

Verdanus artvinensis (Hemiptera: Cicadellidae), a new leafhopper species from northeastern Turkey

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Abstract: *Verdanus artvinensis* n. sp. from northeastern Turkey is described and illustrated. The main characteristics of this species are compared with those of *V. pazoukii* (Dlabola, 1980), a closely related species. A key to distinguish these 2 species is provided.

Key words: Hemiptera, Cicadellidae, Deltocephalinae, *Verdanus*, leafhopper, new species, Turkey

Kuzey Doğu Türkiye’den yeni bir cicadellid türü, *Verdanus artvinensis* (Hemiptera: Cicadellidae)

Özet: Kuzeydoğu Anadolu’dan belirlenen *Verdanus artvinensis* n. sp. türü tanımlanmış ve önemli kısımların çizimi yapılmıştır. Ayrıca, yakın tür olan *V. pazoukii* (Dlabola, 1980) ile karşılaştırılarak iki türün ayrılması için bir anahtar hazırlanmıştır.

Anahtar sözcükler: Hemiptera, Cicadellidae, Deltocephalinae, *Verdanus*, leafhopper, yeni tür, Türkiye

Introduction

The genus *Verdanus* Oman, 1949 is mainly distributed in the Palearctic region from where all of the 32 known species have been reported. Only one of these species, *V. evansi* (Ashmead, 1904) is also distributed in the Nearctic region. Knight (1974) undertook the first detailed study of the genus, including identification key and species descriptions, as a subgenus of *Diplocolenus* Ribaut, 1946. This work included 27 Palearctic species of *Verdanus*. Dlabola (1980) later performed a zoogeographical study of the Palearctic species, and

described 3 additional new species. Based on this and other studies, the number of species of this genus increased to 32 (Kalkandelen, 1972; Nast, 1972, 1982). A total of 6 species have been recorded from Turkey (Table), of which 2, *V. bekiri* (Kalkandelen, 1972) and *V. gazelicornis* (Dlabola, 1980) (Kalkandelen, 1972; Dlabola, 1980; Lodos and Kalkandelen, 1987, 1988; Güçlü, 1991; Güçlü and Özbek, 1995; Kartal and Zeybekoğlu, 1997), are endemic to this country.

The genus *Verdanus* is distinguished by having the aedeagus with a shaft directed dorsally with the apex

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turned posteriorly, rarely straight and directed dorsoposteriorly. The apical process is divergent, sometimes parallel, rarely fused, and variously directed at an angle to shaft. Appendages of socle are long, narrow, and oblong or strongly produced laterally.

Materials and methods

Specimens were collected from the localities of Zeytinlik and Genya Mountain in Artvin province during surveys conducted in 1994 and 2005. Aedeagus of the males was dissected under a stereomicroscope and placed in 10% KOH solution for 1 day at room temperature. The parts of male genitalia having taxonomic importance were drawn using the Corel Draw computer program after taking their photographs under the stereomicroscope.

Results and discussion

Verdanus artvinensis n. sp.

(Figures 1-5)

Description

Male: The body length measured 4.18 (4.05-4.30) mm and the face, thorax ventrally and entire abdomen black; vertex, pronotum and forewings entirely pale green with distal third of the apical cells of fore wings brown. All the legs were black with femora, tibiae and tarsi brown apically. The head was wider than pronotum with the vertex relatively flattened dorsally and anterior margin almost right-angled (90°), length

and width 0.53 (0.52-0.53) and 0.67 (0.63-0.70) mm respectively. The pronotum length and width was 0.46 (0.45-0.46) and 1.13 (1.02-1.20) mm, respectively, and the length of the forewing slightly longer than abdomen with 10th segment of abdomen not reaching the apex of pygophore, not sclerotized ventrally and convex dorsally (Figure 3).

Male genitalia: Pygophore was about 1.5 times longer than width, with a small tooth posteroventrally (Figure 3); subgenital plates did not reach the apex of pygophore with a finger-like apex, approximately as long as width and without setae, lateral sides of the subgenital plates with a series of setae (Figure 4). The styles had a curved apical claw-like process (Figure 5) with connective U-shaped, arms separated at the base, abruptly angled in midline and converging to the apex where fused. The aedeagus shaft elongated was S-shaped with apex terminating in 3 thin pairs of processes independent of each other along their entire length; dorsal processes apically directed and slightly convergent, lateral process directed laterally and curving dorsally at the apex and ventral processes directed ventrally (Figures 1 and 2).

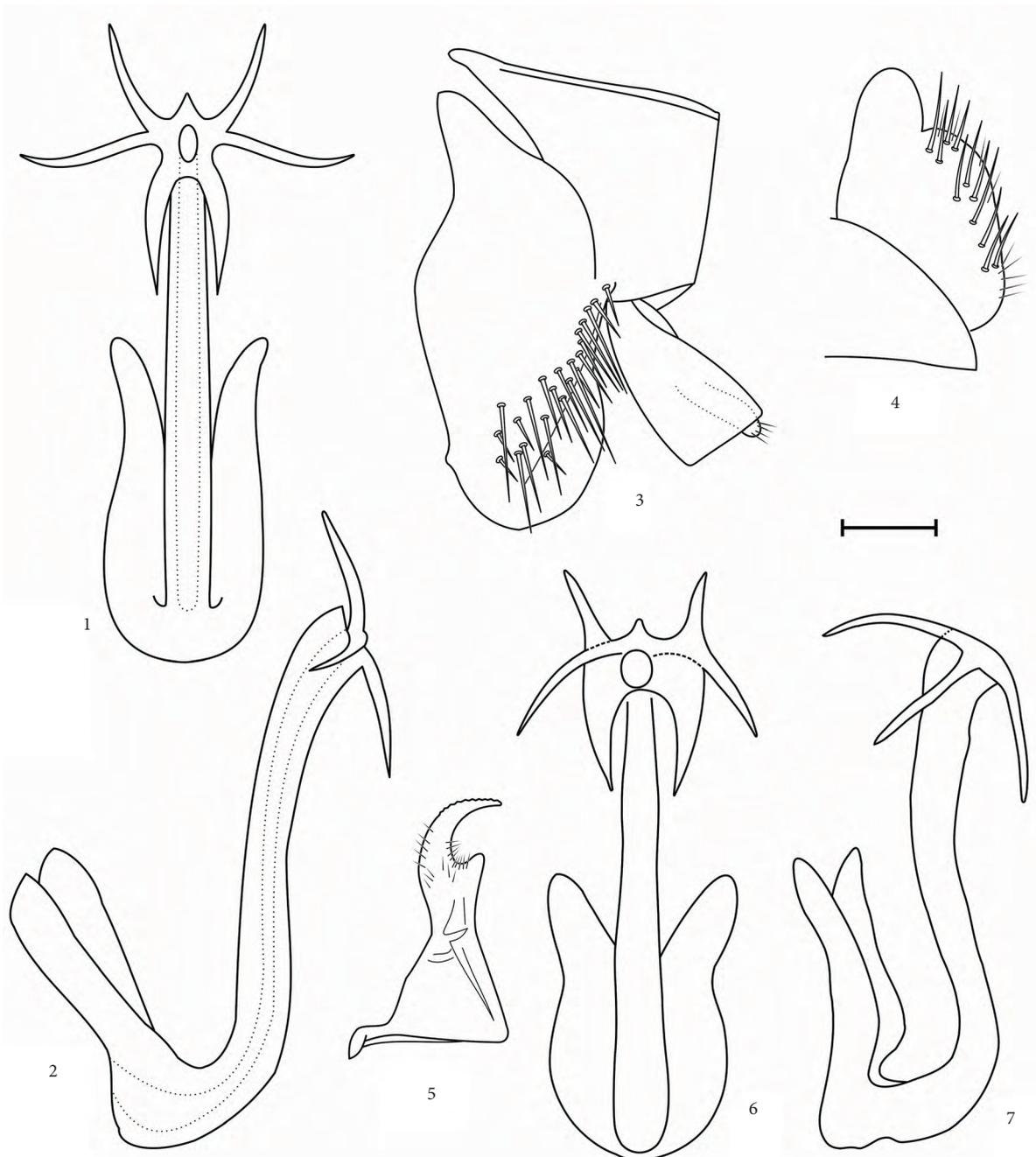
Female: Unknown.

Diagnosis

Verdanus artvinensis n. sp. is morphologically closely related to *V. pazoukii* (Dlabola, 1980). The shape of the aedeagus of both species is similar with 3 pairs of apical processes, but differing in the socle processes, shaft curvature, and the shape and curvature of the apical processes. These 2 species can be distinguished as follows:

Table. Species of *Verdanus* found in Turkey.

Species	Distribution	Distribution in Turkey	References
<i>V. abdominalis</i> (Fabricius, 1803)	East Palearctic, Near East, North Africa	No locality	Jäch, 2007
<i>V. bekiri</i> (Kalkandelen, 1972)	Turkey	Ankara, Sivas, Erzurum	Kalkandelen, 1972; Güçlü and Özbek, 1995
<i>V. gazelicornis</i> (Dlabola, 1980)	Turkey	Artvin, Kars, Trabzon, Van	Dlabola, 1980; Lodos and Kalkandelen, 1987
<i>V. hardei</i> (Dlabola, 1980)	Austria, Switzerland, Turkey	Denizli, Isparta	Kartal and Zeybekoğlu, 1997
<i>V. melichari</i> (Dlabola, 1951)	Azerbaijan, Georgia, Turkey	Erzurum, Kars	Güçlü and Özbek, 1995
<i>V. pazoukii</i> (Dlabola, 1980)	Iran, Turkey,	Artvin, Erzurum, Hakkari, Van	Dlabola, 1980; Lodos and Kalkandelen, 1987



Figures 1-5. *Verdanus artvinensis* n. sp. (holotype) 1-2. Aedeagus, posterior and lateral view; 3. Pygophore and 10th segment, lateral view; 4. Subgenital plate, ventral view; 5. Style, dorsal view. 6-7. *V. pazoukii* Dlabola, 1980. Posterior and lateral view of aedeagus (6 and 7 redrawn from Dlabola, 1980). Scale bar, 0.1 mm for Figures 1 and 2; 0.2 mm for Figures 3, 4 and 5.

- Apical processes of aedeagus thin, independent of each other along their entire length, the ventral process twice as wide than the other two; dorsal processes slightly convergent apically, lateral process curving dorsally at the apex (Figure 1). The shaft was not pronouncedly curved at the base; appendages of the socle divergent from the shaft forming an acute angle (Figure 2)
artvinensis n. sp.
- Apical processes of aedeagus of different width, ventral processes broader at the base widely fused to the lateral processes; pair of lateral processes directed ventro-laterally not curving dorsally (Figure 6). The shaft pronouncedly curved at base; appendages of the socle parallel to the shaft (Figure 7)
pazoukii (Dlabola)

Holotype: ♂, NE Turkey, Artvin, Zeytinlik, 41.059N, 41.492E, 270 m, 06 July 1994, leg. Ş. Güçlü.

Paratypes: 2♂♂, NE Turkey, Artvin, Genya Mountain, 41.090N, 41.460E, 1650 m, 10 June 2005, leg. Ş. Güçlü.

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Deposition of types. The type material has been deposited in the collection of the Entomology Museum of Erzurum, Turkey (EMET).

Type locality: Holotype; NE Turkey, Artvin, Zeytinlik, 41.059N, 41.492E, 270 m. Paratypes; NE Turkey, Artvin, Genya Mountain, 41.090N, 41.460E, 1650 m.

Habitat: The material was collected on gramineae plants in moist areas.

Etymology: The name of new species is derived from the type locality, which is Artvin province, in northeastern Anatolia, Turkey.

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