



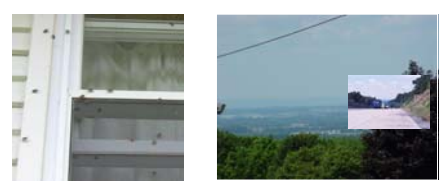
Host Range of the Exotic Brown Marmorated Stink Bug, *Halyomorpha halys* (Heteroptera: Pentatomidae); Implications for Future Distribution

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Introduction



- First reported as a nuisance pest as adults entered homes to overwinter.
- Introduced into Allentown likely as hitchhikers on trucked cargo in 1996.
- Agricultural implications originally overshadowed by nuisance publicity.

Abstract

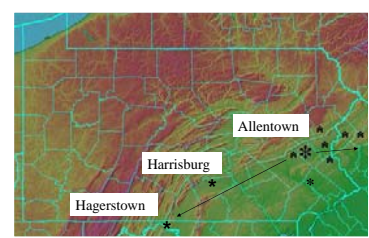
Halyomorpha halys, (Heteroptera: Pentatomidae), is a pest in eastern Asia on soybeans, and woody plants, including broadleaved trees and fruit trees. A population was discovered in Allentown, PA in 2001 but had been established since 1996. *H. halys* is now reported throughout PA and NJ; in 2003 a population was discovered in Hagerstown, MD. Specimens were found in 2004 in DE, WV, and VA. An isolated population was reported in 2004 in Portland, OR and host plants were verified in 2005. Host plant surveys indicated that *H. halys* is polyphagous with patchy and sometimes dense populations, but limited to landscaped urban areas. Damage to fruit trees and feeding on vegetables was observed in gardens. Until populations reach commercial growers, population dynamics in agroecosystems will not be apparent. Woody plants including ornamentals and trees are primary hosts in urban landscaped areas. However, in PA, a population was observed in 2005 to invade a soybean field, and as host range expands south, pest populations on soybeans and fruit trees are likely to occur.

Background and Objectives

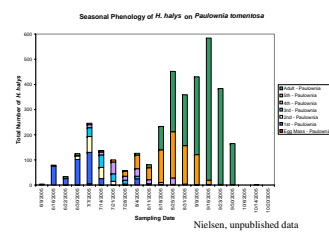
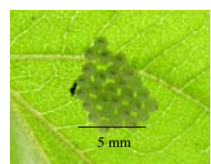
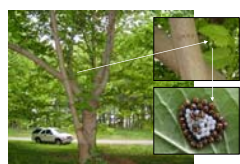
- Polyphagous in Asia; determine host plants in PA.
- Agricultural pest in Asia; determine pest status in PA.
- 1 - 5 generations in Asia; determine life cycle in PA.
- Parasitoids in Asia documented; unknown in PA.



- 2003: Observed on over 60 host plants in urban Allentown, PA.



- 2001: positive identification in Allentown, PA
- 2002: 5 adjoining counties & 2 counties in NJ
- 2003: isolated? populations, Hagerstown MD, Portland, OR
- 2004: widespread in PA, NJ; records from DE, VA, WV



- Univoltine in PA, oviposition from June - September, *Paulownia tomentosa* a primary host in Asia and PA.
- Host switching of parasitoid, *Telenomus podisi* (Hymenoptera: Scelionidae), from indigenous pentatomids.

Pest Status and Summary of Host Plants



- Leaf damage to *Buddleia* (Butterfly Bush), *Prunus serotina* (Black Cherry), and *Paulownia tomentosa* (Royal Paulownia).



Portland, OR

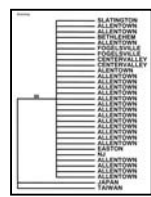


Harrisburg, PA

- 2005 - Urban populations confirmed on ornamentals and trees.

Origin of PA Population, (Carter, unpublished data):

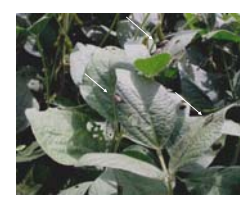
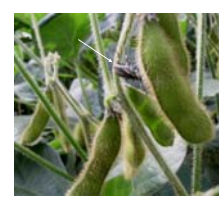
Percent Identity					
	1	2	3	4	5
1	100	96.4	96.5	96.5	96.5
2	96.4	100	96.4	96.4	96.4
3	96.5	96.4	100	100.0	100.0
4	96.5	96.4	100.0	100.0	100.0
5	96.5	96.4	100.0	100.0	100.0



- Mitochondrial DNA was analyzed using maximum parsimony with heuristic search.
- Preliminary analysis suggested only one maternal haplotype in the US.
- Sequence identity with Taiwan and Japan populations is 96.2% and 99.3% respectively.
- Specimens from China and Korea need to be analyzed to show a conclusive pattern.
- Origin of isolated Portland population pending: Allentown or new introduction?



- Feeding and damage to fruits in urban Allentown.



- 2005 - Allentown population invades soybean field bordering urban infestation.

Summary

- *H. halys* limited to mostly landscaped areas but likely to become agricultural pest.
- Leaf damage to woody ornamentals and shade trees, feeding on garden crops.
- Backyard grower in Allentown reported damaging population on fruit trees.
- Damage to fruit on urban peach, apple, and pear trees verified.
- Polyphagous; observed on over 60 host plants, distribution expanding.
- Host switching during the season needs to be evaluated to determine primary hosts.
- 2005 - expanding urban Allentown population reaches soybean field.