J.Het.Turk.
Journal of the Heteroptera of Turkey

ISSN 2687 - 3249 (online edition)

November, 2020
Volume 2, Issue 2

Research Article

Psallus (*Psallus*) *flavellus* Stichel, 1933, a New Miridae (Hemiptera: Heteroptera) Species for the Fauna of Turkey

Barış ÇERÇİ

Faculty of Medicine, University of Hacettepe, Turkey,
E-mail: www.heteropteran99@gmail.com

ABSTRACT: *Psallus* (*Psallus*) *flavellus* Stichel, 1933, collected in the European part of İstanbul, is recorded from Turkey for the first time. Its male, female, last instar nymph and vesica are illustrated. Characters that distinguish this species from other species of *Psallus* which are also associated with *Fraxinus,* are given.

KEYWORDS: *Psallus* (*Psallus*) *flavellus*, new record, Turkey

To cite this article: Çerçi, B., 2020, *Psallus* (*Psallus*) *flavellus* Stichel, 1933, a New Miridae (Hemiptera: Heteroptera) Species for the Fauna of Turkey. *J.Het.Turk.,* 2 (2):134-139

To link to this article: https://www.j-ht.org/wp-content/uploads/2020/11/V22-A6.pdf

Received: Sep 8, 2020; **Revised:** Oct 12, 2020; **Accepted:** Oct 31, 2020; **Published online:** Nov 3, 2020

INTRODUCTION

The genus *Psallus* Fieber, 1858 is currently subdivided into eight subgenera (Linnavuori, 1993, Kerzhner & Josifov, 1999, Yasunaga & Vinkurov, 2000). The nominotypical subgenus *Psallus* (*Psallus*) consists of 62 species in the Palaearctic Region, 54 of which are distributed in the Western Palaearctic Region (Kerzhner & Josifov, 1999, Pagola-Carte, 2017, Pagola -Carte, 2018, Carapezza & Kment, 2018, Matocq, 2019a, Matocq, 2019b, Aukema, 2020). Recently, Carapezza & Kment (2018) prepared a checklist of the *Psallus* species of Turkey. They listed 37 species of *Psallus*, including a new species that they described, *Psallus* (*Psallus*) *thomashenryi* Carapezza & Kment, 2018, recorded a new species for Turkey, *Psallus* (*Psallus*) *lucanicus* and excluded *Psallus* (*Psallus*) *aurora* (Mulsant & Rey, 1852) from the fauna of Turkey. Interestingly, Carapezza & Kment (2018) did not include *P.* (*P.*) *flavellus* Stichel, 1933 in their checklist, although this species had been recorded by Önder (1976) from Turkey. This species is known from Azerbaijan, hence the record from Turkey did not seem unreasonable. Çerçi & Tezcan (2020) examined the supposed specimens of *P.* (*P.*) *flavellus* collected by Önder (1976) and found out that they in fact belonged to another species and excluded *P.* (*P.*) *flavellus* from

the fauna of Turkey. Additionaly, very recently, 2 more *Psallus* species were described from Turkey (Matocq, 2019a, Matocq, 2019b). As a result, the total number of *Psallus* species recorded from Turkey was 39.

With the new record presented in this paper, this number rises to 40.

MATERIAL AND METHODS

The material examined in this paper was collected sweeping branches of trees with sweeping net.

The specimens were examined using Celestron 44125 Microscope. Photographs were taken with Nikon D3300 DSLR Camera combined with a 68mm extension tube and a Lomo 3.7X 0.11 Microscope lens. Identification of the species was based on Wagner (1975) and Wyniger (2004).

RESULTS

***Psallus* (*Psallus*) *flavellus* Stichel, 1933** (Fig 1–3)

Material examined: Turkey, İstanbul, Esenyurt, N 41°03'04.0", E 28°40'29.9", 04. 06. 2016, 1 female (on *Fraxinus* sp.); 20. 05. 2017, 2 males 3 females (on *Fraxinus* sp.); 25. 05. 2017, 2 males 1 female (on *Fraxinus* sp.); 28. 05. 2017, 1 male (on *Fraxinus* sp.), B. Çerçi leg. & det, B. Çerçi Coll. (İzmir)

DISCUSSION

Psallus (Psallus) *flavellus* is a European species known from almost all Central and Northern European countries (Aukema, 2020). Its distribution extends to Africa in Algeria (A. Carapezza regards the record from this country as highly dubious, *pers. comm.*) and to Asia in Azerbaijan. It was also introduced to North America (Kelton, 1983).

The species is not present in European regions of Central and Eastern Mediterranean: In Italy it occurs only in continental Northern regions (Lombardia and Emilia) and in Balkan Peninsula it is known only from northern Moldovia and Serbia. Hence its record from Istanbul, Turkey, at the centre of a very wide area where the species is known not to occur, is rather puzzling.

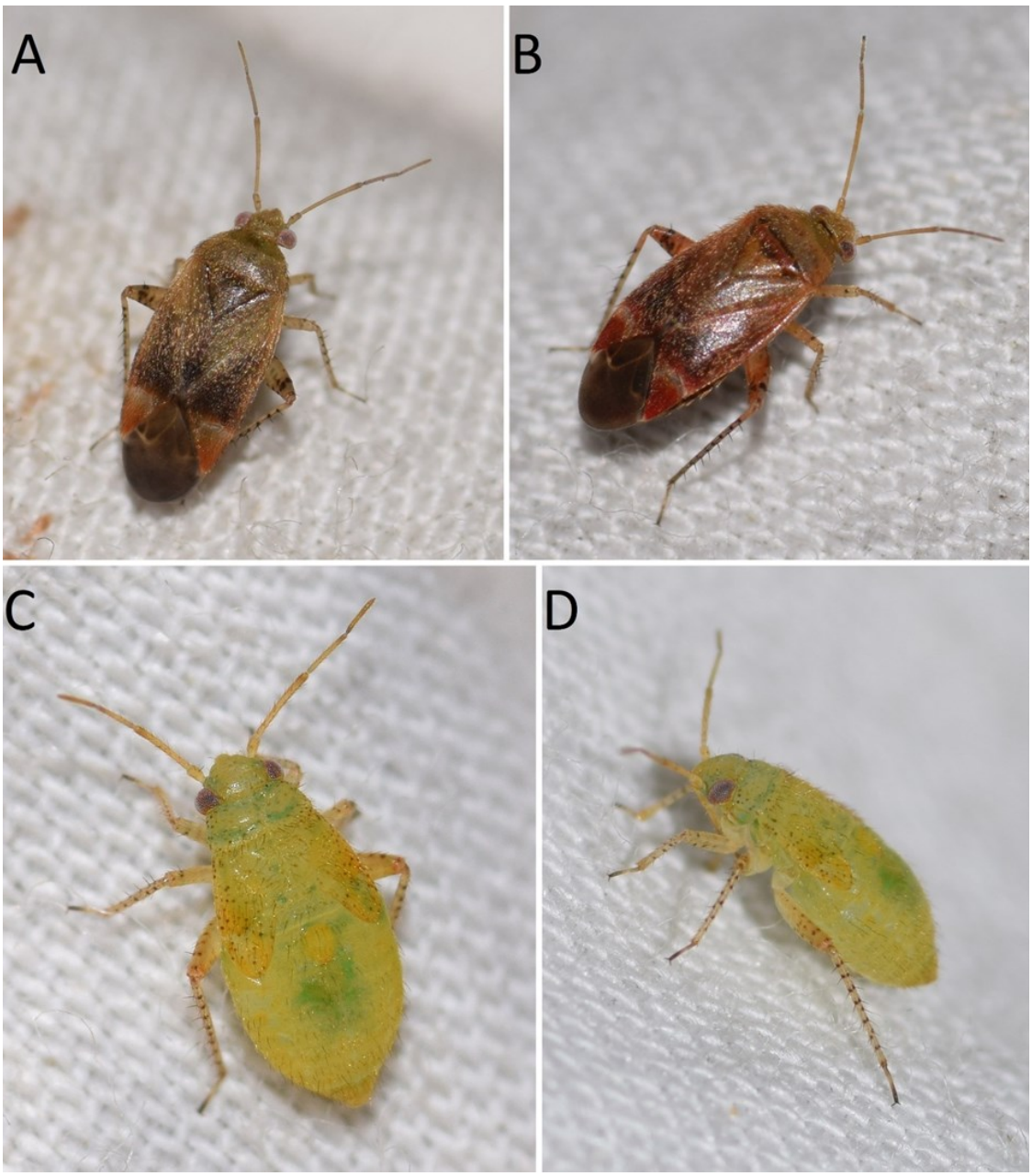
P. (*P.*) *flavellus* is associated with *Fraxinus* trees. Until very recently, only 2 more species of *Psallus* were known to feed on *Fraxinus*: *P.* (*P.*) *lepidus* Fieber, 1858 and *P.* (*P.*) *orni* Wagner, 1968. In the last ten years 3 more species associated with *Fraxinus* were described: *P.* (*P.*) *inancozgeni* Matocq & Pluot-Sigwalt, 2011 from Turkey, *P.* (*P.*) *anasanthi* Pagola-Carte, 2017 and *P.* (*P.*) *enejokosu* Pagola-Carte, 2018, both from Spain. Hence the total number of *Psallus* species associated with *Fraxinus* rised to 6. Among them, *P.* (*P.*) *lepidus* and *P.* (*P.*) *inancozgeni* are known from Turkey (Önder, 1976, Matocq & Pluot-Sigwalt, 2011). Both male and female adults (Fig. 1A–B, 2A–B) and nymphs (Fig. 1C–D) of *P.* (*P.*) *flavellus* were collected from a *Fraxinus* tree in the European part of Istanbul, over 2 years. With this record, the total number of *Psallus* species associated with *Fraxinus* in Turkey rises to 3.

Fraxinus-associated species of *Psallus* have similar type of vesical structure with a dentate apical process and a spine -like lateral process, except for *P.* (*P.*) *inancozgeni* which lacks a lateral process (Fig. 3) (Wyniger, 2004, Matocq & Pluot-Sigwalt, 2011, Pagola-Carte, 2017, Pagola-Carte, 2018).

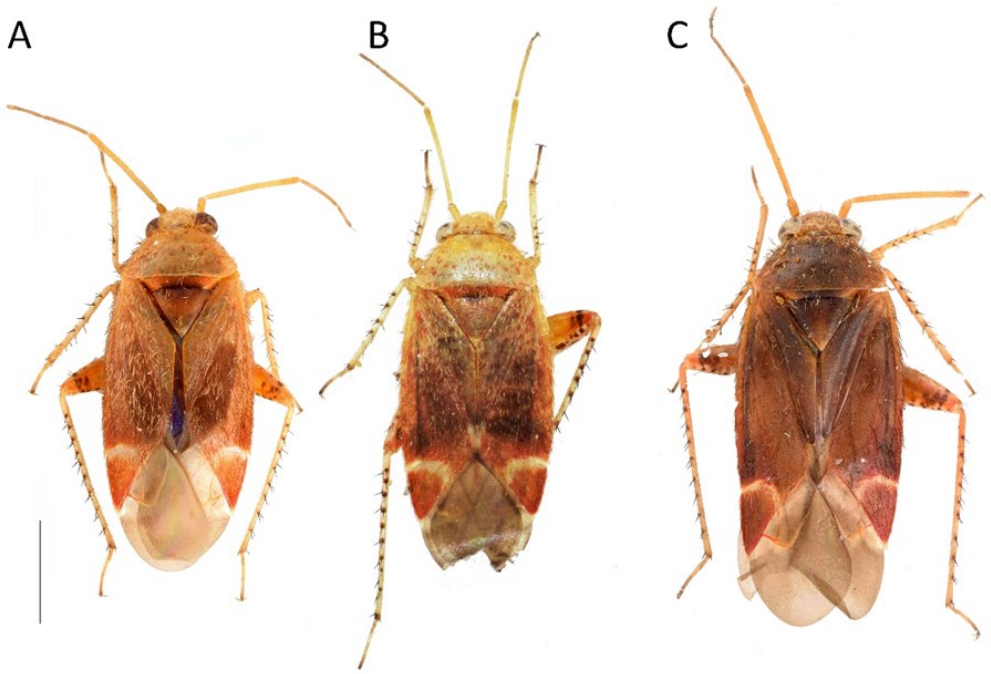
Among these species, *P.* (*P.*) *flavellus* is distinguished by the apical process long and slender and the lateral process very long and almost straight (Wyniger, 2004). *P.* (*P.*) *lepidus* (Fig. 2C) differs from *P.* (*P.*) *flavellus* by the shorter and stouter apical process and the much shorter lateral process of the latter (Fig. 3E). As one more distinguishing feature, although not always valid, one can mention that *P.* (*P.*) *lepidus* has most often unicolorous dark red to brown coloration (Fig. 1C), whereas *P.* (*P.*) *flavellus* has most often pale yellow to orange coloration of pronotum, scutellum and proximal half of hemelytra and only the apical half of hemelytra is red to brown (Fig. 1A–B). *P.* (*P.*) *inancozgeni*

J.Het.Turk., 2(2), Nov 2020 (eISSN 2687-3249)

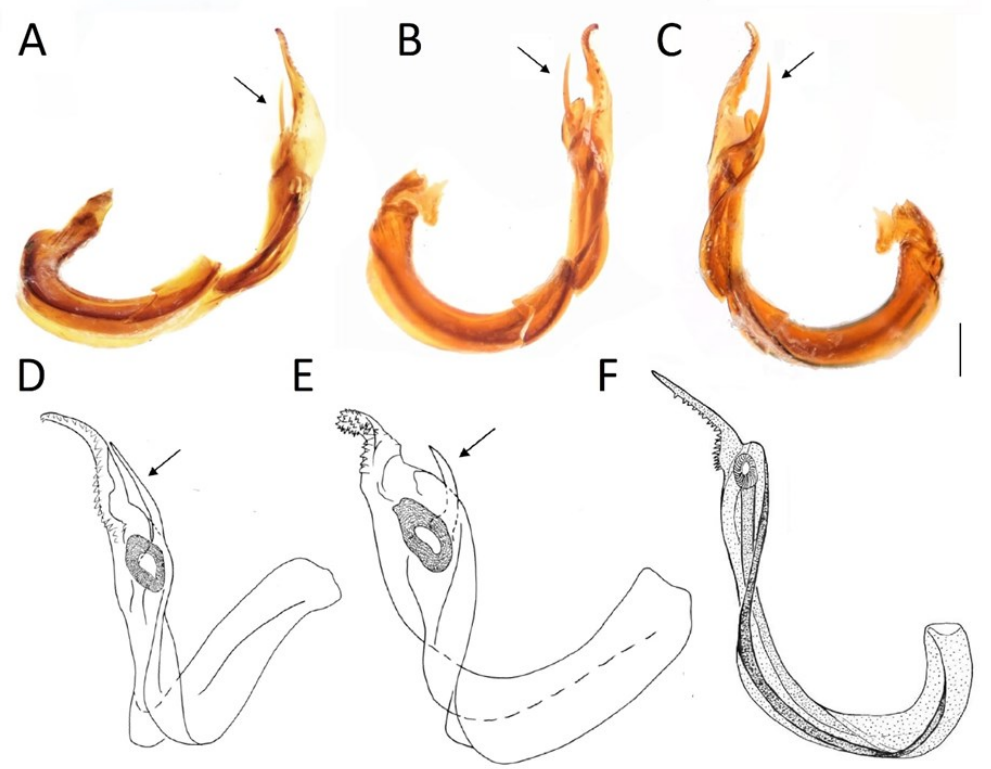
differs from *P.* (*P.*) *flavellus* by the lack of a lateral process (Fig. 3F). *Psallus* (*P.*) *anasanthi*, *P.* (*P.*) *enejokosu* and *P.* (*P.*) *orni*, which are only known from the western Mediterranean region, also differ from *P.* (*P.*) *flavellus* by the shorter and stouter apical process and the shorter lateral process of the vesica (Matocq & Pluot-Sigwalt, 2011, Pagola-Carte, 2017, Pagola-Carte, 2018).



Figures 1A–D. Fig. 1A – *Psallus* (*Psallus*) *flavellus* Stichel, 1933, male specimen, **Fig. 1B** – *idem*, female specimen, **Fig. 1C** – *idem*, last instar nymph, **Fig. 1D** – *idem*, from lateral view.



Figures 2A–C. Fig. 2A - *Psallus* (*Psallus*) *flavellus* Stichel, 1933, male, **Fig. 2B** – *idem*, female, **Fig. 2C** - *Psallus* (*Psallus*) *lepidus* Fieber, 1858, specimen from Karaman, Turkey, (Scale bar = 1 mm).



Figures 3A–F. Fig. 3A–C – *Psallus* (*Psallus*) *flavellus* Stichel, 1933, photographs of vesica from different views, **Fig. 3D** – *idem*, drawing of vesica, **Fig. 3E** - *Psallus* (*Psallus*) *lepidus* Fieber, 1858, drawing of vesica, **Fig. 3F** – *Psallus* (*Psallus*) *inancozgeni* Matocq & Pluot-Sigwalt, 2011, (Scale bar = 0,1 mm) [Arrows indicate lateral process of vesica, A–C = original, D–E = from Wyniger (2004), F = from Matocq & Pluot-Sigwalt (2011)].

J.Het.Turk., 2(2), Nov 2020 (eISSN 2687-3249)

CONCLUSION

The number of *Psallus* species associated with *Fraxinus* was doubled from 3 to 6 in recent years with the description of 3 new species from Spain and Turkey. Pagola-Carte (2018) expressed the opinion that host association of *Fraxinus* seems to be a hot spot for the speciation of *Psallus* species. In accordance with this notion, an isolated record of a *Fraxinus*-associated *Psallus* species could have corresponded to another spot of speciation, but in this case, this isolated record belongs to *P.* (*P.*) *flavellus*, a species widely known from Central Europe. The absence of records of this species from peninsular Italy and Balkan Peninsula except from Moldovia and Serbia is noteworthy. Since peninsular Italy and some countries of the Balkan peninsula are among the egions where the distribution of *Psallus* species is best studied, at present the most likely hypothesis is that this species was accidentally introduced to Turkey by the agency of man. Nevertheless, it is necessary to carry out further field research in the European Part of Turkey and the Balkan Peninsula in order to enhance our knowledge of the distribution of Heteroptera species, which remains inadequate. Such researches are very likely to produce very interesting and unexpected results.

ACKNOWLEDGEMENTS

The author is also very grateful to M. Mazuy (Doubs, France) for sharing the article with the original description of *P.* (*P.*) *inancozgeni*, S. Pagola-Carte (Gipuzkoa, Spain) for sharing many of his articles with the author and Özgür Koçak (Karaman, Turkey) for sharing the specimen of *P.* (*P.*) *lepidus* collected from Karaman, Turkey.

REFERENCES

Aukema, B., 2020, Catalogue of Palaearctic Heteroptera. Naturalis Biodiversity Center. Available from https://catpalhet. linnaeus. naturalis.nl/ (Accessed on 20-08-2020).

Çerçi, B. & Tezcan, S., 2020, New and Interesting Records of Heteroptera (Hemiptera) Species from Turkey, with Reconsideration of Several Previous Records [Unpublished Manuscript].

Carapezza A., Kment P., 2018, *Psallus thomashenryi* sp. n. and Psallus lucanicus from Turkey (Hemiptera, Heteroptera, Miridae). In: Wheeler Jr AG (Ed.), A Festschrift Recognizing Thomas J. Henry for a Lifetime of Contributions to Heteropteran Systematics. ZooKeys, 796: 253–265.

Kelton, L. A., 1983, Four European Species of *Psallus* Fieber found in Canada (Heteroptera: Miridae). Canadian Entomologist, 115: 325–328.

Kerzhner, I. M. & Josifov, M., 1999, Miridae Hahn, 1833. In: Aukema, B. & Rieger, C. (Eds.), Catalogue of the Heteroptera of the Palaearctic Region, volume III, Netherlands Entomological Society, Amsterdam, pp. 1–576.

Linnavuori, R. E., 1993, The Phylinae (Hemiptera: Miridae) of West, Central and North East Africa. Garcia de Orta, Serie de Zoologia (Lisboa), 18(1–2): 115 –296.

Matocq, A. & Pluot-Sigwalt, D., 2011, Une nouvelle espèce de *Psallus* de Turquie associée à Fraxinus sp. (Oleaceae) (Hemiptera, Heteroptera, Miridae, Phylinae). Nouvelle Revue d'Entomologie (Nouvelle Série) 27(2): 163–172.

Matocq, A., 2019a, Un nouveau *Psallus* Fieber, 1858 de Turquie et de Jordanie (Hemiptera, Heteroptera, Miridae). Revue de l'Association Roussillonnaise d'Entomologie, 28(2): 92–96.

Matocq, A., 2019b, Un nouveau *Psallus* Fieber, 1858 de Turquie (Hemiptera, Heteroptera, Miridae). Revue de l'Association Roussillonnaise d'Entomologie, 28 (4): 223–225.

Pagola-Carte, S., 2017, *Psallus (Psallus) anasanthi* sp. n. from Basque Country, northern Iberian Peninsula (Hemiptera: Heteroptera: Miridae). Heteropterus Revista de Entomología, 17(1): 9–20.

Pagola-Carte, S., 2018, *Psallus (Psallus) anasanthi* sp. n. from Basque Country, northern Iberian Peninsula (Hemiptera: Heteroptera: Miridae). Heteropterus Revista de Entomología, 18(2): 181–191.

Önder F., 1976, Türkiye Miridae (Hemiptera) faunası üzerinde sistematik çalışmalar. Ege Üniversitesi Ziraat Fakültesi, Entomoloji ve Zirai Zooloji Kürsüsü, Doçentlik Tezi, İzmir, 506 s.

Wagner, E., 1975, Die Miridae Hahn, 1831, des Mittelmeerraumes und der Makaronesischen Inseln (Hemiptera, Heteroptera), Teil 3. Entomologische Abhandlungen, 40 Suppl., 483 pp.

Wyniger, D., 2004, Taxonomy and phylogeny of the Central European bug genus *Psallus* (Hemiptera, Miridae) and faunistics of the terrestrial Heteroptera of Basel and surroundings (Hemiptera). Unpublished Ph.D thesis, University of Basel, 110 pp.

Yasunaga, T., & Vinokurov, N. N., 2000, The phyline plant bug genus *Psallus* Fieber in Japan (Hetroptera: Miridae: Phylinae). Entomological Science 3: 653 –668.