

***HALYMORPHA HALYS* (HEMIPTERA:PENTATOMIDAE): A NEW INVASIVE SPECIES IN NORTH-WESTERN OF TURKEY**

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ABSTRACT: The invasive species *Halymorpha halys* (Stål, 1855) (Hemiptera: Pentatomidae) was found for the first time in hazelnuts (*Corylus avellana* L.) in the Western Black Sea Region, Turkey in 2018. It is native to Eastern Asia and expected to be entered and spread from Georgia in 2017 to the Central and Eastern Black Sea Region of Turkey, and has reached the Western Black Sea Region in 2018 with its rapid distribution. Considering the potential of pest damage to hazelnuts, eradication and management programs should be developed in order to prevent its spread and damage immediately.

KEY WORDS: Brown marmorated stink bug, *Halymorpha halys*, hazelnuts, invasive, new record, north-western Turkey

Brown marmorated stink bug (BMSB), *Halymorpha halys* (Stål), belongs to the order Hemiptera, family Pentatomidae. It is native to China, Japan, Korea and Taiwan (Hoffman, 1931; Rider et al., 2002; Bernon, 2004; Son et al., 2009; Lee et al., 2013), and introduced into North America in the 1990s, European countries in 2000s (Hemala & Kment, 2017), in Russia and Georgia in 2016 (Gapon, 2016) and in Turkey from Georgia in 2017 (Ak et al., 2018; Guncan & Gumus, 2019). The invasive species showed rapid distribution in 6 provinces of the Eastern and Central Black Sea Region (Ak et al., 2018; Guncan & Gumus, 2019) and Istanbul province from Marmara Region of Turkey in 2017 (Cerci & Kocak, 2017). In the World, the family of Pentatomidae is known to have around 4722 species in the. belonging to 900 genera (Rider, 2006). In Turkey, 170 species belonging to 57 genera of this family are known (Onder et al., 2006; Fent & Aktaç, 2007). *Halymorpha halys* is a polyphag and has been recorded on various host plants belonging to a total of 49 different families (EPPO 2010; CPC 2011). That's why, it is a serious pest for agricultural plants (Gapon, 2016). Since the Turkey climate is likely to be suitable for distribution and establishment of pests, further studies are needed to evaluate the distribution and pest eradication. As populations of *H. halys* continue to increase in agricultural areas, pest control should be performed as soon as possible. The aim of this study provide new information about the distribution of this species introduced in Turkey.

MATERIAL AND METHODS

Sampling was made on hazelnuts in Sakarya and Duzce provinces during November and December 2018 (Fig. 1). Materials have been collected by visual inspections of the plants. The material collected was brought to the laboratory. The samples were separated individually and labelled for identification. Dried specimens were used for the description. The confirmation of the species

determination was made by first author. The specimens were deposited in the Duzce University, Faculty of Agriculture and Natural Science, Turkey.

RESULTS AND DISCUSSION

Details of the examined material of the species is given below:

Order: Hemiptera Linnaeus, 1758

Family: Pentatomidae Leach, 1815

Subfamily: Pentatominae Leach, 1815

Tribe: Cappaeini Atkinson, 1888

Genus: *Halyomorpha* Mayr, 1864

Species: *Halyomorpha halys* (Stål, 1855)

Synonyms: *Pentatoma halys* (Stål, 1855), *Poecilometis mistus* Uhler, 1860, *Dalpada brevis* Walker, 1867, *Dalpada remota* Walker, 1867.

Material examined: Sakarya: Hendek, Turkey, 40° 48' 18.3564" N and 30° 44' 57.4800" E, 197 m, 12.XI.2018, 19.XI.2018, 27.XI.2018 and 04. XII.2018, leg. Y. Adak, S. Oztemiz det. (1 specimen, 4 samples: 3 ♀♀; 3 ♂♂), on hazelnut (Fig. 2).

Distribution in the World: Japan, China, Korea, Taiwan, New Zealand, Georgia, Russia, America, Canada, Switzerland, Germany, Italy, France and Hungary (Wermelinger et al., 2008; Arnold, 2009; Fogain & Graff, 2011; Heckmann, 2012; Hoebeke & Carter, 2003; Callot & Brua, 2013; Lee et al., 2013; Pansa et al., 2013; Vetek et al., 2014; Gapon, 2016; Hemala & Kment, 2017).

Distribution in Turkey: This species was previously reported in Rize, Artvin, Trabzon, Samsun, Ordu, Giresun, Istanbul (Cerci & Kocak, 2017; Ak et al., 2018; Guncan & Gumus, 2019).

Its host range includes fruit trees, vegetable crops, legumes, and ornamentals (Kobayashi 1967, 1977). Economically important host food crops include apple, cherry, peach, pear, cucumber, eggplant, tomato, soybean and corn (Hoffman, 1931; Fukuoka et al., 2002, Hoebeke & Carter 2003; Bernon, 2004; Nielsen & Hamilton 2009a,b; Nielsen et al., 2011; Jacobs, 2012). In the study, we found on hazelnut in Hendek, Sakarya.

CONCLUSION

With the results obtained from this study, a new one was added to the distribution area of the pest in Turkey. It would be necessary to carry out further research into the distribution of the species and monitoring of its population in Turkey to determine the spread of *H. halys* in different hosts.

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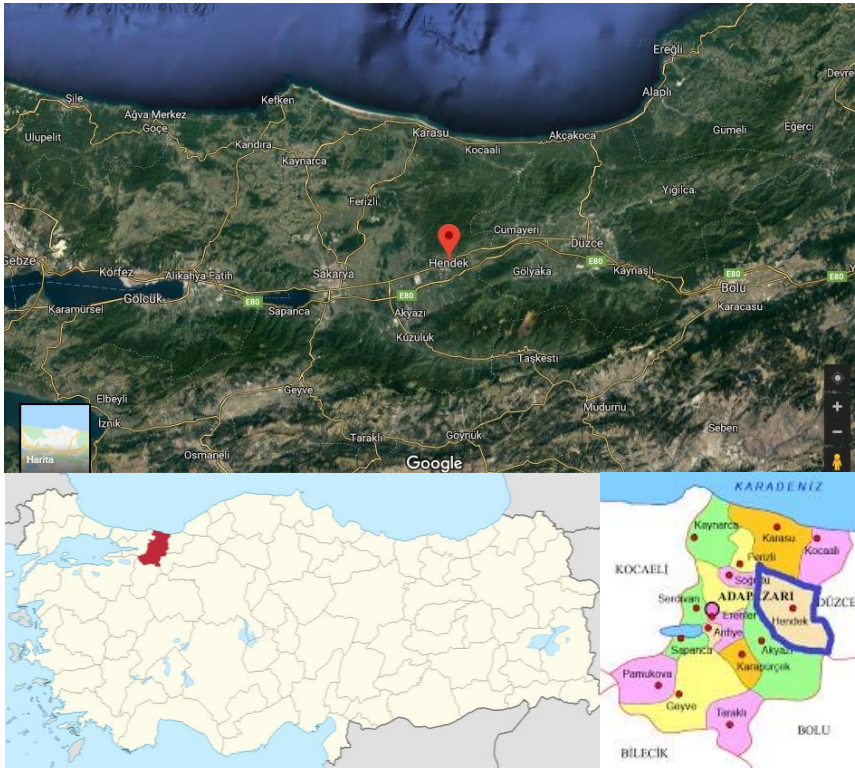


Figure 1. The locality of *Halyomorpha halys* in North-Western of Turkey.



Figure 2. Adults of *Halyomorpha halys*.