

The Brown Marmorated Stink Bug (BMSB): Information for Michigan Residents on a New Home Invader

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Many Michigan residents may not yet be familiar with the brown marmorated stink bug (BMSB), but they may have seen this new invasive pest crawling around inside homes. Similar to the multicolored Asian lady beetle, this stink bug enters buildings in the fall to overwinter and can be a serious nuisance. Some infestations can reach staggering numbers (Inkley, 2012). In eastern states where this pest is established, over 25,000 bugs have been reported in a single home! The BMSB is native to Asia and has few predators in North America adapted to feeding on it. Consequently, it continues to spread across the U.S. in large numbers. Unlike the multicolored Asian lady beetle, the BMSB feeds on plants and can cause massive damage to a wide variety of fruits, vegetables, nuts, legumes and other valuable crops in Michigan. Therefore, BMSB is not only a nuisance pest of homes and gardens but an economic pest of agriculture. This fact sheet will provide information and advice to Michigan residents for dealing with this new invasive pest.



Adult brown marmorated stink bug Photo: Paul Botch, MSU Department of Entomology

Brown marmorated stink bugs clustered on a porch screen door in September.

(D. Sillman, Penn State University) <http://www.psu.edu/dept/nkbiology/naturetrail/speciespages/stinkbug.html>



Home Invasions

Michigan residents will often notice BMSB outside their homes at the beginning of fall (September and October) before they invade the interior. As the weather cools, the stink bugs tend to aggregate on south and west facing sides of the home that receive the most sunlight. In the mid-Atlantic U.S., where BMSB has been established for a longer period of time, these aggregations can be quite large. In Michigan, aggregations may only consist of a handful of bugs now, but it is expected that numbers will increase over time. As populations continue to grow over the next several years, more and more of these invasive stink bugs will seek shelter inside of homes.

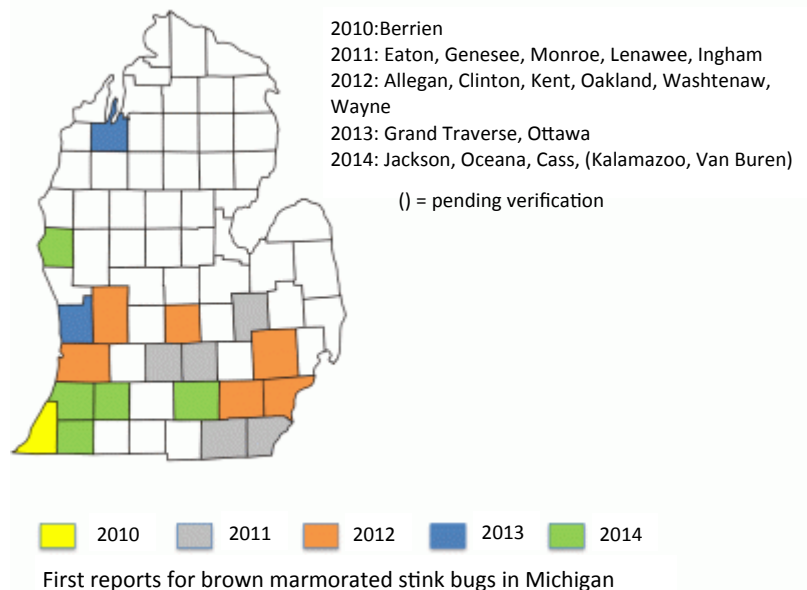
BMSB enter homes just about wherever and however they can find a way in. Entry points can include gaps around doors, windows or air conditioner units. Stink bugs can crawl behind vinyl and shingle siding to enter attics or wall spaces (Inkley 2012). Attic vents, loose or cracked fascia, and utility interfaces can also serve as entry points for BMSB (Ingels and Varela 2014). Once inside, BMSB can infest living spaces throughout homes and also hide in large numbers in attics, walls and crawl spaces (Inkley 2012). True to their name, these bugs stink.

Managing Brown Marmorated Stink Bug (BMSB) in Homes and Gardens

When threatened or crushed, the BMSB emit defensive secretions that have an unpleasant odor. Stink bug frass stains walls and curtains in homes (Inkley 2012). Although they do not harm people or pets by biting or spreading disease, large infestations in homes can contribute to airborne allergies (Mertz et al, 2012). After the fall invasion, BMSB will seek out secluded, dark places in homes to overwinter. During the coldest months, the stink bugs are relatively inactive and may go unnoticed by home occupants. Once the weather warms, however, the stink bugs will begin crawling and flying around the home as they attempt to exit, feed and reproduce.

Background Information and Current Distribution

The BMSB is native to Southeast Asia and was accidentally introduced into the mid-Atlantic region of the United States in the late 1990s. It has since spread to 42 states, including Michigan, where it was first detected in 2010. As of 2015, MSU Diagnostic Services reports that the BMSB has been detected in 23 of 68 counties of Michigan's Lower Peninsula. Currently, the BMSB is most commonly found in the southern and central areas of the state and is often associated with urban areas. Reports of home infestations are widespread, including areas of Detroit, Grand Rapids, Kalamazoo, Lansing, St. Joseph and Jackson. It has been detected as far north as Traverse City. Major highways and traffic moving between cities are corridors for dispersal because this stink bug is an excellent stowaway and will hitchhike on shipping vehicles, campers and even luggage. Due to its ability to spread quickly, and because of current limited control options, the BMSB will likely continue to increase its range and density across Michigan over the next several years.



A map of Michigan counties where brown marmorated stink bug has been detected. M. Haas and L. Gut, MSU, 2014

http://www.ipm.msu.edu/invasive_species/brown_marmorated_stink_bug

Exclusion

The recommended approach to manage stink bugs in residential areas is to exclude them from entering homes. Screens on windows and doors should be replaced or repaired if they have any holes or do not fit tightly. Screening can also be used to block access through window air conditioner units, chimneys, and dryer or attic vents. Damaged weather stripping on doors and windows should be replaced so that tight seals are formed to prevent access. Gaps surrounding window air conditioners, utility interfaces or other cracks can be sealed using silicone caulk or insulating foam sealant (Ingels and Varela 2014; Quarles 2014). Special attention should be given to any gaps on the south and west facing sides of buildings because stink bugs will often aggregate on these areas when the weather starts to cool. Commercial stink bug traps placed strategically outdoors may also limit the number of BMSB that invade homes in the fall.

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Eradication

The best way to remove stink bugs from a home is a vacuum cleaner. A shop vacuum is recommended because stink bug odor can absorb into conventional vacuum cleaners. The BMSB can also be killed by dropping them into a pan of soapy water. Some resourceful people have found that mounting a light or desk lamp above a pan of soapy water makes an inexpensive indoor trap. The stink bugs are attracted to light above the pan and will then fall into the pan and drown (Quarles 2014).

Using pesticides indoors to eradicate BMSB is not recommended. Aerosol foggers used in living spaces will not kill BMSB that are sheltered in crawl spaces or wall interiors, and applying pesticides inside of walls or crawl spaces will likely attract other insects and pests to feed on the BMSB carcasses (Quarles 2014). For a YouTube video with tips on keeping stink bugs out of your house visit: <https://youtu.be/9jlgJ4WiryY>

Garden and Agricultural Pest

Michigan residents may also find BMSB feeding in their gardens. This pest feeds on over 300 different plants, including most things home gardeners may want to cultivate. The BMSB feed on plants by inserting their long beaks into fruit, vegetable or leaf tissue. Saliva is then injected to break down the plant tissue. The resulting damage includes pitting, discoloration and rotting of the fruit, which makes it unappetizing as well as commercially unsaleable. Because Michigan ranks second in agricultural diversity next to California (www.michigan.gov/mdard), there is mounting concern about the economic impact this stink bug could have on a wide range of Michigan growers. Some examples of plants fed on by BMSB include:

- Small fruit: grapes, blueberry, raspberry
- Vegetables: tomatoes, sweet corn, pepper, beans, okra, eggplant
- Field crops: soybean, sunflower
- Ornamental plants: paulownia (princess tree), persimmon, catalpa, walnut, maple, sweet gum, redbud, American holly, crabapple, basswood, butterfly-bush, viburnum, rose, honeysuckle
- Wild and native plants: sugar maple, pawpaw, hickory, hackberry, autumn olive, black walnut, honeysuckle, white mulberry, American sycamore, black locust, sassafras, tree of heaven
- *A compiled list of plants that the BMSB is known to feed on in North America is located at: <http://www.stopbmsb.org/where-is-bsmb/host-plants/>*



BMSB feeding on tree fruits such as apple results in corky spots under the skin which renders the fruit unmarketable as a fresh product. Photo: Steve Jacobs, PSU

Garden insecticides are not considered to have long-lasting effectiveness against stink bugs, especially adults, and additional research is needed to determine how to best use them in managing the BMSB (Ingels and Varela 2014). Baited traps containing pheromone lures can be effective tools in removing stink bugs from an area. Unfortunately, traps placed in gardens may also attract BMSB and increase feeding damage on tomato fruits (Sargent et al, 2014). Stink bugs can be manually removed from gardens by handpicking and disposing, however they are often hidden by foliage and tend to drop from vegetation when they are disturbed (Ingels and Varela 2014). Natural enemies such as assassin bugs, earwigs and green lacewing larvae feed on various BMSB life stages but do not effectively control BMSB (Ingels and Varela 2014). Classical biological control using Asian parasitoid wasps is currently being evaluated as a management tactic and may ultimately contribute to a long-term solution for reducing BMSB populations (Leskey et al, 2012). The MSU Department of Entomology is evaluating one of these wasps as a potential biological control agent. For additional information, visit <http://delfosse.ent.msu.edu/>.

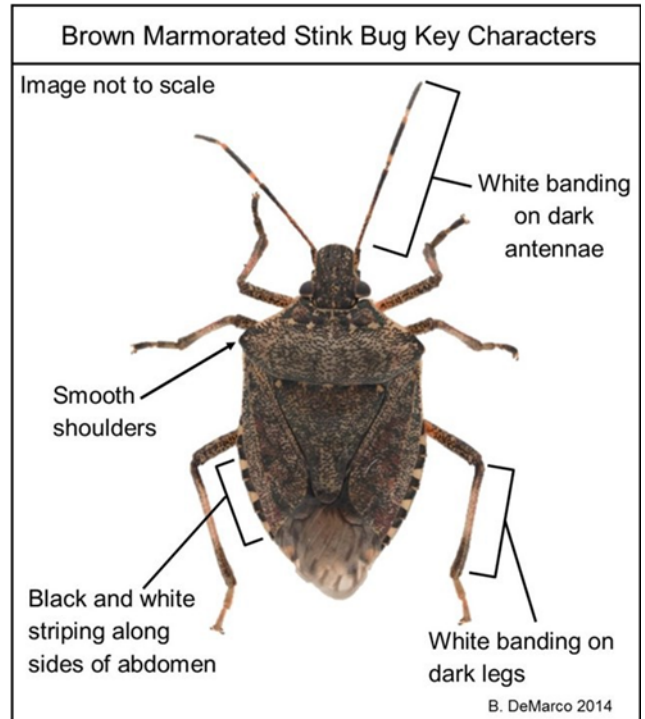
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Identification

Michigan has over 75 species of native stink bugs, many of which look similar to BMSB (Swanson 2012). The BMSB can be identified by its overall marbled-brown appearance, smooth shoulders, alternating black and white striping along its abdomen, and white banding on legs and antennae. These key characters can be used to quickly identify BMSB and differentiate between native stink bug look-alikes. Other insects that invade homes, which are sometimes confused with the BMSB, include the western conifer seed bug and the boxelder bug.



Other common home invaders include the boxelder bug (l) and the western conifer-seed bug (r). Photo credits: Joseph Berber, Bugwood.org. and Donald Owen, Bugwood.org



The brown marmorated stink bug (BMSB) (Photo credits: Bernice DeMarco, Michigan State University. Figure edits: Delfosse Classical Biological Control Lab, Department of Entomology, Michigan State University).

FOR MORE INFORMATION

To report sightings of brown marmorated stink bug in your home or business:
http://www.ipm.msu.edu/invasive_species/brown_marmorated_stink_bug

To learn more about the status and management of BMSB, visit: <http://www.stopbmsb.org/>

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