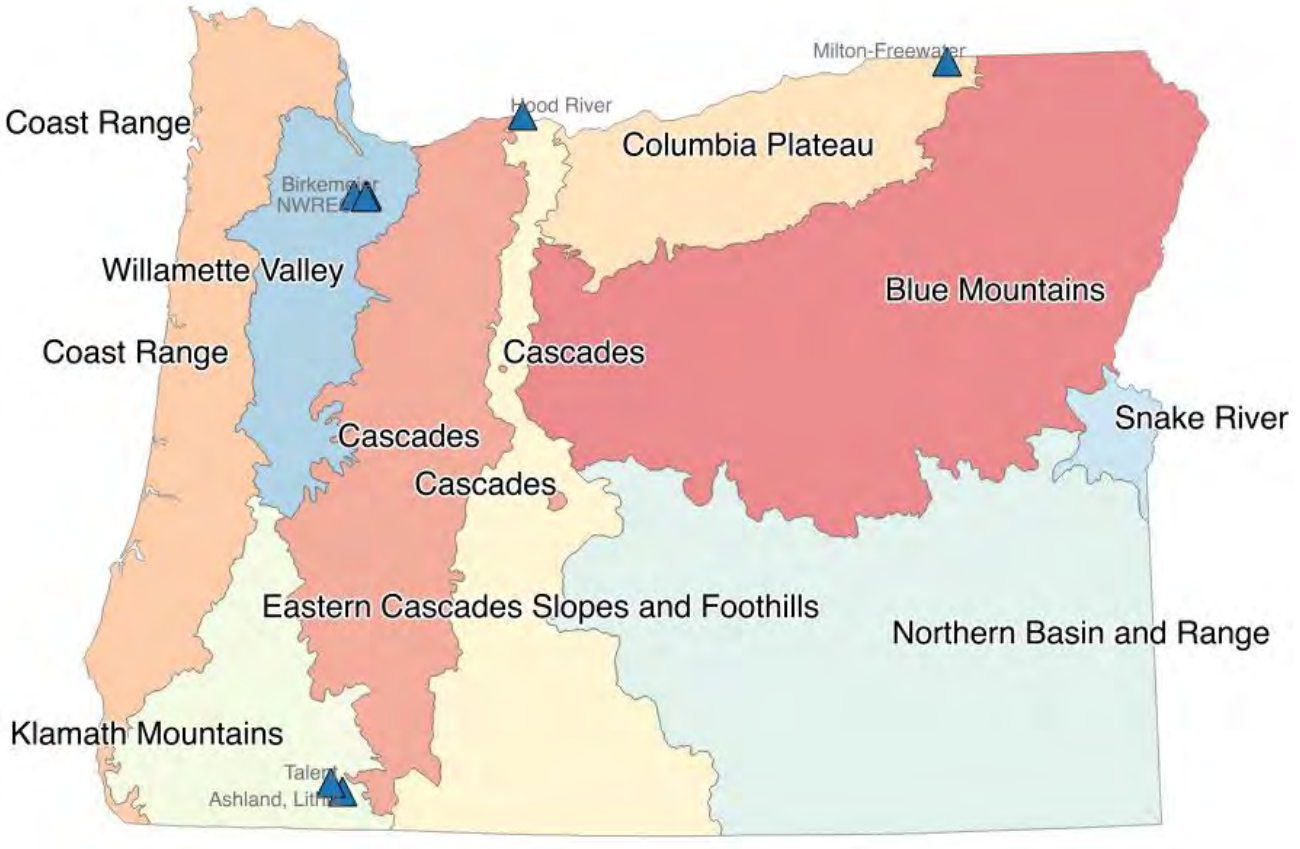
Oregon State University

Oregon history of *T.j.*

- Quarantine work with Oregon Department of Agriculture since 2011
- Surveys for BMSB parasitoids since 2012
  - Always low rates of successful parasitism
- BMSB damage to specialty crops since 2012
- Moved right to redistribution after initial detection beginning 2016
- Additional redistribution in 2017

2016 OR Redistribution efforts

- Released 50 females - urban
- 6 total sites
- Fall 2016
- High-priority orchard crop production areas
  - Pear
  - Cherry
  - Hazelnut
  - Apple



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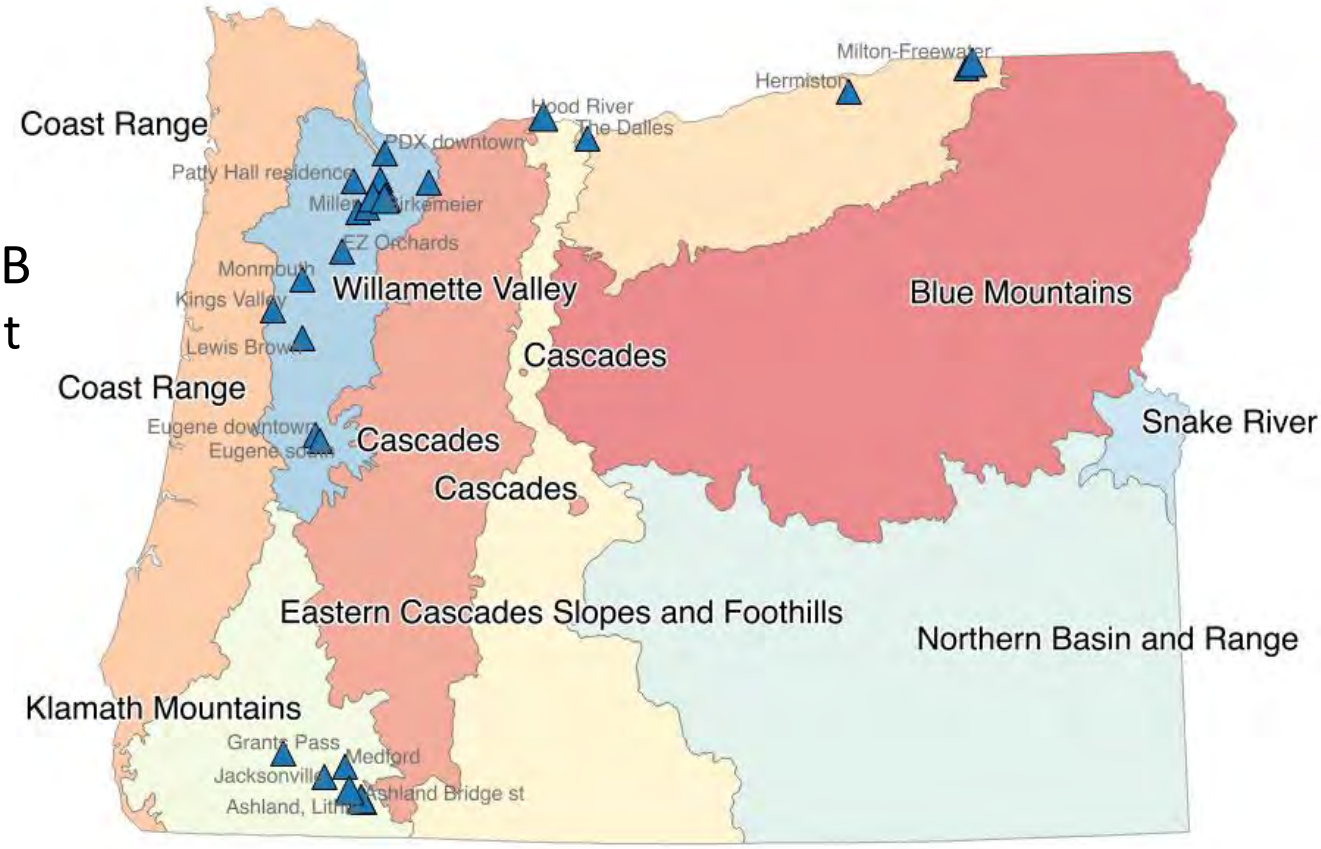
2017 OR Redistribution efforts

- Release in areas with host plants susceptible to BMSB
  - Hazelnut and fruit orchards
- 40 female wasps / site
- May – Aug. 2017
- 208 sentinel BMSB egg masses



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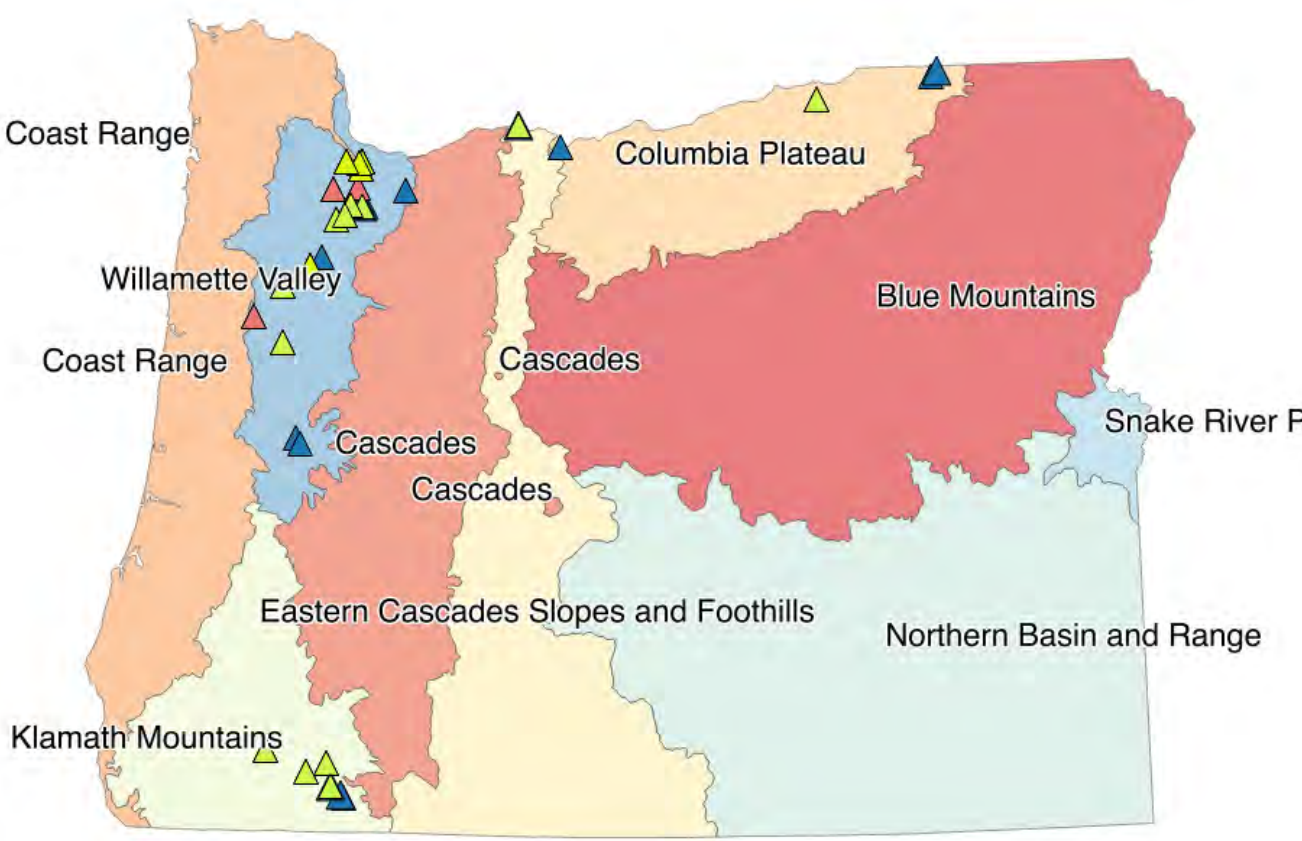
2017 OR Confirmations

- 24 total releases 2017
- 13 successful releases
- 2 new pops – wild egg masses: Salem + Beaverton
- 3 new pops - sentinel eggs - Portland
- Next year critical to examine **overwintering success and establishment of released populations**



N. Wiman, OSU Dept. Horticulture

Enlisting the public (or at least Master Gardeners) to find samurai wasp

Oregon State University | COLLEGE OF AGRICULTURAL SCIENCES »
Brown Marmorated Stink Bug

ABOUT ACADEMICS INTERNATIONAL RESEARCH OUR BEST OUTREACH AND EXTENSION UNITS

Report a parasitized BMSB egg mass or samurai wasp sighting

Visit here for information on identifying and reporting parasitized eggs.

Report a BMSB Sighting

In or around a home or structure | In an orchard,field, or crop | In a vehicle or other place

Brown marmorated stink bug (BMSB), *Halyomorpha halys*, is an important exotic pest insect in Oregon. It first arrived from Asia to the Portland area around

EDD MapS

Early Detection & Distribution Mapping System

OREGON STATE UNIVERSITY EXTENSION SERVICE

Samurai Wasp

Promising egg parasitoid for management of Brown Marmorated Stink Bug (BMSB)

EM 9164 · April 2017

What is the samurai wasp?

Trissolcus japonicus, known by the common name samurai wasp, is a parasitoid of BMSB (an invasive stink bug that damages fruits and vegetables in commercial agriculture and residential gardens) making it a potential candidate for managing BMSB.

Figure 1. Adult samurai wasp. Black line indicates actual length (1.5 mm).

Figure 2. A freshly laid BMSB egg mass typically has 28 eggs. Eggs are laid on the underside of leaves or branches of many types of trees, shrubs, and ornamental plants. They are easiest to detect on broadleaf plants.

Authors: David Lowenstein, Nik Wiman, Heather Andrews, Richard Hilton, Clive Kaiser, Jana Lee, Vaughn Walton, all of Oregon State University; and Chris Hedstrom, of Oregon Department of Agriculture.

Management of BMSB in US Specialty Crops

Stop BMSB.org

Acknowledgments:

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