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LEPTOGLOSSUS OCCIDENTALIS (HEIDEMANN, 1910) IS AN INVASIVE INSECT SPECIES

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ABSTRACT

The western conifer seed bug, *Leptoglossus occidentalis* (Heidemann, 1910) (Heteroptera: Coreidae), is an invasive alien species of North American origin. In Europe, it was first collected in Italy in 1999. From there, it quickly expanded its range to western and eastern Europe. *Leptoglossus occidentalis* was recorded for the first time in Sariyer-Istanbul, Turkey in 2009. *Leptoglossus occidentalis* is specialised to conifers. In this study gives *Leptoglossus occidentalis* morphology, distribution and host plants, economic importance.

Keywords: *Leptoglossus occidentalis*, insect, invasive

İSTİLACI BİR BÖCEK TÜRÜ *LEPTOGLOSSUS OCCIDENTALIS* (HEIDEMANN, 1910)

ÖZET

Leptoglossus occidentalis (Heidemann, 1910) (Heteroptera: Coreidae) Kuzey Amerika orijinli istilacı yabancı bir böcek türüdür. Avrupa'da ilk defa 1999 yılında İtalya'da görülmüştür. Daha sonra hızla doğu ve batı Avrupa'ya yayılmıştır. Türkiye'de 2009 yılında Sarıyer-İstanbul'da tespit edilmiştir. İğne yapraklı ağaçları tercih eden bir zararlıdır. Bu çalışmada *Leptoglossus occidentalis*'in morfolojisi, yayılışı ve konukçu bitkileri ile ekonomik önemi anlatılmıştır.

Anahtar Kelimeler: *Leptoglossus occidentalis*, böcek, istilacı

1. INTRODUCTION

Coreidae (Leach 1815, superfamily Coreidea) includes 2200 species belonging to 500 genera worldwide, and has a very wide distribution. In the Palaearctic Region, 344 species in 84 genera have been listed (Dolling, 2006). In Turkey, 48 species from 20 genera have been recorded (Dursun, 2011).

The genus *Leptoglossus* Guérin-Méneville, classified in subfamily Coreinae and tribe Anisoscelini, comprises 54 species of large coreids, with leaflike dilations on the hind tibiae. The taxonomy of *Leptoglossus* was recently revised. *L. occidentalis* belongs to the largest zonatus species group (Fent and Kment, 2011).

The western conifer seed bug, *Leptoglossus occidentalis* (Heidemann, 1910) (Heteroptera: Coreidae), is an invasive alien species of North American origin (McPherson et al. 1990). In Europe, it was first collected in Italy

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in 1999 (Tescari 2001). From there, it quickly expanded its range to western and eastern Europe (Bernardinelli & Zandigiacomo 2001; Hradil 2008; Kment & Banar 2008; Lis et al. 2008; Rabitsch 2008; Simov, 2008; Werner 2011). *Leptoglossus occidentalis* was recorded for the first time in Sariyer, Turkey in 2009 (Arslangündogdu &Hizal 2010).

Leptoglossus occidentalis is specialised to conifers. It has been recorded from about 40 species of conifers, mostly from pines (Pinales: Pinaceae), e.g., *Pinus coulteri* D. Don, *P. halepensis* Mill., *P. jeffreyi* Balf., *P. lambertiana* Douglas, *P. monticola* Douglas ex D. Don, *P. mugo* Turra, *P. nigra* J. F. Arnold, *P. pinea* L., *P. ponderosa* P. Lawson & C. Lawson, *P. radiata* D. Don, *P. resinosa* Alton, *P. sabiniana* Douglas, *P. strobus* L., and *P. sylvestris* L., but also on *Pseudotsuga menziesii* [Mirb.] Franco, P. macrocarpa [Vasey] Mayr), *Tsuga canadensis* Carrière, T. mertensiana (Bong.) Carrière, *Calocedrus* [=*Libocedrus*] *decurrens* (Torr.) [Pinales: Cupressaceae]), *Abies concolor* [Gord. & Glend.] [Pinales: Pinaceae]), *A. magnifica* A. Murray), *Picea glauca* [Moench] Voss; [Pinales: Pinaceae]) and *Cupressus sempervirens* L. [Pinales: Cupressaceae] (e.g., Koerber 1963; McPherson et al. 1990; Gall 1992;Vanin et al. 2005; Kment & Baňař 2008; Protić 2008; Maltese et al. 2009).

In this study gives *Leptoglossus occidentalis* morphology, distribution and host plants, economic importance.

2. MATERIAL AND METHOD

In this study was used literature and our observations.

3. RESULTS AND DISCUSSION

3.1. Morphology

The upper (dorsal) side of the abdomen is yellow or light orange with five transverse black patches. This orange and black pattern on the abdominal dorsum is revealed during flight. The flight pattern and loud buzz produced by this strong flying conifer pest resemble those of a bumble bee. The young nymphs of *L. occidentalis* are orange, and they become reddish brown after a few molts. The eggs, which are laid in chains on conifer needles, measure about 2 mm each in length.

The genus *Leptoglossus* can be easily distinguished from all other Palaearctic Coreidae by the denticulate hind femora and leaf-like dilations on hind tibiae. Humeral angles of pronotum not produced, widely rounded, disc of pronotum brown with several black round spots, without any pale transverse stripe; leaf-shaped dilations of hind tibiae smaller and narrower, both outer and inner part of the dilation are nearly symmetrical, without teeth. Adult *L. occidentalis* are relatively large and conspicuous, attaining a length of 20 mm and width of 7 mm (Figure 2).

Figure 1. *Leptoglossus occidentalis* (Heidemann, 1910).

3.2. Distribution and host plants in Turkey

Distribution areas and host plants given Table 1 and potential distribution areas given in Figure 2.

Table 1: *Leptoglossus occidentalis* (Heidemann, 1910) distribution in Turkey.

Locality	**Year**	**Host Plant**	**Source**
Edirne	2009	-	Fent and Kment, 2011
Istanbul	2009	*Pinus nigra* *P. pinea* *P. radiata* *Abies concolor*	Arslangündoğdu, and Hizal 2010 Hizal 2012.
Kırklareli	2010	-	Fent and Kment, 2011
Izmir	2012	*Pinus pinea*	Own data (unpublished)

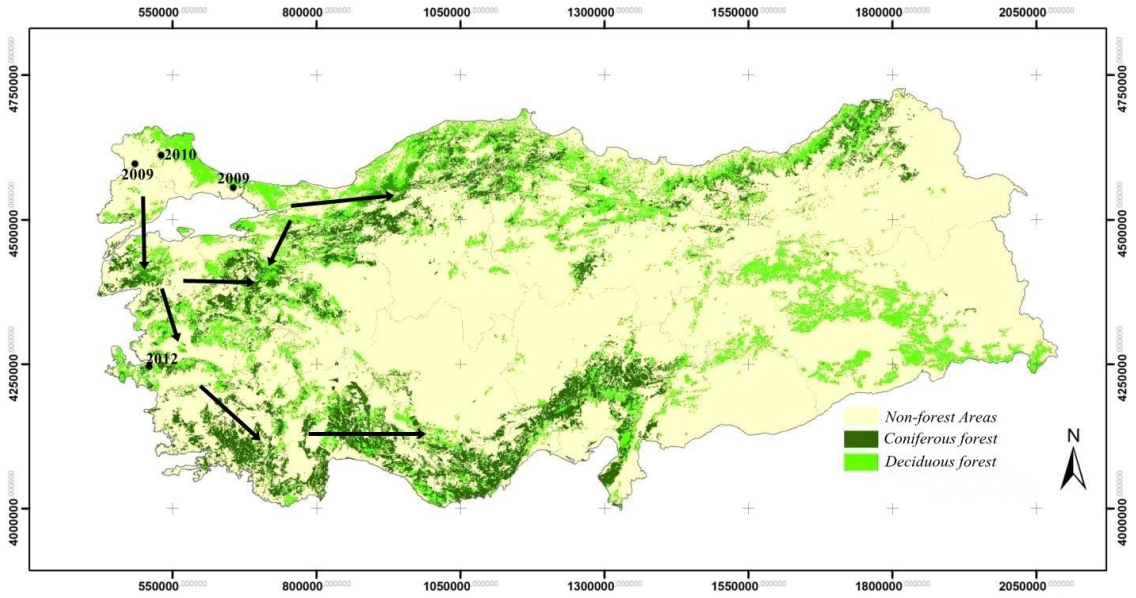

Figure 2. *Leptoglossus occidentalis* (Heidemann, 1910) potential distribution areas (→) (Map modified by Inan & Hizal, 2011).

3.3. Economic Importance

The bugs suck on young developing cones and may cause abortion of young conelets, fusion of seeds to cone scales as well as direct damage by depletion of the lipid and protein content of the seed up to its complete emptying (Bates et al. 2000a,b, 2002). For example, *Leptoglossus occidentalis* can damage up to 70–80 % of seeds on *Pinus monticola* and 50 % of seeds on *Pseudotsuga menziesii* under natural conditions (Connelly & Schowalter 1991). No study has been conducted to assess the potential damage of *L. occidentalis* to native conifers in Turkish Forest, but this species certainly must be considered a potential pest to commercial forestry. Tiberi (2007) listed *L. occidentalis* among pests of *Pinus pinea* cultivated in Italy for the edible seeds. Uyemoto et al. (1986) reported damage caused by *L. Occidentalis* on cultivated pistachio.

Leptoglossus occidentalis (Heidemann, 1910) is new important pest for insect fauna of Turkey. Our understanding of the biology, distribution, host plants, chemical and biological control methods of *Leptoglossus occidentalis* in Turkey is far from adequate. Additional studies are needed to assess the extent of the threat posed by this species, and to develop appropriate preventive or response strategies.

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