

***Podagrionella* Girault, 1913 (Hymenoptera: Torymidae: Podagrionini) Species from Turkey, with Descriptions of New Species**

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Abstract: Two new *Podagrionella* Girault, 1913 (Hymenoptera: Torymidae: Podagrionini) species, *Podagrionella eremiaphilae* sp. nov. and *P. konyaensis* sp. nov., were collected from Konya and Şanlıurfa (Bozova) provinces and are described. The key to the Palearctic *Podagrionella* species was reorganized with the addition of the 2 new species. The diagnostic characters of the new species are given.

Key Words: *Podagrionella eremiaphilae*, *P. konyaensis*, Torymidae, parasitoid, new species, Turkey

Türkiye'nin *Podagrionella* Girault, 1913 (Hymenoptera: Torymidae: Podagrionini) Türleri ve İki Yeni Türün Tanısı

Özet: Konya ve Şanlıurfa (Bozova) illerinden toplanan *Podagrionella* örneklerinden *Podagrionella eremiaphilae* sp. nov. ve *P. konyaensis* sp. nov.'in tanıları yapılmıştır. Yeni türler dahil edilerek Palearctic Bölge *Podagrionella* türlerine ait teşhis anahtarı yeniden oluşturulmuştur. Yeni türlerin tanı karakterleri verilmiştir.

Anahtar Sözcükler: *Podagrionella eremiaphilae*, *P. konyaensis*, Torymidae, parazitoid, yeni tür, Türkiye

Introduction

Bouček (1976) worked on the Mediterranean Podagrioninae and keyed out 2 tribes (Palachini and Podagrionini), including 4 genera, and described a new species of *Iridophagoides* Erdős.

Delvare (1999) studied the abdominal structures in Podagrionini, and provided implications for the phylogeny of the tribe and relationships within the constraints of access to the host.

The tribe Podagrionini is composed of 135 valid species in 6 genera. Two of the genera are Palearctic, but

the others have worldwide distribution. The majority of the species are pan-tropical and occur in Neotropical, Afrotropical, Oriental, and Australian regions (Grissell, 1995). The Palearctic genera are represented by 15 species, *Podagrion* having 11 species and 3 subspecies (Grissell, 1995), and *Podagrionella* consisting of 4 species (Grissell, 1995; Zerova and Seryogina, 2002). Grissell (1995) listed the synonyms of *Podagrionella*, including *Iridophaga* Picard and *Iridophagoides* Erdős.

In material reared or collected with an insect net from fields in the Museum of Plant Protection Department of

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MKU 2 new *Podagrionella* species were found (Figures 1a-h and 2a-f), the first records of the genus in Turkey.

Materials and Methods

Specimens of one of the *Podagrionella* spp. were reared from oothecae of *Eremiaphila turcica* Westwood, 1889 (Mantodea: Eremiaphilidae), which were collected from the sides of Atatürk Barrage in Bozova, Şanlıurfa, in 2002. The other species was swept from the field in Konya Province by Ahmet Şahbaz in 2004.

Morphological terminology follows Grissell (1995). The examined specimens were deposited in the ICMKU collection, Insect Museum of Plant Protection Department, Agriculture Faculty, Mustafa Kemal University, Antakya, Hatay, Turkey. Abbreviations used in the key and descriptions are as follows: C: claval segment; F: funicular segment; OOL: ocello-ocular distance; POL: distance between posterior ocelli; mv: marginal vein; st: stigmal vein; pmv: post-marginal vein.

Results and Discussion

Genus *Podagrionella* Girault, 1913

Synonyms were given by Grissell (1995) as follows:

Podagrionella Girault 1913/ 159:96-97. Type species: *Podagrionella bella* Girault.

Iridophaga Picard 1933: 237-239. Type species: *Iridophaga lichtensteini* Picard.

Tarachodiphaga Ferrière 1955: 214-215. Type species: *Tarachodiphaga senegalensis* Risbec.

Iridophagoides Erdős 1964: 93. Type species: *Iridophagoides petiolatus* Erdős.

Distribution: Palearctic (France, Spain, and Algeria), Afrotropical (Senegal and Malawi), Australian (Australia), and Oriental (India) (Picard, 1933; Erdős, 1964; Grissell, 1995).

Hosts: Reared from egg cases of Mantidae (Mantodea) (Grissell, 1995).

Recognition: Grissell (1995) stated that within Podagrionini, *Podagrionella* is recognized by an elongate hind-tibial apex, with its truncation much wider than twice the cross section of the tibia, the spur situated basally near the basitarsus, and the hind tarsus subequal in length to the hind tibia.

Key to the Palearctic species of *Podagrionella*¹ (adapted from the key of Bouček (1976))

- 1 Metasoma in females more or less petiolate; genal sulcus absent or rudimentary; funicular segments elongate or transverse 2
 - Metasoma sessile; genal sulcus distinct, groove-like; funicular segments transverse (*Iridophaga* group)... 4
- 2 Ovipositor as long as metasoma; fore wing hyaline; antennae short with funicular segments distinctly transverse; propodeum short and steep with irregular cross-carina running from the middle anteriorly towards the sides *Podagrionella konyaensis* sp. nov.
 - Ovipositor longer than body; fore wing with a cross-infumation at the marginal vein; funicular segments elongate; propodeum subhorizontal, with deep reticulation, but without any carinae (*Iridophagoides* group) 3
- 3 Fore wing with infumate cross-fascia confined to the basal half of the marginal vein, not extending to the stigma; anellus transverse; mid-lobe of mesonotum as long as posterior breadth; fore wing 2.75 × as long as broad; mv 0.37 × length of costal cell; petiole hardly longer than broad; ovipositor 1.2 × as long as body *Podagrionella tatarianae* (Bouček, 1976)
 - Fore wing with infumate cross-fascia forming an oblique macula reaching the stigmal vein; anellus subquadrate, slightly longer than broad; mid-lobe of the mesonotum distinctly longer than broad; fore wing 3.15 × as long as broad; mv 0.27 × length of the costal cell; petiole twice as long as broad; ovipositor slightly longer than body *Podagrionella petiolata* (Erdős, 1964)
- 4 POL:OOL = 14:13; mv:st:pmv = 25:6:16; anellus strongly transverse; hind coxae with fine pubescence; hind femur bearing 7 teeth on the outer margin: 5 long and 2 (between the third and fourth) small; petiole in lateral view triangular; ovipositor 1.25 × as long as metasoma *Podagrionella lichtensteini* (Picard, 1933)
 - POL:OOL = 18:5; mv:st:pmv = 19:3:9; anellus slightly transverse; hind coxa almost bare, with a

few hairs; hind femur bearing 7-8 teeth on the outer margin: 5 long and 2-3 small (1 sometimes between the 2nd and 3rd, and 2 between the 4th and 5th), 5th large tooth the longest; petiole in the lateral view quadrangular, about as long as broad; ovipositor more than half the length of the body (1.4:2-2.2)

.....*Podagrionella eremiaphilae* sp. nov.

¹*Podagrionella korsakowi* is not known to us.

Podagrionella konyaensis sp. nov.

(Figures 1a-d and 2a-c)

Description

Female: 1.6 mm.; ovipositor 0.7 mm. Body black, head greenish, meso- and metasoma dark green metallic reflection; antennae, except pedicellus and club, slightly darkened; fore- and mid tibiae, tarsi pale yellow; coxae concolorous with the body, fore- and mid-femora pale brown, hind femora dark brown with slightly metallic reflection, venation of wings brownish. Ovipositor sheaths brown (Figure 1a).

Head and mesosoma covered with short, sparse pale pubescence. Head in dorsal view slightly wider than pronotum, almost 1.9 × as wide as long; in front view slightly wider than long (6.4:5). Malar space 0.44 × as long as eye length, malar sulcus absent, replaced by a longer wide depression; clypeus truncated. POL:OOL = 16:4.

Antennae inserted in the middle of face, total length of pedicellus and flagellum 0.78 × as long as width of head, scape nearly cylindrical, 3.5 × as long as broad, does not reach the median ocellus; pedicellus slightly longer than broad (6:5), anellus strongly transverse, about 6 × as wide as long; funicular segments distinctly transverse, slightly widening towards the apex, first 4 segments about 1.5 ×, the others are 2 × as wide as long; club almost as long as the 3.5 preceding segments, about 1.55 × as long as broad (Figure 2a).

Mesosoma 1.2 × as long as broad. Pronotum about 3.5 × as broad as long, medially; mesonotum finely reticulated, notauli deep, about 0.55 × as long as broad; scutellum with the same reticulated sculpture as mesoscutum, as long as broad, frenal groove absent, frenum narrow, setose, smooth, 1/5 as long as the punctured part of the scutellum (Figure 1b). Front half of mesopleuron reticulated, hind half nearly smooth.

Propodeum (Figure 1c) with flattened median area has fine reticulation (except the hind half close to petiole, which is smooth) and arched lateral carinae, spiracles ellipsoidal, with the distance between spiracles 2.5 × as long as median length. Relative lengths of fore wing veins: marginal vein 18, post-marginal vein 13, radial vein 5, subcostal cell 36 (Figure 2b). Hind femur bearing 6 teeth on outer margin, 5 long and 1 (between the 4th and 6th) small, the 6th is the longest and biggest (Figures 1d and 2c); hind tibia curved, with long apical spine as long as the 1st tarsal segment.

Metasoma 1.3 × longer than mesosoma; petiole in dorsal view slightly transverse, about 0.8 × as long as broad, with distinct reticulation; first tergite with hind margin deeply emarginated; ovipositor as long as metasoma.

Male: Unknown

Host: Unknown

Material examined: Holotype, ♀, Konya (Figure 3), Turkey, 18.XI. 2004 leg. A. Şahbaz, deposited in the Insect Museum of the Plant Protection Department of MKU, Agriculture Faculty, Antakya, Hatay.

Diagnosis. The new species, *Podagrionella konyaensis* sp. nov., is closest to the *Iridophagoides* group, having a metasoma distinctly petiolate, and no genal sulcus; but, it is also similar to the *Iridophaga* group, having a hyaline fore wing, transverse funicular segments, and a short and steep propodeum. It differs from both of them, however, having a short ovipositor (only as long as the metasoma; in other species it is distinctly longer than the metasoma) and the characters stated in the key.

Podagrionella eremiaphilae sp. nov.

(Figures 1e-h and 2d-f)

Description

Female: 2.0-2.2 (holotype) mm; ovipositor 1.4 mm. Body generally dark bluish green, antennae with flagellum brown, ventrally paler, scape mostly yellow, only apical part dorsally metallic greenish, pedicellus dorsally metallic green, ventrally pale brown; coxae and hind leg femurs concolorous with the body, fore and mid femora pale brown (except yellow knees), fore and mid tibiae and tarsi pale yellow (except brown pretarsi). Hind tibia in basal 2/3 brown with slight metallic reflection dorsally. Venation of wings brownish. Ovipositor sheaths brown (Figure 1e).

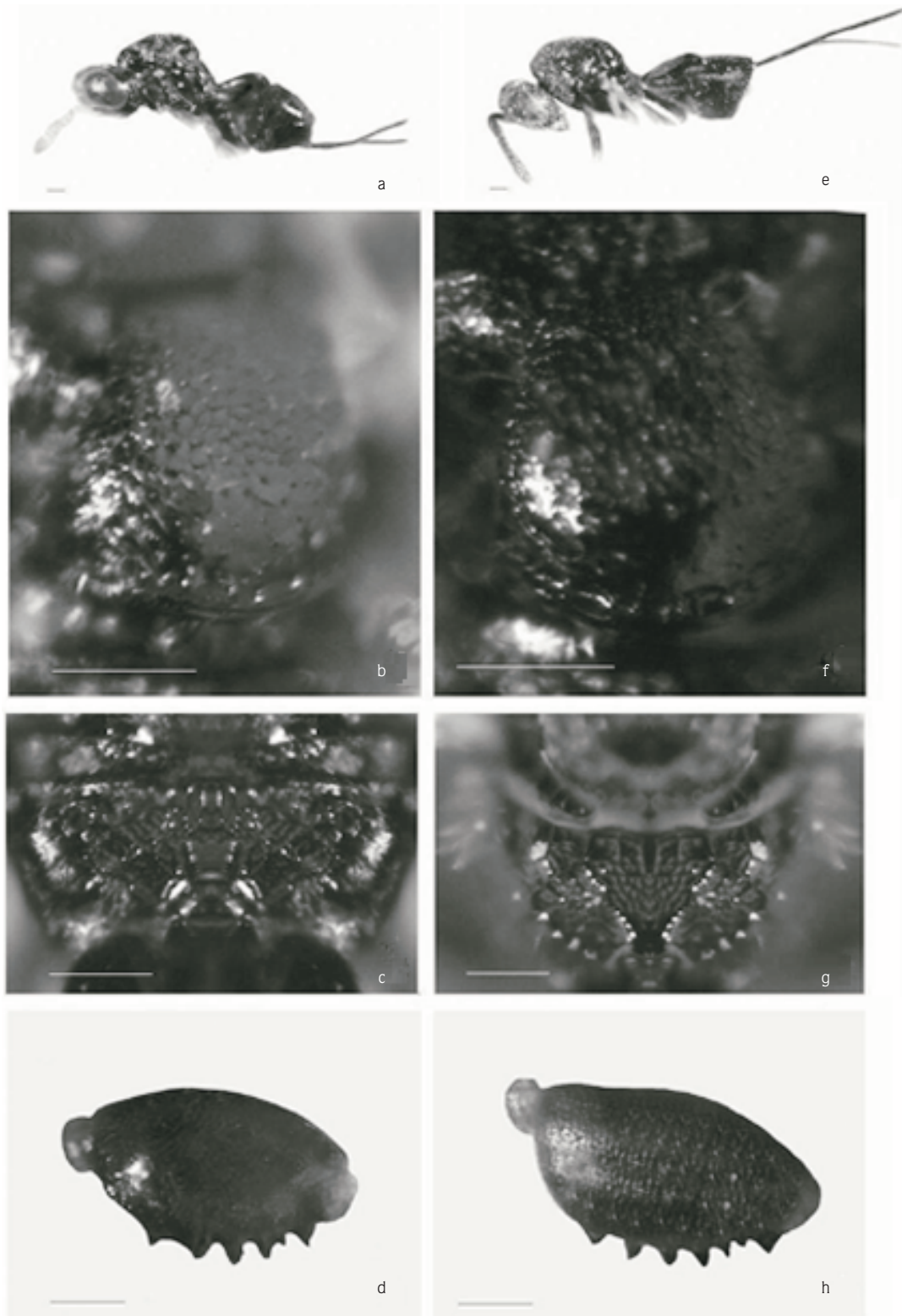


Figure 1. *Podagrionella konyaensis*: a) Female body; b) scutellum; c) propodeum; d) hind femur. *Podagrionella eremiaphilae*: e) Female body; b) scutellum; c) propodeum; h) hind femur. Scale bar = 0.125mm.

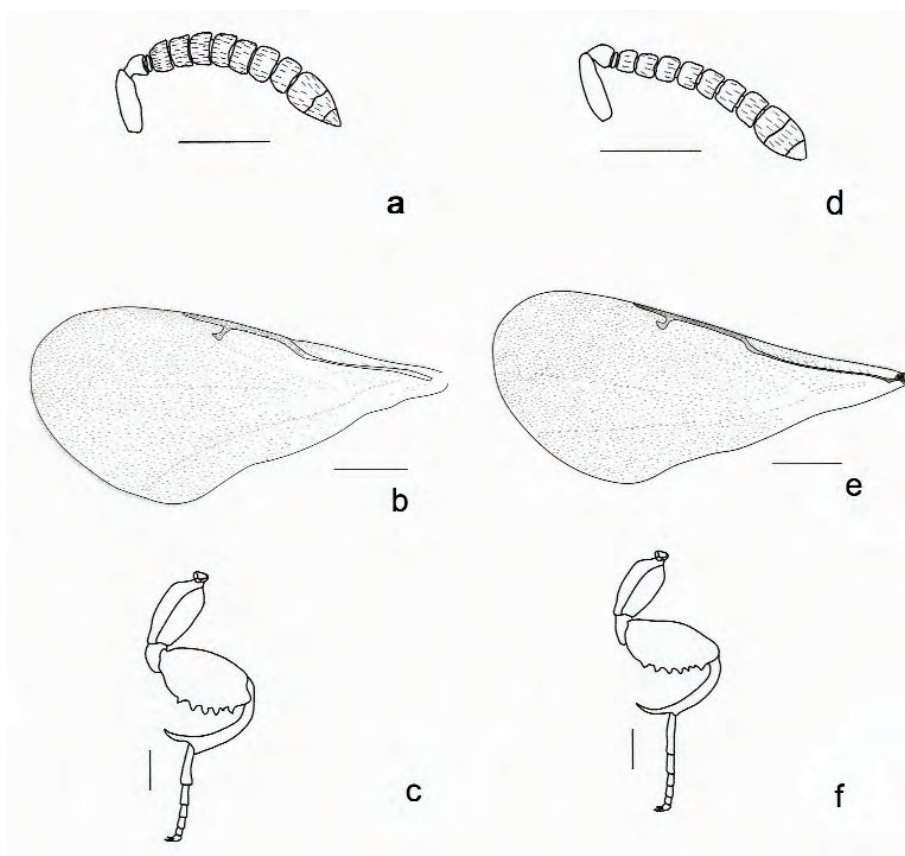


Figure 2. *Podagrionella konyaensis*: a) Antenna; b) forewing; c) hind leg. *Podagrionella eremiophilae*: d) Antenna; e) forewing; f) hind leg. Scale bar = 0.250 mm.

Head and mesosoma covered with short, sparse pale pubescence. Head in dorsal view markedly wider than pronotum, almost $2.2 \times$ as wide as long; in front view slightly wider than long (4:3). Malar space $0.41 \times$ as long as eye length. Clypeus truncated. POL:OOL = 18:5.

Antennae inserted in the middle of face, scape nearly cylindrical, reaching to about the median ocellus; anellus transverse, about $2 \times$ as wide as long; funicular segments slightly transverse, about $2 \times$ as wide as long, slightly widening towards apex; club almost as long as the preceding 3 segments, about $1.25 \times$ wider than 7th funicular segment (Figure 2d).

Mesosoma $1.5 \times$ as long as broad. Pronotum about $2.7 \times$ as broad as long, medially; mesonotum finely reticulated, notauli deep, about $0.6 \times$ as long as broad; scutellum with the same reticulated sculpture as mesoscutum, as long as broad (Figure 1f); frenal groove absent, frenum setose, smooth, $1/3$ as long as the punctured part of scutellum. Front half of mesopleuron

reticulated, hind half nearly smooth. Propodeum weakly reticulated, without distinct carinae (Figure 1g); spiracles ellipsoid, with the distance between spiracles $2 \times$ their median length. Relative lengths of fore wing veins: marginal vein 18, post-marginal vein 9, radial vein 3, subcostal cell 36 (Figure 2e). Hind femora bearing 7-8 teeth on outer margin: 5 long and 2-3 small (sometimes 1 between the 2nd and 3rd, and 2 between the 3rd and 4th), 5th is the longest and biggest; hind tibia curved, with long apical spine as long as the 1st tarsal segment (Figures 1h-2f).

Metasoma as long as mesosoma; petiole in lateral view quadrangular, about as long as broad; ovipositor more than half the length of the body (1.4:2.0-2.2).

Male: 1.7-1.8 mm. Similar to female, except as follows: antenna with scape and pedicellus dark brown with metallic reflection, first 2 funicular segments brown, the others dorsally pale brown, ventrally pale yellow, club pale yellow; fore- and mid- femora yellow, except



Figure 3. Sampling localities in Turkey, with coordinates and altitudes.

sometimes the dorsal and ventral edges have slight metallic reflections. Antennae thicker than those of females. Metasoma shorter than mesosoma (75:90).

Host: All of the specimens were reared from the ootheca of *Eremiaphila turcica* Westwood.

Material examined: Holotype, ♀, the sides of Atatürk Barrage in Bozova, Şanlıurfa (Figure 3), Turkey, 25. IV. 2002. leg. M. Doğanlar, deposited at the Insect Museum of the Plant Protection Department of MKU, Agriculture Faculty, Antakya, Hatay. Allotype male, having same data as the holotype.

Paratypes, 39 ♀♀, 6 ♂♂, same data as the holotype.

Diagnosis. The new species, *Podagrionella eremiaphilae* sp. nov., is close to *Podagrionella lichtensteini* (Picard), having transverse hyaline and funicular fore wing segments, and is close to *Podagrionella konyaensis* sp. nov. It differs from *P. lichtensteini*, having long, distinct teeth on the outer

margin of the hind femur (in *P. lichtensteini* the hind femur has smaller teeth, as shown in Figure 2 of Zerova and Seryogina, 2002), POL more than 3 × OOL (in *P. lichtensteini* POL almost equals OOL), marginal vein 6 × stigmal vein and 2 × post-marginal vein (in *P. lichtensteini* marginal vein 4 × stigmal and 1.5 × post-marginal vein), and some other characters stated in the key. It differs from *P. konyaensis* sp. nov., having an ovipositor that is longer than half of the body (in *P. konyaensis* the ovipositor is almost as long as the metasoma) and other characters stated in the key.

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References

- Bouček, Z. 1976. On the Mediterranean Podagrioninae, with description of a new *Iridophagoides* (Hym., Torymidae). Entomol. Ber. 36: 182-184.
- Delvare, G. 1999. Structure de l'abdomen chez les Podagrionini. Implications pour la phylogénie de la tribu relations avec les contraintes d'accès à l'hôte (Hymenoptera: Chalcidoidea: Torymidae). An. Soc. Entomol Fr. 35 (suppl.): 23-26.
- Erdős, J. 1964. Chalcidoidea nova in Gallia et Numidia inventa (Hym.). An. Soc. Entomol Fr. 69: 89-101.
- Grissell, E. 1995. Toryminae (Hymenoptera: Chalcidoidea: Torymidae): a redefinition, generic classification, and annotated world catalog of species. Memoirs on Entomology International. 2: 249-250.
- Picard, F. 1933. Sur les Hyménoptères parasites des oothèques de mantides, avec la description d'un Chalcididae: *Iridophaga lichtensteini* n. g. et sp. nov. Bull. Soc. Entomol Fr., 1933: 235-241.
- Zerova, M.D. and Seryogina, L.Ya. 2002. A species of the genus *Podagrionella* (Hymenoptera: Torymidae) new to the Kazakhstan Fauna. Entomol. Rev. 82: 125-126.