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SHORT COMMUNICATION

Western conifer seed bug (*Leptoglossus occidentalis* (Heidemann, 1910)) (Insecta: Hemiptera: Coreidae) – a new invasive species of bug in Kampinoski National Park

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ABSTRACT

The paper presents the first finding of the invasive *Leptoglossus occidentalis* (Hemiptera) in Kampinoski National Park. It is also the northern-easternmost locality of this species in Poland.

Keywords: Hemiptera, Heteroptera, Coreidae, *Leptoglossus occidentalis*, new records, Poland, invasive species

The Western conifer seed bug (*Leptoglossus occidentalis*) (Photo 1) is a representative of leaf-footed bugs (Coreidae) within Heteroptera. Its original area is North America, where it occurs in Mexico, the western parts of the US and southern Canada (Hebda & al. 2010). It was brought to Europe at the end of the 20th century, and first reports concerned Italy, where the species was found in the vicinity of Vicenza in 1999 (Tescari 2001). In several next years it

colonised all the Apennine Peninsula from Sicily to the Alps foothills, and in 2002 it was reported from south Switzerland (Colombi & Brunetti 2002). Within several years it colonised south and western Europe: Slovenia (Gogala 2003), Spain (Ribes & *al.* 2004), Croatia (Tescari 2004), Serbia (Protić 2008), Montenegro (Hradil 2008), Bulgaria (Simov 2008), Romania (Ruicănescu 2009), Portugal (Grosso-Silva 2010), Greece (Pettrakis 2011), Bosnia and Hercegovina (Protić & Stanković 2015), Macedonia (Kulijer 2016), Kosovo (Kulijer & Ibrahimović 2017), Albania (van der Heyden 2018). Slightly later it reached the central part of European continent, namely: Austria (Rabitsch & Heiss 2005), Hungary (Harmat & *al.* 2006), France (Moulet 2006), Germany (Werner 2006), Slovakia (Majzlan & Roháčová 2007), the Czech Republic (Beránek 2007), Belgium (Aukema & Liberr 2007), Poland (Lis & *al.* 2008), the Netherlands (Aukema 2008), Russia (Gapon 2012) and Ukraine (Putshkov & *al.* 2012). Finally it also reached north Europe, where it was found in England (Malumphy & Reid 2007), Denmark (Buhl & Stephensen 2009), Norway (Mjøs & *al.* 2010) and Sweden (Lindelöw & Bergsten 2012). Beyond Europe the species also is colonising Asia, as it was reported from Turkey (Arslanguondogdu & Hizal 2010, Fent & Kment 2011, Özgen & *al.* 2017), Israel (van der Heyden 2018b), Georgia (van der Heyden 2018c), Kazakhstan (Barclay & Nikolaeva 2018) and the Far East: China, Korea and Japan (Ishikawa & Kikuhara 2009, Zhu 2010, Yoon & *al.* 2012). In recent years it has also been reported from Africa, namely Tunisia (Jamâa & *al.* 2013) and Morocco (Gapon 2015).



Photo 1. Western conifer seed bug (*Leptoglossus occidentalis*) (Photo by D. Marczak)

The species has promptly colonised new areas, as most often it is transferred with plants among plantations and seedling distributors (McPherson & al. 1990, Mitchell 2000, Tescari 2001, Özgen & al. 2017). Additionally, in their localities, thanks to well-developed wings, adult forms easily move around, expanding their range from a spot they were brought to (Özgen & al. 2017). Their ability to aggregate for wintering makes the species look for warm spots, and thus they have been reported to aggregate under car bonnets, which can be another reason for the species expansion (Rabitsch 2008).

Leptoglossus occidentalis is an oligophagous species, which develops on various species of coniferous trees, where it feeds on juices from young cones. The cones pierced by this hemipteran deform and do not produce seeds. In their natural range in North America this species is deemed to be a pest of coniferous cone plantations, where it can damage even up to 80% seeds of *Pinus monticola* (Connelly & Schowalter 1991). In Europe it damages plantations of pine nuts, reducing seed formation by the *Pinus pinea* (Fent & Kment 2011). It has also been recorded as a pest of *Pistacia vera* in California (Rice & al. 1985). The species has also been reported from California on *Amygdalus communis* (Uyemoto & al. 1986), and in Spain on *Pistacia lentiscus* (Valcárcel & Portillo). The insect overwinters as an imago hidden under loose bark, in tree hollows or cracks. It can also use human households for wintering (Özgen & al. 2017), and there its large aggregations may be quite a nuisance (Kment & Baňar 2008).

In Poland it has been known since 2008 (Lis et al. 2008). Currently it is reported from 14 regions nationwide, mainly from the south-western ones (Gierlasiński & Tazakowski 2013-2019), and the most north-western locality is in Mazowiecka Lowland, in Kozienicka Forest (Gierlasiński & al. 2017).

Below is the data of new localities in Mazowiecka Lowland within Kampinoski National Park. They are currently the farthest north-eastern localities of this species in Poland.

Mazowiecka Lowland: Kampinoski National Park, lines [DC79], 1 ex., 14.09.2017, shaken from *Pinus banksiana*; Izabelin [DC89], 1 ex., 28.11.2017, in the building of Director's office of Kampinoski National Park; Truskaw [DC89], 2 ex., 22.08.2018, shaken from *Pinus sylvestris* on a moor; Zaborów Leśny [DC89], 1 ex., 18.03.2019, under bark of a standing dead *Pinus sylvestris*. The species seems to be well-settled in Kampinoski National Park, as since 2017 its specimens have been permanently found. Interestingly, this hemipteran easily winters in the natural environment, as was proven by finding a live adult individual in March under the bark of a *Pinus sylvestris*. So far no mass appearance of this species, which could pose a threat to pine forest stands, has been reported.

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References

- [1] Arslangundogdu A. Hizal E. 2010. The western conifer seed bug, *Leptoglossus occidentalis* (Heidemann, 1910), recorded in Turkey (Heteroptera: Coreidae). *Zoology in the Middle East*, 50: 138-139.

- [2] Aukema B. 2008. The invasive North American bug *Leptoglossus occidentalis* recorded from the Netherlands (Heteroptera: Coreidae). *Nederlandse Faunistische Mededelingen*, 29: 78-80.
- [3] Aukema B., Libeer R. 2007. First record of *Leptoglossus occidentalis* in Belgium (Heteroptera: Coreidae). *Bulletin de la Société Royale Belge d'Entomologie*, 143: 92-93.
- [4] Barclay M., Nikolaeva S. 2018. Arrival in Kazakhstan of *Leptoglossus occidentalis* (Hemiptera: Heteroptera: Coreidae); a North American invasive species expands 2,500 kilometres to the east. *Klapalekiana*, 54: 1-3
- [5] Beránek J. 2007. First records of *Leptoglossus occidentalis* Heidemann, 1910 (Heteroptera: Pentatomorpha: Coreidae) in the Czech Republic. *Plant Protection Science*, 43, 165-168.
- [6] Buhl O., Stephensen B.K. 2009. Heteroptera: Coreidae. 'Western Conifer Seed Bug' Vestlig Nåletræs-frøtæge *Leptoglossus occidentalis* (Heidemann, 1910) – ny art i Danmark. *Meddelelser fra Entomologisk Selskab for Fyn*, 41, 2: 13-16.
- [7] Colombi L., Brunetti R. 2002. Rapporto del Servizio Fitosanitario del Cantone Ticino. Servizio Fitosanitario, Bellinzona, 36 ss.
- [8] 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.
- [9] Fent M. Kment P. 2011. First record of the invasive western conifer seed bug *Leptoglossus occidentalis* (Heteroptera: Coreidae) in Turkey. *North Western Journal of Zoology*, 7, 1:72-80.
- [10] Gapon D.A. 2012. First records of the western conifer seed bug *Leptoglossus occidentalis* Heid. (Heteroptera, Coreidae) from Russia and Ukraine, regularities in its distribution and possibilities of its range expansion in the Palaearctic Region. *Entomologicheskoe Obozrenie*, 91, 3:559-568.
- [11] Gapon D.A. 2015. First record of *Leptoglossus occidentalis* (Heteroptera: Coreidae) in Morocco. *Heteropterus Revista de Entomología*, 15, 2: 161-163
- [12] Gierlasiński G., Piątek W.K., Piątek W.K. 2017. New data on the occurrence of terrestrial true-bugs (Hemiptera: Heteroptera) in the northern part of Koziencice Forest (Mazovian Lowland) *Heteroptera Poloniae - Acta Faunistica*, 11: 73-79
- [13] Gierlasiński G., Taszakowski A. 2013-2019. Pluskwiaki różnoskrzydłe (Hemiptera: Heteroptera) Polski. <http://www.heteroptera.us.edu.pl>.
- [14] Gogala A. 2003. A leaf-footed conifer seed bug (*Leptoglossus occidentalis*) in Slovenia already (Heteroptera: Coreidae). *Acta Entomologica Slovenica*, 11: 189–190.
- [15] Grosso-Silva J.M. 2010. The North American western conifer seed bug, *Leptoglossus occidentalis* Heidemann, 1910 (Hemiptera, Coreidae), new to Portugal. *Arquivos Entomológicos*, 4: 37-38.

- [16] Harmat B., Kondorosy E., Rédei D. 2006. First occurrence of the western conifer seed bug (*Leptoglossus occidentalis* Heidemann) in Hungary (Heteroptera: Coreidae). *Növényvédelem*, 42: 491-494.
- [17] Hebda G., Dziabaszeński A., Kupczyk M. New localities of *Leptoglossus occidentalis* Heidemann, 1910 (Hemiptera: Heteroptera: Coreidae) in Poland. *Heteroptera Poloniae - Acta Faunistica*, 2: 15-18.
- [18] Hradil K. 2008. *Leptoglossus occidentalis* (Heteroptera: Coreidae) a new alien species in Montenegro. *Acta Entomologica Serbica*, 13: 77-79.
- [19] Ishikawa T., Kikuhara Y. 2009. *Leptoglossus occidentalis* Heidemann (Hemiptera: Coreidae), a presumable recent invader to Japan. *Japanese Journal of Entomology*, 12: 115-116.
- [20] Jamâa M.L.B., Mejri M., Naves P., Sousa E. 2013. Detection of *Leptoglossus occidentalis* Heidemann, 1910 (Heteroptera: Coreidae) in Tunisia. *African Entomology*, 21, 1: 165-167.
- [21] Kment P., Banar P. 2008. Additional records of the invasive Nearctic bug *Leptoglossus occidentalis* (Heteroptera: Coreidae) in Croatia. *Natura Croatica*, 17: 141-147.
- [22] Kulijer D. 2016. *Leptoglossus occidentalis* (Heteroptera: Coreidae) and *Harmonia axyridis* (Coleoptera: Coccinellidae), two new invasive alien species for insect fauna of Macedonia. *Ecologica Montenegrina*, 5: 22-25.
- [23] Kulijer D., Ibrahim H. 2017. First report of invasive species *Leptoglossus occidentalis* in Kosovo (Heteroptera: Coreidae). *Acta Entomologica Slovenica*, 25, 1: 115-118.
- [24] Lindelöw A. Bergsten J. 2012. The invasive western conifer seed bug, *Leptoglossus occidentalis* (Heteroptera: Coreidae), established in Sweden. *Entomologisk Tidskrift*, 133, 1/2: 55-58
- [25] Lis J.A., Lis B., Gubernator J. 2008. Will the invasive western conifer seed bug *Leptoglossus occidentalis* Heidemann (Hemiptera: Heteroptera: Coreidae) seize all of Europe? *Zootaxa*, 1740: 66-68.
- [26] Majzlan O., Roháčová M. 2007. Faunistics records from Slovakia. Heteroptera: Coreidae. *Naturae Tutela*, 11: 199-200.
- [27] Malumphy C., Reid S. 2007. Non-native Heteroptera associated with imported plant material in England during 2006 and 2007. *HetNews*, 10: 2-3.
- [28] 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 Lake Entomologist*, 23: 99-104.
- [29] Mitchell P.L. 2000. Leaf-footed bugs (Coreidae). In: Schaeffer C.W., Panizzi A.R. (eds.), Heteroptera of economic importance. CRC Press, Boca Raton, Florida, 337-403.
- [30] Mjøs A.T., Nielsen T.R. & Ødegaard F. 2010. The Western Conifer Seed Bug (*Leptoglossus occidentalis* Heidemann, 1910) (Hemiptera, Coreidae) found in SW Norway. *Norwegian Journal of Entomology*, 57: 20-22.

- [31] Moulet P. 2006. Un nouveau Coréide en France: *Leptoglossus occidentalis* Heidemann, 1910 (Heteroptera Coreidae). *Entomologiste*, 62: 183-184.
- [32] Özgen İ., Dioli P., Çelik V. 2017. New and interesting record of western conifer seed bugs: *Leptoglossus occidentalis* (Heidemann, 1910) (Heteroptera: Coreidae) in Eastern Turkey. *Journal of Entomology and Zoology Studies*, 5, 5: 830-833.
- [33] Petrakis P.V. 2011. First record of *Leptoglossus occidentalis* (Heteroptera: Coreidae) in Greece. *Entomologia Hellenica*, 20: 83-93.
- [34] Protić L. 2008. *Leptoglossus occidentalis* Heidemann (Heteroptera: Coreidae) in Serbia. *Acta Entomologica Serbica*, 13: 81–84.
- [35] Protić L., Stanković M. 2015. New research on the fauna of Heteroptera in Bosnia-Herzegovina. *Acta entomologica serbica*, 20: 13-28.
- [36] Putshkov P.V., Gubin A.I., Popov G.V., Kalesnik V.I., Syzhko V.V. 2012. The North American intruder *Leptoglossus occidentalis* Heidemann (Heteroptera: Coreidae) settled down in Ukraine. *Ukrainska Entomofaunistyka*, 3, 3: 1-3
- [37] Rabitsch W. 2008. Alien true bugs of Europe (Insecta: Hemiptera: Heteroptera). *Zootaxa*, 1827: 1-44.
- [38] 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.
- [39] Ribes J., Serra A., Goula M. 2004. Catalogue of Heteroptera of Catalonia (Insecta, Hemiptera, Heteroptera). Institució Catalana d'Història Natural Secció de Ciències Biològiques Institut d'Estudis Catalans, Barcelona, 128 ss.
- [40] Rice R.R., Uyemoto J.K., Ogawa J.M., Pemberton W.M. 1985. New findings in pistachio problems. *California Agriculture*, 39, 1/2: 15-18
- [41] Ruicănescu A. 2009. *Leptoglossus occidentalis* Heidemann, 1910 (Heteroptera: Coreidae) in România.. In: Rákósy, L., Momeu, L. (eds.), Neobiota din Romania. Presa Universitară Clujeană, Cluj-Napoca, Romania, 153-154
- [42] Simov N. 2008. Western conifer seed bug *Leptoglossus occidentalis* Heidemann, 1910 (Heteroptera: Coreidae) already in Bulgaria. *Historia Naturalis Bulgarica*, 19: 179-180.
- [43] Tescari G. 2001. *Leptoglossus occidentalis*, coreide neartico rinvenuto in Italia – (Heteroptera, Coreidae). *Società Veneziana di Scienze Naturali*, 26: 3-5.
- [44] Tescari G. 2004. First record of *Leptoglossus occidentalis* (Heteroptera: Coreidae) in Croatia. *Entomologia Croatica*, 8: 73-75.
- [45] Uyemoto J.K., Ogawa J.M., Rice R.E., Teranishi H.R., Bostock R.M., Pemberton W.M. 1986. Role of several true bugs (Hemiptera) on incidence and seasonal development of pistachio fruit epicarp lesion disorder. *Journal of Economic Entomology*, 79: 395-399.
- [46] Valcárcel J.P., Portillo P. 2009. Primer registro de *Leptoglossus occidentalis* Heidemann, 1910 (Hemiptera, Coreidae) para Murcia (S.E. de la Península Ibérica). *Archivos Entomológicos*. 2: 5.

- [47] van der Heyden T. 2018a. First record of *Leptoglossus occidentalis* Heidemann (Heteroptera: Coreidae: Coreinae: Anisoscelini) in Albania. *Revista Chilena de Entomología*, 44, 3: 355-356
- [48] van der Heyden T. 2018b. First record of *Leptoglossus occidentalis* Heidemann, 1910 (Hemiptera: Heteroptera: Coreidae: Coreinae: Anisoscelini) in the Golan Heights. *Revista gaditana de Entomología*, 9, 1: 1-3
- [49] van der Heyden T. 2018c. New data on the distribution of *Leptoglossus occidentalis* Heidemann (Heteroptera: Coreidae: Coreinae: Anisoscelini), including the first record of the species in Georgia. *Revista Chilena de Entomología*, 44, 4: 433-435
- [50] Werner D.J. 2006. *Leptoglossus occidentalis* nun auch in Deutschland. *Heteropteron*, 23: 38.
- [51] Yoon C-S., Kim H-G., Park J.D., Choi W-Y., Choi H-J., Cheong S-W. 2012. First Record of the Western Conifer Seed Bug, *Leptoglossus occidentalis* Heidemann (Heteroptera: Coreidae) in Korea. *Journal of the Environmental Sciences*, 1009–1013.
- [52] Zhu W.B. 2010. Exotic coreid bugs introduced into China. In: Proceedings of the 4th meeting of the International Heteropterist's Society. Nankai University, Tianjin, China, July 12–17, 2010. Nankai University, Tianjin, p. 73