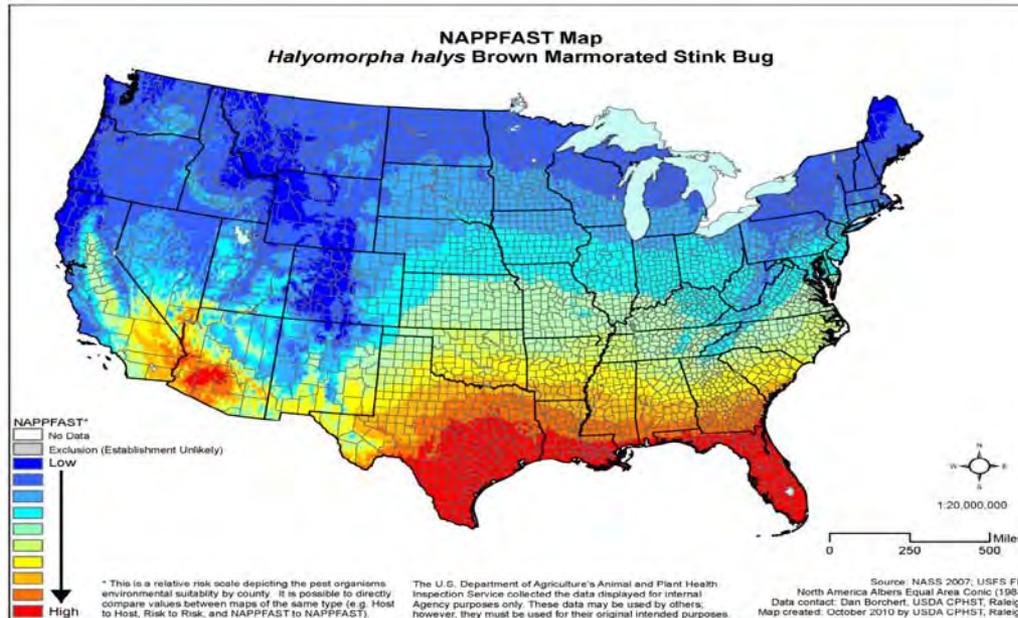


# BMSB Voltinism: NY to NC



Holtz and Kamminga (2010).  
Qualitative analysis of the pest risk  
potential of the brown marmorated  
stink bug (BMSB), *Halyomorpha*  
*halys* (Stål), in the United States

**Brent Short<sup>1</sup>, Mark Abney<sup>2</sup>, Art Agnello<sup>3</sup>, Matt Bickerton<sup>2</sup>, Peter Jentsch<sup>4</sup>, Greg Krawczyk<sup>5</sup>, John Tooker<sup>6</sup>, Jim Walgenbach<sup>7</sup>, and Tracy Leskey<sup>1</sup>**

<sup>1</sup>USDA-ARS AFRS, Kearnyesville, WV 25430

<sup>3</sup>Cornell University, Geneva, NY 14456

<sup>5</sup>Penn State University, Biglerville, PA 17307

<sup>7</sup>NC State University, Mills River, NC 28759

<sup>2</sup>NC State University, Raleigh, NC 27695

<sup>4</sup>Cornell University, Highland, NY 12528

<sup>6</sup>Penn State University, University Park, PA 16802



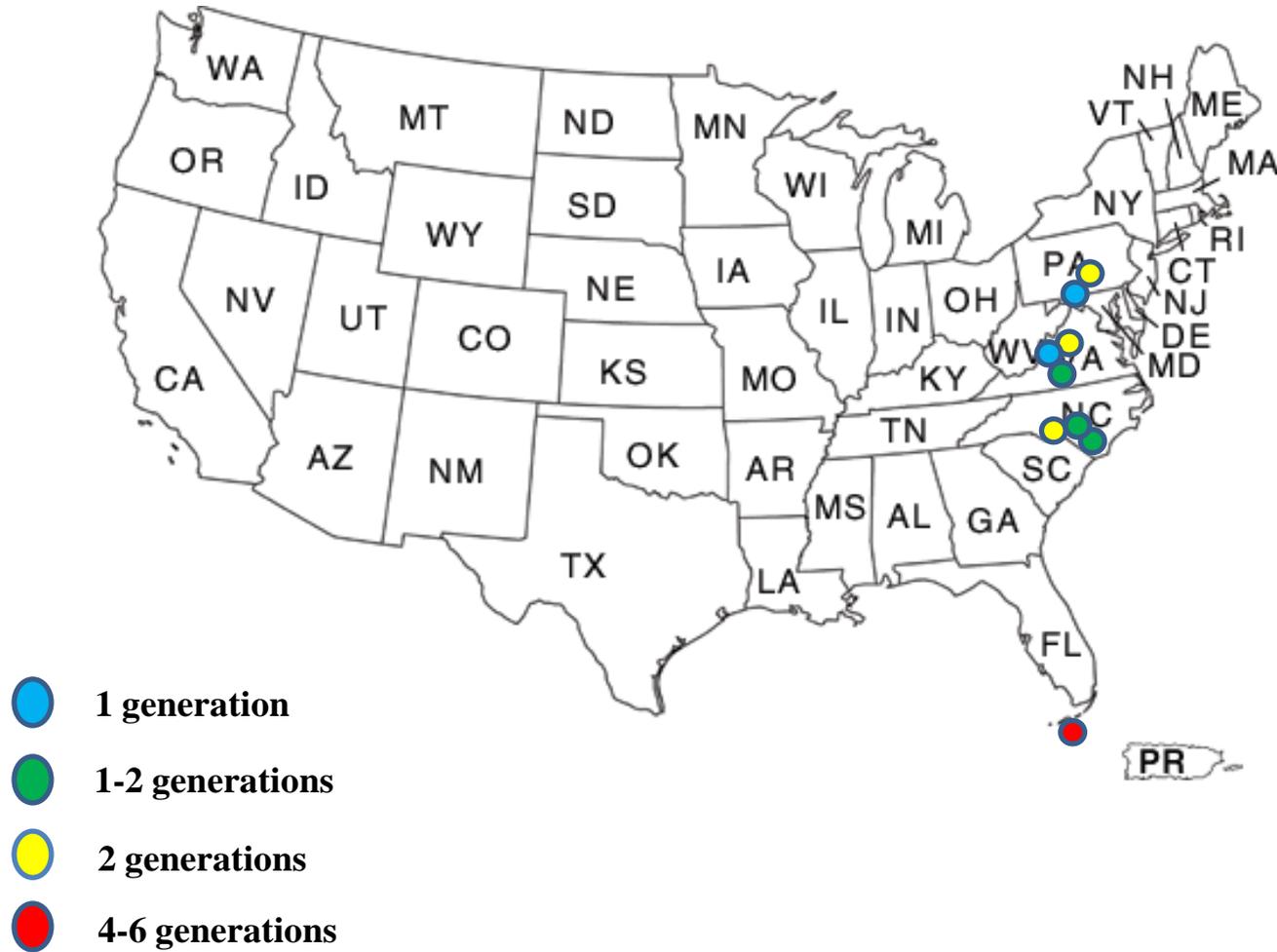
# Existing Voltinism Reports: U.S.A.



● 1 generation

● 2 generations

# East Asia in the United States



# Number of Generations in WV



- Reflection of field development
- 5 male and 5 female overwintering bugs
  - Apr 14 and May 4, 2010
  - April 26, 2011
- *Paulownia tomentosa*, nectarines, peas, soybeans, green beans, tomatoes and/or peppers.
- Bagged pairs on *Paulownia*
  - May 21, 2010
  - May 23, 2011
- Removed adults when eggs laid
- Followed development and recorded temperature daily

# Results from 2010

Biological Period	Calendar Date	Accumulated DD	Total DD
Overwintered Adults in Cage	April 14 – May 4	216.02 - 235.16	
Eggs Deposited	May 26 – June 7		
Eggs Deposited	May 26 – June 7	536.78 - 613.44	
Summer Generation Adults Present	July 14 - 27		<b>752 - 848</b>
Summer Generation Adults Present	July 14 -27	130.80 - 142.74*	
Eggs Deposited	July 19-28		
Eggs Deposited	July 19-28	624.66*	
Second Generation Adults Present	September 13		<b>754 - 766</b>

# Results from 2011

Biological Period	Calendar Date	Accumulated DD	Total DD
Overwintered Adults in Cage	April 26	180.81- 189.06	
Eggs Deposited	June 2-3		
Eggs Deposited	June 2-3	582.76-656.27	
Summer Generation Adults Present	July 27-August 2		<b>762 - 845</b>
Summer Generation Adults Present	July 27 – August 2	80.51-95.86	
Eggs Deposited	August 1 - 9		
Eggs Deposited	August 1 - 9	553.38-562.42	
Second Generation Adults Present	October 11-18		<b>633 - 658</b>



# Modifications

- Examination of capacity
- Egg masses from laboratory colonies
- Normal ovarian development can occur at 13 h daylight – so 14 h selected as starting point
  - Watanabe et al. (1978), Watanabe (1979, 1980), Yanagi and Hagihara (1980)



# Current Data

<b>Location</b>	<b>14 h Daylight</b>	<b>Eggs “deposited”</b>	<b>Egg Hatch Complete</b>	<b>Current Stage</b>
Highland, NY	May 1	May 4	May 15	2 <sup>nd</sup> instar
Geneva, NY	May 2	May 9	May 20	2 <sup>nd</sup> instar
University Park, PA	May 2	May 15	May 16-May 21*	2 <sup>nd</sup> instar
Biglerville, PA	May 3	May 4	May 15-May 17	2 <sup>nd</sup> instar
Kearneysville, WV	May 8	May 8	May 21-May 23	3 <sup>rd</sup> instar
Raleigh, NC	May 10	May 10	May 17-May 18	2 <sup>nd</sup> -3 <sup>rd</sup> instar
Mills River, NC	May 13	May 13	May 24-25	2 <sup>nd</sup> -3 <sup>rd</sup> instar

# Acknowledgments

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