

1.3.2. Determine the time lag and impact of BMSB as it colonizes new habitats



Funding



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Collaborating Institutions



Cornell University



UNIVERSITY OF MARYLAND



Virginia Tech



NC STATE UNIVERSITY



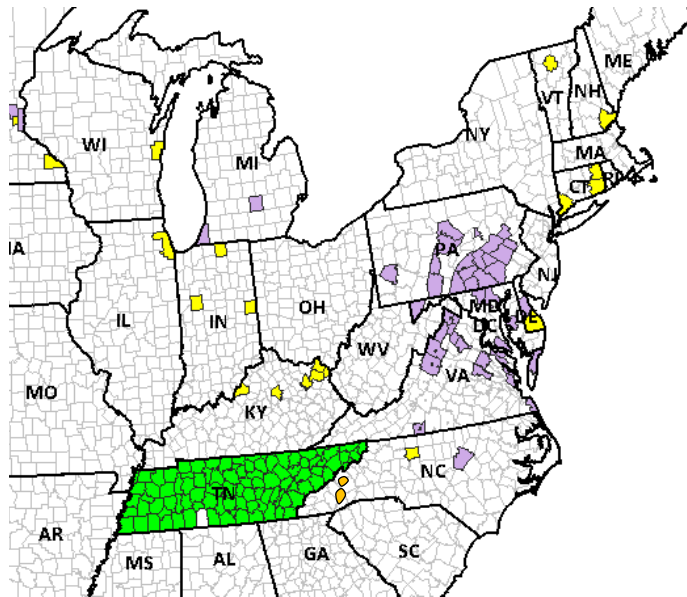
1.3.2. Determine the time lag and impact of BMSB as it colonizes new habitats

- In 2010, BMSB just becoming established in NY, southeastern VA, and NC.
- Potential for multiple generations in VA and NC will reduce lag time between establishment and crop injury.
 - 3 to 5-yr gap in WV and NJ
- Monitor displacement of native stink bugs by BMSB in specialty crops.

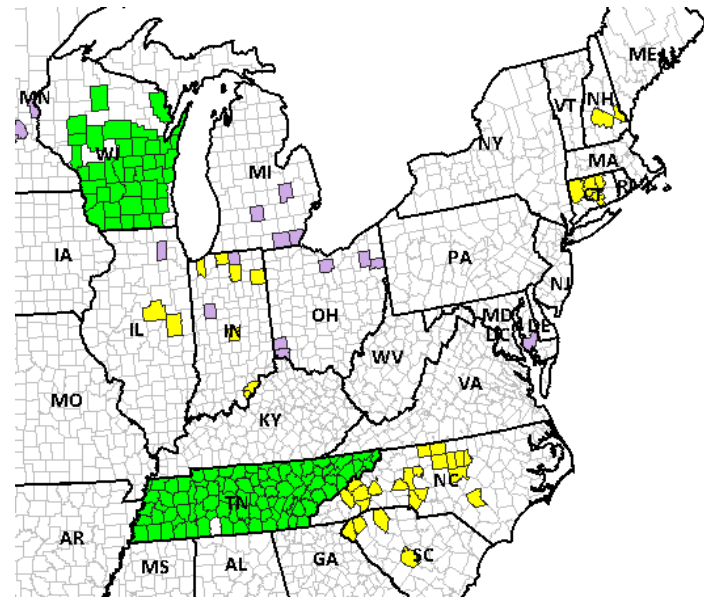
National Agriculture Pest Information System Survey

- Not found
- Found
- Established by survey

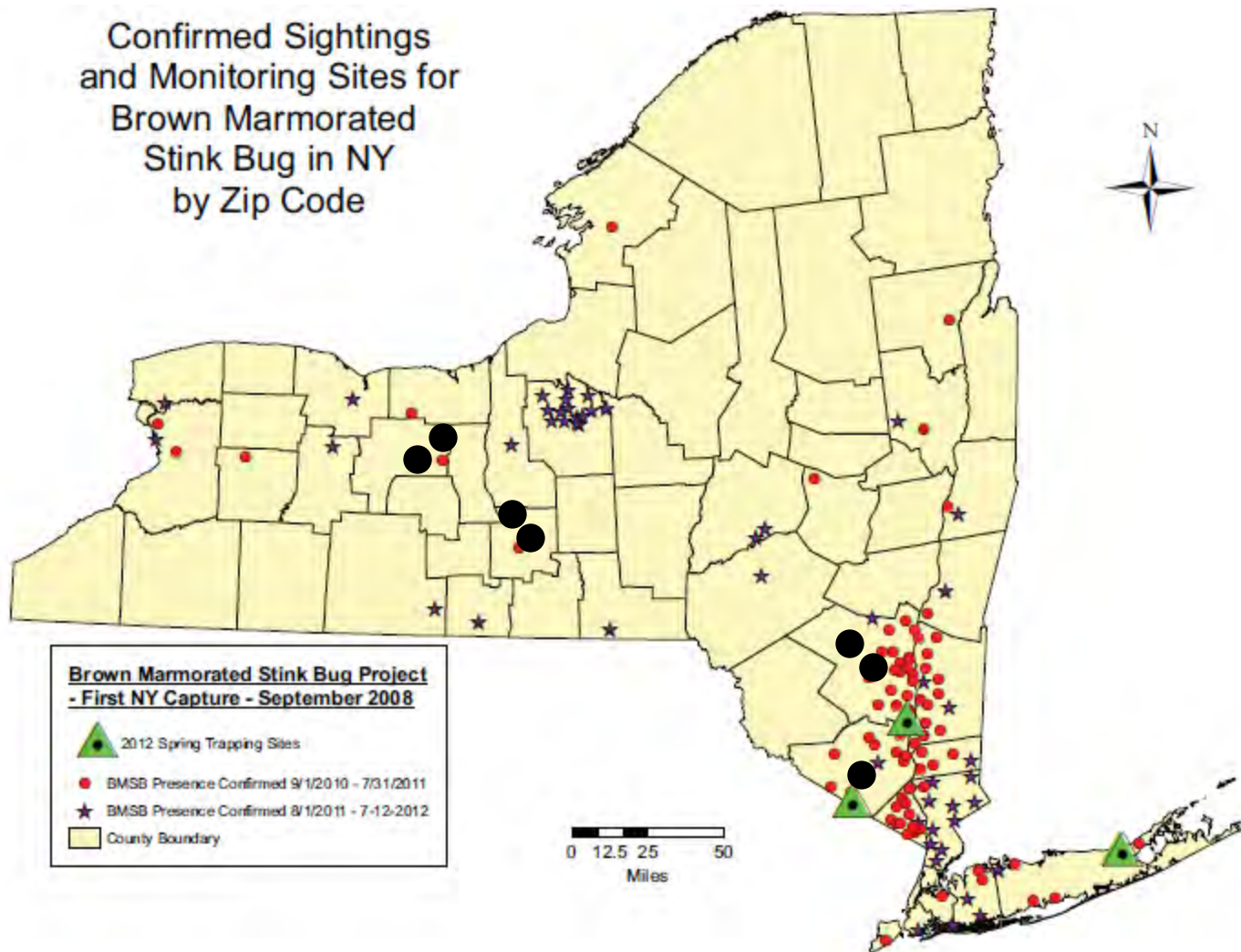
2010

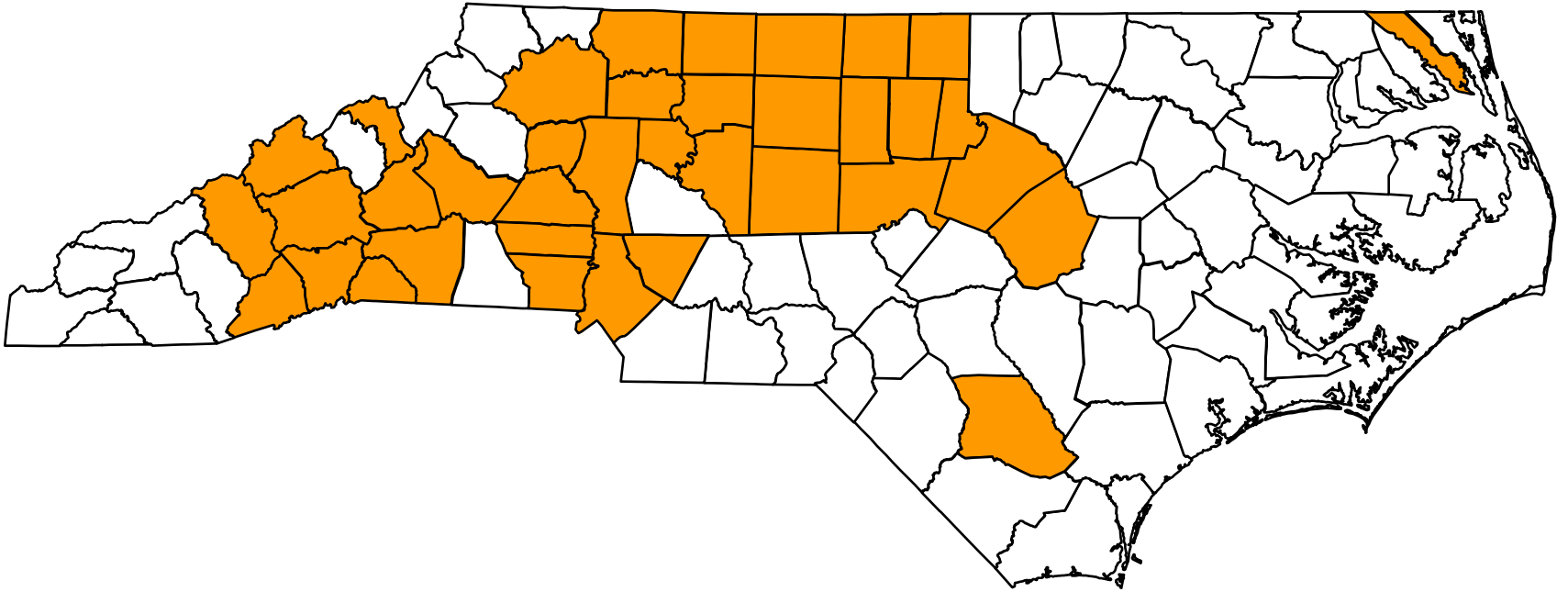


2011

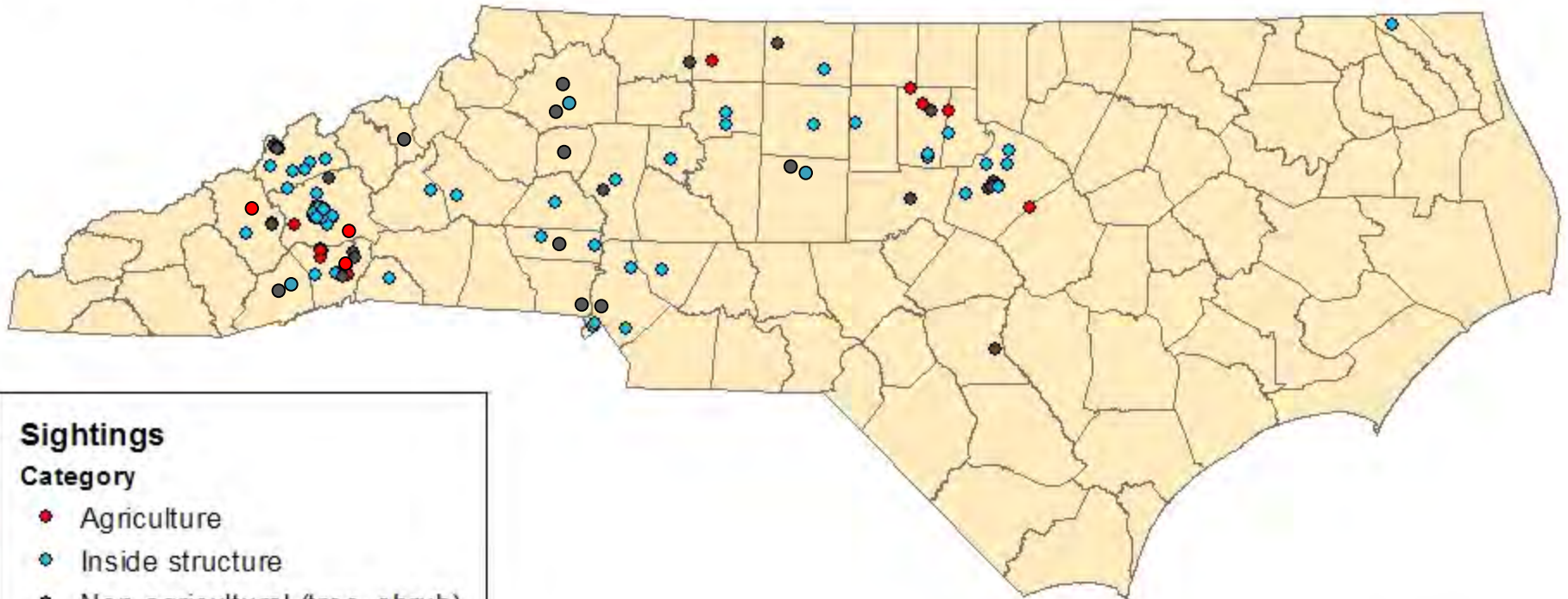


Confirmed Sightings and Monitoring Sites for Brown Marmorated Stink Bug in NY by Zip Code





Confirmed Brown Marmorated Stink Bug Sightings in North Carolina



Sightings

Category

- Agriculture
- Inside structure
- Non-agricultural (tree, shrub)

brown marmorated stink bug (*Halyomorpha halys*)

July 10, 2012 - July 17, 2012

Legend

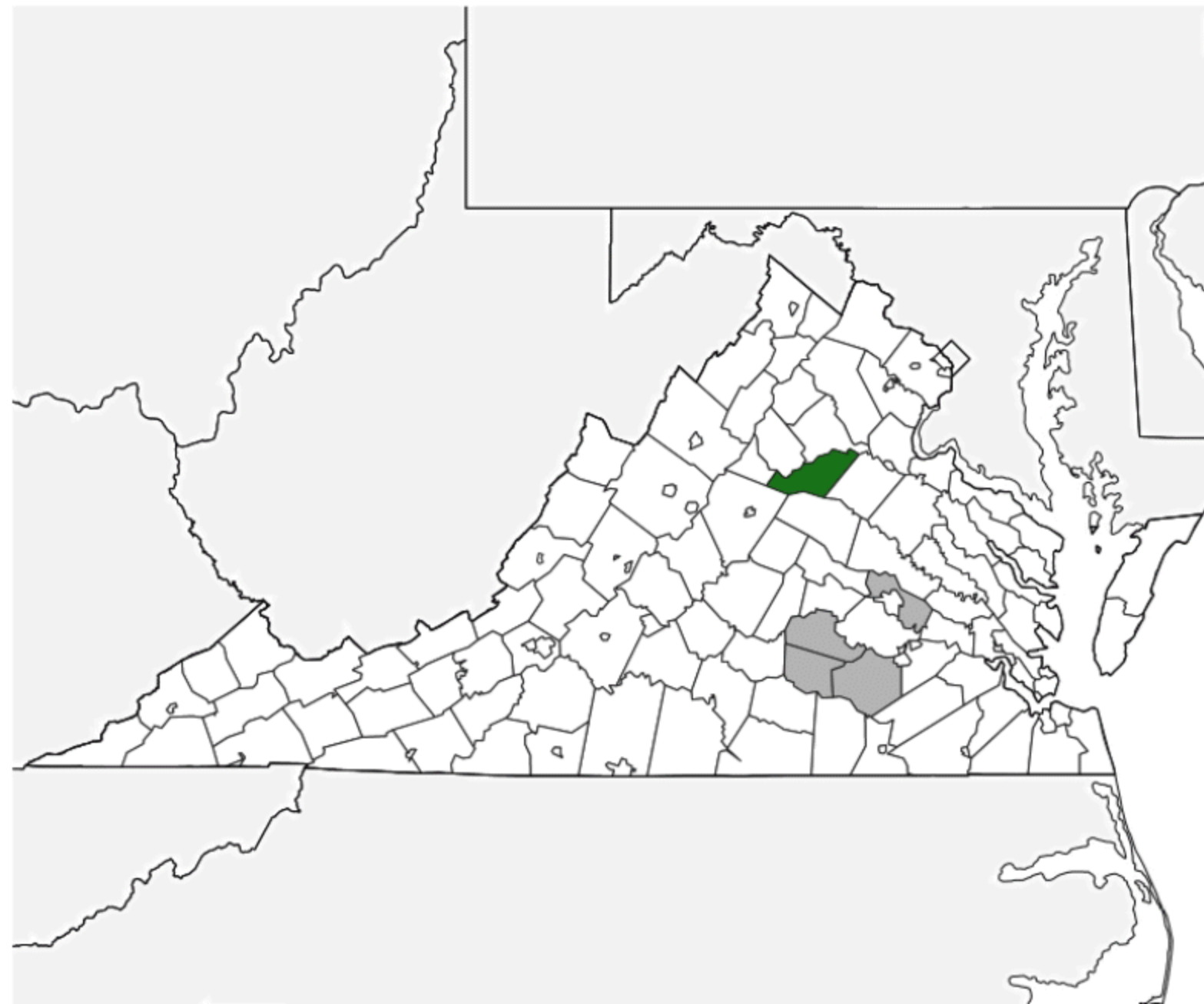
- Low (1 - 4)
- Medium (5 - 12)
- High (> 13)
- Not Found

Virginia Cooperative Extension

Virginia Tech

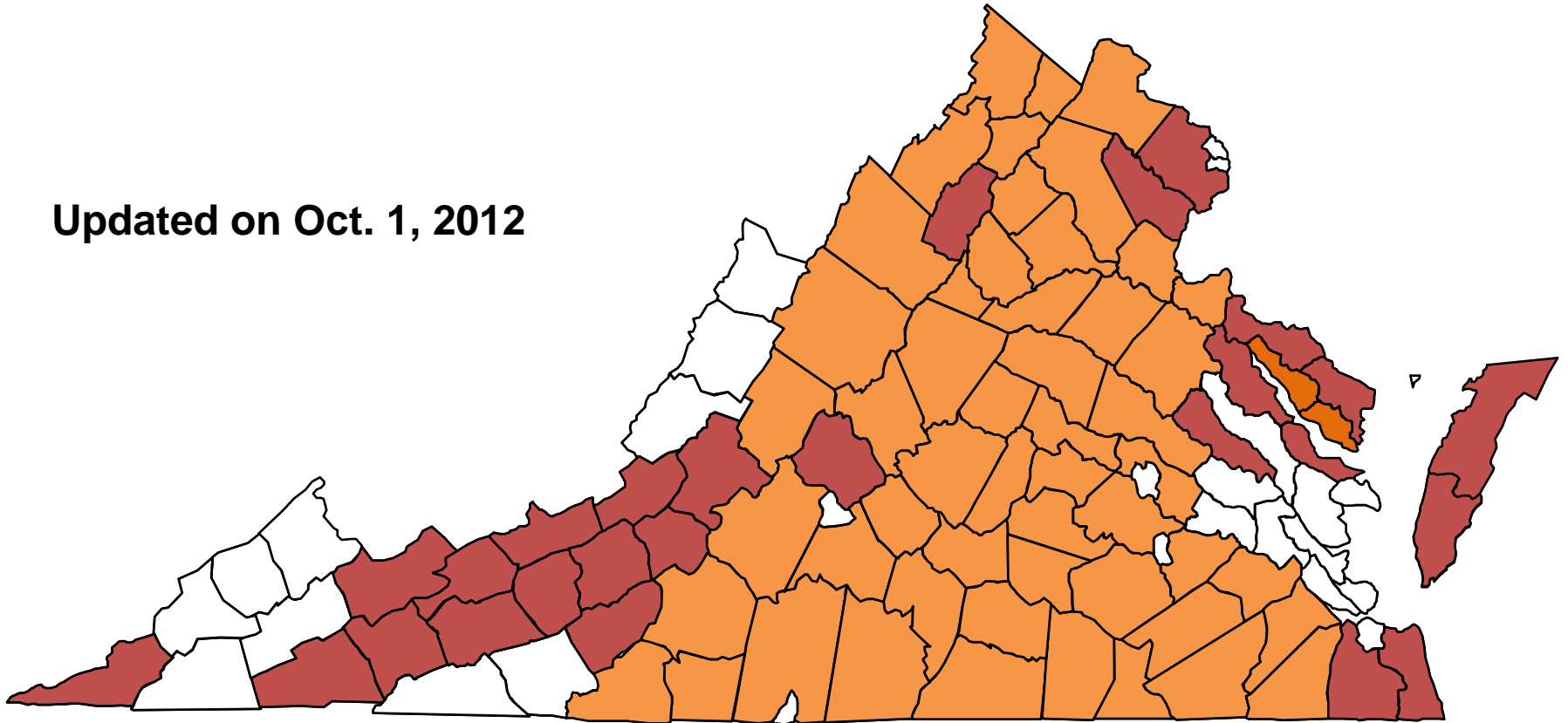
Center for Invasive Species & Ecosystem Health

Southern IPM Center



BMSB Distribution in VIRGINIA

Updated on Oct. 1, 2012

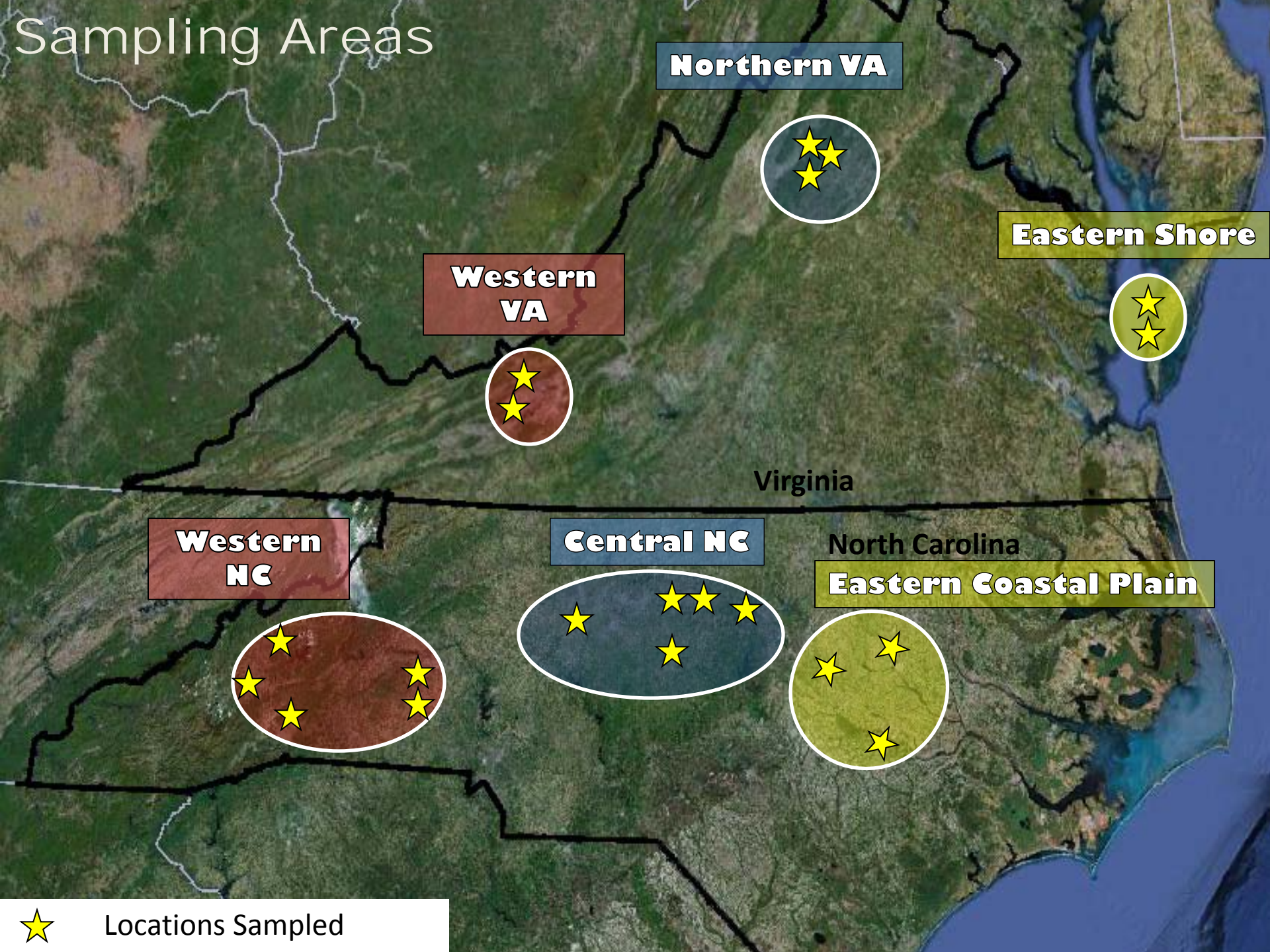


- BMSB detected in soybeans in 44 of the 56 major soybean Cos., northernmost to the NC border
 - In soybean in 3 coastal plain Cos.
 - In one cotton field (nymph)
- BMSB found in crops other than soybean

Lag Time Between First Detections and Damage to Crops

State	Year first detected	Year first observed in crops	Year economic problem in crop
WV	2005	2008	2009 2010 (disaster year)
NY	2007	2011 (pepper)	2012 (apple)
SE VA SW VA	2006 2004	2012 2009 (vegies)	— 2010
NC (w) NC (E)	2009 2011	2011(vegies, apple) —	— —

Sampling Areas



Northern VA

Eastern Shore

Western VA

Virginia

Western NC

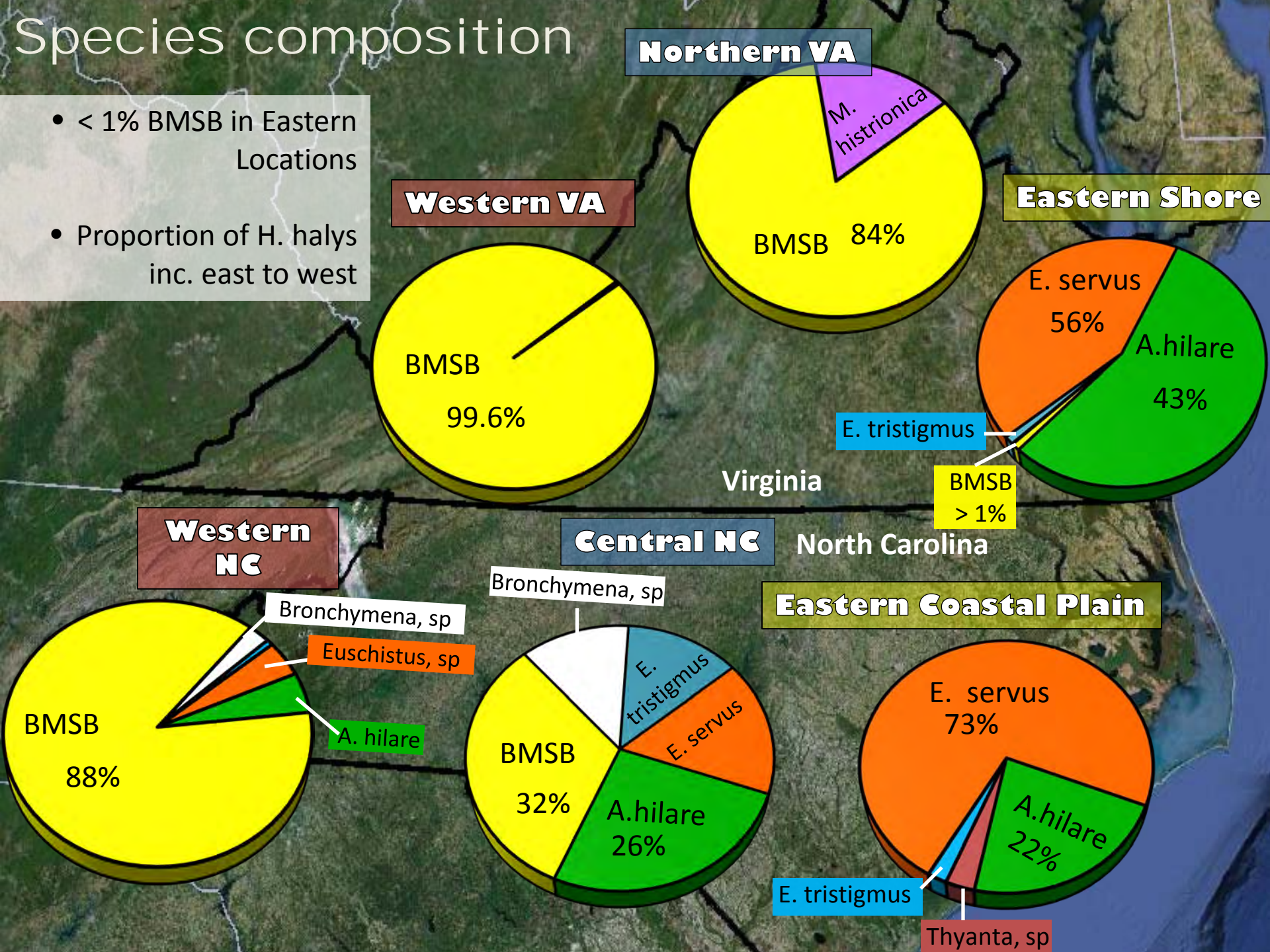
Central NC

North Carolina
Eastern Coastal Plain

★ Locations Sampled

Species composition

- < 1% BMSB in Eastern Locations
- Proportion of *H. halys* inc. east to west



Percentage of BMSB on Wild Hosts - VA

2011 (n=4854)		2012 (n=2433)	
Plant	% of total	Plant	% of total
Tree of Heaven	31.2	Paulownia	13.6
Paulownia	19.3	Magnolia	12.3
Mimosa	13.9	Jimson weed	10.7
Catalpa	5.1	Fig tree	13.6
Cherry	4.5	Lilac	8.6
Magnolia	4.0	Catalpa	6.9
Crape Myrtle	3.4	Mulberry	5.4
Mulberry	3.1	Redbud	4.2
Pokeweed	2.4	Bradford pear	3.3
Black Walnut	2.1	Tree of Heaven	2.2
Other (15)	11.1	Other (19)	19.2

Percentage of BMSB on Wild Hosts - NC

2011 (n=234)		2012 (n=1,409)	
Plant	% of total	Plant	% of total
Tree of Heaven	33.8	Tree of Heaven	19.3
<i>Paulownia</i>	26.5	Yellowwood	16.3
<i>Catalpa</i>	25.2	Catalpa	14.5
Locust	3.4	Paulownia	11.9
Dogwood	3.0	Cherry	11.7
Wild grape	2.6	Locust	8.9
Cherry	2.1	Black walnut	3.6
Black Walnut	1.3	Wild Grape	3.3
Red Maple	0.9	Sycamore	3.0
		Buckeye	1.6
Other (3)	1.2	Other (20)	5.8

Common Host Plants – NC 2012

Plant	BMSB (93)	BSB (50)	GSB (72)	RSB (93)	Other (100)
Tree of Heaven	209	1	9	1	2
Yellowwood	203	0	6	0	0
Catalpa	182	1	3	2	2
Cherry	155	0	3	12	0
Paulownia	97	0	12	4	0
Locust	69	0	0	3	0
Black walnut	48	1	3	4	2
Wild Grape	46	0	12	12	0
Sycamore	15	0	1	2	0
Buckeye	13	0	0	0	0
All other (21)	80	4	20	3	0

Summary

- As BMSB spreads to different regions, lag time between initial detection and development into agricultural problem appears to be consistent.
- Identification of wild hosts important in population dynamics of BMSB.
- Baseline knowledge of Pentatomid diversity in natural habitats (with and without BMSB) of frontier areas.