

MANAGING BROWN MARMORATED STINK BUGS IN HOMES & GARDENS

What is the brown marmorated stink bug?

The brown marmorated stink bug, also known as *Halyomorpha halys*, is a shield-shaped insect, about the size of a US dime that uses its piercing mouthparts to suck plant juices from fruits, fruiting vegetables, seed pods and nuts on a wide variety of wild and cultivated plants. It was accidentally brought to North America from Asia sometime before 1996 and was first detected in Michigan in 2010. By the fall of 2015, many Michigan residents in the southern Lower Peninsula were noticing this insect crawling around inside and outside their homes. As of August 2020, it has been found in all Michigan counties and is well-established in the southern part of the Lower Peninsula. This fact sheet will provide information and advice to Michigan residents for dealing with this relatively new pest.



A brown marmorated stink bug walking on a reflective surface. Photo: Paul Miller, Kalamazoo, MI

Why are they in my home? Should I be concerned?

First, they are NOT nesting, laying eggs or feeding on anything or anyone in your home. These are plant-feeding insects with straw-like mouthparts for drinking plant juices. Similar to the multicolored Asian lady beetle, this stink bug enters buildings in the fall, seeking shelter for the winter. Although they do not harm people or pets by biting or spreading disease, large infestations in homes can contribute to airborne allergies.¹ They will attempt to leave your home again in the spring – if they can find their way back out – to look for plants to feed on and to lay their eggs outside. Outside they have the potential to become a garden pest and are considered to be an economically important agricultural pest.

How are they getting into my home?

Brown marmorated stink bugs 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.² Attic vents, loose or cracked fascias, and utility interfaces can also serve as entry points.³ Once inside, they can move into living spaces or remain hidden in attics, walls and crawl spaces.²



A brown marmorated stink bug on a screen door. Photo: Jim Engelsma, Grand Rapids, MI

What can I do once they are in my home?

When threatened or crushed, stink bugs emit defensive secretions that have an unpleasant odor. This is where the name “stink bug” comes from. Therefore, the best way to remove stink bugs from a home is with a shop vacuum with an inch of soapy water in the canister. A shop vacuum is recommended because stink bug odor can absorb into domestic vacuum cleaners that have a cloth bag. The soapy water will effectively trap and drown the bugs. Use dish soap in an amount that you would normally use if you were going to hand wash dishes in a sink. If a vacuum is not available, knocking or dropping them into a pan of soapy water will also effectively kill them. 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.⁴

Using pesticides indoors in an attempt to eradicate stink bugs is not recommended. Aerosol foggers used in living spaces will not kill any stink bugs 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 stink bug carcasses.⁴

How can I prevent them from entering my home in the first place?

Screens on windows and doors can 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 can 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.^{3,4} 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 in the fall.

Importance of this pest in gardens and farms

This pest feeds on over 300 different kinds of plants, including most things home gardeners may want to cultivate. Brown marmorated stink bugs feed on plants by inserting their long beaks into fruit, nut, pod, or other plant tissues and injecting saliva to break down and digest these food sources. The resulting damage may include pitting, discoloration and rotting around the feeding site, which makes the damaged plant material unappetizing as well as commercially unsaleable (<http://www.stopbmsb.org/where-is-bmsb/crops-at-risk/>). It can also reduce the number of viable seeds those plants can produce. Some examples of plants that are moderately to highly attractive to brown marmorated stink bugs include:

- **Fruits:** apple, blackberry, blueberry, grape, pear (Asian and European), nectarine, peach, raspberry
- **Nuts:** hazelnut, walnuts
- **Vegetables:** beans (green, pole, snap, lima), cole crops (broccoli, cauliflower, collard greens), cucumber, edamame, eggplant, okra, peppers, sweet corn, Swiss chard, tomatillo, tomato
- **Field crops:** dry beans, field corn, soybean, sunflower
- **Ornamental and woodland plants:** bee-bee tree, black cherry, buckthorn, catalpa, crab apple, English holly, flowering dogwood, Japanese pagoda tree, little-leaf linden, maples, multiflora rose, Peking lilac tree, redbud, serviceberry, tree of heaven

For a more complete list of potential host plants in North America, visit: <http://www.stopbmsb.org/where-is-bmsb/host-plants/>



Stink bugs can be hard to spot on tree bark. There are eight of them on this peach tree limb. Photo: Bill Shane, MSU Extension



Evidence of stink bug feeding damage on jalapeño peppers (left) and Golden Delicious apples (right). Pepper photo: Ben Phillips, MSU Extension; Apple photo: Jim Engelsma, Grand Rapids, MI



Strategies for preventing feeding damage in home gardens or small-scale urban farms

- **Hand removal:** In smaller gardens, stink bugs can be manually removed by handpicking and disposing of them, however they are often hidden by foliage and tend to drop from vegetation when they are disturbed.³
- **Exclusion:** Where they are very abundant, or in high value crops, fine mesh netting can be used to exclude stink bugs and other insects from accessing developing fruit or vegetables. The netting should only be applied after all necessary pollination has occurred. If you are growing fruit and vegetables in hoop houses, netting can be used to enclose the ends and other potential access points.
- **Trapping:** In larger scale commercial fruit and vegetable production, baited traps containing pheromone lures are used to keep track of stink bug activity. These traps may also be used to “trap out” the bugs in a localized area, but the lures really only become attractive in late summer, and may simply attract more brown marmorated stink bugs to the area you are trying to protect resulting in an increase of feeding damage.⁵

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- **Insecticides:** Since these insects are highly mobile and sturdy, and can feed on a tremendous number of different host plants, use of most insecticides in a home garden will have limited success in preventing stink bug feeding damage. Materials that act as feeding deterrents may be the best option.
- **Biological suppression:**
 - Just like any other living thing, **microbes** can infect stink bugs. There are a number of pathogens being studied that either slow and/or kill brown marmorated stink bugs; one of these is a kind of microsporidia that attacks and kills the brown marmorated stink bug when it is being reared in a lab for study purposes. Recent population crashes in the mid-Atlantic where the stink bug had been found in astonishing numbers, may be a result of a naturally occurring pathogen.
 - Spiders and insect **predators**, including assassin bugs, earwigs, green lacewings and lady beetle larvae are important natural enemies of plant-feeding insects. These predators feed on various stink bug life stages and may help suppress local populations of the pest.
 - **Parasitoids**, small wasps that lay their eggs in or on the eggs or larvae of other insects, are another class of important natural enemies of plant-feeding insect pests. There are some native parasitoids that will lay eggs in brown marmorated stink bug eggs, but it is the Asian parasitoid called the samurai wasp (*Trissolcus japonicus*) that is the most efficient at finding and parasitizing the brown marmorated stink bug.⁶ This parasitoid has been in quarantine while it is being evaluated before release in North America, but in the meantime, it also arrived here on its own and was first detected in Michigan in 2018. Parasitoid adults rely on the sugars found in nectar and so interplanting or setting aside habitat nearby with flowering herbaceous plants will boost their local abundance as well as benefit pollinators, butterflies and other beneficial insects.

Identification

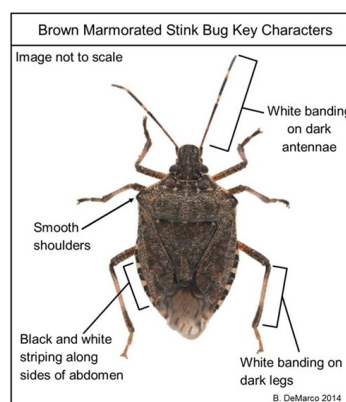
Michigan has over 75 species of native stink bugs, many of which look similar to brown marmorated stink bugs.⁷ The brown marmorated stink bug has an overall appearance of being marbled-brown, with smooth shoulders, alternating dark and light striping along its abdomen, and light-colored banding on legs and antennae. These key characters can be used to quickly identify the brown marmorated stink bug and differentiate it from native stink bug look-alikes. Other insects that invade homes, which are sometimes confused with stink bugs, include the western conifer seed bug and the boxelder bug.

Acknowledgments

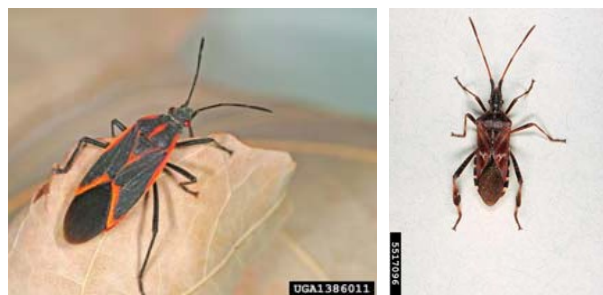
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Key characteristics of the brown marmorated stink bug. Photo: Bernice DeMarco, MSU Department of Entomology



Other common home invaders that may be mistaken for stink bugs include the boxelder bug (left) and the western conifer seed bug (right). Photo credits: Joseph Berber and Donald Owen, Bugwood.org

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