

First Record of the Invasive Pest, *Halyomorpha halys* (Hemiptera: Pentatomidae), in McDonough County, and its Current Distribution in Illinois

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ABSTRACT

A new record of the invasive stink bug *Halyomorpha halys* (Stål) (Hemiptera: Pentatomidae), the brown marmorated stink bug (BMSB), is reported for McDonough County, in west-central Illinois. BMSB is known to cause severe damage to commodities in the Mid-Atlantic region of the U.S. Adults seek homes as overwintering sites and are a nuisance. Currently there are limited options to control BMSB and monitoring their presence and range extension can contribute to the development of pest management strategies. This represents one of the western-most records of this insect in Illinois. The current distribution and potential economic and ecological impacts of BMSB are discussed.

RECORD

A new county record for the brown marmorated stink bug (BMSB), *Halyomorpha halys* (Stål) (Hemiptera: Pentatomidae), in Macomb, McDonough County, in west-central Illinois is reported based on findings of adult BMSB in insect collections by students taking an entomology course at Western Illinois University. These included two female BMSB collected in McDonough County on 4 and 8 Oct 2015. Three males were also collected in neighboring Knox County on 16 Sept, and 8 and 11 Oct 2015. Specimens from McDonough County were collected in disturbed grass areas at Western Illinois University (40.476°N, 90.688°W) and in a residential area east of campus (40.465°N, 90.678°W). Specimens from neighboring Knox County were collected in a disturbed grass area at Lake Storey in Galesburg (40.987°N, 90.394°W). A single adult female BMSB was also captured in the home of the first author (40.443°N, 90.654°W) in Macomb on 6 Oct 2015. The specimens displayed the distinctive dark and light bands on the antennal segments, as well as alternating dark and light banding along the margins of the abdomen. Dorsally, the head, pronotum, scutellum, and hemelytra were mottled shades of brown and gray. The legs were brown with faint white banding. Ventrally, the body was lighter in color with brown spots distributed laterally. Close examination revealed that there were no spines on the pronotum, which distinguishes this species from other pentatomids (Fogain and Graff, 2011; Jones and Lambdin, 2009; Welty et al., 2008).

BMSB adults range from 14-17 mm long (Fig. 1).

This insect is native to China, Japan, Korea and Taiwan. BMSB has become an agricultural pest in its native range. The earliest confirmed sighting of BMSB in the U.S. was in Allentown, PA in 1996 (Hoebeke and Carter, 2003; Rice et al., 2014). Genetic analysis has shown that BMSB was

likely introduced to the U.S. from a population originating from Beijing, China (Xu et al., 2014). BMSB has been confirmed in 42 states including Illinois. Population increases have been documented in most states east of the Mississippi River, especially in the Mid-Atlantic region near the point of introduction. States west of the Mississippi River have fewer reports of BMSB (NIPMC, 2016). The first record of BMSB

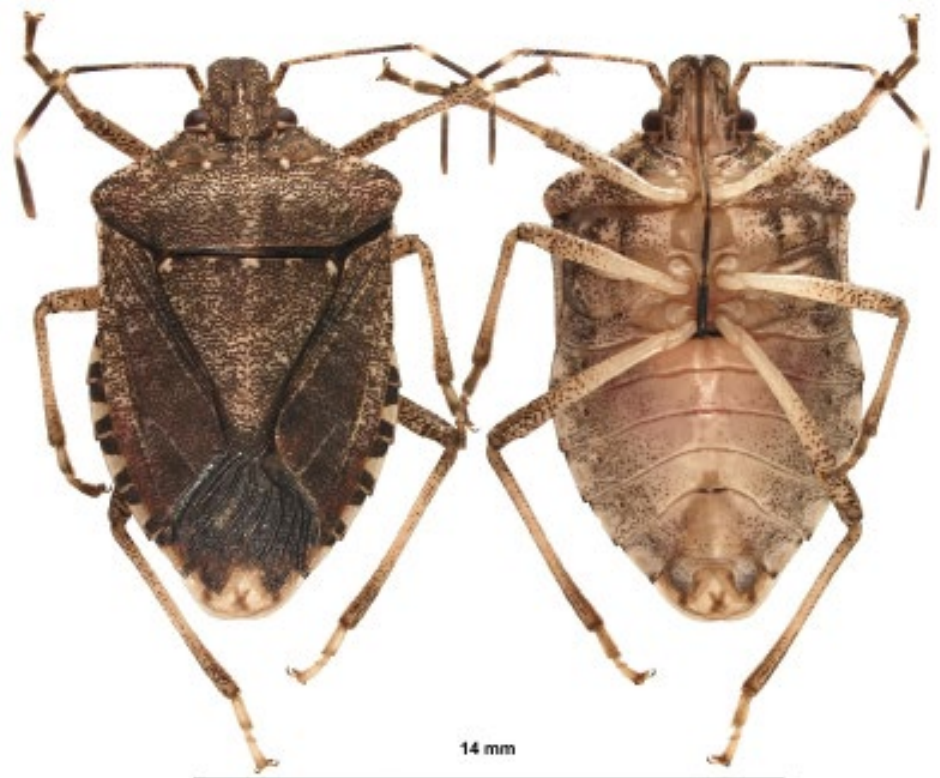


Figure 1. Dorsal (left) and ventral (right) views of brown marmorated stink bug. Source: Patrick Marquez, USDA APHIS PPQ, Bugwood.org

in Illinois was documented during 2010 in Cook County. Since 2010, BMSB has been found in 27 Illinois counties (Fig. 2) (K. A. Estes, pers. comm., March 9, 2015). West-central Illinois appears to be near the “front” of the insect’s western movement in the mid-central U.S., based on 2010-2016 maps of survey data (NIPMC, 2016; USDA, 2016a).

Since its arrival in North America, BMSB has become a serious pest of fruits, vegetables and farm crops in the Mid-Atlantic region of the U.S. It is likely that BMSB will become a pest of these commodities in other areas in the U.S. as well (Leskey et al., 2012). BMSB are generalist feeders and have been documented to have >100 host plants (Bergmann et al., 2015). Damage has been documented in row crops such as soybeans, wheat and field corn (Nielsen et al., 2011). BMSB have piercing-sucking mouthparts and inject saliva as they feed. This feeding can puncture and scar plant tissue, resulting in distortion of the growing tissue around the feeding scar. In corn, BMSB feeds through the husk and damages the developing ear, resulting in unfilled or shrunken kernels. In soybean plants, BMSB feeds through the developing pod, resulting in damage to seeds. Soybean fields are typically damaged along field borders near tree lines. Chemical control has been used to decrease the numbers of BMSB in large infestations, however this can negatively affect other beneficial insects (Rice et al., 2014). BMSB is a nuisance pest both indoors and out. It is attracted to the outsides of homes on warm fall days in search of protected overwintering structures. BMSB enter the home via structural openings around doors and windows. BMSB do not bite, sting or transmit pathogens to humans; however, they are a nuisance due to the unpleasant odor they emit when crushed (Gangloff-Kaufmann, 2012). BMSB are an invasive, exotic species and can reproduce in large numbers due to lack of predators in their new environment. Like other invasive species, BMSB can also potentially disrupt ecological communities and reduce native biodiversity (Fogain and Graff, 2011; Nielsen et al., 2011). Introductions of species outside of their native ranges are now considered a major threat to indigenous biodiversity (Simberloff et al., 2005).

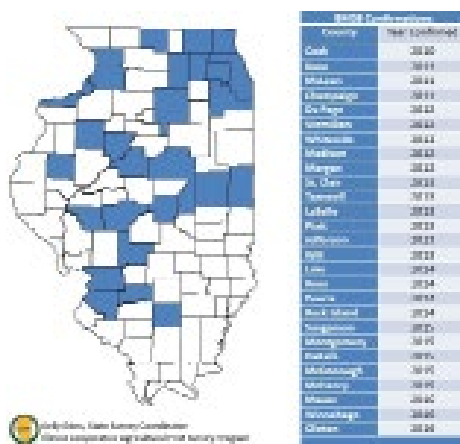


Figure 2. Brown marmorated stink bug confirmations in Illinois counties from 2010-2016.

Effects on local agriculture are unknown but there is a potential for damage to economically important crops grown in Illinois. In 2015, the estimated production of grain corn in Illinois was 2.01 billion bushels, and soybean production was estimated at 544 million bushels. These two crops comprise over 90% of all crop area harvested in Illinois (USDA, 2016b). Current treatment recommendations for crop protection include the use of insecticides. Testing is currently underway on biological controls available to decrease BMSB populations (Rice et al., 2014). Active surveillance of BMSB is limited in Illinois and is needed to monitor the potential threat of BMSB. We encourage Illinois residents to report sightings of BMSB to the Illinois Cooperative Agricultural Pest Survey (CAPS) program (<http://www.inhs.illinois.edu/research/caps/contacts/>, last accessed March 9, 2016) in order to track the presence of the species.

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