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ADDITIONAL RECORDS OF THE INVASIVE NEARCTIC BUG *LEPTOGLOSSUS OCCIDENTALIS* (HETEROPTERA: COREIDAE) IN CROATIA

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Additional records of the invasive Nearctic true bug *Leptoglossus occidentalis* Heidemann, 1910 (Heteroptera: Coreidae: Coreinae: Anisoscelini) from Croatia are given from the islands of Rab, Brač, and Hvar. A new host plant, *Pinus halepensis*, is reported.

Key words: Heteroptera, Coreidae, *Leptoglossus occidentalis*, Croatia, invasive species, host plant, *Pinus halepensis*

Kment, P. & Baňař, P.: Novi nalazi invazivne nearktičke vrste stjenice *Leptoglossus occidentalis* (Heteroptera: Coreidae) u Hrvatskoj. Nat. Croat., Vol. 17, No. 2., 141–147, 2008, Zagreb.

U radu se donose novi nalazi invazivne nearktičke vrste stjenice *Leptoglossus occidentalis* Heidemann, 1910 (Heteroptera: Coreidae: Coreinae: Anisoscelini) za Hrvatsku, i to s otoka Raba, Brača i Hvara te se govori o novoj biljci domaćinu, alepskom boru *Pinus halepensis*.

Ključne riječi: Heteroptera, Coreidae, *Leptoglossus occidentalis*, Hrvatska, invazivna vrsta, biljka domaćin, *Pinus halepensis*

INTRODUCTION

Leptoglossus occidentalis Heidemann, 1910 (Hemiptera: Heteroptera: Coreidae: Coreinae: Anisoscelini), is originally a Nearctic species, native to the western areas of

North America (from Mexico in the south through California and Utah to British Columbia, Alberta, and Saskatchewan in the north (KOERBER, 1963; FROESCHNER, 1988; MCPHERSON *et al*., 1990; ZAVALA CHAVEZ & MENDEZ MONTIEL, 1996). After World War II, the species spread eastwards: in the 1950s and 1960s it reached America's Midwest (Indiana, Iowa, Montana, Nebraska, Kansas), in the 1970s Wisconsin and Illinois, in the 1980s Minnesota, Michigan, Ontario, and Connecticut situated on the Atlantic coast. In the 1990s it was reported from Pennsylvania, New York, Massachusetts, Rhode Island, New Hampshire, Main, and New Brunswick (FROESCHNER, 1988; MC PHERSON *et al*., 1990; GALL, 1992; WHEELER, 1992; RIDGE--O'CONNOR, 2001). In Europe, *L. occidentalis* was discovered for the first time near Vicenza in northern Italy in 1999 (TESCARI, 2001). The first record was followed by a rapid spread in Italy, where it was found at further localities in Lombardy, Veneto, Abruzzo, Friuli-Venezia Giulia, Emilia-Romagna, Trentino-Alto Adige, and Sicily (BERNARDINELLI & ZANDIGIACOMO, 2001, 2002; HILPOLD, 2005; OLIVIERI, 2004; PEZZI, 2003; TAYLOR *et al*., 2001; TESCARI 2001, 2003; VANIN *et al*., 2005; VICIDOMINI & PIGNATORO 2007; VILLA *et al*., 2001). It was also collected in 2002 in southern Switzerland (canton Tessin) (COLOMBI & BRUNETTI, 2002) and in 2007 in northern Switzerland (WYNIGER 2008), in 2003 in Slovenia (GOGALA, 2003; further records published by JURC & JURC, 2005), and in Catalonia (RIBES *et al*., 2004; RIBES & ESCOLÀ, 2005). In 2004 it was recorded from Croatia (TESCARI, 2004) and Hungary (HARMAT *et al*., 2006; further record published by FÖLDESSY, 2006), in 2005 from Austria (RABITSCH & HEISS, 2005), in 2006 from France (MOULET, 2006; further records e.g. published by DUSOULIER *et al*., 2007), the Czech Republic (KMENT *et al*., 2008), and Germany (WERNER, 2006), Serbia (Protić, in prep.), in 2007 from Slovakia (MAJZLAN & ROHÁČOVÁ, 2007), Poland (LIS *et al*., 2008), Belgium (AUKEMA & LIBEER, 2007) and England (MALUMPHY & REID, 2007) and in 2008 from Montenegro (K. Hradil, in prep.).

Leptoglossus occidentalis is an oligophytophagous species which develops on various conifers. It feeds on young developing cones, in winter on the bases of the needles. It has been recorded from about 40 conifer species (*Pinus* spp., *Calocedrus decurens*, *Pseudotsuga menziesii*, *Tsuga canadensis*, *Cedrus* spp., *Abies* spp., and *Picea* spp.) (e.g., KOERBER, 1963; KRUGMAN & KOERBER, 1969; VILLA *et al*., 2001). In the USA and Canada, it is known as a relatively serious pest of conifer seed orchards. Under natural conditions, *L. occidentalis* can damage 70–80 % of *Pinus monticola* seeds and 50 % of *Pseudotsuga menziesii* seeds (CONNELLY & SCHOWALTER, 1991). In autumn, the bugs search for suitable dry overwintering places (bird and rodent nests, spaces under loose bark of trees, etc.), forming aggregations of tens to thousands of overwintering individuals. The forming of such aggregations on the windows of human dwellings and similar places may be a nuisance. Artificial transport of the specimens (e.g., with Christmas trees shipments) accelerates the spread of the species (e.g., GALL, 1992; WHEELER, 1992; BLATT, 1994; RIDGE-O'CONNOR, 2001). BATES (2005) reported damages on cross-linked polyethylene (PEX) pipes commonly used in plumbing and radiant heating systems in the USA; the multiple partial and through-wall microscopic holes made by the bug's rostrum piercing the pipe caused the pipes to leak.

RESULTS

Leptoglossus occidentalis Heidemann, 1910

Material examined: Rab island, Lopar, San Marino camp and its environs, N 44°50′ E 14°43′, 9.–13.vi.2007, 1 female, J. Schlägelová lgt., P. Kment det. & coll. **Hvar island**, Pitve env., N 43°08′ E 16°40′, creeping on a rock under *Pinus halepensis*, 29.viii.2007, 1 larva of instar 2, T. Juřička lgt., P. Kment det. **Brač island**, Sumartin env., N 43°17′ E 16°52′, swept from *Pinus halepensis*, 10.–11.ix.2007, 1 male, 1 larva of instar 5, P. Kment lgt. & det. All material is deposited in the collection of the National Museum, Prague, Czech Republic.

DISCUSSION

The only record of *Leptoglossus occidentalis* in Croatia came from the North Dalmatian island of Cres, locality Martinšica in the west of the island (N 44°19′ E 14°20′), where it was collected on *Pinus nigra* (Tescari, 2004). We documented this species from the nearby Island of Rab, as well as from the Central Dalmatian Islands Brač and Hvar (Fig. 1). The line of sight distances between the first locality on Cres Island and the new localities are: 30 km eastwards to Rab Island, 262 km south-eastwards to Hvar Island, and 264 km south-eastwards to Brač Island. These records document the rapid spread of this invasive alien species in the Balkan peninsula along the Adriatic coast. However, the population density seems to be rela-

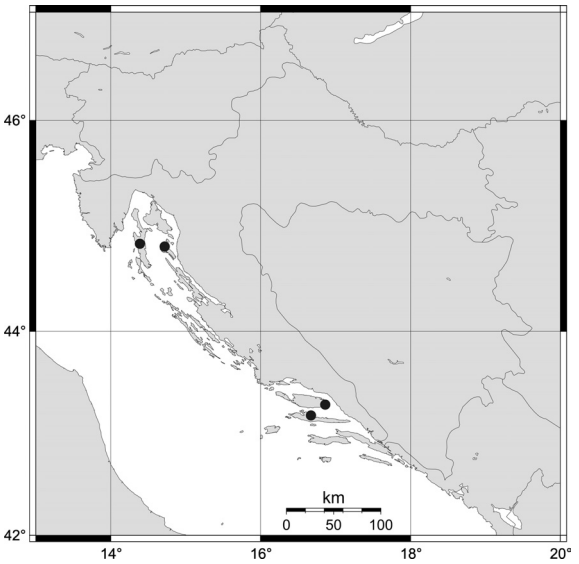

Fig. 1. Distribution of *Leptoglossus occidentalis* Heidemann, 1910 in Croatia.

tively low so far, at least on Brač, where three hours of sweeping of pines resulted in only two specimens collected.

TESCARI (2004) argued that this species 'has poor flying capabilities and is definitely not capable of crossing the stretch of sea that separates the island [Cres] from its neighbouring islands and Istria'. He suggested unintentional introduction with tourist movement or with ornamental conifers. However, TESCARI (2004) evidently underestimated the power of winds blowing from mainland to sea and vice versa (e.g. bora), which may support the long flight of even larger animals than *L. occidentalis*. Of course, unintentional introduction by man also happens, especially the transport of overwintering assemblages of bugs (e.g. hidden with wood or in containers) would be very efficient for establishing new centres of further dispersion (as in the case of Berlin in Germany – WERNER 2006).

Leptoglossus occidentalis was reported in association with many species of pines, Nearctic (e.g., *Pinus banksiana*, *P. cembroides*, *P. contorta*, *P. coulteri*, *P. flexilis*, *P. jeffreyi*, *P. lambertiana*, *P. monticola*, *P. ponderosa*, *P. radiata*, *P. resinosa*, *P. strobus*) as well as Palaearctic (*P. mugo*, *P. nigra*, *P. pinea*, *P. sylvestris*) (BATES *et al*., 2002; KOERBER, 1963; KRUGMAN & KOERBER, 1969; ZAVALA CHAVEZ & MENDEZ MONTIEL, 1996; SCHOETTLE & NEGRON, 2001; VILLA *et al*., 2001; OLIVIERI, 2004; TESCARI, 2004; TIBERI, 2007). However, it has never been mentioned in connection with *Pinus halepensis*, which is reported here as a new host plant of *L. occidentalis*.

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SAŽETAK

Novi nalazi invazivne nearktičke vrste stjenice *Leptoglossus occidentalis* (Heteroptera: Coreidae) u Hrvatskoj

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Leptoglossus occidentalis Heidemann, 1910 (Heteroptera: Coreidae: Coreinae: Anisoscelini) je nearktička vrsta, autohtona u zapadnim dijelovima Sjeverne Amerike (od Meksika na jugu, do jugozapadne Kanade). Nakon II. Svjetskog rata vrsta se počela širiti na istok: 50-tih i 60-tih godina XX. stoljeća došla je do američkog Srednjeg Zapada, 70-tih godina do Wisconsina i Illinoisa, a 80-tih sve do Connecticuta na obali Atlantika. U Europi je prvi puta otkrivena 1999. godine blizu Vicenze u sjevernoj Italiji, a zatim se brzo proširila Apeninskim poluotokom i Sicilijom. Godine 2002. pronađena je u južnoj Švicarskoj (kanton Tessin), 2003. u Sloveniji i Kataloniji, 2004. u Hrvatskoj i Mađarskoj, 2005. u Austriji, 2006. u Francuskoj, Srbiji, Češkoj Republici i Njemačkoj, 2007. u Slovačkoj, Poljskoj, Belgiji i Engleskoj te 2008. u Crnoj Gori.

Leptoglossus occidentalis je oligofagna vrsta koja se razvija na različitim četinjačama. Hrani se na mladim češerima, zimi na bazama iglica. Zabilježena je na 40-tak vrsta četinjača (npr. *Pinus* spp., *Calocedrus decurens*, *Pseudotsuga menziesii*, *Tsuga canadensis*, *Cedrus* spp., *Abies* spp. i *Picea* spp.). U nasadima četinjača u SAD i Kanadi radi relativno ozbiljne štete na sjemenkama. U jesen stjenice traže prikladno suho mjesto za prezimljavanje (gnijezda ptica i glodavaca, mjesta pod slabo pričvršćenom korom drveća itd.) te čine agregate od desetaka do stotina tisuća jedinki.

Jedini podatak o *L. occidentalis* iz Hrvatske potječe s otoka Cresa (lokalitet Martinšćica), gdje je zabilježena na vrsti *Pinus nigra*. U ovom radu donosimo nalaze vrste s otoka Raba, Brača i Hvara, pri čemu zračna udaljenost od prvog lokaliteta s Cresa iznosi 30 km istočno prema Rabu, 262 km sjeveroistočno prema Hvaru i 264 km sjeveroistočno prema Braču. To svjedoči o vrlo brzom širenju ove strane invazivne vrste. Zasad se gustoća populacije čini relativno niskom, barem na Braču gdje smo u tri sata stresanja borova prikupili samo dvije jedinke. *Pinus halepensis* je ovdje zabilježen kao nova biljka domaćin za *L. occidentalis*.