NEW AND UNUSUAL REPORTS

First Records of *Leptoglossus occidentalis* Heidemann, 1910 (Heteroptera: Pentatomorpha: Coreidae) in the Czech Republic

Jakub BERÁNEK

Section Harmful Organisms – Unit of Plant Protection Methods, State Phytosanitary Administration, Brno, Czech Republic

Abstract

Beránek J. (2007): **First records of** *Leptoglossus occidentalis* Heidemann, 1910 (Heteroptera: Pentatomorpha: Coreidae) **in the Czech Republic**. Plant Protect. Sci., **43**: 165–168.

In the autumn of 2006 and summer 2007 the coreid species *Leptoglossus occidentalis* Heidemann, 1910 was detected in the Czech Republic for the first time as a new alien insect species. It is native to North America, where it causes important seed losses on coniferous trees, especially pines. From Europe it is known since the end of the last century, when it was introduced to Italy. Its repeated finding could indicate a vital population of this species in the Czech Republic, not only introduced individuals.

Keywords: Hemiptera; western conifer seed bug; seed losses; coniferous trees

Leptoglossus occidentalis Heidemann, 1910, known as the leaf-footed bug or the western conifer seed bug, is considered a severe pest for seed orchards of conifers. It is a native species of the western areas of North America, from Mexico in the south to British Columbia of Canada in the north (McPherson *et al.* 1990). It was first described in 1910 from California (Bernardinelli & Zandigiacomo 2001a, b). Since the end of the last century the range of this bug has been expanding. In the 1960's it was observed from California through Arizona, New Mexico and Texas, northeastward to Iowa. By the 1970's it was established in Wisconsin and Illinois, and by the mid 1980's was found in Minnesota, Michigan and Ontario. In 1990 this species was collected in New York State and in 1992 it was found in Pennsylvania (McPherson *et al.* 1990; Wheeler 1992; Bernardinelli & Zandigiacomo 2001b).

In 1999 it was first recorded from Europe. It was observed near Vicenza in northern Italy, whereto it was probably introduced from North America (Tescari 2001). The first European record was followed by rapid spread of this species to further localities in Italy and other countries (Bernardinelli & Zandigiacomo 2001a, 2002; Tescari 2001, 2003). In 2002 it was also collected in southern Switzerland (Tescari 2003), in 2003 in Slovenia (Gogala 2003) and in north-western Spain (Ribes & Escolà 2005), in 2004 in Croatia (Tescari 2004) and Hungary (Harmat *et al.* 2006) and in 2005 in Austria (Hipold 2005; Rabitsch & Heiss 2005). In 2006 it was found also in France (Moullet 2006).

The western conifer seed bug is a major pest of seed orchards in the USA and southern Canada. By its mouth parts it pierces the cone and sucks out the seed endosperm, thus causing a high incidence of conelet abortion. Its direct economic impact is a reduction in the yield and quality of conifer seed crops. Under natural conditions, *L. occidentalis* can damage 50–80% of conifer seeds (Connely & Schowalter 1991; Bates

Figure 1. The evidence individual of the western conifer seed bug (*Leptoglossus occidentalis*) caught 2007 in the Botanical Garden and Arboretum of Mendel University of Agriculture and Forestry in Brno (photo author)

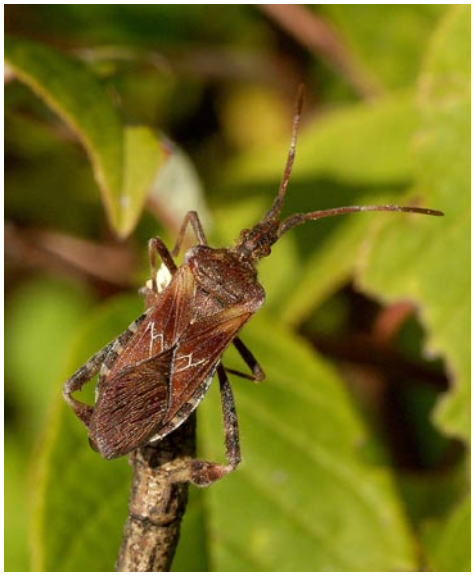

Figure 2. Adult specimen of the western conifer seed bug (*Leptoglossus occidentalis*) from Brno-Černá Pole, South Moravia, caught in 2006 (photo author)

2000). The bug attacks about 40 species of conifers, especially Douglas fir (*Pseudotsuga menziesii* (Mirb.) Franco), various species of pines e.g. white pine (*Pinus strobus* L.), red pine (*Pinus resinosa* Aiton), ponderosa pine (*Pinus ponderosa* Dougl. ex Law. et C. Law.), Scots pine (*Pinus sylvestris* L.), Austrian pine (*Pinus nigra* Arnold), mountain pine (*Pinus mugo* Turra), lodgepole pine (*Pinus contorta* Dougl. ex Loud.), but also cedars (*Cedrus* spp.), firs (*Abies* spp.), spruces (*Picea* spp.) and pistachio (*Pistacia vera* L.).

The adult of *L. occidentalis* is flattened, warm reddish-brown coloured with a distinctive zigzag stripe across the fore wings (Figure 1). The dorsal side of the abdomen is yellow or light orange with five transverse black patches, which are revealed during flight. The length of its body is 9–18 mm, with females being larger than males. The important identification mark is leaf-like expansions of the hind tibiae. Hind femora are often also swollen and bear heavy spines. The nymphs are orange and brown and become reddish brown to brown as they develop (Bernardinelli & Zandigiacomo 2001b).

In North America this species is monovoltine, but in Mexico it is polyvoltine. In the spring the adults move to coniferous trees, where they feed on the developing seeds and early flowers of different species of conifers. The females lay rows of eggs on the needles of the host trees. The nymphs hatch after about 10 days. Young nymphs begin to feed on tender cone scales and sometimes needles. Nymphs pass through five stages and reach adulthood by late summer. New adults feed on ripening seeds until early autumn and then they hibernate. The bugs sometimes cause serious alarm when large numbers of adults suddenly invade houses looking for overwintering sites (Gall 1992; Wheeler 1992; Blatt 1994).

L. occidentalis was first found in the Czech Republic on October 8, 2006 at a window of the State Phytosanitary Administration (GPS: N 49°12'40'' E 16°36'59'', faunistic quadrant 6765), where it found a suitable place for hibernation (Kment *et al.* in press). The second find was on July 23, 2007 under an Austrian pine (*Pinus nigra*) in the Botanical Garden and Arboretum of Mendel University of Agriculture and Forestry in Brno. The distance of these localities is about 100–150 m. Both bugs were identified by the author. The first one was revised at the Department of Entomology of the National Museum in Prague (by P. Kment). The sex of the first individual is unknown, because it flew away while being photographed. The second individual was male. The larva of this species was also found on the wall of the building in the campus of Mendel University of Agriculture and Forestry in Brno in September 11, 2007.

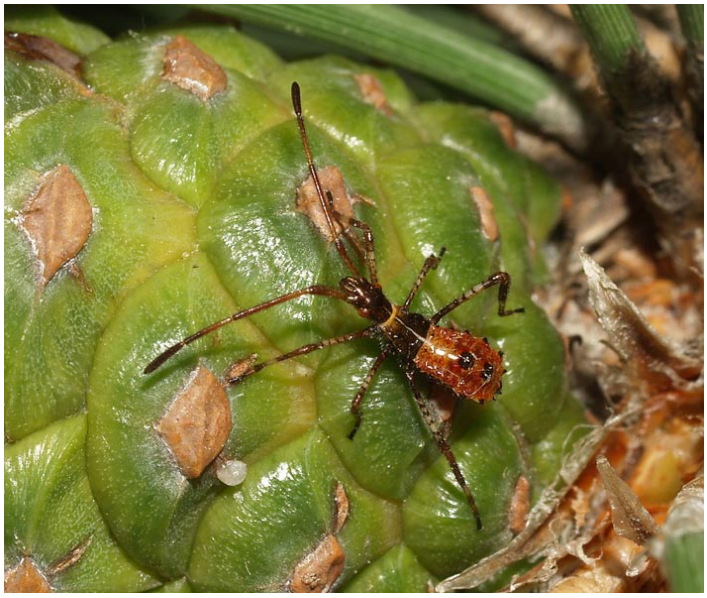

Figure 3. Nympha of *L. occidentalis* on the host plant (photo author)

After finding the second individual, the author attempted to verify the occurrence of other individuals of this bug by knocking on branches of several pine species in the Botanical Garden and Arboretum. However, no individuals were found. During next observations in Botanical Garden and Arboretum which had taken place in the end of September 2007 were caught other 12 individuals, let us say 7 adults and 5 larvae.

There are also other localities in the Czech Republic where *L. occidentalis* was caught by other entomologists in autumn 2007: Olomouc (faunistic quadrant 6469) and Brno-Lesná (faunistic quadrant 6765) 1.2–1.5 km far from Botanical Garden and Arboretum of Mendel University of Agriculture and Forestry in Brno (Kment *et al*. in press).

The western conifer seed bug does not present a new potential pest of commercial forestry in the Czech Republic for now. Its repeated finding could mean the existence of an established population, not only an accidental introduction of individuals in the Czech Republic, especially in the area of Brno.

References

Bates S.L. (2000): Impact of *Leptoglossus occidentalis* (Hemiptera: Coreidae) on Douglas-fir seed production. Journal of Economic Entomology, **93**: 1444–1451.

Bernardinelli I., Zandigiacomo P. (2001a): *Leptoglossus occidentalis* Heidemann (Heteroptera, Coreidae): a conifer seed bug recently found in northern Italy. Journal of Forest Science, **47** (Special Issue No. 2): 56–58.

Bernardinelli I., Zandigiacomo P. (2001b): *Leptoglossus occidentalis* Heidemann (Heteroptera, Coreidae): a conifer seed bug recently found in northern Italy. In: 4th Workshop of IUFRO – WP 7.03.10, 17–22 September 2001, Prague, Czech Republic.

Bernardinelli I., Zandigiacomo P. (2002): Prima segnalazione per il Friuli-Venezia Giulia del "cimicione delle conifere" (*Leptoglossus occidentalis*). Notizario ERSA, No. 5: 44–46.

Blatt S.E. (1994): An unusually large aggregation of the western conifer seed bug, *Leptoglossus occidentalis* (Hemiptera: Coreidae), in a man-made structure. Journal of the Entomological Society of British Columbia, **91**: 71–72.

Connely A.E., Schowalter T.D. (1991): Seed losses to feeding by *Leptoglossus occidentalis* (Heteroptera: Coreidae) during two periods of second year cone development in Western White Pine. Journal of Economic Entomology, **84**: 215–217.

Gall W.K. (1992): Further eastern range extension and host records for *Leptoglossus occidentalis* (Heteroptera: Coreidae) well documented dispersal of a household nuisance. Great Lakes Entomologist, **25**: 159–171.

Gogala A. (2003): Listonožka (*Leptoglossus occidentalis*) že v Sloveniji (Heteroptera: Coreidae). Acta Entomologica Slovenica, **11**: 189–190.

Harmat B., Kondorosy E., Rédei D. (2006): A nyugati levéllábú poloska (*Leptoglossus occidentalis* Heidemann) első magyarországi megjelenése (Heteroptera: Coreidae). (First occurrence of the western conifer seed bug (*Leptoglossus occidentalis* Heidemann) in Hungary (Heteroptera: Coreidae)). Növényvédelem, **42**: 491–494.

Hipold A. (2005): Neu für Südtirol: *Leptoglossus occidentalis* Heidemann, 1910 (Heteroptera, Coreidae). Gredleriana, **5**: 358.

Kment P., Beránek J., Baňař P. (2008): Faunistic records from the Czech Republic – IXX. Heteroptera: Coreidae. Klapalekiana, **44** (in press).

McPherson J.E., Packauskas R.J., Taylor S.J., O'Brien M.F. (1990): Eastern range extension of *Leptoglossus occidentalis* with a key to *Leptoglossus* species of America North of Mexico (Heteroptera: Coreidae). Great Lakes Entomologist, **23**(2): 99–104.

Moullet P. (2006): Un nouveau Coréide en France: *Leptoglossus occidentalis* Heidemann, 1910 (Heteroptera Coreidae). Entomologiste (Paris), **62**: 183–184.

Rabitsch W., Heiss E. (2005): *Leptoglossus occidentalis* Heidemann, 1910, eine amerikanische Adventivart auch in Österreich aufgefunden (Heteroptera: Coreidae). Berichte des Naturwissenschaftlich-Medizinischen Vereins in Innsbruck, **92**: 131–135.

Ribes J., Escolà O. (2005): *Leptoglossus occidentalis* Heidemann, 1910, Hemípter neàrtic trobat a Catalunya (Hemiptera: Heteroptera: Coreidae). (*Leptoglossus occidentalis* Heidemann, 1910, a Nearctic bug (Hemiptera, Heteroptera, Coreidae) found in Catalonia, Spain. Sessió Conjunta d'Entomologia ICHN-SCL, **13**: 47–50.

Tescari G. (2001): *Leptoglossus occidentalis*, coreide neartico rinvenuto in Italia – (Heteroptera, Coreidae*).* Società Veneziana di Scienze Naturali, Lavori, **26**: 3–5.

Tescari G. (2003): Note sulla diffusione di *Leptoglossus occidentalis* Heidemann, 1910 (Hemiptera, Heteroptera) nel territorio vicentino. Studi e Ricerche – Associazione Amici del Museo – Museo Civico "G. Zannato": 35–36.

Tescari G. (2004): First record of *Leptoglossus occidentalis* (Heteroptera: Coreidae) in Croatia. Entomologica Croatica, **8**: 73–75.

Wheeler A.G. (1992): *Leptoglossus occidentalis*, a new conifer pest and household nuisance in Pennsylvania. Pennsylvania Department of Agriculture Bulletin, **18**: 29–30.

Received for publication July 27, 2007
Accepted after corrections October 6, 2007

Corresponding author:

Ing. Jakub Beránek, Státní rostlinolékařská správa, Sekce ochrany proti škodlivým organismům, oddělení metod ochrany rostlin, Zemědělská 1a, 613 00 Brno, Česká republika
tel.: + 420 545 137 056, e-mail: jakub.beranek@srs.cz