Pest Watch:
Brown Marmorated Stink Bug

WASHINGTON STATE UNIVERSITY EXTENSION FACT SHEET • FS079E

WSU Extension *Pest Watch* fact sheets identify new agricultural pests in or near Washington State that pose environmental and economic threats. In the event of a severe pest outbreak, a *Pest Alert* will be issued with emergency pest management and control information.

Introduction

The brown marmorated stink bug (BMSB) causes damage to agricultural crops and annoyance to homeowners. Reported findings in the United States indicate the pest has moved from the East Coast to southwest Washington State in just over a decade. To minimize the risk of further migration, Washington State University Extension and Washington State Department of Agriculture agents need citizens to report sightings in undocumented areas of the state.

Classified as *Halyomorpha halys* (Stål), the BMSB is a native Asian insect that was first reported in the United States in the late 1990s. Since its initial detection in Allentown, Pennsylvania, the BMSB has been found in 35 other states. Documented sightings in Washington State began in the fall of 2010, and so far are restricted to Clark and Skamania Counties (Fig. 1).

Identification

BMSB nymphs (Fig. 2) are brightly colored red and black or white and black when they first hatch from eggs. Nymphs begin to resemble the adult stage in coloration but lack developed wings. Adults are a half-inch long with a shield-shaped body characteristic of all stink bugs (Fig. 3A). The body color is a mottled brown and grey and the margins of the shoulders (pronotum) are smooth (Fig. 3B). The antennae and legs have dark and light bands. The abdomen also has alternating dark and light bands which extend beyond the wings and are easily visible when viewing an adult bug. The underside is white, sometimes with dark markings.

Figure 1. Current distribution of BMSBs in Washington State. (C. Looney, WSDA)

Figure 2. BMSB 3rd instar nymph. (P. Shearer, OSU)

This fact sheet is part of the WSU Extension Home Garden Series.

Figure 3. BMSB adult. A) Note the light and dark bands on antennae, legs, and abdomen. B) The edges of the shoulders are smooth. (D. Kitchen, WSDA)

Figure 4. A) **Euschistus** *sp. adult without bands on antennae or legs. B) Note the toothed edges on the shoulders. (D. Kitchen, WSDA)*

Figure 5. A) **Holcostethus** *sp. adult without light and dark bands on the antennae, legs, or abdomen. B) The edges of the shoulders are smooth. (D. Kitchen, WSDA)*

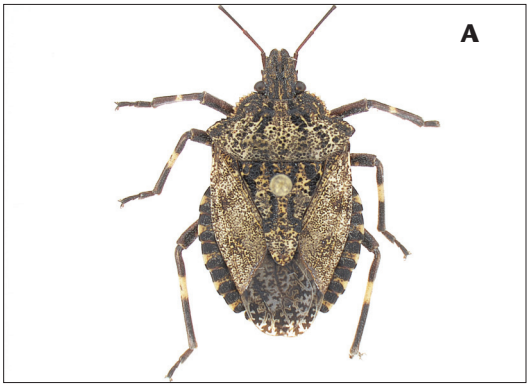

Figure 6. A) **Brochymena** *sp. adult with light and dark bands on legs and abdomen. B) The edges of the shoulders are heavily toothed. (D. Kitchen, WSDA)*

Other stink bugs and related Hemipterans (true bugs) already occurring in Washington may be confused with BMSBs. Similar-appearing stink bugs include *Euschistus* sp. (Fig. 4), *Holcostethus* sp. (Fig. 5), and *Brochymena* sp. (Fig. 6). BMSBs can be distinguished from other stink bugs by their mottled coloration in combination with light and dark banding on the antennae, legs, and abdomen (Fig. 3A).

Euschistus and *Brochymena* look strikingly like BMSBs except for the toothed edges on the shoulders (Figs. 4B and 6B, respectively). While *Holcostethus* can have smooth-edged shoulders (Fig. 5B), they do not have banded legs or antennae (Fig. 5A). Other hibernating bugs commonly found in the home are western conifer seed bugs (*Leptoglossus occidentalis*, Fig. 7), grass bugs (*Peritrechus* sp., Fig. 8),

Figure 7. **Leptoglossus** *occidentalis adult. (T. Murray, WSU)*

Figure 8. **Arhyssus** *sp. adult. (E. LaGasa, WSDA)*

Figure 9. Boxelder bug, **Boisea** *adult. (C. Hedstrom, OSU)*

Figure 10. **Lygaeus** *sp. adult. (T. Murray, WSU)*

Figure 11. **Rhyparochromis vulgaris** *adult. (E. LaGasa, WSDA)*

Figure 12. **Raglius alboacuminatus** *adult. (E. LaGasa, WSDA)*

boxelder bugs (*Boisea*, Fig. 9), milkweed bugs (*Lygaeus*, Fig. 10), and the seed bugs *Rhyparochromis vulgaris* (Fig. 11) and *Raglius alboacuminatus* (Fig. 12).

Life Cycle

Overwintering female BMSB adults emerge from protected areas such as buildings in early spring to lay eggs in clusters of 20 to 30 on the undersides of leaves (Fig. 13). Eggs begin hatching by early June. Nymphs go through five growth stages. Early instar nymphs tend to feed in aggregations but begin to disperse as they get older. Nymphs are highly mobile and are often seen walking from tree to tree. The next generation's adults appear by August.

Damage

The BMSB has proven to be a significant pest in the eastern United States, causing severe losses in apple yields. It feeds throughout its nymph and adult stages on a wide range of plants, including high-value agricultural crops such as tree fruit (Fig. 14), grapes, berries, vegetables, corn, soybeans, and ornamentals. BMSB feeding damage results in deformation and rotten blemishes on fruit and other plant parts (Fig. 15).

As the name implies, BMSBs emit unpleasant odors. Beginning in September, BMSB adults aggregate in large masses often on the sides of homes and other buildings. They enter structures to avoid cold weather. While stink bugs are not known to harm people or cause damage to buildings, they can be quite distressing when large numbers of individuals enter households. Adult bugs may become active during warm periods of the winter, further causing annoyance as they fly and crawl around inside houses and emit unpleasant odors. The overwintering behavior adds to the BMSB's pest status as a nuisance to homeowners.

Management

The BMSB has shown high adaptability to different climates in the United States and appears to resist commonly used pesticides. Farmers are resorting to using broad-spectrum insecticides until better management techniques are developed. Entomologists are researching long-term management tools such as biological control. Small wasps have been found to effectively parasitize and kill BMSB eggs in the pest's China homeland. However, further study is needed before these wasps are proven safe to release.

In areas of the country where BMSB populations are high, homeowners have dealt with problems by sealing up their houses as tight as possible. Sealing cracks, mending screens, and screening vents mechanically exclude BMSB adults from entering houses. When aggregations begin to form, regular vacuuming BMSB adults has helped reduce the number entering houses.

Sampling

It is likely that the BMSB will continue to spread, as this pest often hitchhikes on cars and cargo. Without any reliable survey methods identified as of yet, limiting the spread will rely on public detections of BMSBs in new locations. If you suspect you have BMSBs in a new region of Washington State, please collect a sample in a crush-proof container, note the date and specific location, and place it

Figure 13. BMSB eggs. (P. Shearer, OSU)

Figure 14. BMSB adult on Asian pear. (P. Shearer, OSU)

in a freezer until you can take it to your local WSU Extension office or local Master Gardener clinic (http://ext.wsu.edu/locations). Your observations will be recorded and help minimize the distribution of BMSBs statewide.

Further Reading

Bernon, G., K.M. Bernhard, A.L. Nielsen, J.F. Stimmel, E.R. Hoebeke, and M.E. Carter. 2007. Host Range of the Exotic Brown Marmorated Stink Bug, *Halyomorpha halys* (Hemiptera: Pentatomidae): Implications for Future Distribution. In *Proceedings, 17th U.S. Department of Agriculture Interagency Research Forum on Gypsy Moth and Other Invasive Species, 200*, edited by K.W. Gottschalk, 26. Gen. Tech. Rep. NRS-P-10. Newtown Square, PA: U.S. Department of Agriculture. http://www.treesearch.fs.fed.us/pubs/12454.

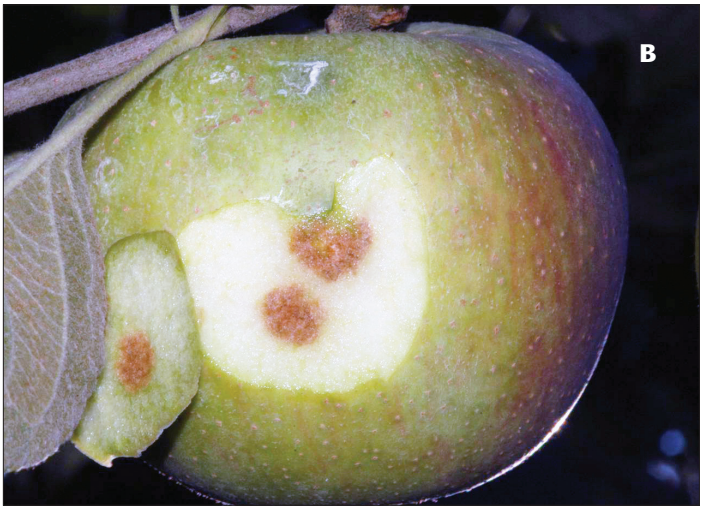

Figure 15. BMSB feeding damage on apple. A) External blemish. B) Injury to underlying tissue. (P. Shearer, OSU)

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New Jersey Agricultural Experiment Station. How to Control the Brown Marmorated Stink Bug. Rutgers Cooperative Extension, http://njaes.rutgers.edu/stinkbug/control.asp.

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