

A PRELIMINARY REVISION OF THE PALAEARCTIC SPECIES AND SUBSPECIES OF *THISOICETRUS* BR. W. (ORTHOPTERA, ACRIDIDAE).

By B. P. UVAROV, D.Sc.,

Department of Entomology, British Museum (Natural History).

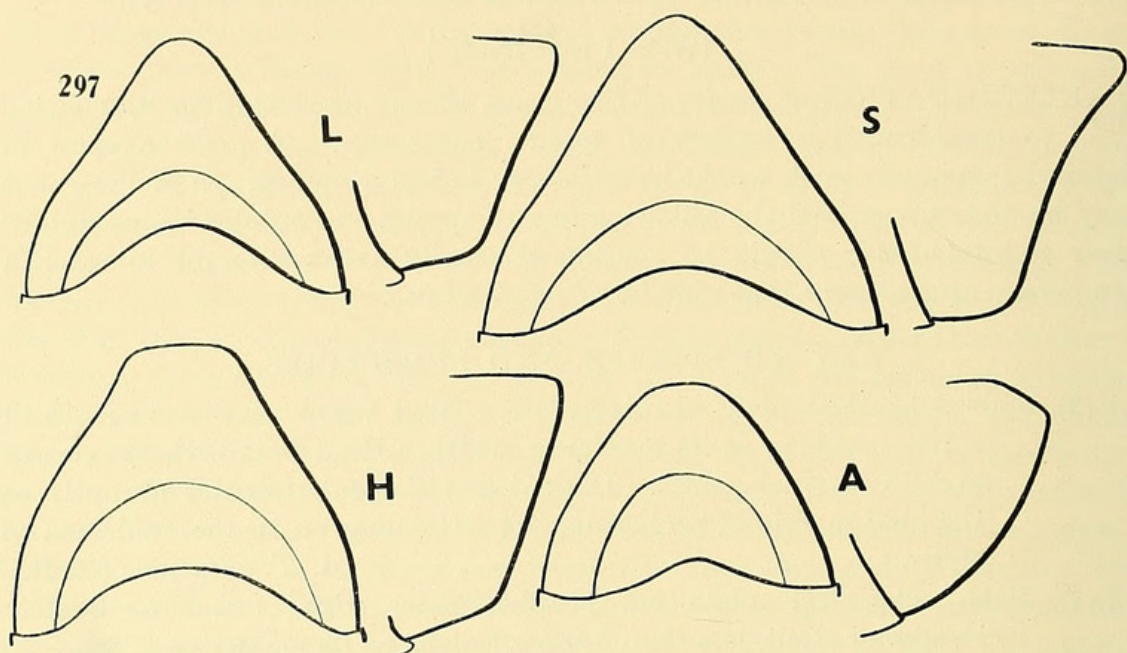
(With 1 text-figure.)

DETERMINATION of species of this genus affords unusual difficulties owing to considerable instability of specific characters. A great amount of detailed taxonomic work would be necessary before a monograph of the genus may be undertaken, and the following key to species and subspecies, as well as their annotated list, should be considered merely as an attempt to reach a temporary arrangement that may be of practical use.

KEY TO SPECIES AND SUBSPECIES.

- 1 (2). Male subgenital plate bi-tuberculate. Hind femur very slender, about 6 times as long as its maximum width. Hind tibia with 15 external and 13 internal spines. Dark dorsal stripe terminates abruptly at the hind margin of pronotum, not extending on to the anal area of elytra 1. *T. adspersus* (Redt.).
- 2 (1). Male subgenital plate not bi-tuberculate. Hind femur moderately slender or stout, less than 5 times as long as its maximum width.
- 3 (20). Hind tibia more or less red, or at least pale purplish, with more than 10–11 external spines. Pronotum always with a broad black median stripe enclosed between two narrow light ones.
- 4 (5). Hind femur with heavy black markings on the externomedian area, two of them reaching across it. Face strongly oblique; fastigium of vertex forming an angle with the frontal ridge, at least in the male. Very similar in general appearance and coloration to *T. adspersus*.
2. *T. rantae* Uv.
- 5 (4). Black markings on the externomedian area of hind femur absent or small, none of them extending below the median line.
- 6 (9). Hind tibia with 12–13 (exceptionally 14) external and 10–11 internal spines.
- 7 (8). Hind wings colourless or faintly greenish.
3. *T. annulosus annulosus* (Wlk.).
- 8 (7). Hind wings distinctly bluish. 3a. *T. annulosus cyanescens*, subsp. n.
- 9 (6). Hind tibia with 14–17 external and 11–13 internal spines.
- 10 (15). Male subgenital plate short, not attenuate, very obtuse or even roundly truncate apically (fig. 297, H).
- 11 (14). Size medium to quite large (for the genus). Frontal ridge ordinary, distinctly constricted at fastigium.
- 12 (13). Size large (♂ 28–30 mm., ♀ 40–50 mm.). Lateral pronotal keels divergent backwards. Lateral pronotal lobes and pleurae rugulose; hind femur punctured 4. *T. harterti* I. Bol.

- 13 (12). Size medium (σ 22–24 mm., ϕ 28–30 mm.). Lateral pronotal keels practically parallel. Lateral pronotal lobes and pleurae less rugulose, shiny, hind femur smooth, shiny 5. *T. persa* Uv.
 14 (11). Size very small (σ 15 mm., ϕ unknown). Frontal ridge very wide, not constricted at fastigium. Lateral pronotal keels practically obsolete 6. *T. theodori* Uv.
 15 (10). Male subgenital plate elongate, attenuate, subacute apically (fig. 297, L, S).
 16 (19). Size medium to large (σ over 18 mm., ϕ over 30 mm.).



TEXT-FIG. 297.—Male subgenital plates, viewed from below and in profile: **L**, *Thisoicetrus littoralis littoralis*.—**S**, *T. littoralis similis*.—**H**, *T. harterti*.—**A**, *T. annulosus*.

- 17 (18). Hind tibia sanguineous. Male subgenital plate less attenuate (fig. 297, L). General coloration darker. 7. *T. littoralis littoralis* (Ramb.).
 18 (17). Hind tibia pure light-red. Male subgenital plate more attenuate (fig. 297, S). General coloration lighter. 7a. *T. littoralis similis* (Br. W.).
 19 (16). Size small (σ 16 mm., ϕ 27 mm.) 7b. *T. littoralis minutus* Uv.
 20 (3). Hind tibia without red colour, with 10–11 external and not more than 10 internal spines. General coloration buff; pronotum with only a narrow and imperfectly defined median dark stripe; elytra without spots. Size large 8. *T. buxtoni* Uv.

ANNOTATED LIST OF SPECIES AND SUBSPECIES.

1. *Thisoicetrus adspersus* (Redtenbacher 1889).

1889. *Euprepocnemis adspersa* Redtenbacher, *Wien. Ent. Zeit.*, **8**: 30.
 1898. *Thisoicetrus adspersus*, I. Bolivar, *Ann. Sci. Nat. Porto*, **5**: 34, 35.
 1912. *Thisoecetrus adspersus*, Uvarov, *Horae Soc. Ent. Ross.*, **40**: 33, 34, fig. 3c.

This easily recognizable species has been recorded from Transcaspia (type locality: Askhabad), E. Transcaucasia, Caspian plains of Northern Caucasus, Iran, Mesopotamia, Palestine and Egypt, on one hand, and from Spanish Morocco and S.E. Spain, on the other. I am now able to record it also from Baluchistan,

Arabia, Cyprus and Central Algeria, but there still remains a wide gap between the eastern and the western areas of its occurrence, which cannot be due to mere lack of records, but represents a real interruption in the present distribution area.

A long series of specimens from Cyprus are all relatively very small and of dark general coloration, but it would be premature to separate them subspecifically, since the species appears to be unstable in these respects elsewhere.

2. *Thisoicetrus rantae* Uvarov 1936.

1936. *Thisoicetrus rantae* Uvarov, *Linn. Soc. Journ., Zool.*, **39**: 549.

Although somewhat similar in the appearance to *T. adspersus*, this species differs well from it in the structure of the male subgenital plate and in other characters indicated in the above key and in the original description. A curious feature of *T. rantae* is the individual variation in the length of elytra which may be either considerably shorter than abdomen, or extend beyond the hind knees, while the intermediate condition is less common. This appears to suggest an incipient dimorphism.

The species is known only from S. Arabia.

3. *Thisoicetrus annulosus annulosus* (Walker 1870) (text-fig. 297, A).

1870. *Heteracris annulosa* Walker, *Cat. Derm. Salt. Brit. Mus.*, **4**: 673, 674.

1871. *Acridium continuum* Walker, *t.c.*, **5**, Suppl.: 61 (*syn. nov.*).

1873. *Pezotettix (Euprepocnemis) charpentieri* Stål, *Bih. Sven. Akad. Handl.*, **4** (5): 15 (*syn. nov.*).

1908. *Thisoicetrus charpentieri* I. Bolivar, *Bol. R. Soc. Esp. Hist. Nat.*, 1908: 328.

1920. *Thisoicetrus charpentieri* Uvarov, *Nov. Zool.*, **30**: 75, 77.

1923. *Thisoicetrus continuus* Uvarov, *Ent. Mon. Mag.* (3) **9**: 85.

I. Bolivar (1908) was the first author to define more or less clearly this species, which was usually confused with *T. littoralis*, but he failed to notice the important difference between the two in the shape of the male subgenital plate. He was also unable to know of the existence of two earlier names given to the same species by Walker, *annulosa* and *continuum*, but my examination of the types shows them to be synonymous with Stål's *charpentieri*. The name *T. annulosus* (Wlk.), unfortunately, takes precedence of the others, although it is based on a female from unknown locality.

When redescribing *T. continuus* in 1923, I had before me a limited series of that insect, and had no means of comparing it with the true *charpentieri*. Therefore, my redescription was made comparative with *T. littoralis*, which is, of course, not even closely related to the insect in question. Now I have before me very abundant material from Tunis, Egypt (Siwa, Helouan, etc.), Arabia, Palestine, etc., and am able to record its extreme variability as regards size, coloration and the degree of rugosity of integument. It appears that, being essentially an oasis insect, this species splits up into numerous local population groups, fairly uniform within themselves, but always slightly different from other populations. The Palestine (Jordan Valley, especially) group might even be separated subspecifically (see my redescription of *continuum*), as its members are usually much more roughly sculptured and have relatively shorter and stouter hind femora than North African forms. I believe, however, that it would be wiser not to attempt subspecific division without more detailed studies, and

the only subspecies of *T. annulosus* which I propose to recognize is that from the Somaliland, differing in wing colour (see below).

The known distribution of *T. annulosus* comprises Spanish Morocco, Algeria, Tunis, Libya, Egypt, Anglo-Egyptian Sudan (Kordofan; British Museum), Sinai, Palestine, Arabia.

3a. *Thisoicetrus annulosus cyanescens* subsp. n.

One male (type) and three females in the British Museum, from Buran, British Somaliland, 3000 ft. (*C. L. Collenette*), are strikingly different from the typical form in the light-blue coloration of hind wings, while quite similar to it morphologically. Since no case of blue coloration of hind wings is known to me amongst very long series from other localities, I regard the Somalian specimens as representing a distinct subspecies.

4. *Thisoicetrus harterti* I. Bolivar 1913 (text-fig. 297, H).

1913. *Thisoicetrus harterti* I. Bolivar, *Nov. Zool.*, **20**: 614.

1923. *Thisoecetrus bolivari* Uvarov, *op. cit.*, **30**: 76 (*syn. nov.*).

1923. *Thisoecetrus harterti*, Uvarov, *l.c.*

In my 1923 paper I have made a mistake in identifying the Biskra insect with that redescribed by I. Bolivar as *T. charpentieri* St. (now *T. annulosus*, see above) and believed that author incorrect in his determination, while I can see now that he was right.

The number of tibial spines in this insect, now known to me by a long series from Southern Algeria (Bou-Saada, Djelfa, Colomb-Bechar), French Sudan, Northern Nigeria and Kordofan, is greater than in *T. annulosus* and by this character the species must be referred to the group allied to *T. littoralis*. On the other hand, the male subgenital plate of *T. harterti* is of the type approaching that in *T. annulosus*, but clearly different in the truncate apex. In Kordofan, *T. harterti* was found actually together with *T. annulosus*, from which it differs strikingly even in the size, and there can be no doubt of its independent specific status.

T. harterti is easily recognizable at first sight by its large size and large dark spots on elytra. I. Bolivar's type from Biskra is a bleached female, probably because it hibernated in the adult stage (taken in April), but in fresh specimens the coloration is very contrasting. The Kordofan specimens are paler than those from Algerian oases, and they were also taken at the end of winter.

The distribution area of this species embraces the Sudanese zone of dry grasslands south of the Sahara, while in the Sahara itself it occurs only in oases, as a relic of the former northward extension of tropical savannas.

5. *Thisoicetrus persa* Uvarov 1933.

1933. *Thisoecetrus charpentieri persa* Uvarov, *Trav. Inst. Zool. Acad. Sci. U.R.S.S.*, **1**: 231.

On re-examining some paratypes still available to me, as well as additional series of specimens from British Baluchistan, I am now convinced that this insect deserves specific recognition, the more so that in Baluchistan it occurs together with *T. annulosus* (former *charpentieri*). By the number of tibial spines it belongs to the same group as *T. littoralis* and *T. harterti*, sharing with the latter the shape of the male subgenital plate. It is easily recognized by the strongly polished shiny surface and practically parallel lateral pronotal carinae.

6. ***Thisoicetrus theodori* Uvarov 1929.**

1929. *Thisoecetrus theodori* Uvarov in: Bodenheimer u. Theodor, *Ergebnisse der Sinai-Expedition*, 1929: 102.

A curious diminutive species with abnormally expanded frontal ridge. Unfortunately, the type, a male from Sinai, remains the only specimen known.

7. ***Thisoicetrus littoralis littoralis* (Rambur 1838) (text-fig. 297, L).**

1838. *Gryllus littoralis*, Rambur, *Faune Andal.*, 2: 78.

1908. *Thisoicetrus littoralis*, I. Bolivar, *Bol. R. Soc. Esp. Hist. Nat.*, 1908: 329.

1923. *Thisoicetrus littoralis littoralis*, Uvarov, *Nov. Zool.*, 30: 77.

This subspecific name is restricted to the Spanish representatives of the species, while two more subspecies are recognized below.

7a. ***Thisoicetrus littoralis similis* (Brunner 1861) (text-fig. 297, S).**

1861. *Caloptenus similis* Brunner von Wattenwyl, *Verh. zool. bot. Ges. Wien.*, 11: 224.

1870. *Cyrtacanthacris notata* Walker, *Cat. Derm. Salt. Brit. Mus.*, 3: 574 (*syn. nov.*).

1912. *Thisoecetrus similis* Uvarov, *Horae Soc. Entom. Ross.*, 40 (3): 32, fig. 3b.

1931. *Thisoicetrus littoralis asiaticus* Uvarov, *Trav. Inst. Zool. Acad. Sci. U.R.S.S.*, 1: 230 (*syn. nov.*).

Lack of sufficient material on this insect led me into unnecessary confusion in the past, but I have before me now very extensive series from the whole of south-western Asia and north-eastern Africa. This enables me to establish what I hope is the final synonymy of this subspecies of *T. littoralis*.

Brunner in 1861 has described a *Caloptenus similis* from Egypt (which I designate as the type locality) and Syria, giving only a very brief diagnosis that may be applied to several different species of *Thisoicetrus*. In 1912 I have suggested that his description fits a Transcaspian insect, and I then gave a figure of its male genital appendages. Later (in 1931), however, I became doubtful in my interpretation of *similis*, mainly because I had no sufficient Egyptian material before me and thought that Egyptian specimens may be different from Asiatic ones. At present, I am able to say definitely that the genus *Thisoicetrus* is represented in Egypt by *T. adspersus*, *T. annulosus* and a subspecies of *T. littoralis* which extends its area into Palestine, Arabia, Iraq, Iran, Central Asia and Baluchistan, without exhibiting any appreciable geographical variation. Since the type of *Caloptenus similis* appears to have been lost (or possibly, has never been labelled as such), the question arises which of the three Egyptian members of the genus answers best the brief original description. *T. adspersus* is at once ruled out because Brunner would not have failed to notice the bituberculate male subgenital plate characteristic of this species. The description of the lateral pronotal carinae, which are said to be "rectissimae" in *C. similis*, can never be applied to *T. annulosus*, while it is very apt in the case of *T. littoralis*. A useful supplementary character may be seen in the presence of three black spots on the external face of hind femur, since these spots are usually well developed in *T. littoralis*, but mostly quite obsolete, or very indistinct, in *T. annulosus*. Some uncertainty is introduced only by the description of the male subgenital plate which is said to be short and obtuse, while the cerci do not exceed the plate. The subgenital plate in *T. annulosus* is certainly shorter and more obtuse than in *T. littoralis*, but the cerci in the former are definitely (if a little) projecting beyond the plate, while in *T. littoralis* they are relatively shorter and, therefore,

correspond better to the description of *C. similis*. I think, therefore, that my 1912 view was correct and that Brunner's name should be applied to the subspecies of *littoralis*, which has been later described by Walker as *Cyrtacanthacris notata* (from "Upper Egypt") and by myself as *T. littoralis asiaticus* (from Iraq, Iran and Transcaspia).

7b. ***Thisoicetrus littoralis minutus*** Uvarov 1921.

1921. *Thisoicetrus littoralis* var. *minuta* Uvarov, *Trans. Ent. Soc. London*, 1921 : 123.

1923. *Thisoicetrus littoralis minuta* Uvarov, *Nov. Zool.*, **30** : 77.

This is a very distinctive small race of *T. littoralis* described from Bône on the Algerian coast and now known to me also from Bau-Saada, where it occurs together with *T. harterti*, as well as from St. Germain in Tunis.

8. ***Thisoicetrus buxtoni*** Uvarov 1921.

1921. *Thisoicetrus buxtoni* Uvarov, *J. Bombay Nat. Hist. Soc.*, **27** : 65.

A remarkable large species, described originally from Amara in lower Mesopotamia, but now known to me also from Baghdad.

Note 1.—When studying Palaearctic species of *Thisoicetrus*, I had to consider *Euprepocnemis caerulescens* Stål 1876, referred by some authors to *Thisoicetrus*. An examination of a ♂ and a ♀ types, kindly sent by Dr. M. Beier from the Brunner collection in Vienna, proved them to belong to the genus *Bibulus* I. Bolivar 1914, based on *Tylotropidius brunni* Giglio-Tos. This latter species was considered by its author to be identical with *Euprepocnemis caerulescens* as re-described by Brunn in 1901 from East African specimens, but not with Stål's original *E. caerulescens* from Massowa on the Red Sea. Actually, however, no specific differences can be found between specimens from the Red Sea coasts and those from the interior of East Africa, as I am able to say after having examined good series from various localities. Therefore the following synonymy should be established :

Bibulus caerulescens (Stål 1876).

1876. *Euprepocnemis caerulescens* Stål, *Bih. Sven. Acad. Handl.*, **4** (5) : 16.

1901. *Euprepocnemis caerulescens*, Brunn, *Mitt. Naturhist. Mus. Hamburg*, **18** : 84, 132.

1907. *Tylotropidius brunni*, Giglio-Tos, *Boll. Mus. Torino*, **22** : 31 (*syn. nov.*).

1914. *Bibulus brunni*, I. Bolivar, *Trab. Mus. Hist. Nat. Madrid*, **20** : 31.

Note 2.—The name *Thisoicetrus similis* Ramme 1931 (*Mitt. Zool. Mus. Berlin*, **16** : 942) is preoccupied by *Th. similis* Brunner 1861, and the species is here renamed ***Th. oxyurus*** nom. nov.



Uvarov, B. P. 1939. "A preliminary revision of the Palaearctic species and subspecies of *Thisiocetrus* Br. W. (Orthoptera: Acrididae)." *Novitates zoologicae : a journal of zoology in connection with the Tring Museum* 41, 377–382.

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