Brown Marmorated Stink Bug

The brown marmorated stink bug (BMSB) was first collected in September of 1998 in Allentown, but probably arrived several years earlier.

Brown marmorated stink bug

Common name: Brown marmorated stink bug Scientific name: Halyomorpha halys Stål, 1855 Order: Hemiptera (true bugs) Family: Pentatomidae (stink bugs)

Summary

Brown marmorated stink bug (BMSB) is an invasive bug that is a serious pest of fruit, vegetable, and other crops. It also becomes a nuisance pest of homes as it is attracted to the outside of houses on warm fall days in search of protected, overwintering sites and can enter houses in large numbers.

Distribution

Brown marmorated stink bug (Fig. 1) was accidentally introduced from east Asia (China, Japan, Korean) into eastern Pennsylvania and was first collected in Allentown in 1998, although it probably arrived several years earlier. It has since spread throughout most of eastern and western of North America and will likely be found continent wide within a few years (Fig. 2).

Figure 1. Adult brown marmorated stink bug.

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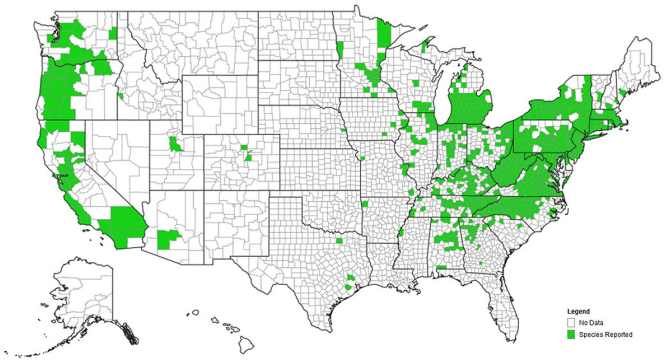

Figure 2. US counties where BMSB has been detected as of November 2017. Map via EDDMapS.

Description

Adults are approximately 17 mm (0.66 in) long and are shades of brown on both the upper and lower body surfaces (Fig. 1). They are “shield" shaped like other stink bugs, almost as wide as they are long. To distinguish them from other stink bugs, look for lighter bands on the antennae and darker bands on the membranous, overlapping part at the rear of the front pair of wings. They have patches of coppery or bluish-metallic colored puntures (small rounded depressions) on the head and pronotum. The name “stink bug" refers to the scent glands located on the dorsal surface of the abdomen and the underside of the thorax.

The eggs are elliptical (1.6 x 1.3 mm), light yellow to yellow-red with minute spines forming fine lines. They are attached, side-by-side, to the underside of leaves in masses of 20 to 30 eggs.

There are five nymphal instars (immature stages). They range in size from the first instar at 2.4 mm to the fifth instar that is 12 mm in length. The eyes are a deep red. The abdomen is a yellowish red in the first instar and progresses to off-white with reddish spots in the fifth instar. Protuberances are found before each of the abdominal scent glands on the dorsal surface. The legs, head and thorax are black. Spines are located on the femur, before each eye, and several on the lateral margins of the thorax (Fig. 3).

Figure 3. BMSB nymphs on Trumpet Creeper

Life history

This species probably has a single generation per year in Pennsylvania, although warm spring and summer conditions may permit the development of two generations. Adults emerge in the spring (late April to mid-May) and mate and deposit eggs from May through August. The eggs hatch into small black and red nymphs that go through five molts. Adults begin to search for overwintering sites starting in September through October.

Agricultural damage

Brown marmorated stink bug feeds on a wide variety of host plants, including a variety of fruits (e.g., apples, stone fruits including peaches and apricots, figs, mulberries, citrus fruits and persimmons), crops (e.g., beans, corn, tomatoes and soybeans) and many ornamental plants and weeds. For a list of high, moderate, and low risk crops, see the StopBMSB website. Feeding on tree fruits such as apple results in a characteristic distortion referred to as “cat facing," that renders the fruit unmarketable as a fresh product (Figs. 4, 5). Feeding in beans and okra may cause scarred, sunken areas and deformed pods, while feeding on fleshy fruit, such as tomatoes and peppers, can produce spongy areas and internal tissue damage. Rice et al (2014) provide an excellent review of BMSB damage to a variety of crops and ornamental plants with numerous photographs of bugs and damage.

Figure 4. Stink Bug Apple Damage.

Figure 5. Peach and Sweet Corn Damage

Human health

Brown marmorated stink bugs can produce allergic reactions (rhinitis and/or conjunctivitis) in individuals who are sensitive to the bugs' odor (the defensive chemicals can be an aeroallergen). Individuals sensitive to the odors of cockroaches and lady beetles are may be particularly affected by BMSB. Additionally, if the insects are crushed or smashed against exposed skin, they can produce dermatitis at the point of contact; there has not been much research in this regard, although it appears to affect only a small percentage of the population.

Damage to structures

The stink bug will not reproduce inside structures or cause damages. If many of them are crushed or sucked into a vacuum cleaner, their smell can be quite apparent.

Management of BMSB in homes

Before bugs enter a building

Mechanical exclusion is the best method to keep stink bugs from entering homes and buildings. Cracks around windows, doors, siding, utility pipes, behind chimneys, and underneath the wood fascia and other openings should be sealed with good quality silicone or silicone-latex caulk. Damaged screens on doors and windows should be repaired or replaced.

Exterior applications of insecticides may offer some minor relief from infestations when the task of completely sealing the exterior is difficult or impossible. Applications should be applied by a licensed pest control operator in the fall just prior to bug congregation. Unfortunately, because insecticides are broken down by sunlight, the residual effect of the material will be greatly decreased and may not kill the insects much beyond several days or a week.

After stink bugs have entered the structure

If numerous bugs are entering the living areas of the home, attempt to locate the openings where the insects gain access. Typically, stink bugs will emerge from cracks under or behind baseboards, around window and door trim, and around exhaust fans or lights in ceilings. Seal these openings with caulk or other suitable materials to prevent the insects from crawling out. Both live and dead stink bugs can be removed from interior areas with the aid of a vacuum cleaner - however, the vacuum may acquire the smell of stink bugs for a period of time.

It is not advisable to use an insecticide inside after the insects have gained access to the wall voids or attic areas. Although insecticidal dust treatments to these voids may kill hundreds of bugs, there is the possibility that carpet beetles will feed on the dead stink bugs and subsequently attack woolens, stored dry goods or other natural products in the home. Although aerosol-type pyrethrum foggers will kill stink bugs that have amassed on ceilings and walls in living areas, it will not prevent more of the insects from emerging shortly after the room is aerated. For this reason use of these materials is not considered a good solution to long-term management of the problem. Spray insecticides, directed into cracks and crevices, will not prevent the bugs from emerging and is not a viable or recommended treatment.

Pesticide warning

Pesticides are poisonous. Read and follow directions and safety precautions on labels. Handle carefully and store in original labeled containers out of the reach of children, pets, and livestock. Dispose of empty containers right away, in a safe manner and place. Do not contaminate forage, streams, or ponds.

Select references

EDDMapS. 2017. Early Detection & Distribution Mapping System. The University of Georgia - Center for Invasive Species and Ecosystem Health. Available online; last accessed 30 November 2017.

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