

Research article

First record of *Halyomorpha halys* (Stål, 1855) (Pentatomidae: Heteroptera) in Aegean Region of Turkey

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Abstract: *Halyomorpha halys* (Stål, 1855), commonly called as Brown Marmorated Stink Bug (BMSB), is an economically important invasive Pentatomidae species that has introduced to Turkey from İstanbul and Artvin in 2017 for the first time. Since then, it has substantially spread along the northern coastline of Anatolia. With this paper, we record this species from İzmir, for the first time in Aegean Region of Turkey. This record highlights the possibility of this species becoming very abundant in İzmir and causing damage to economically important crops in this region.

Keywords: *Halyomorpha halys*, new record, Aegean Region, Turkey

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Introduction

Halyomorpha halys (Stål, 1855) is a member of the family Pentatomidae. It is commonly called as Brown Marmorated Stink Bug (BMSB). This species is an invasive species that originates from Oriental Region and introduced to many countries in Nearctic region and Western Palaearctic region (Cienferoni et al., 2018).

It was introduced to Europe in 2004 for the first time and spread to many other European countries including Austria, Bulgaria, Croatia, Georgia, Germany, Greece, France, Hungary, Italy, Liechtenstein, Romania, Russia, Serbia, Switzerland, Slovakia, Slovenia, Spain and Sweden (Cienferoni et al., 2018). Among the neighbors of Turkey, this invasive species was first recorded from Greece in 2011, from Georgia in 2015 and from Bulgaria in 2016 (Milonas and Partsinevelos, 2014, Gapon, 2016, Simov, 2016). Later, it was finally recorded from Turkey for the first time from İstanbul and Artvin in 2017 (Çerçi and Koçak, 2017; Güncan and Gümüş, 2018). In the past 3 years, this species has been recorded from Artvin, Giresun, İstanbul, Ordu, Rize and Trabzon (Çerçi and

Koçak, 2017; Güncan and Gümüş, 2018; Ak et al., 2019; Cianferoni et al., 2019, Göktürk and Tozlu, 2019). It was also recorded from Sakarya by Öztemiz et al. (2019), but the illustrations of captured specimens do not correspond to *H. halys* but to *Rhaphigaster nebulosa* (Poda, 1761), a similar looking native species. Therefore, the record from Sakarya is doubtful. *H. halys* is a polyphagous species that is known to feed on plants from at least 49 different families (Gapon, 2016). In Northeast Anatolia, *H. halys* was observed on kiwi, hazelnut, apple, pear, Oriental persimmon, peach, beans, tomatoes, pepper, and corn (Göktürk and Tozlu, 2019).

Although it has not been reported to cause significant economic damage on any of abovementioned crops, except kiwi, yet, it was reported to cause significant economic losses in different crops in USA and Georgia and significant damage to peach in Italy and Greece (Bariselli et al., 2016; Göktürk and Tozlu, 2019; Damos et al., 2020). It is also expected to cause a significant negative impact on the yield of hazelnut in this region in

near future, if no precautions are taken (Göktürk and Tozlu, 2019).

Material and Methods

Two specimens of *H. halys* were observed in September and October 2020 from two different localities in İzmir. Only one of the specimens was captured. The captured specimen was photographed with Nikon D 3300 DSLR Camera combined with Tokina 100mm F2.8 AT-X PRO Macro Lens and 68mm extension tubes. The captured specimen is preserved in the private collection of the author. The map was prepared using SimpleMapp (https://www.simplemapp.net/).

Results

Halyomorpha halys (Stål, 1855) (Figure 1)

Material examined: Turkey: İzmir, Bornova, Ege University, Faculty of Agriculture, 38°27'16.2"N 27°13'34.6"E, 07.09.2020, 1 male, B. Çerçi leg. and det.; İzmir, Kavacık, 38°21'41.3"N 26°58'26.5"E, 1 specimen, B. Çerçi det.



Figure 1. Dorsal habitus of *Halyomorpha halys* (Stål, 1855), male from Bornova, Izmir (scale bar 1 mm)

The specimen that was collected from Bornova was found on an ornamental bush in the garden of the Faculty of Agriculture, Ege University. Notably, there were numerous nymphs of this species on the same plant. The second specimen was observed on the wall of a building at 891 m altitude in Kavacık. Although *H. halys* is not known from Aegean Region of Turkey, it was recorded from Attica, Central Macedonia and Lesbos Island in Greece (Milanos and Patrilinevelos, 2014; Andreadis et al., 2018; Cianferoni et al., 2019; Damos et al., 2020) (Figure 2).

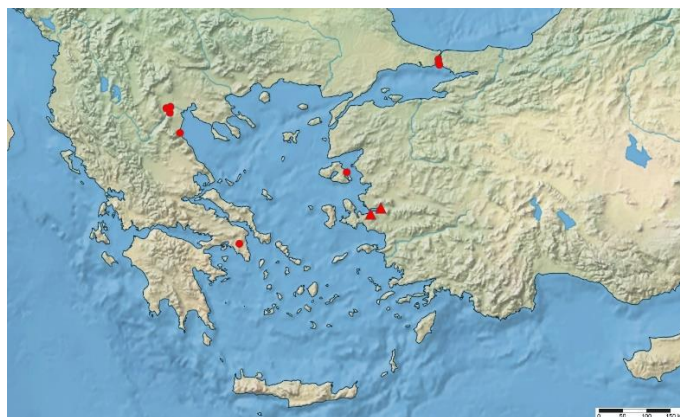


Figure 2. Records of *Halyomorpha halys* (Stål, 1855) in Greece and Western Turkey. Circles indicate previous records published in scientific articles and triangles indicate new records given in this paper.

Conclusion

The invasive Pentatomidae species *Halyomorpha halys* has been spreading across Europe since 2004 and reached to Turkey in 2017. Since its first record from Istanbul and Artvin, it spread westward along the coastline of Eastern Blacksea region and reached to Ordu. In this paper, this species is recorded from İzmir, for the first time in Aegean region of Turkey. Considering the serious pest status of this polyphagous species, this new record from İzmir is an important early warning about the potential risks of this species becoming abundant in İzmir and cause economic loss in agriculture in this region in near future. Therefore, further studies should be conducted to determine the distribution and abundancy of this species in İzmir and precautions should be taken accordingly.

Ethical Approval

The authors don't declare ethical approval.

Conflicts of Interest

The authors declare that they have no conflict of interest.

Funding Statement

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