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On some Heptageniidae new for Anatolia (Turkey) (Insecta, Ephemeroptera)

With 15 Figures

NILSÜN KAZANCI & DIETRICH BRAASCH
Ankara Potsdam

Introduction

Recently BRAASCH (1981) referred to the fauna of Heptageniidae in Anatolia. The work contains records of following species: *Iron caucasicus* TSHERNOVA, 1938, *I. znojkoii* TSHERNOVA, 1938, *Ecdyonurus ornatipennis* TSHERNOVA, 1938, *E. resslii* BRAASCH, 1981 (*lateralis* group), and *Rhithrogena theischingeri* BRAASCH, 1981 (*semicolorata* group). Then DEMOULIN (1963, 1965) has illustrated some unnamed species of genera *Atronurus* LESTAGE, 1924 and *Thalerosphyrus* EATON, 1883 from Turkey what is due to a comment. Today genus *Atronurus* cannot be defined exactly in nymphal range. According to this a revision of *Atronurus* like species as *Heptagenia tallax* (HAGEN) (sensu GRANDI, 1953) from Sardinia and *Atronurus kugleri* DEMOULIN, 1973 from Israel have been revealed as species group with close affinity to *Ecdyonurus lateralis* group. After drawing of DEMOULIN (1963) the nymphs "*Atronurus* ? sp. 1 and 2" belong to *lateralis* group, especially because of small number in maxillar pectinations, little denticulation of claws and proportion of body length to head breadth.

On the other hand *Thalerosphyrus* seems to be spread only in eastern part of Asia. The most western finding place can be noticed of India, Khandala near Bombay (nymphs, leg. GILLIES, det BRAASCH). Having studied genus *Thalerosphyrus* BRAASCH & SOLDÁN (1984) have informed that *Thalerosphyrus* nymphs bear long projections at lateral hind margins of sterna. "*Thalerosphyrus* ? sp. larve" of DEMOULIN (1965) is without these characters but it rather resembles species of *lateralis*-complex from Caucasus described as *Ecdyonurus azerbaijshanicus* (BRAASCH, 1978). Only in head markings we see differences.

Problematically in generic view is the status of *Cinygma tibialis* ULMER, 1920. TSHERNOVA & BELOV (1982) have given new combination of this species placing it in genus *Epeorus*. That means now *Epeorus (Epeorus) tibialis* (ULMER, 1920). It is obvious that the authors could not take into consideration work of THOMAS (1982) putting that obscure *Ecdyonurus znojkoii* TSHERNOVA, 1938 in synonymy generically, i.e. in favour of *Rhithrogena*. So it can be supposed that titillatorless forms like that now *Rhithrogena znojkoii* (TSHERNOVA) and like ones as *Epeorus tibialis* (ULMER) are in reality right *Rhithrogena*. The authors have redescribed the species in question. The male genitalia having been given seem to be like those of our specimens. Regarding all facts we believe that *Epeorus (Epeorus) tibialis* (ULMER) can only be *Rhithrogena tibialis* (ULMER, 1920) **comb. nov.**

Material, if not otherwise mentioned, is all collected by KAZANCI.

Species list

1. *Epeorus zaitcevi* TSHERNOVA, 1982

2 ♂♂, Turkey, Kars, Ardahan, 23.7.1981; 9 ♂♂, Erzurum, Yeşildere, 27.7.1981; 9 ♂♂, Erzurum, Dumlu, 27.8.1981; 1 ♂, Gümüşhane, Bayburt, 29.7.1981; 3 ♂♂, Hakkâri, Otluca, 17.7.1979, leg. DEMIRSOY.

This species has been figured as nymph by BRAASCH (1976) sub nom. *Epeorus znojkoii* TSHERNOVA. Probably *Epeorus (Epeorus)* sp. published as "larve" by DEMOULIN (1973)

from Israel is the same species (BRAASCH vid.). Because of difficult recognition in work of TSHERNOVA (1981) we have drawn genital segment (fig. 1, 2) once more. Species now known from Armenia, Israel is new for Turkey.

2. *Iron longimaculatus* BRAASCH, 1982 (?)

1 ♀ subimago, Turkey, Uludağ, 800–1750 m, 29.5.1970, leg. WITTMER et v. BOTHMER.

The attribution of this species is not quite clear. Type species shows oblong spots on femora; our specimen lacks legs. Markings on dorsal abdomen of subimago female are similar those in nymphs; type specimen was not coloured definitely. New for Turkey.

3. *Rhithrogena sublineata* n. sp.

Subimago ♂, length of body 7 mm, length of fore wing 7 mm, cerci are broken.

Head yellowish; compound eyes greyish blue, separated from one another by breadth of median ocellus. Pronotum yellowish, laterally small blackish bordered; abdomen yellowish, terga and sterna (fig. 4, 3) with distinct dark markings. Legs yellowish with dark spots rounded on femora near middle area. Wings light brown; cross veins simple, 14 in costal field. Cerci dark at base followed by light brown, whitish at the tip. Penis (fig. 6,7) at base broad, apically with rounded, close standing and pointed lobes with 3-toothed titillators (fig. 8) at their inner sides; hind margin of styliger (fig. 5) in the middle with V-shaped emargination.

Holotype: subimago ♂, Turkey, Hakkâri, Otluca, 17.8.1979, leg. DEMIRSOY, in coll. KAZANCI, Hacettepe University, Ankara.

The generic position of this species seems to be a bit problematically, because there is a median line on ventral abdomen quite unusual but often found in *Epeorus/Iron*. Possession of femur spot can also be reckoned for *Epeorus/Iron*. Particularly the structure of styliger hind margin besides presence of titillator leads us to conception of being true *Rhithrogena*. Finding of adults would clarify situation. With its above mentioned marking species is not comparable with any known *Rhithrogena*.

4. *Ecdyonurus ornatipennis* TSHERNOVA, 1938

1 subimago ♀, Turkey, Amasya, 400–900 m, 24.–26.5.1970, leg. WITTMER and v. BOTHMER.

Known from the Caucasus, Iran and Turkey.

5. *Ecdyonurus pseudaffinis* BRAASCH, 1980

1 ♀, Turkey, Arakli, south of Trabzon, 23.5.1970, leg. WITTMER and v. BOTHMER.

For near spreading to Anatolia in Soviet Georgia (Adsharian ASSR) species was to be expected in Turkey. New for the country.

6. *Rhithrogena braaschi* JACOB, 1974

1 ♂, Turkey, Bolu-Abant, 25.5.1981.

Described from Bulgaria and recently recorded from Greece (BELFIORE & BRAASCH i. pr.).

7. *Rhithrogena caucasica* BRAASCH, 1979

1 ♂, Turkey, Hakkâri, Otluca, 17.7.1979, leg. DEMIRSOY; 3 ♂♂, Hakkâri, Çukurca Town, Güzereş Village, 25.8.1981.

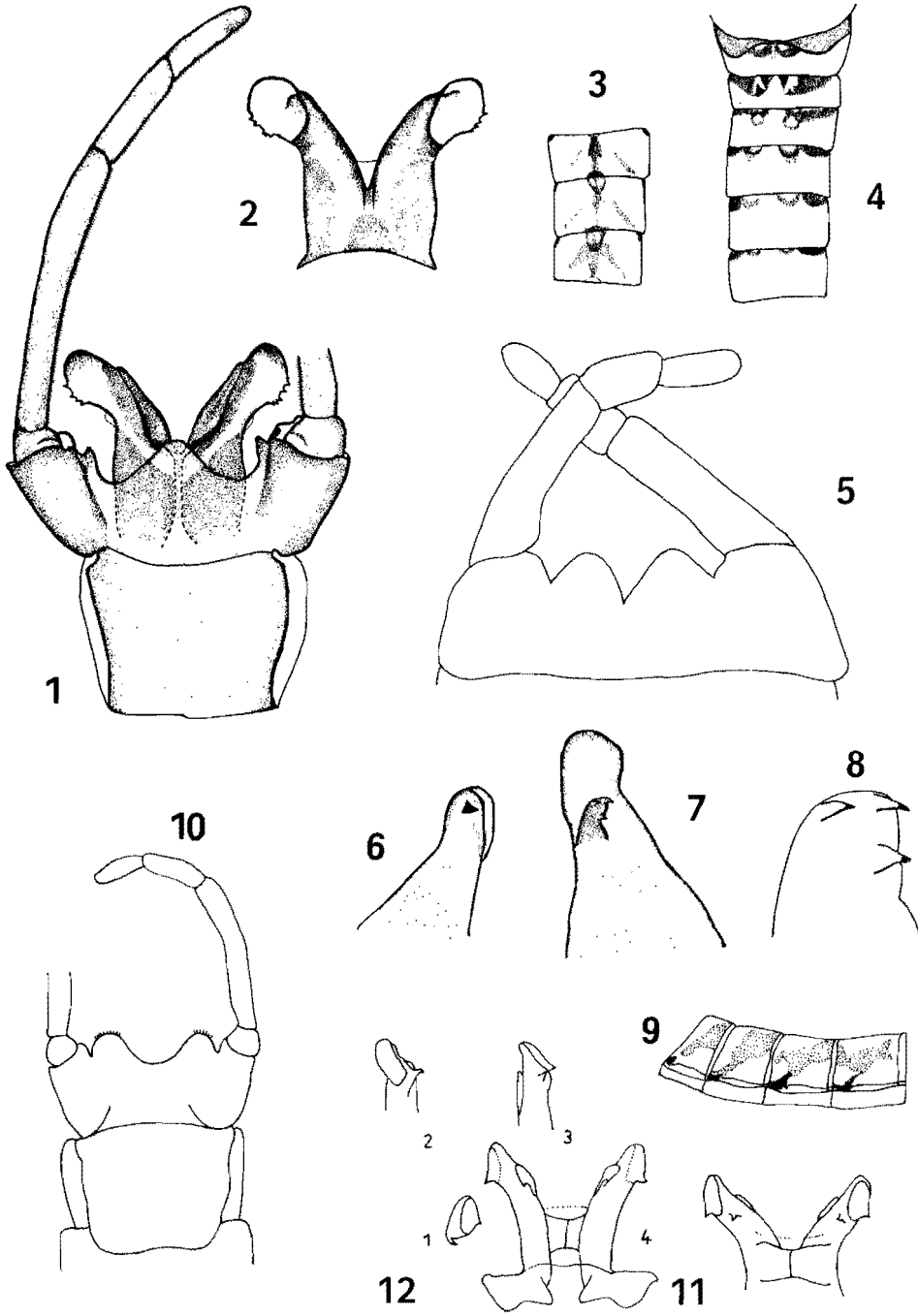
In Caucasus region this species is widely spread in lower mountain streams.

8. *Rhithrogena expectata* BRAASCH, 1979

1 ♂, Turkey, Erzurum, 27.7.1979.

Species shows similar distribution as precedent one, but in altitude it goes higher.

Figs. 1–2: *Epeorus zaitcevi* TSHERNOVA, ♂ genitalia. 1 – genital segment, styliger, forceps, penis, ventral view; 2 – penis, dorsal view. – Figs. 3–8: *Rhithrogena sublineata* n. sp., ♂ subimago. 3 – sterna II–IV; 4 – terga I–IV; 5 – genital segment, styliger, forceps, ventral view; 6 – penis lobe, dorsal view; 7 – penis lobe, ventral view, 8 – titillator tip. – Figs. 9–12(1–4): *Rhithrogena iranica* BRAASCH, ♂. 9 – abdominal segments II–V, lateral view; 10 – genital segment, styliger, forceps, ventral view; 11 – penis, dorsal view; 12(1–4), penis, 12.1 – apex, right lobe, dorsal view; 12.2 – right lobe, inner side, lateral view; 12.3 – left lobe, outer side, lateral view; 12.4 – total, ventral view.



9. *Rhithrogena iranica* BRAASCH, 1983

6 ♂♂, Turkey, Muş, Varto, 1800 m, 6.8.1982.

Having been described this species in subimago male stage, we give some drawings of ♂ (figs. 9–12) which represent abdominal terga II–V (fig. 9), abdominal tip ventrally (fig. 10), penis ventrally (fig. 12.4), penis dorsally (fig. 11) and some views of penis parts (figs. 12.1,2,3).

Up till now only known from Iran.

10. *Rhithrogena iridina kownackorum* SOWA et ZIMMERMANN, 1975

1 ♂, Turkey, Gümüşhane, 1.8.1981.

Lately recorded from the neighbouring Soviet Armenia near Erevan (BRAASCH, 1979). There are slight differences between specimen in question and Erevan specimens.

11. *Rhithrogena tibialis* (ULMER, 1920) **comb. nov.**

2 ♂♂, Turkey, Hakkâri, Otluca, 18.7.1979, leg. DEMIRSOY; 2 ♂♂, Bolu, Gerede stream, 4.7.1980; 8 ♂♂, Erzurum, Pasinler, 26.7.1981; 3 ♂♂, Erzurum, İlica, 27.8.1981.

12. *Rhithrogena znojtkoi* (TSHERNOVA, 1938)

1 ♂, Turkey, Bingöl, İlicalar, 29.7.1982; 2 ♂♂, Erzincan, Çağlayan village, 26.7.1982; 9 ♂♂, Tunceli, Munzur valley, 27.7.1982; 1 ♂, Artvin, Borçka, 31.5.1983; 1 ♂, Maraş, Kilavuzlu village, 20.5.1982; 1 ♂, Antalya, Elmali, 14.5.1982; 2 ♂♂, Ankara, Çeltikçi, 27.4.1983; 2 ♂♂, Erzincan, Kemah, 26.5.1983; 1 ♂, Mersin, Çamlıyayla, 25.5.1984.

13. *Afronurus kugleri* DEMOULIN, 1973

3 ♂♂, 15 nymphs, Turkey, Ankara, Güvem, 28.7.1978; 1 ♂, Bolu, Kibrisçik, 30.6.1979; 2 ♂♂, 1 ♀, 1 subimago ♂, 1 subimago ♀, Elazığ, Karakoçan, 28.7.1982; 1 ♂, Bingöl, Muş road, 3.8.1982; 1 ♂, Muş, Varto, 3.8.1982.

We have already mentioned that *A. kugleri* cannot be regarded as genuine *Afronurus*, because demonstrating titillators conspicuously as in *Ecdyonurus lateralis*. Its generic position will be dealt by BRAASCH, SOWA & JACOB (i. prep.) in the context of *Ecdyonurus lateralis* complex.

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Summary

Some species of Heptageniidae are recorded for the first time from Anatolia: *Epeorus zaitcevi* TSHERNOVA, *Iron longimaculatus* BRAASCH, *Ecdyonurus pseudaffinis* BRAASCH, *Rhithrogena braaschi* JACOB, *Rh. caucasica* BRAASCH, *Rh. expectata* BRAASCH, *Rh. iranica* BRAASCH, *Rh. iridina kownackorum* SOWA et ZIMMERMANN. *Rhithrogena sublineata* n. sp. is new for science. For better knowledge illustrations are given of *Epeorus zaitcevi* ♂ and *Rhithrogena iranica* ♂. *Epeorus (Epeorus) tibialis* (ULMER, 1920) is to be regarded now as *Rhithrogena tibialis* (ULMER, 1920) **comb. nov.**; *Afronurus kugleri* DEMOULIN, new for Anatolia, is reckoned for belonging to sub-group of *Ecdyonurus lateralis* complex.

Zusammenfassung

ÜBER EINIGE FÜR ANATOLIEN (TÜRKEI) NEUE HEPTAGENIIDAE

Einige Arten der Heptageniidae werden erstmalig aus Anatolien nachgewiesen: *Epeorus zaitcevi* TSHERNOVA, *Iron longimaculatus* BRAASCH, *Ecdyonurus pseudaffinis* BRAASCH, *Rhithrogena braaschi* JACOB, *Rh. caucasica* BRAASCH, *Rh. expectata* BRAASCH, *Rh. iranica* BRAASCH, *Rh. iridina kownackorum* SOWA et ZIMMERMANN. *Rhithrogena sublineata* n. sp. ist neu für die Wissenschaft. Zur besseren Kenntnis werden von *Epeorus zaitcevi* ♂ und *Rhithrogena iranica* ♂ Illustrationen gegeben. Für *Epeorus (Epeorus) tibialis* (ULMER, 1920) erscheint nun als neue Kombination *Rhithrogena tibialis* (ULMER, 1920). *Afronurus kugleri* DEMOULIN, welche neu für Anatolien ist, wird als zum *Ecdyonurus lateralis*-Komplex gehörend angesehen.

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Addresses of the authors:

Dr. N. Kazanci, Hacettepe Üniversitesi, Fen Fakültesi, Biyoloji Bölümü, Beytepe – Ankara (Turkey)

Dipl.-Biol. D. Braasch, Maybachstraße 1a, Potsdam, DDR - 1570

Rezension

FREINA, J. J. de & Th. J. WITT: Die Bombyces und Sphinges der Westpalaearktis (Insecta, Lepidoptera). Ein umfassendes, reich illustriertes Bestimmungsbuch europäischer und nordwest-afrikanischer Nachtfalter.

708 Seiten, 369 Abbildungen, 46 Tafeln, 330 Verbreitungskarten.
Edition Forschung & Wissenschaft Verlag GmbH, München 1987.

Dieses Werk schließt eine schon lange bestehende Lücke in der Lepidopterologie und trägt dem enormen Wissenszuwachs der letzten Jahrzehnte hinsichtlich Systematik, Taxonomie, Ökologie und Zoogeographie, woran die Autoren erheblichen Anteil haben, Rechnung. Der Bearbeitung der Tagfalter (HIGGINS & RILEY, 1970) folgt nun für einen etwas weiter gespannten Raum der 1. Teil der Spinner und Schwärmer.