Türk. entomol. derg., 2011, 35 (2): 207-213
ISSN 1010-6960

***Orijinal araştırma (Original article)***

# A new species of *Terellia* (Diptera: Tephritidae) from Turkey with a key to Turkish species of the subgenus *Cerajocera*

Murat KÜTÜK[1*] Neslihan BAYRAK[2] Rüstem HAYAT[2]

## Summary

*Terellia askaleensis* n. sp. which was collected from Kop Mountain, Aşkale, Erzurum, Turkey on *Centaurea carduiformis* in the summer season of 2008 and 2009*, was* described, illustrated and placed in the subgenus *Cerajocera.* The species is mostly similar to *Terellia (Cerajocera) yukseli* Kütük, *Terellia* (*Cerajocera*) *setifera* Hendel and *T.* (*C.*) *clarissima* Korneyev having entirely hyaline wing. It can be distinguished from the other Turkish species of *Terellia* by the reduction of wing spot pattern, the presence of a spinose antennal horn, and characters of glans and aculeus. Original photographes of the specimens and detailed illustrations of the genitalia structures are provided and the key of subgenus *Cerajocera* is given.

**Key words:** *Terellia* (*Cerajocera*) *askaleensis*, new species, Tephritidae, Turkey
**Anahtar kelimeler:** *Terellia* (*Cerajocera*) *askaleensis*, yeni tür, Tephritidae, Türkiye

## Introduction

The genus *Terellia* Robineau-Desvoidy, 1830 (Diptera: Tephritidae) differs from other genera of Terellini by the following combination of characters (Merz, 1994) (for more complete list of characters): frons flat or slightly convex; fronto-facial angle slightly projecting or rather rounded; face slightly concave; epistome projecting; palp usually spathulate and projecting anterior of epistome; usually flat and distinctly longer than wide, but in *T. virens*, as long as wide and convex; dorsocentral setae stiuated on or very close to line of anterior supra-alars; wing either banded, or hyaline, or slightly infuscate; stigma yellowish; veins $R_{4+5}$ and M, usually slightly convergent in their distal sections; terminal section of vein M usually at least twice as long as penultimate section; cell cup with short or indistinct point; abdomen often with for rows of black spots dorsally, some spots

[1] Gaziantep University, Faculty of Science and Art, Department of Biology, 27310, Gaziantep, Turkey
[2] Atatürk University, Faculty of Agriculture, Department of Plant Protection, 25240, Erzurum, Turkey
[*] Sorumlu yazar (Corresponding author) e-mail: mkutuk@gantep.edu.tr
Alınış (Received): 17.03.2010 Kabul ediliş (Accepted): 26.07.2010

sometimes lacking; aculeus pointed or rounded at apex. Korneyev (1985) has revised the tribe Terellini. He considered *Terellia* and *Cerajocera* as distinct genera differing in wing pattern and the shape of the male aedeagal glans. The apomorphic characters that Korneyev (1985) suggested as symapomorphies of *Terellia* were mostly related to the wing pattern, but also to the similar shape of the tip of the aculeus and the association with the Asteraceae hosts. Korneyev (1987) described *Terellia* (*Cerajocera*) *clarissima* reared from *Jurinea mollis* in southern Ukraine with entirely hyaline wings (as in typical *Terellia*) and the shape of the aedeagal glans as in *Cerajocera*. He also considered *Cerajocera* as a subgenus of *Terellia*. The known biology of species is associated with the capitula of some species of the Composite tribe Cardueae (White, 1988). Sixteen species of *Terellia* were recorded in the Turkish fauna until now.

In the summer season of 2008 and 2009, the authors collected a series of uncommon species of the genus *Terellia* on *Centaurea carduiformis* in Turkey. It was found to be an undescribed species of vague relationships in the subgenus *Cerajocera*, which runs available keys to *T.* (*C.*) *yukseli* Kütük, *T.* (*C.*) *gynaecochroma* (Hering) and *T.* (*C.*) *ceratocera* (Hendel) This new species is described and figured.

## Material and Methods

This study is based mainly on 14 male and 7 female specimens collected from Erzurum province in Turkey in 2008 and 2009 years. The terminology and morphological interpretations used in this paper follow White et al. (1999). The specimens used in this study are deposited in the following institutions: Department of Biology, Faculty of Science & Arts, Gaziantep University, Gaziantep, Turkey (GUGT) and Entomology Museum, Erzurum, Turkey (EMET); The host plant was identified by Prof. Dr. Hüseyin ZENGİN (Atatürk University, Faculty of Agriculture, Department of Plant Protection, Erzurum, Turkey).

## Results

### A key to Turkish Species of Subgenus *Cerajocera*

**1.** Wing with distinct 3-4 bands ……..... **2**

- Wing hyaline except for yellowish pterostigma or reduced bands and a few small spots present near the apex of wing (Figs. 1. E-F) …..…..... **3**

**2.** Pedicel of male shorter than first flagellomere; three wing bands present, if four bands present basal band reduced ……. ***gynaecochroma*** (Hering)

- Pedicel of male longer than first flagellomere; four distinct wing bands present ……..…….. ***ceratocera*** (Hendel)

***3.*** Pterostigma yellow and two reduced wing patterns (Fig .1.E) present in female specimens; two spots present at wing apex (Fig. 1.F) in male specimens ……..…..…….. ***askaleensis*** n. sp

- Pterostigma yellow but any wing pattern absent in female specimens and any spot absent at wing apex in male specimens ……...… ***yukseli*** Kütük

***Terellia askaleensis*** **n. sp.** Kütük, Bayrak & Hayat (Figs. 1. A-G)

**Type material**

Holotype female: Turkey, Erzurum, Aşkale, Kop Mountains, 39˚ 54' N, 41˚ 14' E, 2400 m, 28.06.2008, leg. M. Kütük and R. Hayat; Paratypes: Erzurum, Aşkale, Kop Mountains, 39˚ 54' N, 41˚ 14' E, 2400 m, 28.06.2008, 4 ♀♀, 12 ♂♂; Erzurum, Ataturk University, Campus, 40˚ 01' N, 40˚ 30' E, 1867 m, 07.07.2008, 1 ♀; Erzurum, Aşkale, 39˚ 55' N, 40˚ 38' E, 1730 m, 09.07.2009, 1 ♀, 2 ♂♂, leg. M. Kütük and R. Hayat. The holotype was deposited in GUGT together with some paratypes. 2 ♀♀, 2 ♂♂ are deposited in EMET.

**Diagnosis**

*Terellia askaleensis* n. sp. and *T. yukseli* have somewhat similar hyaline wing, reduced wing pattern or pedicel on first flagellomere by which they can be readily distinguished from the other species of *Terellia* subgenus *Cerajocera.* The clear difference in the wing patterns of these two species is that two reduced wing patterns (Fig. 1. E) are present in female specimens of *T. (C.) askaleensis* whereas these bands are absent at wing apex in female specimens of *T.* (C.) *yukseli*. Two spots are present in male specimens of *T. (C.) askaleensis* whereas these spots are absent at wing apex in male specimens of *T. (C.) yukseli.*

**Description**

Head: Mostly yellow; ocellar spot black; 3 brown frontal setae; occiput yellow; anterior orbital setae divergent; antenna yellow with black setulae; pedicel as in *T.* (*C.*) *yukseli*; pedicel of male longer than that of female; ground colour of pedicel whitish with black 7-8 spines and 30-33 hairs; the hairs occur at basal half of pedicel whereas the spine occurs at apical half of pedicel; apical half of arista black, basal half brown; genal setae distinct and yellowish; palp yellow with black setulae; proboscis capitata.

Thorax: Ground colour yellow, tomentum black with white hairs; dorsocentral setae situated on black area, prescutellar seta on green area; all of setae on thorax brownish; scutellum yellow with 35-38 white hairs; basal scutellar seta 1,1-1,2 times as long as apical scutellar seta; halter yellow; humerus yellow; humeral hairs white.

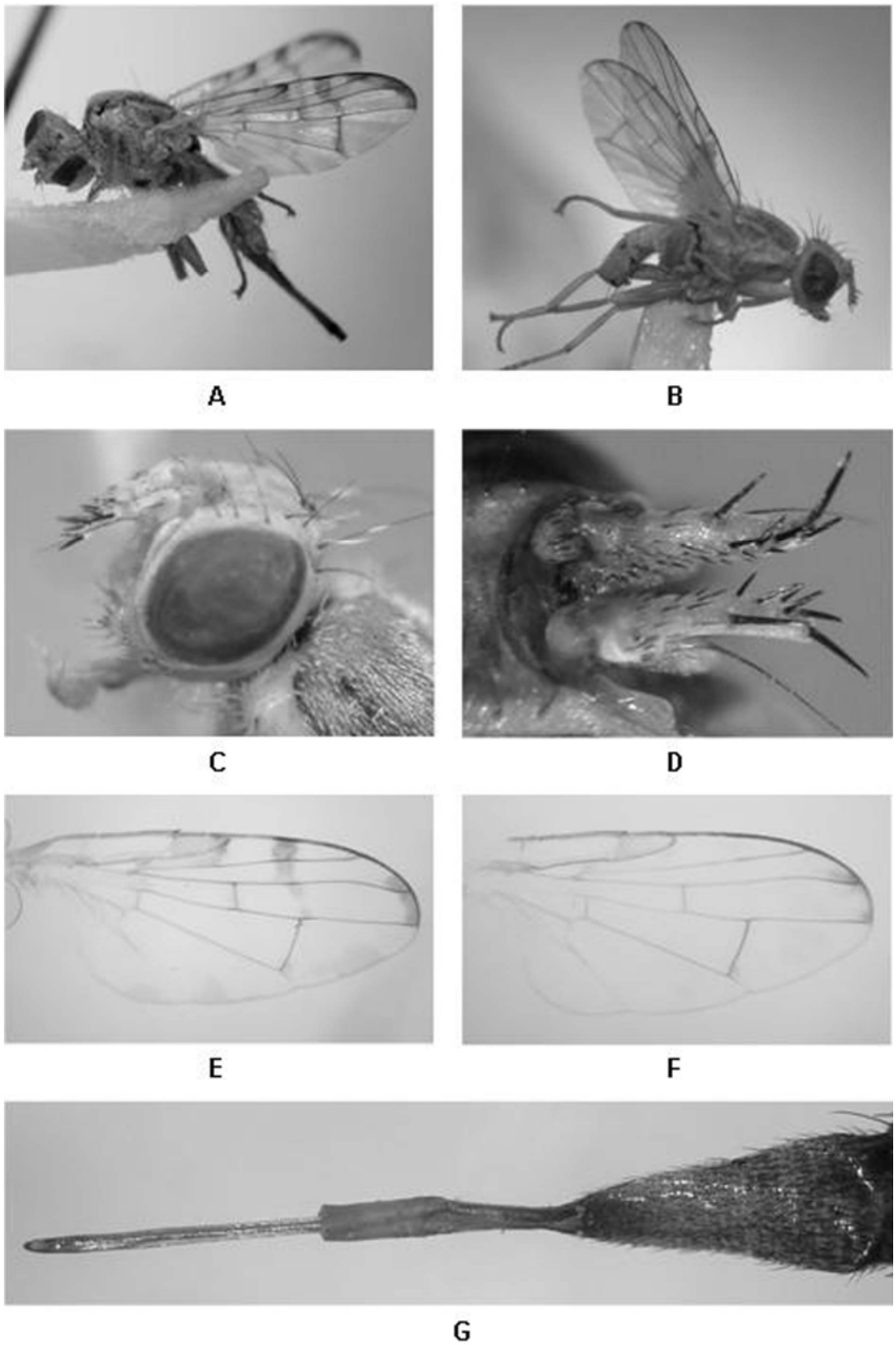


Figure 1. *Terellia (Cerajocera) askaleensis* n. sp. Kütük, Bayrak & Hayat; A- holotype female; B- male; C- male head; D- male pedicel; E- female wing; F- male wing; G- female postabdomen (Original).

Legs: Mostly green to red with black hairs; femora with long hairs; trochanter green; hind coxa yellow.

Wing: Mostly hyaline but pterostigma yellow; two wing bands present, first band extending from costal margin to DM-Cu vein, second band at apex of wing and ending to vein M (these band absent in male specimens, only two spots present on vein $R_{4+5}$ and vein M in Fig. 1 F). Last section of vein M 2.0 times as long as penultimate section; costal spine distinct.

Female abdomen: Ground colour yellow to green with black and white setulae; often 8 rows of black spots dorsally; oviscape reddish to brown, basal half brown with black setulae; all of setae on abdomen black; aculeus apex rounded; with 3 pairs of hairs (Fig. 2 D); oviscape 0.9 times as long as preabdomen; $6^{th}$ tergite of preabdomen as long as penultimate 2 terga.

Male abdomen: Ground colour yellow with small white setulae and last tergite mostly brown hairs; last tergite as long as penultimate two terga and 4 black spots present on last tergite; proctiger brownish; surstyli as in figure 2.A; proctiger with yellow setulae (Fig. 2 B); glans sclerotized (Fig. 2 C).

Measurements: (length in mm): Female body 5.7-7.2; wing 4.7-5.3; aculeus 2.8. Male body 5.0-6.1; wing 4.2-4.9.

Host plant and biology: The specimens were collected on *Centaurea carduiformis* D.C. (Asteraceae). Biology is unknown.

**Etymology**

This new species is named from type locality, Aşkale, Erzurum, Turkey.

## Discussion

The new species is differs from *Terellia (Cerajocera) setifera* Hendel and *T. (C.) clarissima* Korneyev with mostly hyaline wing. The aedeagal glans of *T. (C.) askaleensis* differs from *T. (C.) yukseli, T. (C.) clarissima* and *T. (C.) setifera.* Ultimate section of the vein M 2 times as long as penultimate part in *Terellia askaleensis,* whereas ultimate section of vein M is 2,2 times as long as penultimate in *T. yukseli.* Two reduced wing bands present in female specimens and two spots are present in male specimens of *T. (C.) askaleensis,* whereas wing bands or spots are absent in female or male specimens of *T. (C.) yukseli*.

The species of subgenus *Cerajocera* are associated with different host plants: The host plants of *T. gynaecochroma* are *Onopordum anisacanthum* (Khouzama et al., 2002) and *O*. *acanthium* (Kütük & Varol, 2006), *T. (C.) ceratocera* develops on *Centaurea scabiosa, C. alpestris* (White, 1988) and *T. (C.) yukseli* on *Centaurea urvillei* (Kütük, 2009), whereas *T. askaleensis* is believed to feed in the flower heads of *Centaurea carduiformis.*

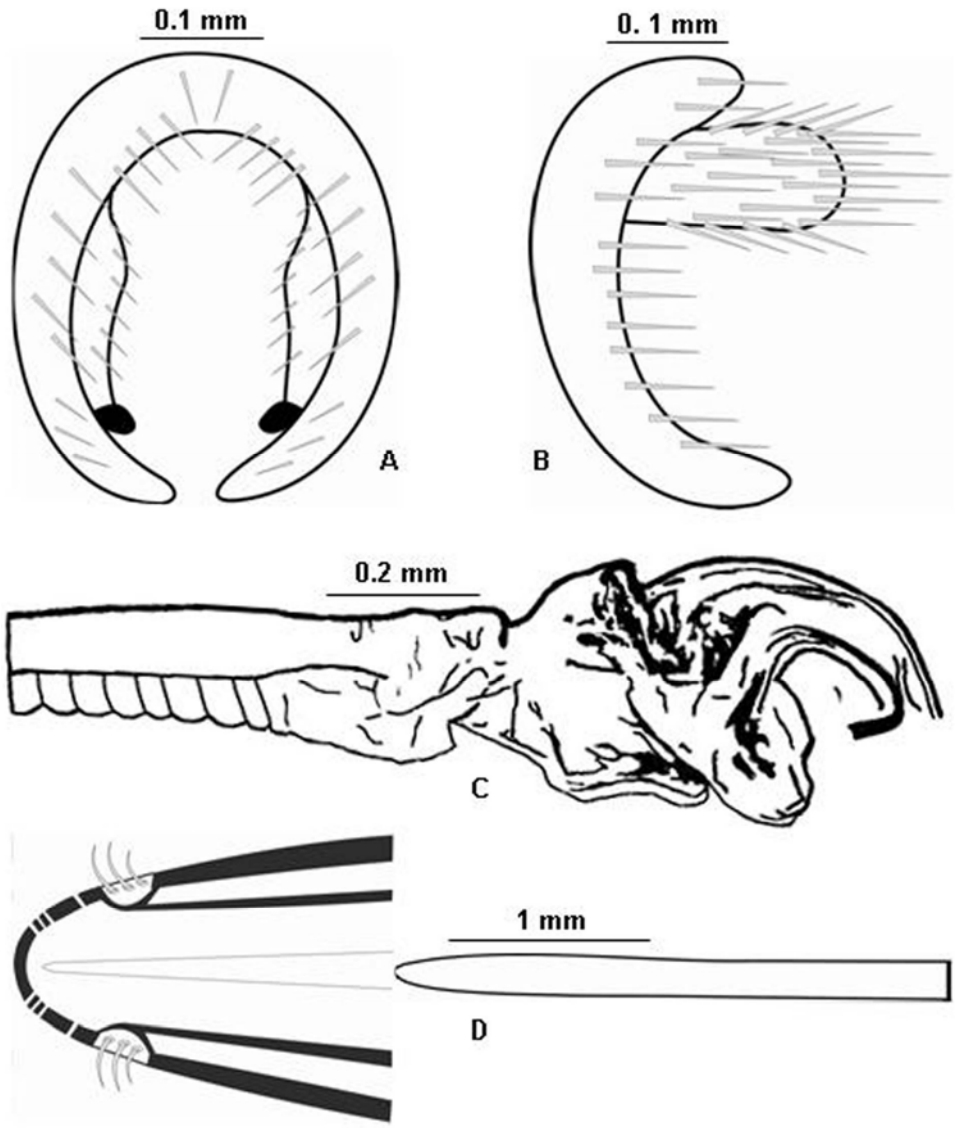


Figure 2. *Terellia* (*Cerajocera*) *askaleensis* n. sp. Kütük, Bayrak & Hayat; A- epandrium and surstyli, posterior view (proctiger removed); B- epandrium and proctiger, lateral view; C- glans, dorsolateral view; D- aculeus, dorsal view and enlarged at apex (Original).

## Özet

**Türkiye'den *Terellia* (Diptera: Tephritidae)'nın yeni bir türü ile *Cerajocera* altcinsine ait Türkiye'de bulunan türlerinin teşhis anahtarı**

*Terellia* Robineau-Desvoidy, 1830'nın bir altcinsi *Cerajocera* içinde yer alan *Terellia askaleensis* n. sp. Türkiye'den tanımlanmıştır. Tip lokalitesi Erzurum, Aşkale, Kop

Dağı olup örnekler *Centaurea carduiformis* D.C. bitkisi üzerinden 2008- 2009 yıllarında toplanmıştır. Bu tür, *Terellia (C.) yukseli* Kütük, *Terellia (Cerajocera) setifera* Hendel ve *T. (C.) clarissima* Korneyev türlerine saydam kanat özellikleri bakımından benzemektedir. Diğer *Terellia* türlerinden, kanat nokta deseni, antende mevcut çıkıntısı, karakteristik glans ve aculeus yapıları ile ayırt edilebilmektedir. Türe ait orijinal resimler ve genital yapıların ayrıntılı çizimleri verilmiştir.

## Acknowledgments

We thank Prof. Hüseyin ZENGİN (Atatürk University, Faculty of Agriculture, Department of Plant Protection, Erzurum, Turkey), for host plant determination of the new species. This study was supported by the Scientific and Technological Research Council of Turkey (TUBITAK, project number: 107O487) and Atatürk University, Scientific Research Fund (project number: 2007/26).

## References

Khouzama, M. K., S.M. Kalash & I. M. White, 2002. Flowerhead-infesting Fruit Flies (Diptera: Tephritidae) on Thistles (Asteraceae) in Lebenon. **Journal of Natural History, 36**: 617-629.

Korneyev, V. A., 1985. Fruit Flies of the Tribe Terellini Hendel, 1927 (Diptera, Tephritidae) of the Faune of the USSR. **Entomologicheskoe Obozrenie, 64**: 624- 644.

Korneyev, V. A., 1987. A revision of the subgenus *Cerajocera* stat. n. of the genus *Terellia* (Diptera: Tephritidae) with description of a new species of fruit flies. **Zoologihheskii Zhurnal, 66**: 237-243.

Kütük, M., 2009. A New Species of *Terellia* Robineau-Desvoidy (Diptera: Tephritidae) from Turkey. **Turkish Journal of Zoology, 33**: 297-300.

Kütük, M. & M. I. Varol, 2006. Records of two new species of *Terellia* Robineau-Desvoidy, 1830 (Diptera: Tephritidae) new to the Turkish fauna. **Turkish Journal of Zoology, 30**: 99-102.

Merz, B., 1994. Diptera, Tephritidae. Insecta Helvetica Fauna, Hge pres, Geneva, 198 pp.

White, I. M., 1988. Tephritid flies (Diptera: Tephritidae). Handbook for the Identification of British Insects. Dorset Press, London, 134 pp.

White, I. M., D. H. Headrick, A. L. Norrbom & L. E. Carroll, 1999. 33 Glossary. In: Fruit Flies (Tephritidae): Phylogeny and Evolution of Behavior. (Eds., Aluja, M., Norrbom A.L.), CRC press, London, New York, Washington, 881-924 pp.