

First Record of the Western Conifer Seed Bug, *Leptoglossus occidentalis* Heidemann, 1910 (Hemiptera, Coreidae), from Palestine

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Abstract

This is the first report of the invasive Western conifer seed bug *Leptoglossus occidentalis* Heidemann, 1910 (Hemiptera, Coreidae) from the Palestine geography representing its southern-most record in Asia. The record is from Wadi Al Makhrou, a valley considered as a key biodiversity area (KBA) and a UNESCO World Heritage site. *L. occidentalis* is a significant pest of pine trees and an invasive species to the Mediterranean region originally from western North America. More studies are needed on its ecology, status, genetics, distribution, and potential damage in Palestine.

Keywords: Hemiptera, Heteroptera, invasive species, pest, historic Palestine, *Leptoglossus occidentalis*.

1. Introduction

The family Coreidae of the insect Order Heteroptera has 270 genera and around 1900 described species worldwide (Henry 2009; Packauskas 2010); though a more recent reference is recommended. The genus *Leptoglossus* has sixty-one species restricted to the Nearctic ecozone except for one species that is the Western conifer seed bug, *L. occidentalis* (Heidemann, 1910) which has been spreading elsewhere (Brailovsky 2014). This is a damaging invasive species originally native to western North America which has been spreading to eastern North America and other parts of the world (Kulijer and Ibrahim, 2017; Lesieur *et al.*, 2019). The first record of this species in Europe was in Italy in 1999 (Taylor *et al.* 2001) to be soon followed by observations in further parts of Europe and then in Turkey in 2009 (Arslangündoğdu and Hizal 2010; Fent and Kment, 2011). From Turkey, the species has started to spread southwards to Lebanon (Nemer 2015) and the nearby Syrian Golan Heights (van der Heyden 2018).

This paper records the southern-most distribution of the Western conifer seed bug, *L. occidentalis* so far in a significant area and discusses the implication of finding the species in Wadi Al-Makhrou, near Bethlehem, Palestine. The area in question is a key biodiversity area and was also designated as a UNESCO World Heritage Site (see MoTA 2013) which really prompted the researchers to study such invasive and other threats to the local area. This area is the last remaining biodiversity hotspot in Western Bethlehem and the Southern Jerusalem areas. The valley is mentioned earlier in travel books (e.g.

Robinson, 1856) and is undergoing a biodiversity reduction (Qumsiyeh *et al.* 2014; Amr *et al.* 2016).

2. Materials and Methods

Field trips were made to Al Makhrou Valley as part of the ongoing projects by the Palestine Museum of Natural History (PMNH) and the Palestine Institute for Biodiversity and Sustainability (PIBS) to study biodiversity in an area of significant conservation value coming under threats (Qumsiyeh *et al.* 2017). Wadi Al-Makhrou is a valley located about 7 km south of the old city of Jerusalem and about 6 km northeast of the old city of Bethlehem. Al-Makhrou is an important part of the system that refills the water aquifer of Bethlehem District area. The Genus *Leptoglossus* is easy to distinguish Coreid genera by having a denticulate hind femora and leaf-like dilations on the hind tibiae (Moulet 1995, Figure 1). The identification of the specimen at the PMNH lab shows the existence of the species *Leptoglossus occidentalis* which was confirmed by using keys to the genus *Leptoglossus* (Brailovsky 2014).

3. Results and Discussion

A living specimen of *L. occidentalis* was collected from Wadi Al-Makhrou under a pine tree of the species *Pinus halepensis* Miller (specimen number PMNH E11620, collected on 4 September 2018, Figure 1). The closest records from the Eastern Mediterranean region are from Turkey (Fent and Kment, 2011), Lebanon (Nemer 2015), and the Syrian Golan (van der Heyden 2018). The range spread from western North America to other parts of the world including Morocco, Turkey, Lebanon, and Syria

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in the MENA region (van der Heyden 2018). This invasive pest species is found on conifer trees mostly of the genus *Pinus*, and is highly damaging (Fent and Kment 2011; Farinha *et al.* 2018).

This is the first record of the species from Palestine which raises a significant alarm concerning its potential damage to conifers such as *P. halepensis* and accordingly the potential damage to a highly sensitive ecosystem. Unfortunately, the sampling in the area was not intensive enough to understand the extent of the presence of a population of this species.

Locally, Handal (2017) have found another invasive species of Heteroptera, *Deroplax silphoides* Thunberg 1783, in the Bethlehem district. The finding of a second invasive pest species may signal significant changes in the environment already evident by decline of biodiversity in this region (e.g. Qumsiyeh *et al.* 2014; Amr *et al.* 2016). A more detailed survey of Heteroptera in Palestine is warranted in addition to using mitochondrial DNA analysis which has already shown its utility in understanding the spread of this species from western to eastern North America and then to Europe (Lesieur *et al.* 2019). This study concludes that such data, though limited, are important to create an understanding of the distributional changes of species and are especially relevant in the case of invasive species.

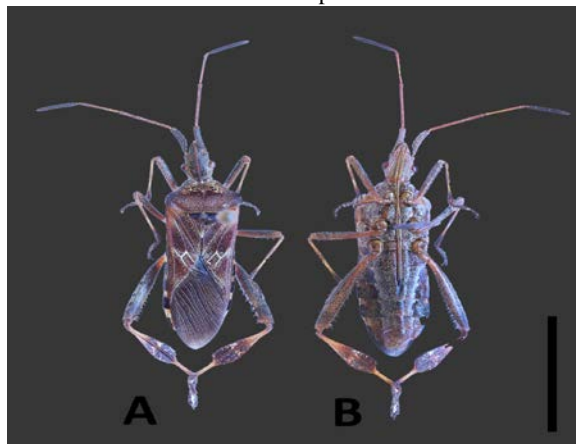


Figure 1. Adult of *Leptoglossus occidentalis*, A: Dorsal view, B: Ventral view, Scale Bar = 10mm.

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