



Status of Brown Marmorated Stink Bug in NC and VA

Matt Bickerton

Mark Abney

Jim Walgenbach

Tom Kuhar

Katherine Kamminga

Host Use in USA:

- Bernon (2004) documented > 60 wild host plants in PA
- Nielsen & Hamilton (2009) studied population dynamics in ornamentals and found that densities in PA were highest in
 - Early season: *Paulownia tomentosa*
 - Mid- late season: *Viburnum*, spp., *Fraxinum americanum*; *Paulownia tomentosa*
 - Late season: *Pyrus*, spp. (Pear), *Paulownia tomentosa*

Objectives:

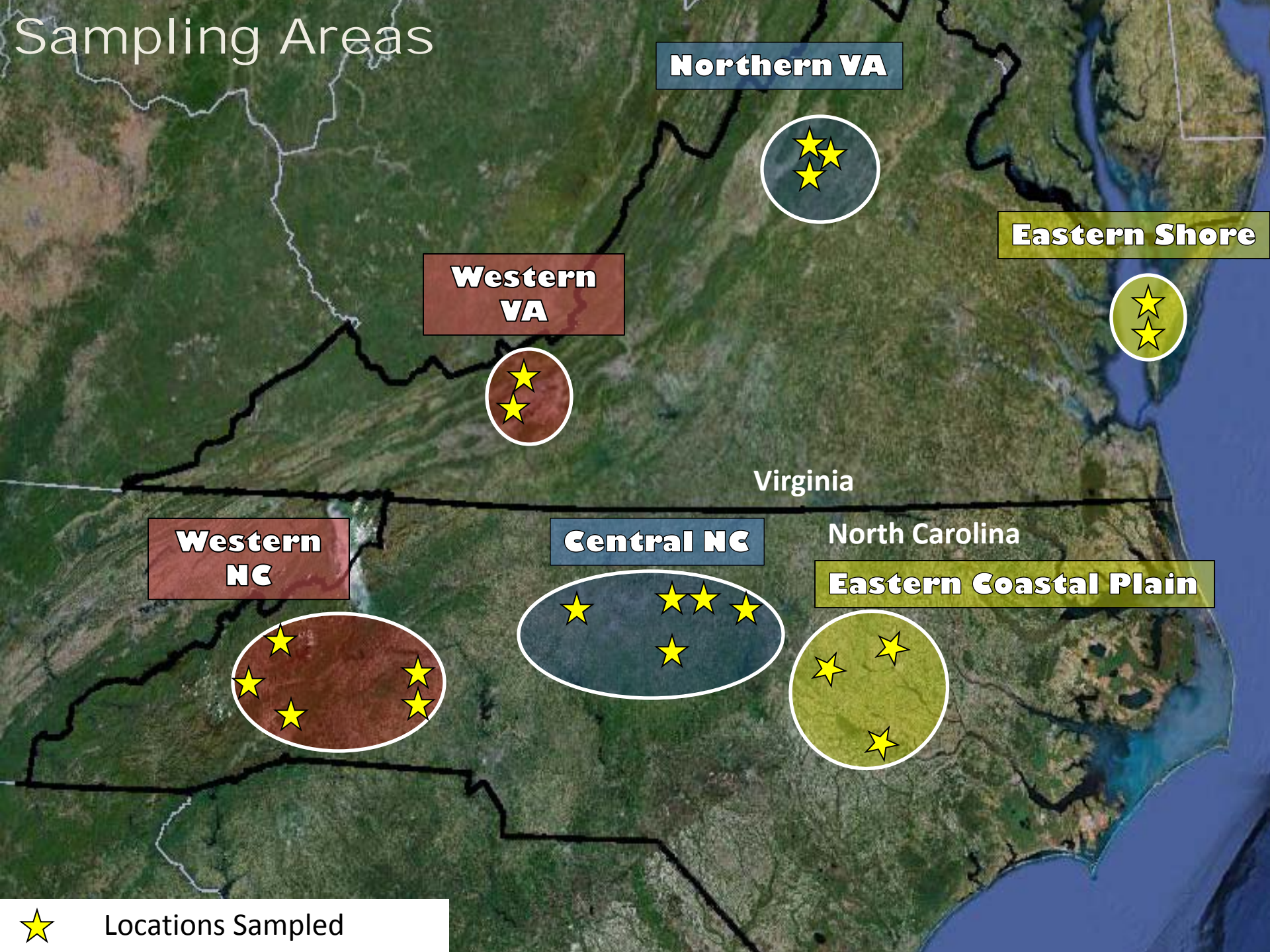
Determine the role of wild plants on population biology of BMSB

1. Determine important host plants of BMSB across geographic regions in its southern range
1. Determine effect of BMSB on native stink bug spp
2. Determine sequence of host use in Wild Plants
3. Determine whether wild plants augment or reduce population growth in agricultural habitats

Methods:

- 3 min timed samples performed every 2 wk
 - 5 reps (crop sampling)
 - Variable # reps for wild hosts
- Visual
- Beat sheet
 - 3 whacks / branch
- Sweep net
 - 20 sweeps/ sample x 30

Sampling Areas



Northern VA

Eastern Shore

Western VA

Virginia

Western NC

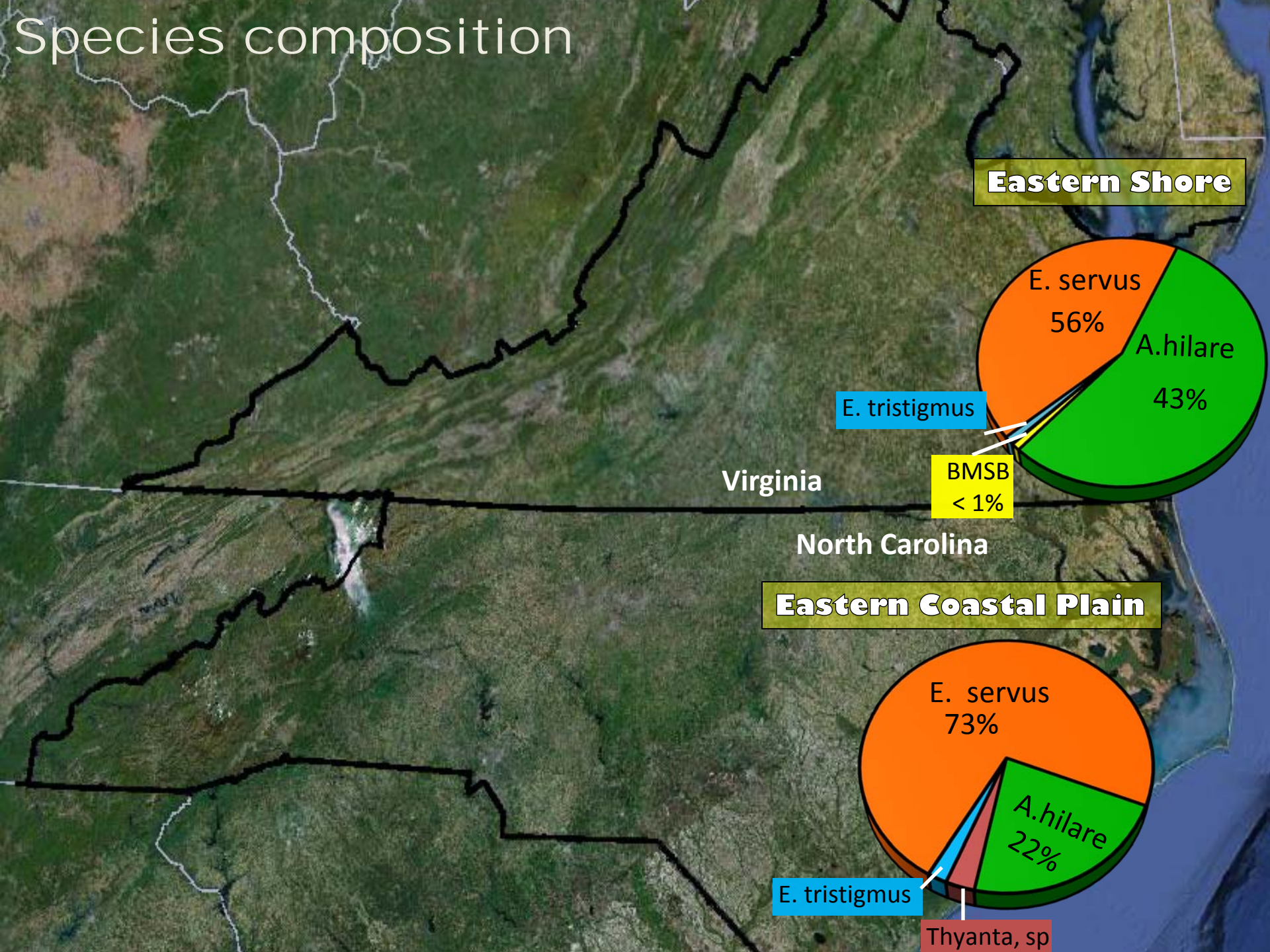
Central NC

North Carolina

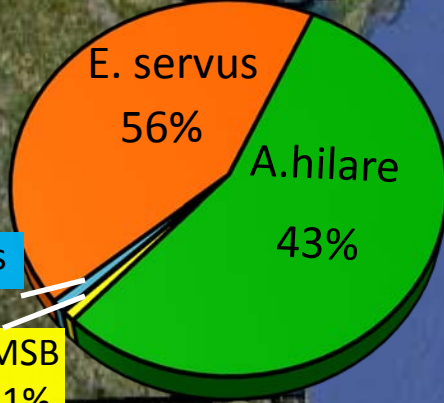
Eastern Coastal Plain

★ Locations Sampled

Species composition



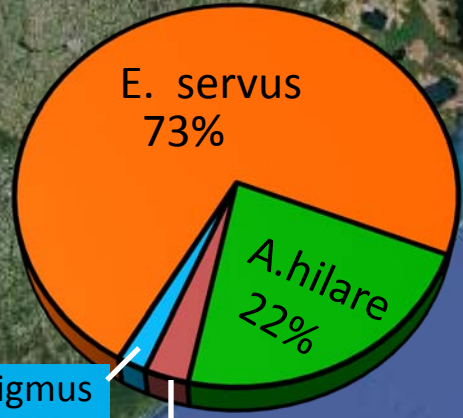
Eastern Shore



Virginia

North Carolina

Eastern Coastal Plain

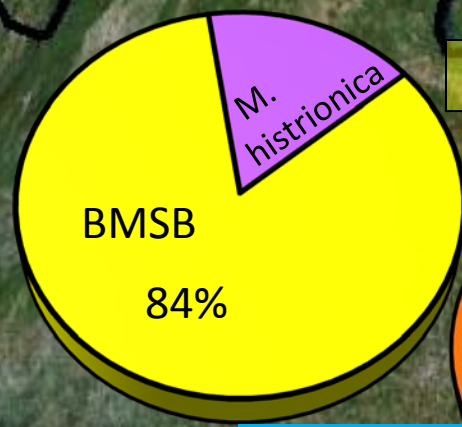


E. tristigmus

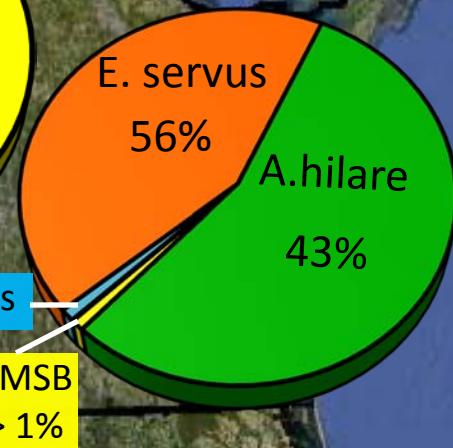
Thyanta, sp

Species composition

Northern VA

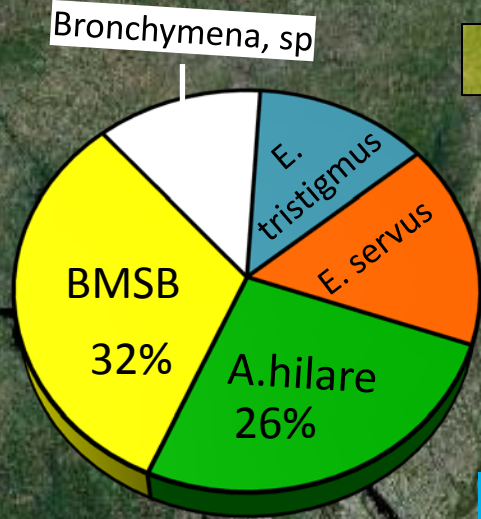


Eastern Shore



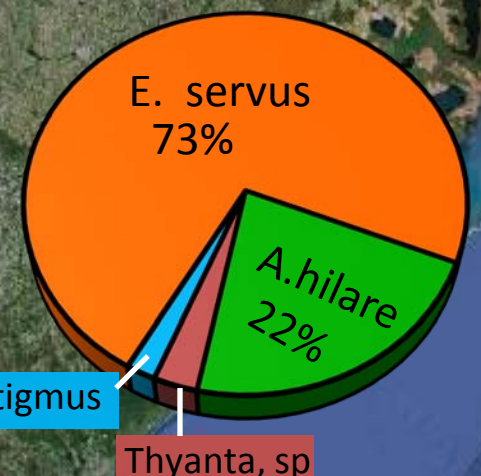
Virginia

Central NC

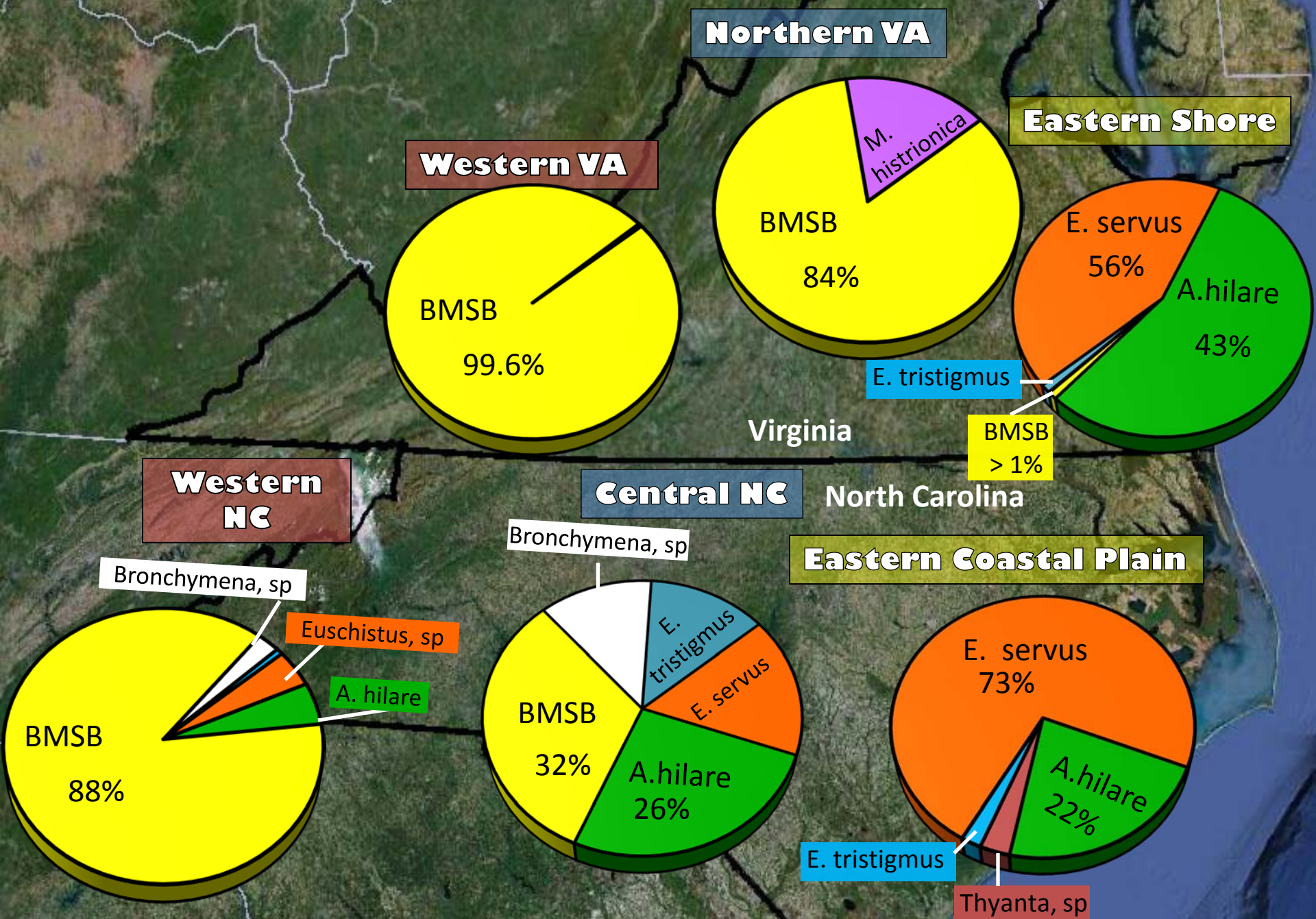


North Carolina

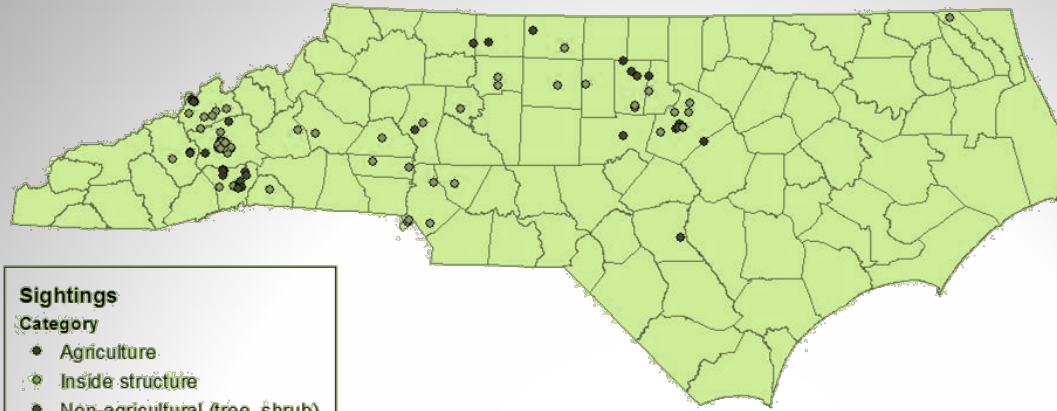
Eastern Coastal Plain



Species composition

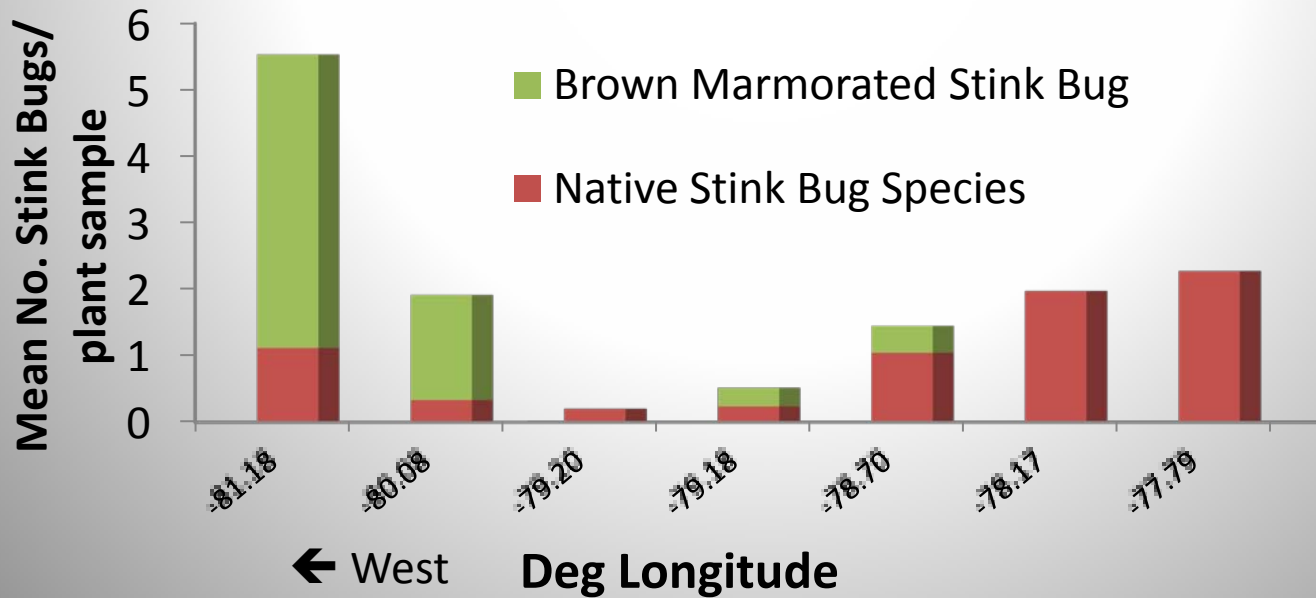


Confirmed "Sightings"



Ginger Kowal 5/10/2012

Population Trends in NC



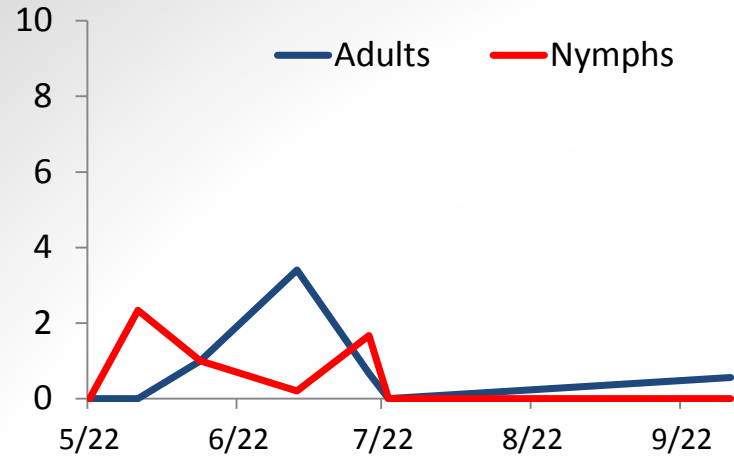
Wild and Cultivated Host Plants

Location	# Wild Plant Species w/ BMSB		# Crop Species w/ BMSB
Virginia	2011	2012	2011 & 2012
East	-	0	1
North	-	7	9
West	45	46	29
North Carolina	2011	2012	2011 & 2012
East	0	0	0
Central	6	19	4
West	11	28	8

Major Host Plants in NC and VA (Early to Mid- Season)

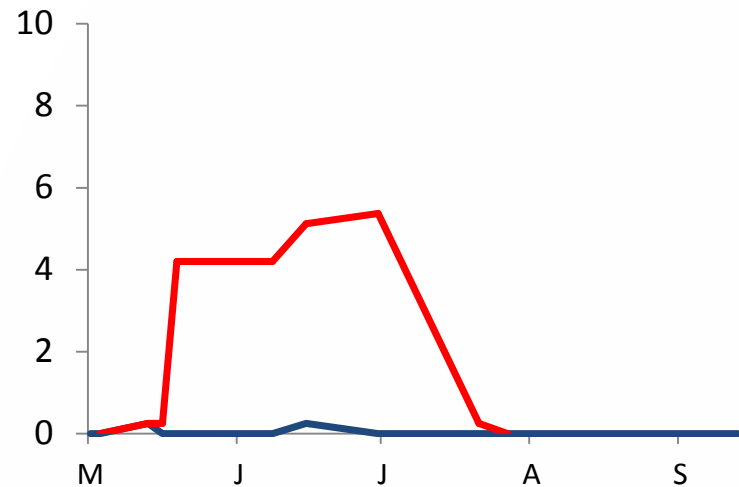
Sassafras:

Sassafras albidum Nutt



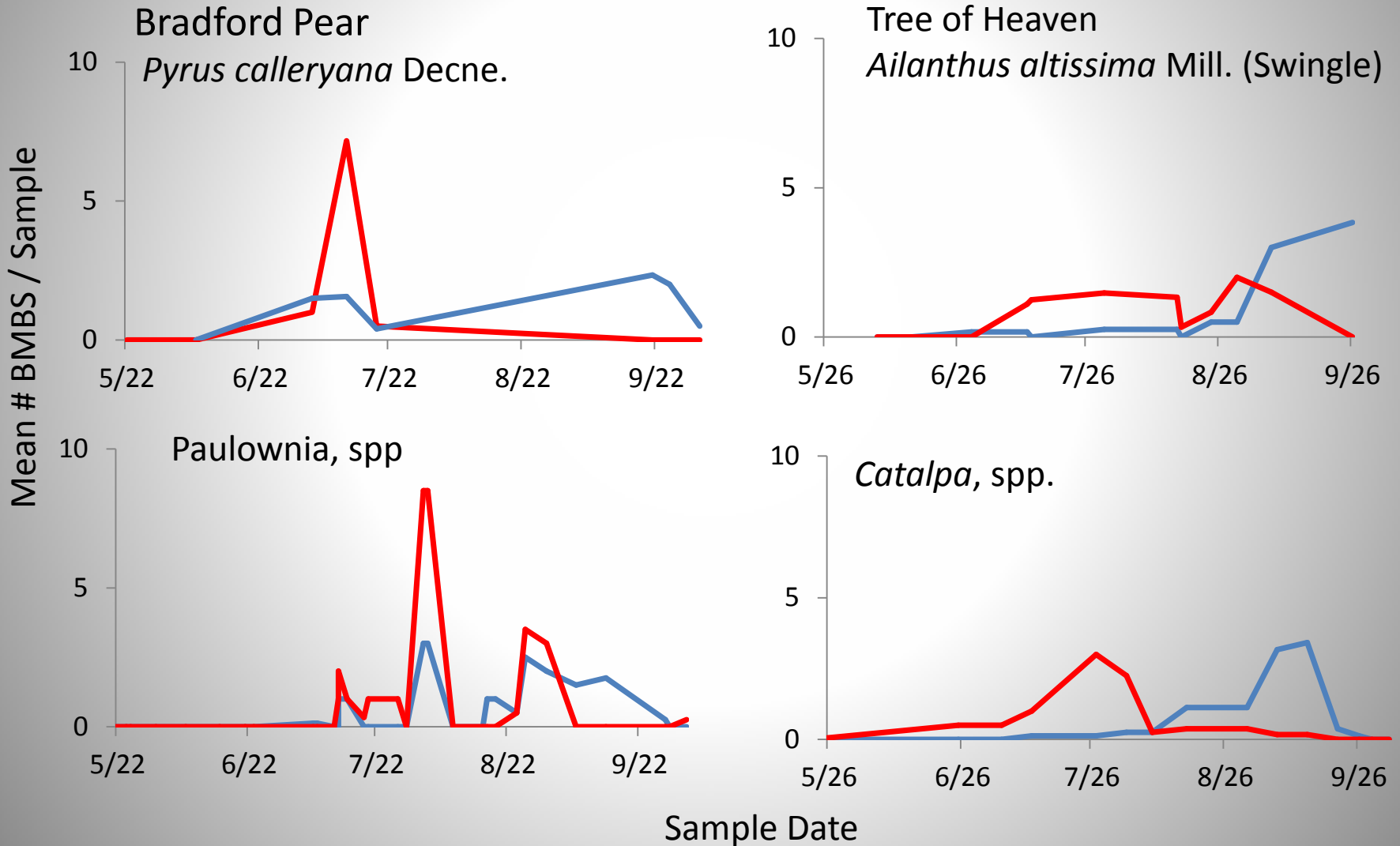
Black Cherry:

Prunus serotina Ehrh.



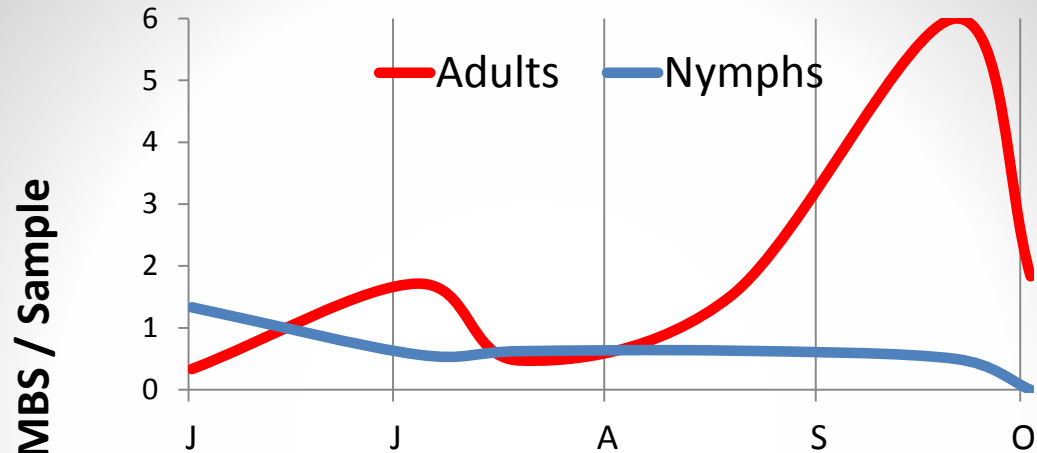
Major Host Plants in NC and VA (Mid- to Late Season)

— Adults — Nymphs

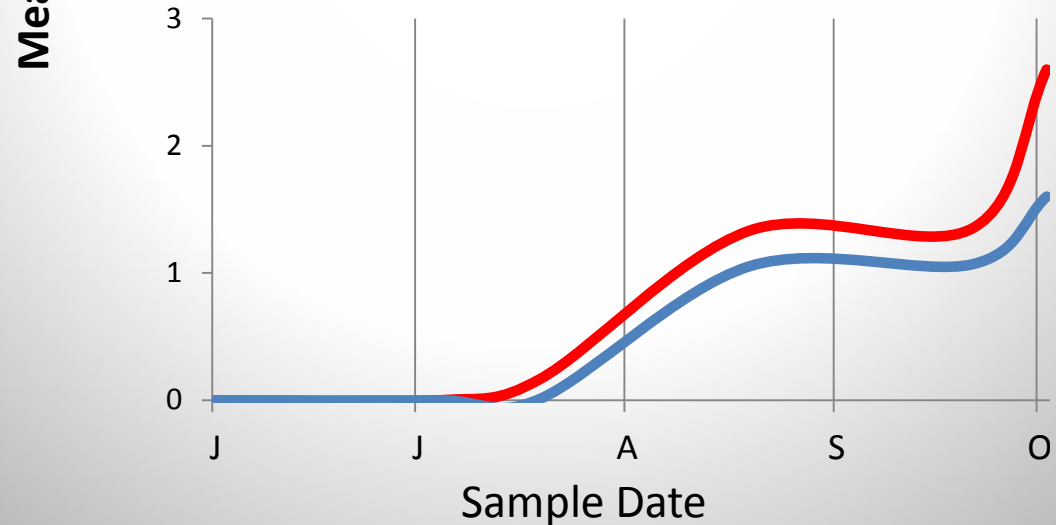


Population Dynamics in Agriculture

A) Wild Tree Border



B) Soybeans



Similar Host Plants Among Sites in VA and NC

Plant Species	# of sites with BMSB -ALL YEARS-	% of sites with BMSB
Bell Pepper	3	60%
Field Corn	3	60%
Soybean	4	80%
Redbud	3	60%
Wild Grape	3	60%
Sassafras	3	60%
Red Maple	3	60%
Cherry (Prunus Spp)	3	60%
Paulownia (Princess tree)	3	60%
Ailanthus (Tree of Heaven)	3	60%
Catalpa	4	80%

Conclusions

- Wild hosts are an important part of BMSB's life cycle.
- BMSB present in > 29 cultivated plants in Virginia and 11 in North Carolina.
- Presence of wild host plants around agricultural areas may contribute greatly to BMSB densities in crops at certain periods.
- Catalpa and soybean were the most common host plants associated with BMSB in VA and NC.

Conclusions (cont.)

- Similar host species used by BMSB in the Southeast compared with Northeast (e.g. *Paulownia*, *Pyrus*, spp.) but at slightly different times.
- BMSB has a major impact on pentatomid species composition, increasing from < 1 % in the east to up to 99% of all species captured in the western areas.

Acknowledgements

- Mark Abney
- Jim Walgenbach
- Tom Kuhar
- Katherine Kamminga
- Steve Schoof
- Ginger Kowal
- Amanda Bakken
- Rocio Davila
- Melissa Somody
- James Trammel
- Justin Jones



Funding:

USDA NIFA /SCRI

Southern Region IPM

North Carolina Dept. of Agriculture

References

- Bernon et al. Proceedings, XV USDA Interagency Research Forum on Gypsy Moth and Other Invasive Species 2004: 12.
- Hoebeke & Carter. 2003. Proc. Entomol. Soc. Wash. 105.
- Panizzi. 1997. Annu. Rev. Entomol. 42.
- Holtz, T., and K. Kamminga. 2010. USDA- APHIS- PPQ.
- Nielsen & Hamilton. 2009. Annals Entomol. Soc. Am. 102.

