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On Western and South Australian acridiine grasshoppers related to the genera *Sumbilvia* Sjöstedt and *Rusurplia* Sjöstedt

(Insecta, Acridoidea, Catantopidae)

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Western and South Australian grasshoppers related to the genera *Sumbilvia* Sjöstedt and *Rusurplia* Sjöstedt and characterized by unbordered fastigium verticis and by wide, spatulate prosternal process are revised. Following new taxa are described: *Triodicolacris eburnea*, gen. nov., spec. nov., *T. picta*, spec. nov., *Brachyelytracris viridifemur*, gen. nov., spec. nov., *Sjoestedtocris validipes*, gen. nov., spec. nov., *S. brevicornis*, spec. nov., *S. inornata*, spec. nov., *S. rufotibialis*, spec. nov., *S. variabilis*, spec. nov., *S. variabilis corpulenta*, subspec. nov., *S. variabilis pseudo-corpulenta*, subspec. nov., *S. variabilis interioris*, subspec. nov., *S. latifrons*, spec. nov., *S. gracilipes*, spec. nov., *S. roseifemorata*, spec. nov., *S. liveringae*, spec. nov., *S. marginata*, spec. nov., *S. infuscata*, spec. nov., *S. infuscata validior*, subspec. nov., *S. houstoni*, spec. nov., *S. cinctipes*, spec. nov., *S. bilineata*, spec. nov., *S. uniformis*, spec. nov., *S. laticornis*, spec. nov., *S. sulcata*, spec. nov., *S. acutifrons*, spec. nov., and *S. buningoniae*, spec. nov.

Rusurplia badia Sjöstedt is transferred to genus *Sjoestedtocris*. The ♀ genitalia of *Sumbilvia ophidiops* Sjöstedt and the ♂ and ♀ genitalia of *Rusurplia tristis* Sjöstedt and *Sjoestedtocris badia* (Sjöstedt) are described and figured.

The ranges of the species are mapped. Southern-central Western Australia, the Hamersley Region, and the (southern) Kimberley Division, both in northwestern Australia, are centres of species richness of the mentioned genera. Most species are deserticolous and live mainly with spinifex. Few presumably primitive species of *Sjoestedtocris*, however, which do not show the highly cryptic dorsal pattern of the spinifex-inhabiting species, live in more humid regions on the southern border of the range of genus *Sjoestedtocris*. This distribution pattern suggests the evolution of that genus in mesic environments, presumably in South Australia, and a later range extension to southern inland Western Australia, where the main taxonomic radiation occurred. Later on one stock spread northwards to the Hamersley region and eventually to the Kimberleys and even to tropical Northern Territory. Hence, almost all species of these northern centres belong to one highly evolved species-group. The high diversity of these grasshoppers is another example of the evolution of a rich deserticolous fauna in the arid regions of Western and South Australia.

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Introduction

Acridiine grasshoppers of the family Catantopidae in the sense of Dirsh (1975) are in the vast areas of arid country in western, central, and southern Australia numerous and diverse. Nevertheless, they have been studied in detail only twice by Sjöstedt (1921, 1936), while the more recent revisors of Australian Orthoptera like Rehn (1952, 1953, 1957) and Key (1972, 1976, 1985, 1989, 1991) did not or only marginally deal with this most diverse family of short-horned grasshoppers. Although the fauna of the southeastern parts of Australia is perhaps fairly well known, the fauna of arid western and central Australia, especially that of the northern parts, is rather poorly recorded. Little material from Western Australia had been included in the revisions of Sjöstedt. Apart from some material from the vicinity of Perth in southwestern Australia and of accident specimens, especially those specimens collected by Mjöberg in northern and northwestern Australia were available to Sjöstedt. However, as was demonstrated recently for other orthopteran groups (Otte & Alexander 1983, Rentz 1985, Baehr 1988, 1989), northwestern and far northern Australia is surprisingly rich in species.

I had the opportunity to collect grasshoppers in several parts of Western Australia on two occasions. Although collecting of grasshoppers was only a by-product during extensive search for carabid beetles, I was impressed by the large number of species encountered. During two travels through northwestern and central western Australia in November-December 1984, and central western and southwestern Australia in November-December 1987, I collected about 150 species of acridiine grasshoppers, though few species only could be properly identified using the revisions of Sjöstedt. This demonstrates the present poor knowledge on the Western Australian acridiine fauna. I was especially impressed by the number, in terms as well of specimens as of species, of rather similar looking catantopine grasshoppers characterized at the same time by the fastigium verticis passing evenly into the costa frontalis without any angle or border, and the presence of a wide, more or less spatulate, apically rather excised prosternal process. Such species make up a considerable part of the grasshoppers fauna in certain areas of central western and northwestern Australia. When trying identification using Sjöstedt's keys, I arrived either at the genus *Sumbilvia* Sjöstedt, namely in specimens lacking lateral pronotal ridges, or at the genus *Rusurplia* Sjöstedt, in specimens having more or less developed lateral pronotal carinae. However, examination of the types of the hitherto described species *Sumbilvia ophiidiops* Sjöstedt, *Rusurplia tristis* Sjöstedt, and *Rusurplia badia* Sjöstedt revealed that neither of the mentioned species could belong to any of the two genera, because *Sumbilvia* has no spatulate prosternal process, while at least *Rusurplia tristis* has a well developed median vertical ridge and fairly distinctive remnants of foveolae. To get more information on this problem, I received a sample of *Rusurplia*-like specimens each from the Western Australian Museum, Perth, and from the South Australian Museum, Adelaide, containing, inter alia, specimens of several unknown species, as well as specimens of *Rusurplia*, mainly from Western Australia and from arid areas of South Australia and central Northern Territory.

In the following, 22 species and additional 4 subspecies of altogether three new genera are described and their distribution is mapped.

Acknowledgements

Thanks are due to Dr. T. Kronstedt, Stockholm, for kindly making available types of Sjöstedt's species, and to Dr. T. Houston, Perth, and Dr. E. G. Matthews, Adelaide, for kind loan of material. I also thank my wife for accompanying me under the harsh conditions of far northwestern Australia, and Dr. R. Gerstmeier for assistance during collecting work in Western Australia. I am indebted to the Deutsche Forschungsgemeinschaft (DFG) for supporting the travels to Western Australia by two travel grants.

Measurements

Measurements have been made under a stereo microscope using an ocular micrometer. Body length was measured from anterior margin of head to apex of abdomen including genitalia; prothoracic length along median carina, in species with concave posterior border to a line between the most posteriorly protruding parts of border; prothoracic width at the narrowest part of pronotum between outer borders of lateral carinae or position of lateral carinae, if these are absent; length of metatibia from knee to base of upper external apical spine.

Characters

Best characters for species distinction are usually in the ♂ genitalia: especially shape and structure of supraanal plate, cercus, shape of lophus and ancora of epiphallus, dorsal ectophallic sclerite, and endophallus. ♀ genitalia are commonly rather similar, although shape of upper valve is more variable and can be used to some extent for species distinction.

Most useful external characters are: Shape of head, structure of costa frontalis, shape of prothorax and of prothoracic carinae, prosternal process, relative length of posterior legs, especially metafemur, number of spines on metatibia, and colour and pattern which are quite distinctive and commonly rather constant.

Material

Altogether 168 specimens have been examined for this study. However, in few species only the material was sufficient enough to yield information on variability or even to give an impression of the real distribution of the species. More severe, in several species the odd sex, unfortunately usually the ♂ is still unknown. This is presumably due to the environment in which these grasshoppers live. Most inhabit arid regions mainly grown with spinifex with which these animals match well in colour and pattern, and in the hummocks of which they usually retreat when disturbed. Thus, especially the smaller and more agile ♂♂ are rather hard to capture under such circumstances, and the best collecting methods are burning them out of spinifex hummocks or taking them at light.

Abbreviations

NT	– Northern Territory
SA	– South Australia
WA	– Western Australia
l/w	– ratio length/width
>	– larger or more than
<	– smaller or less than

Abbreviations of collections mentioned in text

BMNH	– The Natural History Museum, London
NHRS	– Naturhistoriska Riksmuseet, Stockholm
SAMA	– South Australian Museum, Adelaide
WAM	– Western Australian Museum, Perth
ZSM	– Zoologische Staatssammlung, München

Renewed key to the Australian catantopine genera having the fastigium verticis evenly passing over into the costa frontalis (couplet BB in Sjöstedt's [1936] key)

- a. Mesosternal lobes longer than wide, inner margin straight Cyrtacanthacridinae
(*Schistocerca* Stal, *Valanga* Uv., *Patanga* Uv., *Austracris* Uv., *Loiteria* Sjöst.
- aa. Mesosternal lobes about as long as wide, inner margin convex.

- b. Lateral carinae of pronotum completely absent.
- c. Ocular width wider than costa frontalis.
 - d. Pronotum dorsally compressed, cristate *Ecphantus* Stal
 - dd. Pronotum not cristate.
 - e. Elytra completely developed.
 - f. Prosternal tubercle long and conical; pronotum dorsally straight ... *Happarana* Sjöst.
 - ff. Prosternal tubercle thick and conical, apex rounded off; pronotum dorsally concave *Histrioacrida* Sjöst.
 - ee. Elytra short *Testudinella* Sjöst.
 - cc. Ocular width narrower than costa frontalis; prosternal tubercle cylindrical *Catantops* Schaum
 - ccc. Ocular width equal to costa frontalis.
 - g. Elytra lobiform; posterior border of pronotum concave; prosternal tubercle wide, depressed, spatulate *Brachyelytracris*, gen. nov.
 - gg. Elytra fully developed; posterior border of pronotum slightly convex; prosternal tubercle less wide, more or less square, not spatulate.
 - h. Prosternal tubercle square with convex apex; ventral parts of body densely hirsute *Sumbilvia* Sjöst.
 - hh. Prosternal tubercle slightly transverse, apex excised; ventral parts of body sparsely hirsute *Triodicolacris*, gen. nov.
- b. Lateral carinae of pronotum distinct, at least in metazona, or feeble, though not completely absent.
- c. Apex of antenna dilatated and compressed *Geremia* Stal
- cc. Apex of antenna not dilatated nor compressed.
 - d. Prozona of pronotum with large tubercle *Chirotepica* Sjöst.
 - dd. Prozona of pronotum without tubercle.
 - e. Prosternal tubercle with acute apex.
 - f. Lateral carinae of pronotum complete; prosternal tubercle elongate, with acute, curved apex *Choerodocus* Bol.
 - ff. Lateral carinae of pronotum in middle obliterated; prosternal tubercle thick, with rounded apex *Perbellia* Sjöst.
 - ee. Prosternal tubercle wide, spatulate, at apex straight or somewhat emarginate.
 - g. Fastigium with distinct median carina, antero-lateral borders of fastigium straight, sharp *Rusurplia* Sjöst.
 - gg. Fastigium without median carina, antero-lateral borders of fastigium convex, indistinct *Sjoestediacris* gen. nov.

Genus *Sumbilvia* Sjöstedt

Sumbilvia Sjöstedt, 1921, p. 91, 277

Genotype: *Sumbilvia ophidiops* Sjöstedt, 1921

The genus is based on the single species *S. ophidiops* Sjöstedt which is so far known only from the ♀.

Sumbilvia ophidiops Sjöstedt

Fig. 1

Sumbilvia ophidiops Sjöstedt, 1921, p. 277, Taf. 17, fig. 17; Sjöstedt 1936, p. 169.

Types. Cotypes: 1 ♀, Queen's Islet, N. W. Austr. (NHRS); 2 ♀♀, N. Australia, Alexandra, Stalker (BMNH).

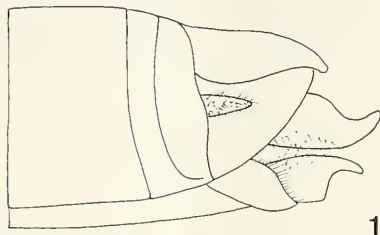


Fig. 1. *Sumbilvia ophidiops* Sjöstedt. Lateral view of ♀ abdomen.

I have seen the specimen from NHRS which lacks the antennae and has the apex of prosternal process destroyed. No additional material has been seen. Because the ♀ genitalia have been not mentioned in the description, they are herein described and figured.

Diagnosis. Medium sized, elongate species with triangular, very protruding head. Head and pronotum with a median dark stripe, laterally bordered by a light stripe which continues on the tegmina. Lateral part of head behind eyes and dorsal part of paranota with wide dark stripe. Fastigium verticis convex, without median carina, evenly passing into carina frontalis. Foveolae absent. Pronotum with feeble median carina, without lateral carinae. Prosternal process square, according to description "late rotundato, valde declive" (destroyed in examined cotype).

Description

♀ genitalia (Fig. 1). Supraanal plate triangular, laterally slightly convex, at base with shallow groove. Subgenital plate with wide, convex apex. Valves short, lower valve rather hooked near base, with dense and markedly elongate hairs.

Distribution. Northwestern and northern Australia, see description (Sjöstedt 1921).

Genus *Triodicolacris*, gen. nov.

Genus of catantopine grasshoppers characterized by convex fastigium verticis devoid of median carina and passing evenly into costa frontalis; absence of foveolae; very wide and abbreviated costa frontalis; absence of lateral pronotal carinae; rather narrow, not spatulate, somewhat cuneiform prosternal process with medially excised apex; complete wings; presence of furcula; deeply excised ♂ supraanal plate besides of apex; elongate ♂ cercus with more or less distinct ventrodiscal

projection; wide epiphallus with elongate, narrow lophi and dentiform ancora; dorsal ectophallic sclerite with sclerotized dorsal projection; and endophallus with somewhat curved, fairly elongate aedeagal sclerites.

Type-species: *Triodicolacris eburnea*, spec. nov.

Key to species of genus *Triodicolacris*, gen. nov.

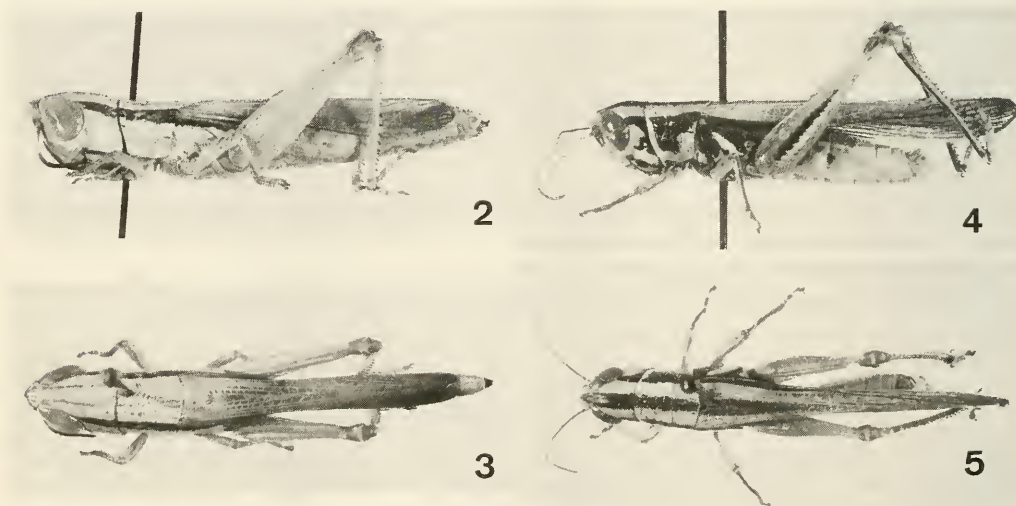
1. Antenna short, median segments barely longer than wide. Dorsolateral border of metatibia with less than 10 spines. Head, pronotum, and tegmina medially without dark stripe; metafemur and metatibia flesh-coloured. ♂ tegmina barely surpassing abdomen. Epiphallus with convex anterior border, lophi wider, anteriorly humped (Fig. 6e). North western Australia south of Great Sandy Desert . *eburnea*, spec. nov.
- Antenna elongate, median segments almost twice as long as wide. Dorsolateral border of metatibia with 12 or more spines. Head, pronotum, and tegmina medially with contiguous dark stripe; metafemur internally red, externally red with dark and light stripe, metatibia fuscous, external border whitish. ♂ tegmina much surpassing abdomen. Epiphallus with straight anterior border, lophi very narrow, far less humped anteriorly (Fig. 7e). North-western Australia north of Great Sandy Desert . *picta*, spec. nov.

Triodicolacris eburnea, spec. nov.

Figs 2, 3, 6, 81

Types. Holotype: ♂, Australian, WA. 43, Joffre Falls, 70 km se. Wittenoom, 1. 12. 1984, M. & B. Baehr (WAM). — Paratypes: 1 ♀, same data as holotype (ZSM); 1 ♀ Australien, WA. 47, Hooley Creek, 68 km nw. Wittenoom, 2.—3. 12. 1984, M. & B. Baehr (ZSM).

Diagnosis. Distinguished from *T. picta* by short antenna, low number of spines (<10) on dorso-lateral border of metatibia, tegmina in ♂ c. as long as, in ♀ shorter than abdomen, rather uniform, whitish colouration, rather short furcula, convex anterior border of epiphallus, and wider, more humped lophi.



Figs 2–5. *Triodicolacris*. 2–3. *T. eburnea*, spec. nov., ♀ paratype. 2. Lateral view. 3. Dorsal view. 4–5. *T. picta*, spec. nov., ♂ holotype. 4. Lateral view. 5. Dorsal view. Lengths (of body): 26.0 mm; 15.0 mm.

Description

Measurements. Body length. ♂: 19 mm, ♀: 26–29 mm. Length of pronotum. ♂: 2.75 mm, ♀: 3.7–4.5 mm. Ratio length/width of pronotum: 1.43–1.67. Length of tegmen. ♂: 11.6 mm, ♀: 16.0–18.5 mm. Length of metafemur. ♂: 8.3 mm, ♀: 10.4–11.6 mm. Length ratio metatibia/metafemur: 0.76–0.77. Ratio length/width of metafemur. ♂: 3.9, ♀: 3.85–4.25.

Colour (Figs 2, 3). Almost white, only a narrow stripe behind eye, along upper border of paranotum and along thorax just below tegmen dark. Antenna basally light, apically dark. Spines of metatibia black in apical half.

Head (Figs 2, 3, 6a). Moderately acute and triangular, lateral profile of frons almost straight. Costa frontalis short, rather wide, slightly widened at antennal base, c. as wide as eye width, depressed, with some coarse punctures. Frons with rather indistinct suborbital carina. Antenna short, with 24–26 segments, l/w of median segments c. 1. Vertex and costa frontalis with few erect hairs.

Pronotum (Figs 2, 3). Moderately elongate, prozona distinctly longer than metazona, with a distinct posterior and a short anterior sulcus, not crossing median carina. Median carina distinct, lateral carinae absent. Anterior border almost straight, posterior border moderately convex. Prozona in middle with some coarse punctures, metazona dorsally and laterally irregularly punctate, puncturation slightly vermiculate. Surface highly nitid, with some erect hairs.

Tegmina (Fig. 2). Narrow, rather elongate, in ♂ c. as long as, in ♀ shorter than abdomen. Anterior border almost without subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 6b). Prosternal process rather narrow, basally quadrate, cuneiform, apex and anterior surface near apex deeply excised. Mesosternal lobes separated. Whole lower surface with scattered, erect hairs.

Legs (Fig. 2). Metafemur short and stout, smooth. Apex of lower lobus of knee moderately acute to fairly rounded. Metatibia with 7–10 external and 8–12 internal spines, upper surface rather sparsely covered with erect hairs.

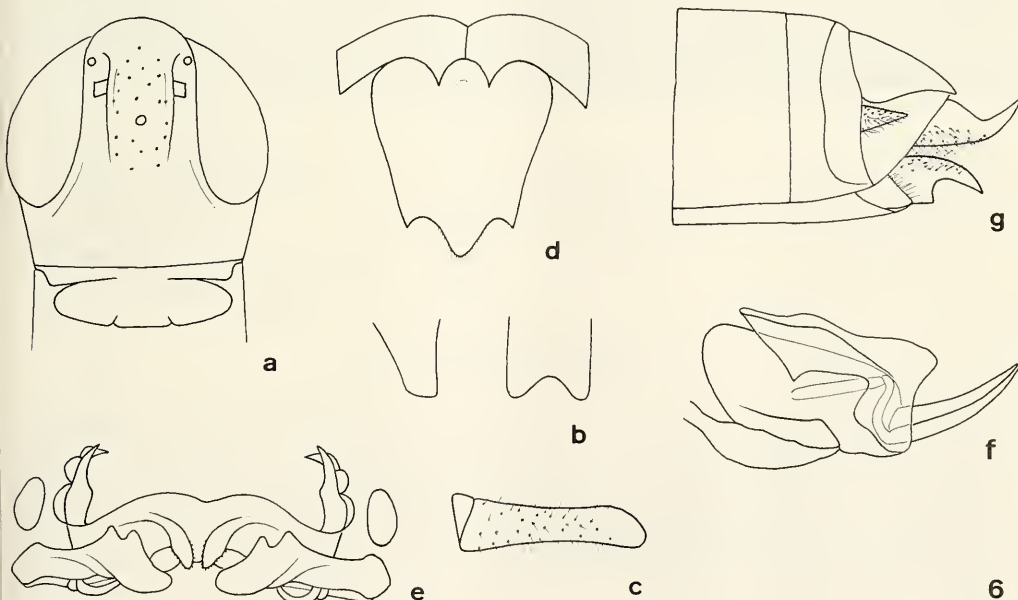


Fig. 6 a–g. *Triodicolacris eburnea*, spec. nov. a. Frontal view of head. b. Prosternal process, lateral and frontal view. c. ♂ cercus. d. ♂ supraanal plate. e. Epiphallus. f. Phallus. g. Lateral view of ♀ abdomen.

♂ genitalia (Figs 6c–f). Tergum 10 completely divided, furcula short, but very acute. Supraanal plate attenuate, apex roundly produced, laterally with sharp, acute projection. Cercus elongate, parallel, flattened, apex rounded off, almost without ventral projection. Epiphallus as in fig. 6e, lophus elongate, narrow, rather contorted, ancora dentiform. Dorsal ectophallic sclerite with strongly sclerotized dorsal projection. Endophallus as in fig. 6f, aedeagal sclerites elongate.

♀ genitalia (Fig. 6g). Supraanal plate triangular, at apex rounded off. Subgenital plate elongate, apex produced, convex. Valves rather elongate, lower valve at base strongly hooked, upper valve not hooked. Cercus narrow, triangular, acute.

Variation. Some variation noted, as the Hooley Creek specimen has a remarkably longer prothorax, less excised prosternal process, narrower costa frontalis, more spines on metatibia, and it lacks the distinctive dark lateral stripe of both Joffre Fally specimens. It may represent a subspecies, but any decision is at present premature.

Distribution (Fig. 81). Hamersley region in western central part of Western Australia.

Habits. All specimens captured between spinifex, in which they try to vanish when molested.

Etymology. Named on account of the whitish colouration.

Triodicolacris picta, spec. nov.

Figs 4, 5, 7, 81

Types. Holotype: ♂, G. Baenish. leg., Derby, W. A. (WAM 87/1616).

Diagnosis. Distinguished from *T. eburnea* by elongate antenna, high number of spines on dorso-lateral border of metatibia, tegmina in ♂ markedly surpassing abdomen, vivid colouration, elongate, very acute furcula, straight anterior border of epiphallus, and narrow, elongate, anteriorly less humped lophi.

Description

Measurements. Body length. ♂: 15 mm. Length of pronotum. ♂: 3.9 mm. Ratio length/width of pronotum: 1.55. Length of tegmen. ♂: 17.8 mm. Length of metafemur. ♂: 10.6 mm. Length ratio metatibia/ metafemur: 0.91. Ratio length/width of metafemur. ♂: 4.4.

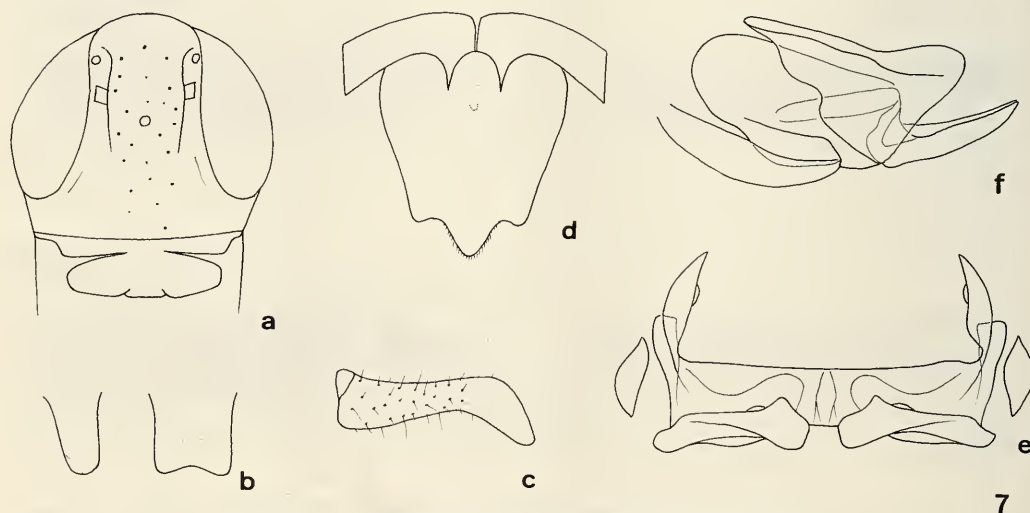


Fig. 7 a–f. *Triodicolacris picta*, spec. nov. Legends see fig. 6.

Colour (Figs. 4, 5). Pattern very contrasting. Ground colour whitish-yellow with greenish tint on head and thorax, with sharply contrasting black stripe on middle of head, pronotum, and anal field of tegmina. Head behind eyes, lateral border of mandible, and paranota widely black, thorax mainly black with contrasting yellow stripes on pleura. Also anterior abdominal segments and anterior border of tegmina black. Antenna yellow, median surface black. Tibiae streaked with black. Metafemur and knee internally and externally reddish, with a contrasting black and white stripe on external surface. Metatibia black, external border greenish-white. Tarsi roseate.

Head (Figs 4, 5, 7a). Rather short and obtuse, lateral profile of frons fairly convex. Costa frontalis short, wide, feebly widened at antennal base, slightly wider than eye width, convex, with several coarse punctures. Frons with very indistinct suborbital carina. Antenna elongate, with 20–23 segments, l/w of median segments almost 2. Vertex and costa frontalis with rather numerous erect hairs.

Pronotum (Figs 4, 5). Moderately elongate, prozona distinctly longer than metazona, with two distinct sulci, though only anterior sulcus crossing median carina. Median carina distinct, lateral carinae absent. Anterior border almost straight, posterior border moderately convex. Prozona in middle with some coarse punctures, metazona dorsally and laterally irregularly punctate, puncturation barely vermiculate. Surface nitid, with some erect hairs.

Tegmina (Fig. 4). Narrow, rather elongate, in ♂ much longer than abdomen. Anterior border almost without subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 7b). Prosternal process rather narrow, apex moderately, anterior surface barely excised. Mesosternal lobes separated. Lower surface of thorax with fairly dense, that of abdomen with sparse, erect hairs.

Legs (Fig. 4). Metafemur short, smooth. Apex of lower lobus of knee acute. Metatibia with 12–15 external and 13–15 internal spines, upper surface moderately densely covered with rather elongate, erect hairs.

♂ genitalia (Figs 7c–f). Tergum 10 completely divided, furcula elongate and very acute. Supraanal plate attenuate, apex roundly produced, laterally with moderately sharp projection. Cercus elongate, parallel, flattened, apex rounded off, with moderate ventrodistal projection. Epiphallus as in fig. 7e, lophus elongate, narrow, contorted, ancora dentiform. Dorsal ectophallic sclerite with strongly sclerotized, somewhat excised dorsal projection. Endophallus als in fig. 7f, aedeagal sclerites rather elongate.

♀ genitalia. Unknown.

Variation. Unknown.

Distribution (Fig.). Northwestern Australia north of Great Sandy Desert. So far known form type locality only.

Habits. Unknown.

Etymology. Named on account of the vivid pattern.

Genus *Brachyelytracris*, gen. nov.

Genus of catantopine grasshoppers characterized by convex fastigium verticis devoid of median carina and passing evenly into costa frontalis; absence of foveolae; absence of lateral pronotal carinae; concave posterior border of pronotum; short, lobiform tegmina; wide, spatulate, anteriorly excavate prosternal process; presence of furcula; attenuate ♂ supraanal plate with deep excision laterally of apex; short, depressed ♂ cercus without ventrodistal projection; simple epiphallus with triangular, rather separated lophi and large, wide, dentiform ancora; weakly sclerotized dorsal ectophallic sclerite without dorsal projection; elongate endophallus; rather short apodeme of cingulum; very elongate aedeagal sclerites; large valves of ♀ ovipositor, both hooked near base.

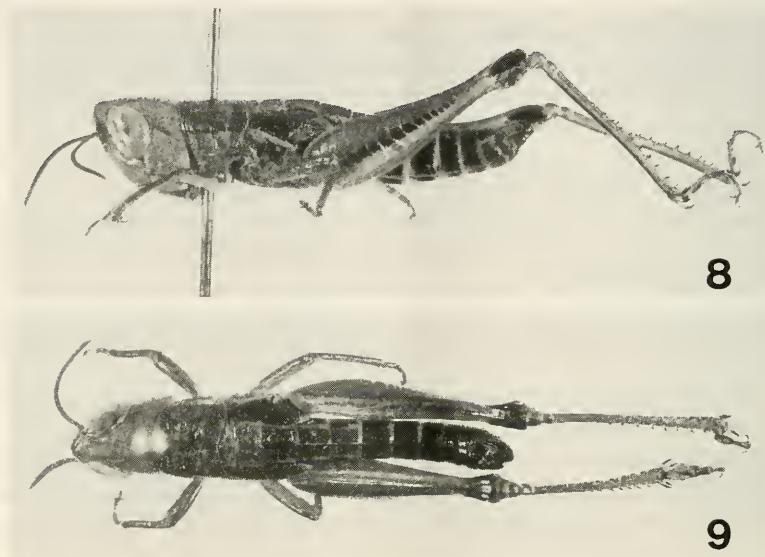
Type-species: *Brachyelytracris viridifemur*, spec. nov.

Brachyelytracris viridifemur, spec. nov.

Figs 8–10, 81

Types. Holotype. ♂, 37 K NE of Laverton, 28.21. S, 122.37 E, Western Australia, 10–12 Sept. 1982, B. Hanich & T. F. Houston 453-11, Ex Triodia (WAM 87/1695). — Paratypes: 2 ♀♀, same data (WAM 87/1696-97, ZSM); 1 ♀, 36 km NNE of Neale Junction, W. Aust., 28.03 S, 126.02 E, 18-20 Sept. 1982, B. Hanich & T. F. Houston 471 (WAM 87/1700); 1 ♂, W. Aust., 25 km E of New Yamarna HS, 28.10 S, 123.41 E, 21 Sept. 1982, B. Hanich & T. F. Houston 478-4, Ex Triodia, WAM 87/1701 (ZSM).

Diagnosis. Recognized by short, convex head, wide, rather convex costa frontalis, pattern consisting of black lateral patches on anterior abdominal segments, reddish apex of abdomen, greenish metafemur (intensively green in ♂♂), and bluish-grey metatibia.



Figs 8 and 9. *Brachyelytracris viridifemur*, spec. nov., ♂ paratype. 8. Lateral view. 9. Dorsal view. Length: 17.5 mm.

Description

Measurements. Body length. ♂: 17.0–17.5 mm, ♀: 25.0–27.5 mm. Length of pronotum. ♂: 2.8–2.9 mm, ♀: 3.8–4.6 mm. Ratio length/width of pronotum: c. 1.15–1.2. Length of tegmen. ♂: 3.0–3.2 mm, ♀: 3.4–4.3 mm. Length of metafemur. ♂: 9.7–10.0 mm, ♀: 13.5–14.8 mm. Length ratio metatibia/metafemur: 0.78–0.82. Ratio length/width of metafemur. ♂: 3.75–3.8. ♀: 4.05–4.10.

Colour (Figs 8, 9). Light brown, somewhat mottled, ♂ with reddish tinge on anterior part of body and on legs. Upper part of paranota with indistinct darker stripe. Thoracal pleurae blackish, metapleura with conspicuous white stripe. Anterior 4 (♀) or 6–7 (♂) abdominal tergites and sternites with large black spot, last segments more or less reddish. Metafemur in ♀ externally greenish with dark stripe, in ♂ intensively green with dark stripe bordered ventrally by a greenish-yellowish stripe, upper border reddish. Metatibia greyish to bluish-grey, ventral border dark, spines black at apex. Metatarsus reddish.

Head (Figs 8, 9, 10a). Rather short and obtuse, lateral profile of vertex and of frons fairly convex, especially in ♀. Costa frontalis short, wide, feebly widened at antennal base, slightly narrower than

eye width, rather convex, with some coarse punctures. Frons with very indistinct suborbital carina. Antenna short, with 22–24 segments, l/w of median segments c. 1. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 8, 9). Short and wide, prozona distinctly longer than metazona, with two more or less distinct sulci, anterior sulcus laterally abbreviated, posterior sulcus usually not attaining median carina. Sulci close together. Median carina fairly distinct, lateral carinae absent. Anterior border almost straight, posterior border concave. Prozona in middle with some very coarse, irregular punctures, metazona dorsally and laterally irregularly punctate, puncturation somewhat vermiculate. Punctures far less coarse than on prozona. Surface highly nitid, with some erect hairs.

Tegmina (Figs 8, 9). Short, lobiform, just attaining 3rd abdominal segment.

Ventral surface (Fig. 10b). Prosternal process wide, spatulate, apex rather deeply excised. Mesosternal lobes widely separated. Lower surface of thorax with moderately dense, that of abdomen with sparse, erect hairs.

Legs (Fig. 8). Metafemur short and very stout, smooth. Apex of lower lobus of knee rather obtuse. Metatibia with 8–10 external and internal spines, upper surface densely covered with very elongate, erect hairs.

♂ genitalia (Figs 10c–f). Tergum 10 completely divided, furcula short, rounded, situated rather laterally. Supraanal plate attenuate, apex roundly produced, laterally with rounded projection. Cercus short, wide, flattened, apex rounded off, without ventrodistal projection. Epiphallus as in fig. 10e, lophi rather separated, triangular, ancora wide, dentiform. Dorsal ectophallic sclerite weakly sclerotized, without dorsal projection. Endophallus elongate, as in fig. 10f, aedeagal sclerites very elongate.

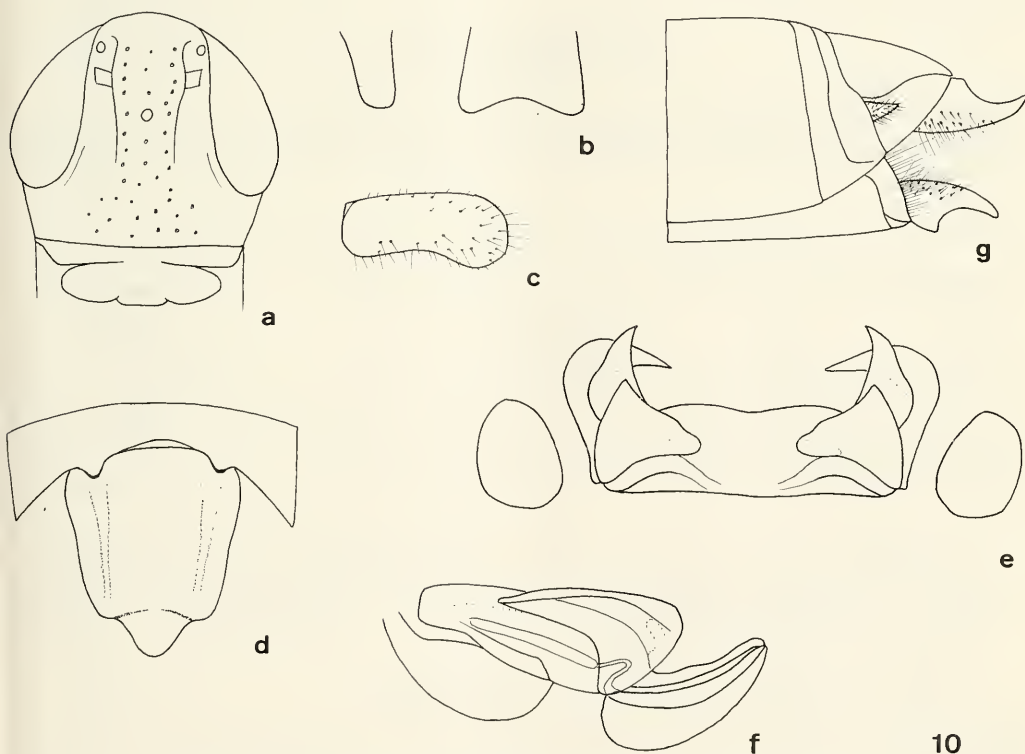


Fig. 10 a–g. *Brachyelytracris viridifemur*, spec. nov. Legends see fig. 6.

♀ genitalia (Fig. 10g). Supraanal plate triangular, at apex rounded off. Subgenital plate elongate, in middle deeply excised, though apex very produced. Valves large, moderately elongate, at base strongly hooked. Cercus fairly wide, triangular, acute.

Variation. Apart from sexual variation little variation noted.

Distribution (Fig. 81). Known so far from central and central eastern parts of Western Australia.

Habits. A decidedly deserticolous species, captured from spinifex (*Triodia*).

Etymology. Named on account of the green metafemur in ♂.

Genus *Rusurplia* Sjöstedt

Rusurplia Sjöstedt, 1930, p. 31

Type-species: *Rusurplia tristis* Sjöstedt, 1930

Sjöstedt (1930) gave a good generic diagnosis which, however, does not fully apply to both included species described in the same paper. Only *Rusurplia tristis* Sjöstedt matches this description, while *Rusurplia badia* Sjöstedt differs in that the fastigium verticis is not concave, has no definite median carina, and its lateral borders are slightly convex and less sharply defined. Hence, *Rusurplia badia* is better removed from genus *Rusurplia*, and it is herein included in the new genus *Sjoestedtacriss*.

Actually the triangular shape, sharp lateral borders, and presence of a median carina of fastigium, as well as more or less well distinguished remnants of the foveolae in *Rusurplia tristis* Sjöstedt, is evidence that this species is not properly placed in Sjöstedt's key.

Rusurplia tristis Sjöstedt

Figs 11, 81

Rusurplia tristis Sjöstedt, 1930, p. 32, Taf. 6, fig. 2, Taf. 7, figs 1a–d; Sjöstedt 1936, p. 171.

Types. Holotype: 1 ♀, Australia, S. A. Ooldea (A. M. Lea) (SAMA). – Paratype: 1 ♀, same data (NHRS).

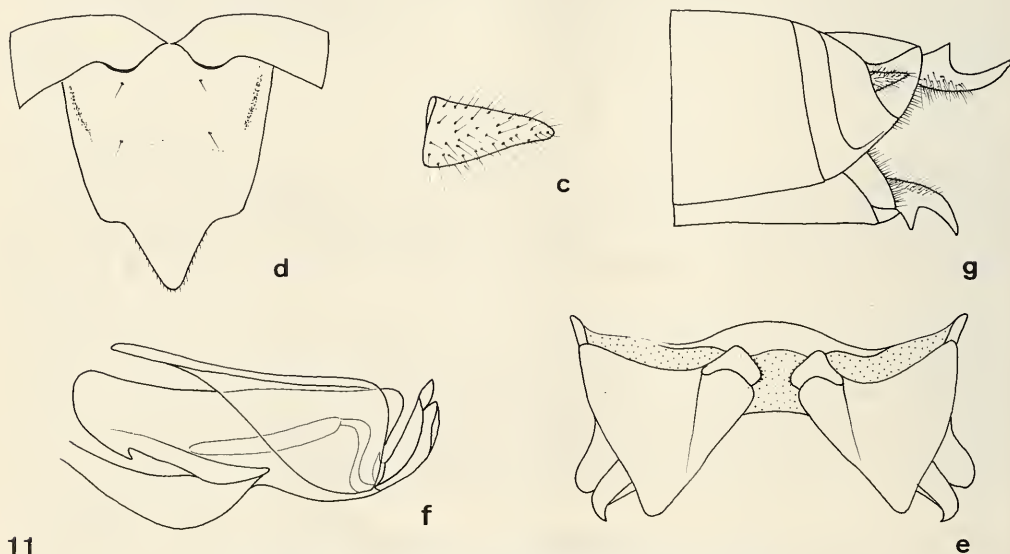


Fig. 11 c–g. *Rusurplia tristis* Sjöstedt. Legends see fig. 6.

I saw the specimen from NHRS which lacks the antennae. In the description Sjöstedt added "(typ.)" to the SAMA specimen, so this is regarded the holotype, the NHRS specimen the paratype. There are some additional specimens from SAMA, WAM, and my own collection (ZSM), captured in central Northern Territory, central Western Australia, Eyre Peninsula in South Australia, and one specimen also at the type locality, Ooldea in western South Australia. This material includes several ♂♂. The ♂ and ♀ genitalia are described below.

Diagnosis. Medium sized, rather uniformly brown to almost black species, recognized by brownish-black posterior tibia; conspicuous, usually white, calloused patch in middle of posterior prozonal part of paranotum; impressed fastigium verticis having sharp, straight borders and a distinct median ridge; more or less distinct remnants of fastigial foveolae; well developed median and lateral pronotal carinae; conspicuous longitudinal ridges on metazona; wide spatulate, apically rather excised prosternal process; small, triangular ♂ cercus, similar to ♀ cercus; epiphallus with very large, triangular lophi; elongate endophallus with short, upright aedeagal sclerites; at base strongly hooked ♀ valves.

Description

Measurements. Body length. ♂: 22–24 mm, ♀: 29–33 mm. Length of pronotum. ♂: 3.7–3.9 mm, ♀: 5.0–5.2 mm. Ratio length/width of pronotum: 1.65–1.75. Length of tegmen. ♂: 16.5–17.5 mm, ♀: 20.5–22.0 mm. Length of metafemur. ♂: 11.6–12.0 mm, ♀: 15.0–15.2 mm. Length ratio metatibia/ metafemur: 0.72–0.77. Ratio length/width of metafemur. ♂: 3.85–4.0, ♀: 3.85–3.95.

♂ genitalia (Figs 11c–f). Tergum 10 situated laterally, completely divided, furcula very short and inconspicuous, rounded. Supraanal plate attenuate, apex produced, triangularly acute, laterally with rounded projection. Cercus short, triangular, barely flattened, apex without ventrodistal projection, similar to ♀ cercus. Epiphallus as in fig. 10e, lophus very large, triangular, medially deeply incised, ancora hook-shaped. Dorsal ectophallic sclerite with very small dorsal projection. Endophallus elongate, as in fig. 10f, aedeagal sclerites short, almost vertical.

♀ genitalia (Fig. 11g). Supraanal plate triangular, at apex rounded off, with distinct transverse sulcus slightly in front of middle. Subgenital plate elongate, apex short, rounded, in middle deeply impressed. Valves moderately elongate, both valves at base strongly hooked. Cercus narrow, triangular, acute.

Variation. There is some variation in colour, as the west Australian specimens are almost black, whereas the central and south Australian specimens are more or less dark brown. Development of median carina of fastigium and of foveolae varies also to some degree.

Distribution (Fig. 81). Central Northern Territory, central and central western parts of Western Australia and western South Australia, east to Eyre Peninsula.

Material examined (10). SA: 1 ♀, Ooldea, A. M. Lea, paratype! (NHRS); 1 ♀, Ooldea, C. A., R. T. Mairice 1897, Winnecke Coll. 10.2.03 OT (SAMA); 1 ♂, Ceduna, 28. Nov. 1962, D. Wright (SAMA); 1 ♀, Gawler Range, 60 km W. Iron Knob, 20. 12. 1972, M. Baehr (ZSM); 1 ♀, Hambidge Mallee, 60 km W. Cleve, 22. 12. 1972, M. Baehr (ZSM). – NT: 1 ♂, Mt. Olga, 1960, J. Findley (SAMA); 1 ♀, (locality not readable), C. Australia, F. Scarpe (SAMA). – WA: 2 ♂♂, 12.5 km SSE. of Banjiwari 27°42'S 121°37'E, 22.–28. Feb. 1980, T. F. Houston et al., WAM 87/1675–76 (WAM, ZSM); 1 ♂, 13 km NNW. of Manton Knob, 26.42 S, 126.27 E, 15–16 Sept. 1982, B. Hanich & T. F. Houston (WAM 87/1698).

Habits. This is apparently a deserticolous species widely distributed throughout arid areas of central, southern and western Australia. The Western Australian specimens, as well as specimens collected by myself, have been captured from spinifex (*Triodia*).

Genus *Sjoestedtacr*, gen. nov

Genus of catantopine grasshoppers characterized by convex fastigium verticis devoid of median carina and passing evenly into costa frontalis; absence of foveolae; presence of lateral pronotal

carinae; wide, spatulate, usually anteriorly and/or apically excavate prosternal process; fully developed wings; presence of furcula; variously shaped, usually rather triangular ♂ supraanal plate; depressed, variably shaped ♂ cercus; narrow, not divided bridge of epiphallus; more or less widely separated lophi of different shape; presence of usually somewhat dentiform ancora; usually rather striking, bilineate, cryptic pattern.

Type-species: *Rusurpia badia* Sjöstedt, 1930.

Key to species of genus *Sjoestedtacriss*, gen. nov.

Although some species are still known from one sex only, I did not divide the key in one part for ♂♂ only and another part for ♀♀, because I think that in most cases the odd sex is determinable by use of non-genitalic characters. However, the figures of ♂ genitalia should be used whenever possible, because in certain species ♂ genitalia offer the best distinguishing characters.

1. Metatibia reddish, at least in part 2.
 — Metatibia not reddish 5.
2. Metatibia completely reddish, without white and black basal rings *rufotibialis*, spec. nov.
 — Metatibia with distinct white and black basal rings 3.
3. Without **distinct** bilineate pattern on head, pronotum, and tegmina (Fig. 20); lateral pronotal carinae irregular, rather weakly developed; ♂ supraanal plate regularly triangular (Fig. 23d); ♂ cercus small, triangular like in ♀; epiphallus as in fig. 23e *inornata*, spec. nov.
 — With **distinct** bilineate pattern on head, pronotum, and tegmina (Figs 61, 63); lateral pronotal carinae conspicuous, regular, well developed; ♂ supraanal plate (when known) irregularly triangular (Fig. 64d); ♂ cercus large, wide, with ventrodistal projection; epiphallus as in fig. 64e 4.
4. Head less acute (Fig. 60); l/w of pronotum < 1.8 (in ♀); metatibia shorter compared with metafemur (ratio < 0.83); metafemur shorter, l/w in ♂ < 4.4, in ♀ < 5; pattern slightly less striking; ♂ genitalia see figs 64c–f *cinctipes*, spec. nov.
 — Head more acute (Fig. 62); l/w of pronotum c. 2 (in ♀); metatibia longer compared with metafemur (ratio > 0.85); metafemur longer, l/w in ♀ > 5.2; pattern more striking; ♂ unknown *bilineata*, spec. nov.
5. Metatibia very elongate and delicate, l/w in ♂ > 5.6, in ♀ > 5.8 (♂ of only 1 species known) 6.
 — Metatibia shorter and less delicate, l/w in ♂ usually < 5, in ♀ < 5.3 9.
6. Smaller species, ♀ < 26.5 mm long; costa frontalis narrow and elongate, fairly sulcate (Fig. 68a); ♂ genitalia see figs 68c–f *uniformis*, spec. nov.
 — Larger species, ♀ > 29 mm long; costa frontalis wide and rather short, not sulcate (Figs 46a–48a); ♂♂ unknown 7.
7. Metafemur on dorsal and ventral borders roseate; tegmina distinctly mottled; abdominal segments laterally with distinct pattern of two, sometimes connected, oblique stripes (Fig. 41) . *roseifemorata*, spec. nov.
 — Metafemur not roseate; tegmina not distinctly mottled; abdominal segments without such pattern ... 8.
8. Light species; metafemur with two distinct subapical rings (Fig. 43); metatibia pale blue with white and blackish subbasal rings; ♀ supraanal plate pale blue; antenna elongate, median segments c. 3 × as long as wide; ♀ cercus short and wide, apex obtuse (Fig. 48g) *liveringae*, spec. nov.

- Dark, brownish species; metafemur not ringed (Fig. 39); metatibia infusate with whitish subbasal ring; ♀ supraanal plate not blue; antenna shorter, median segments c. $1.5 \times$ as long as wide, ♀ cercus narrow, elongate, apex acute (Fig. 46g) *gracilipes*, spec. nov.
9. Very light, feebly patterned species with convex frons, short and fairly wide costa frontalis (Fig. 57a), and weakly developed lateral pronotal carinae; pattern consisting only of a dark stripe on lateral part of head and pronotum (Figs 49, 50); upper surface of abdomen usually reddish; ♂ supraanal plate triangular with bisinuate lateral borders (Fig. 57d); ♂ cercus and epiphallus see figs 57c, e; ♀ upper valve markedly hooked near apex (Fig. 57g) *marginata*, spec. nov.
- Usually darker, more distinctly patterned species; when light and weakly patterned, with acute head and straight frons, elongate, narrow, sulcate costa frontalis, and well developed lateral pronotal carinae; usually a dorsal sublateral light stripe on head, pronotum, and tegmina well developed; upper surface of abdomen rarely red; ♂ genitalia different; ♀ upper valve hooked or not 10.
10. Costa frontalis narrow, elongate, remarkably sulcate, usually subocular carina elongate and strong (Figs 77a–80a); rather small species, commonly with acute head; metatarsus usually flesh-coloured, not markedly bluish or infusate; upper valve of ♀ (when known) hooked near base 11.
- Costa frontalis abbreviated, wide, not or only feebly sulcate, subocular carina usually less marked; usually larger species with less acute head; metatarsus commonly bluish or infusate; upper valve of ♀ hooked or not 14.
11. Basal segments of antennae distinctly widened and somewhat serrate; metafemur more elongate ($l/w > 4.7$); ♂ unknown *laticornis*, spec. nov.
- Basal segments of antenna barely widened, not serrate; metafemur short, even in ♀ ($l/w < 4.25$); ♂ genitalia (when known) see figs 78c–f, 79c–f 12.
12. Head rather short and convex, costa frontalis moderately narrow (Figs 75, 76, 80a); pronotum fairly short, $l/w < 1.6$; dorsal pattern very distinct; ♂ unknown *buningoniae*, spec. nov.
- Head triangular and acute, costa frontalis narrow (Figs 71–74, 78a, 79a); pronotum elongate, $l/w > 1.75$; dorsal pattern less distinct; ♀ unknown 13.
13. ♂ supraanal plate as in fig. 78d; epiphallus narrow, lophi c. triangular, complicately coiled (Fig. 78e); cingular apodeme of phallus very short (Fig. 78f); ♀ unknown *sulcata* spec. nov.
- ♂ supraanal plate as in fig. 79d; epiphallus wide, lophi wide (Fig. 79e); cingular apodeme elongate (Fig. 79f); ♀ unknown *acutifrons*, spec. nov.
14. Lower surface of metafemur clearly reddish, at least in apical half 15.
- Lower surface of metafemur not clearly reddish, at most yellowish 19.
15. Antenna fairly elongate, l/w of median segments > 1.5 ; furcula (when known) obtuse, ♂ supraanal plate very wide (Fig. 58d); ♂ genitalia see figs 58c–f; upper valve of ♀ not hooked near base (fig. 58g) 16.
- Antenna short, median segments not longer than wide; furcula (when known) acute, ♂ supraanal plate narrower (Figs 17d); ♂ genitalia see figs 17c–f; upper valve of ♀ hooked at apex or not 17.
16. Head longer and more acute; metafemur longer, $l/w > 4.9$ (in ♀); dorsal pattern less conspicuous (Fig. 52); ♂ genitalia see figs 58c–f *infusata infusata*, spec. nov.
- Head shorter and more convex; metafemur shorter, $l/w < 4.5$ (in ♀); dorsal pattern conspicuous (Fig. 54); ♀ unknown *infusata validior*, subspec. nov.

17. Head short and less acute (Fig. 13); metafemur short, $l/w < 4.2$; metatibia infusate or brownish; ♂ cercus with slight ventrodistal projection (Figs 12c, 17c); furcula acute, ♂ supraanal plate see figs 12d, 17d; lophus in epiphallus with narrow, elongate lateral process (Figs 12e, 17e) 18.
– Head longer and more acute (Fig. 16); metafemur longer, l/w c. 4.7; metatibia blue; ♂ unknown *brevicornis*, spec. nov
18. Bilineate dorsal pattern very conspicuous (Fig. 13); prosternal process anteriorly and at apex very deeply excised (Fig. 17b); ♂ genitalia see figs 17c–f *validipes*, spec. nov.
– Bilineate dorsal pattern inconspicuous; prosternal process anteriorly and at apex but slightly excised; ♂ genitalia see figs 12c–f *badia* (Sjöstedt)
19. Metafemur with two conspicuous light subapical rings (Fig. 37); metatibia pale blue with distinct and infusate subbasal rings; apex of ♀ valves very short, obtuse (Fig. 45g); large, brown, conspicuously bilineate species with rather convex head (Figs 37, 38); ♂ unknown *latifrons*, spec. nov.
– Metafemur without distinct subapical rings; metatibia at most with indistinct white subbasal ring; apex of ♀ valves elongate, acute; species of different size and colour; ♂ genitalia see figs 33c–f, 34c–e, 35c–e, 59c–f 20.
20. Dorsal bilineate pattern almost absent, pronotum uniformly reddish (Fig. 56); ♂ cercus with concave apical border and acute ventrodistal projection (Fig. 59c); ♂ supraanal plate with distinct furrow and a lateral denticle on either side (Fig. 59d); median part of lophus not bifurcate, ancora conspicuously coiled (Fig. 59e); ♀ unknown *houstoni*, spec. nov.
– Dorsal bilineate pattern well developed, pronotum not reddish; ♂ cercus with convex or straight apical border, with or without ventrodistal projection (Figs 33c–35c); ♂ supraanal plate variable, though without distinct furrow and lateral denticle (Figs 33d–35d); median part of lophus more or less bifurcate, ancora not as coiled (Figs 33e–35e) 21.
21. Head remarkably large, short, and convex (Fig. 28); anterior border of pronotum usually perceptibly concave; ♂ supraanal plate triangular with sinuate lateral borders and two moderate humps near base (Fig. 34d); ♂ cercus with strong, rounded ventrodistal projection (Fig. 34c); epiphallus see fig. 34e *variabilis corpulenta*, subspec. nov.
– Head not as large, longer, and more acute (Figs 25, 29, 31); anterior border of pronotum usually almost straight; ♂ supraanal plate either rather circular with very large basal humps, or triangular without humps (Figs 33d, 35d); ♂ cercus without or with fairly acute ventrodistal projection (Figs 33c, 35c); epiphallus see figs 33e, 35e 22.
22. Head markedly acute and triangular (Fig. 31); metatibia always yellow; upper valve of ♀ slightly hooked (Fig. 36g) *variabilis interioris*, subspec. nov.
– Head less acute and triangular (Figs 25, 29); metatibia usually pale blue, rarely yellow (in Pilbara area only); upper valve of ♀ not hooked 23.
23. Pronotum elongate, l/w almost 2; metafemur shorter, $l/w < 4.7$; ♂ furcula obtuse, ♂ supraanal plate very convex, basally with two very large humps (Fig. 33d); ♂ cercus without ventrodistal projection (Fig. 33c); lophus in epiphallus short, medially wide, convex (Fig. 33e) . *variabilis variabilis*, spec. nov.
– Pronotum shorter, $l/w < 1.8$; metafemur longer, l/w c. 5; ♂ furcula acute, ♂ supraanal plate triangular without distinct basal humps (Fig. 35d); ♂ cercus with rather acute ventrodistal projection (Fig. 35c); lophus in epiphallus narrow, elongate, medially narrow, deeply bifurcate (Fig. 35e) *variabilis pseudocorpulenta*, subspec. nov.

Sjoestedtocris badia (Sjöstedt, 1930), comb. nov.

Figs 12, 82

Rusurplia badia Sjöstedt, 1930, p. 33, Taf. 6, fig. 3, Taf. 7, figs 2a–e; Sjöstedt 1936, p. 171.

Types. Holotype: 1 ♀, Fraser R. Oct. 91, Helms (SAMA). – Paratypes: 2 ♀♀, C. Australia, Everard Rgs., White (NHRS, SAMA).

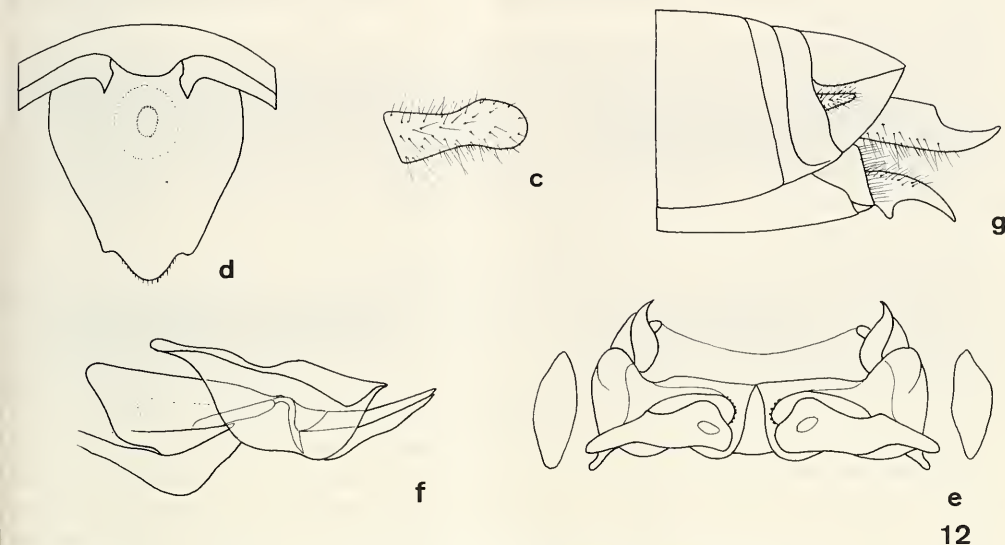


Fig. 12 c–g. *Sjoestedtocris badia* (Sjöstedt). Legends see fig. 6.

I have seen the NHRS specimen which is regarded a paratype, because in his description Sjöstedt added “(typ.)” to the Fraser R. specimen.

Because this species lacks the special characters of the fastigium verticis found in *Rusurplia tristis* and ascribed to genus *Rusurplia* in the generic diagnosis, *R. badia* is herewith removed from genus *Rusurplia* and included in the new genus *Sjoestedtocris* together with several other, new species.

I have several additional specimens from southwestern South Australia, including ♂♂. For better distinction from the other species of *Sjoestedtocris* a short general description and the description of ♂ and ♀ genitalia are given.

Diagnosis. Recognized by small size, reddish-brown or brownish-olivaceous color and inconspicuous pattern, infusate tegmina, brown posterior tibia, laterally black abdomen changing to dark reddish towards apex, remarkably short pronotum, moderately wide, at apex fairly excised prosternal process, triangular ♂ supraanal plate with short apex, anteriorly straight epiphallus with elongate, narrow lophi, and elongate, narrow ♀ valves, both being hooked near apex.

Description

Measurements. Body length. ♂: 15.0–16.0 mm, ♀: 20.0–23.0 mm. Length of pronotum: ♂: 2.3–2.45 mm, ♀: 2.8–3.1 mm. Ratio length/width of pronotum: 1.47–1.60. Length of tegmen. ♂: 11.0–11.5 mm, ♀: 13.5–15.0 mm. Length of metafemur. ♂: 7.4–7.6 mm, ♀: 9.0–10.3 mm. Length ratio metatibia/metafemur: 0.72–0.75. Ratio length/width of metafemur. ♂: 3.9–4.1, ♀: 4.05–4.15.

Colour. More or less dark or reddish-brown, somewhat mottled. Sometimes lateral parts of vertex and pronotum slightly lighter, though no distinctive pattern visible. Anterior half or two thirds of

abdomen laterally black, apex more or less reddish. Legs reddish-brown, metafemur externally olivaceous-brownish, internal and lower surfaces reddish. Metatibia brown, spines apically black. Metatarsus reddish. Tegmina infusate, anterior border even darker.

Head. Fairly short and obtuse, especially in ♀♀, lateral profile in frons convex. Costa frontalis moderately elongate, wide, feebly widened at antennal base, almost as wide as eye width, rather convex, with some very coarse punctures. Frons with indistinct suborbital carina. Antenna very short, with 21–22 segments, l/w of median segments <1. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum. Rather short and wide, slightly widened to base, prozona slightly longer than metazona, with two distinct sulci not crossing median carina. Median carina conspicuous, elevated, lateral carinae distinct, calloused. Anterior border almost straight, posterior border moderately convex. Prozona in middle with few very coarse, irregular punctures, metazona dorsally and laterally irregularly punctate, puncturation somewhat vermiculate, dorsally even arranged in irregular longitudinal lines. Punctures far less coarse than on prozona. Surface nitid, with some erect hairs.

Tegmina. Elongate, narrow, in ♀ attaining, in ♂ slightly surpassing abdomen. Anterior border with feeble subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface. Prosternal process moderately wide, spatulate, apex feebly excised. Mesosternal lobes fairly separated. Lower surface of thorax with moderately dense, that of abdomen with sparse, erect hairs.

Legs. Metafemur short, smooth. Apex of lower lobe of knee acute. Metatibia with 8–10 external and 9–11 internal spines, upper surface rather densely covered with elongate, erect hairs.

♂ genitalia (Figs 12 c–f). Tergum 10 situated laterally, completely divided, widely spaced. Tergum 9 with median projection. Furcula short, acute. Supraanal plate attenuate, apex roundly produced, laterally with slightly angular projection. Cercus short, wide, flattened, apex rounded off, slightly widened, though almost without ventral projection. Epiphallus as in fig. 12 e, lophus elongate, complicately contoured, ancora dentiform. Dorsal ectophallic sclerite with small dorsal projection. Endophallus as in fig. 12 f, aedeagal sclerites fairly elongate, horizontal.

♀ genitalia (Fig. 12 g). Supraanal plate triangular, with rounded apex. Subgenital plate with convex, slightly projecting apex. Valves elongate, narrow, near base distinctly hooked. Cercus narrow, triangular, acute.

Variation. Apart from some variation of colour and pattern little variation noted.

Distribution (Fig. 82). Origin of holotypus not settled, but it might be Frazer River near Derby in northwestern Australia, where Helms is known to have collected. If this locality would be verified, the species has a very wide distribution from the northwestern part of Western Australia through central Australia to northern Eyre Peninsula in South Australia.

Material examined (13): SA: 1 ♀, C. Australia, Everard Rgs., White, paratype! (NHRS); 1 ♀, N. of Wirrula, 13 June 1956, G. F. Gross (SAMA); 6 ♀♀, Poochera, 13–15 June 1956, G. F. Gross (SAMA, ZSM); 1 ♂, 2 ♀♀, S. of L. Everard Stn., Gawler Rgs., 12 June 1956, G. F. Gross (SAMA); 1 ♂, Yardea, Gawler Rgs., 15 June 1956, G. F. Gross (ZSM); 1 ♂, 6 mi. W. of Wilson, May 9. 1956, G. F. Gross (SAMA).

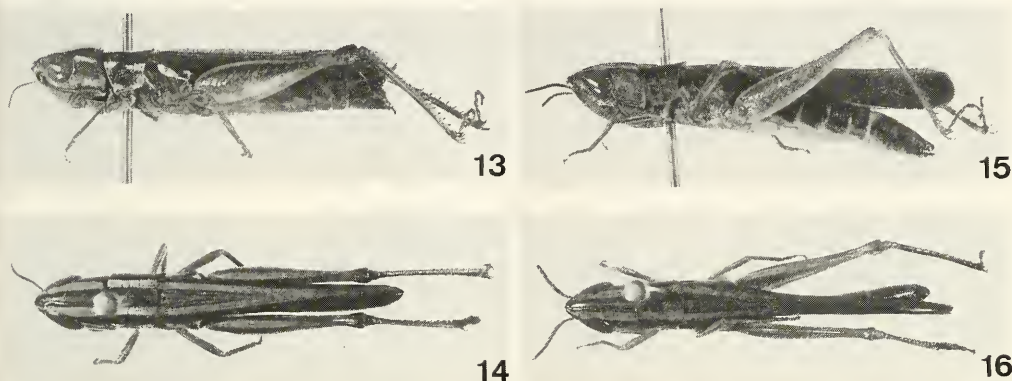
Habits. Apparently an arid country inhabiting species, as most specimens were burnt out of spinifex (*Triodia*).

Sjoestedtocris validipes, spec. nov.

Figs 13, 14, 17, 82

Types. Holotype: ♂, A. Douglas. leg. June 59, Bernier Is (WAM 87/1619). — Paratypes: 1 ♀, same data (WAM 87/1620); 1 ♀, A. Douglas. leg. June 59, Dorre Is, WAM 87/1618 (ZSM); 1 ♀, 29. VIII. 75, Shot Hole Canyon, Exmouth, Western Australia, R. P. McMillan (WAM 87/1644).

Diagnosis. Recognized by short, convex, massive head, short antennae, short and wide, not sulcate costa frontalis, short and stout legs, short pronotum with distinct lateral pronotal carinae, deeply excised prosternal process, dark colour and vivid pattern consisting of a conspicuous, light sublateral stripe on vertex, pronotum and tegmina, blackish thorax with contrasting yellow pattern, and fuscous metatibia, very elongate, acute furcula, elongate, narrow lophi in epiphallus, and not hooked upper ♀ valve.



Figs 13–16. *Sjoestedtacrís*. 13–14. *S. validipes*, spec. nov., ♀ paratype. 13. Lateral view. 14. Dorsal view. 15–16. *S. brevicornis*, spec. nov., ♀ holotype. 15. Lateral view. 16. Dorsal view. Lengths: 24.5 mm; 22.3 mm.

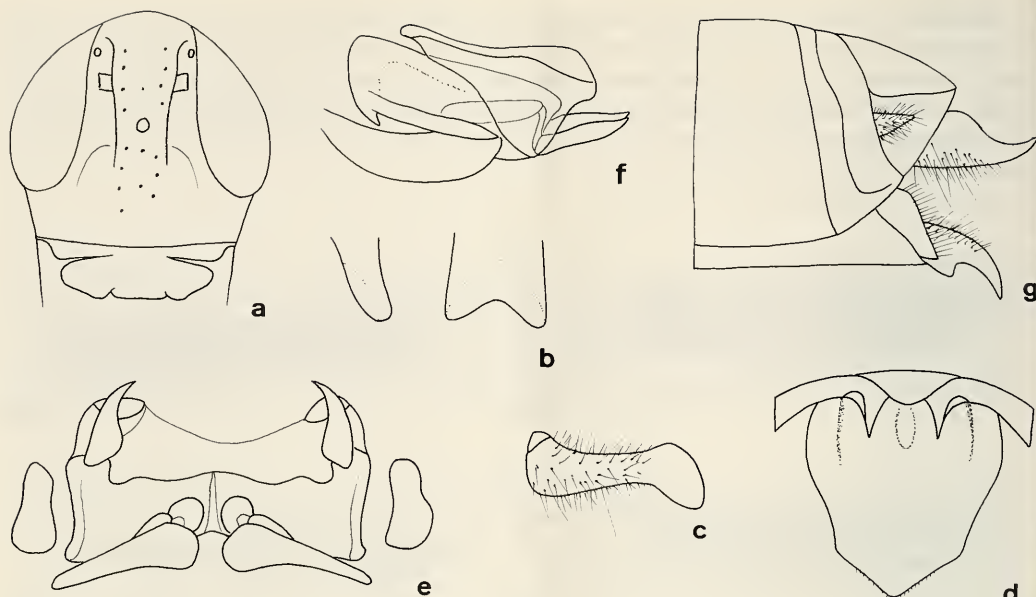
Description

Measurements. Body length. ♂: 15.4 mm, ♀: 21.3–24.5 mm. Length of pronotum. ♂: 2.4 mm, ♀: 3.0–3.3 mm. Ratio length/width of pronotum: 1.44–1.55. Length of tegmen. ♂: 10.8 mm, ♀: 14.8–15.1 mm. Length of metafemur. ♂: 8.3 mm, ♀: 10.1–11.3 mm. Length ratio metatibia/metafemur: 0.74–0.76. Ratio length/width of metafemur. ♂: 3.8, ♀: 3.85–4.15.

Colour (Figs 13, 14). Head and thorax brownish to black, lower surface and legs yellow to light greenish. Vertex, pronotum, and tegmina with a very conspicuous, wide, white sublateral stripe, head behind eyes and prothorax laterally with another light stripe, more or less interrupted on pronotum. Thorax laterally widely blackish, with a distinctive white stripe on metepisternum. Abdomen dorsally reddish. Antenna brown. Dorsal part of external surface of metafemur brown, ventral part greenish-yellowish, interior and ventral surface red, knee black. Metatibia infuscate, dorsolateral surface somewhat lighter. Spines basally whitish, apically black. Metatarsus infuscate. Tegmina rather infuscate, anterior border near base almost black. Pattern very vivid.

Head (Figs 13, 14, 17a). Rather short and convex, lateral profile of frons convex. Costa frontalis short, rather wide, slightly widened at antennal base, as wide as eye width, depressed, with sparse, coarse puncturation. Frons with feeble and rather short suborbital carina, especially in ♀♀. Antenna short, with 23–24 segments, l/w of median segments c. 1. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 13, 14). Short, slightly widened to base, only 1.5× as long as wide, prozona markedly longer than metazona, both sulci moderately distinct, not crossing median carina. Median carina distinct, feebly elevated, lateral carinae conspicuous, strongly calloused, rather wide. Anterior border straight, posterior border gently convex. Whole pronotum with very coarse, rather vermiculate impressions, puncturation slightly denser on metazona, dorsally on metazona sometimes even arranged in some irregular longitudinal lines. Surface highly nitid, with some erect hairs.



17

Fig. 17 a–g. *Sjoestedtocris validipes*, spec. nov. Legends see fig. 6.

Tegmina (Fig. 13). Elongate, narrow, in ♂ slightly longer as abdomen, in ♀♀ as long as or slightly shorter than abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 17 b). Prosternal process wide, spatulate, deeply excised at apex and anterior surface. Mesosternal lobes narrowly separated. Lower surface of thorax with moderately sparse, that of abdomen with rather sparse, erect hairs.

Legs (Fig. 13). All legs short and stout, especially metafemur very stout, smooth. Apex of lower lobe of knee acute. Metatibia with 10–13 external and internal spines, upper surface densely covered with very elongate, erect hairs. Metatarsus short.

♂ genitalia (Figs 17 c–f). Tergum 10 completely divided, furcula very elongate and acute. Tergum 9 projecting in middle. Supraanal plate laterally near base convex, then gently sinuate, apex widely triangular, laterally of apex feebly concave. Base with a shallow median pit. Cercus rather narrow and elongate, flattened, apex obliquely rounded, with feeble ventrodistal projection. Epiphallus as in fig. 17 e, lophus elongate, simple, ancora dentiform. Dorsal ectophallic sclerite with rather sclerotized, strong, triangular dorsal projection, directed dorsally. Endophallus as in fig. 17 f, aedeagal sclerites short, rather horizontal.

♀ genitalia (Fig. 17 g). Supraanal plate triangular, with rounded apex. Subgenital plate with wide, triangular, rather convex apex. Valves rather elongate, lower valve near base strongly hooked, upper valve not hooked. Cercus narrow, triangular, acute.

Variation. Little variation noted.

Distribution (Fig. 82). Exmouth Peninsula and islands of Shark Bay, central western coast of Western Australia.

Habits. Unknown. Perhaps a coastal or subcoastal species.

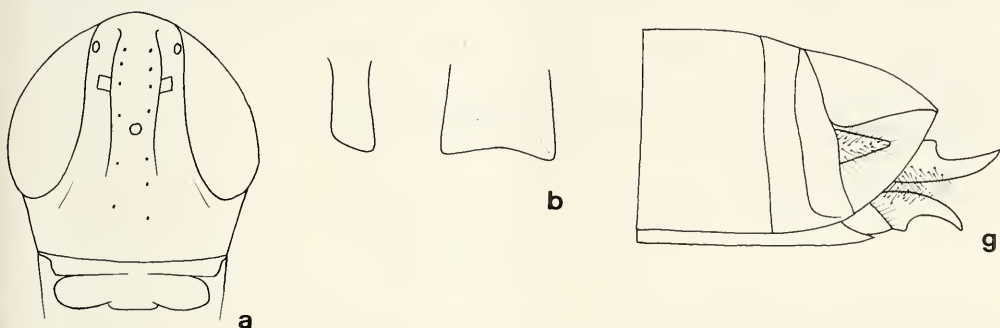
Etymology. Named on account of the stout metafemur.

Sjoestedtocris brevicornis, spec. nov.

Figs 15, 16, 18, 82

Types. Holotype: ♀, 12.5 km SSE. of Banjiwarn HS 27°42'S, 121°37'E, W. Aust. 22–28 Feb. 1979, T. F. Houston et al. 316–10 (WAM 87/1672).

Diagnosis. Recognized by moderately acute, fairly convex head with short, wide, not sulcate costa frontalis, very short antenna, short pronotum with distinct lateral carinae, dark colouration and rather vivid pattern, almost completely dark upper surface of abdomen, reddish metafemur, contrasting blue-grey metatibia, and hooked ♀ upper valve.



18

Fig. 18 a, b, g. *Sjoestedtocris brevicornis*, spec. nov. Legends see fig. 6.

Description

Measurements. Body length. ♀: 22.3 mm. Length of pronotum. ♀: 2.85 mm. Ratio length/width of pronotum: 1.46. Length of tegmen. ♀: 16.1 mm. Length of metafemur. ♀: 9.55 mm. Length ratio metatibia/ metafemur: 0.73. Ratio length/width of metafemur. ♀: 4.7.

Colour (Figs 15, 16). Dorsal surface of body inclusive anterior and median legs, and tegmina light brown, dorsal surface of abdomen piceous, ventral surface yellow. Vertex, pronotum, and tegmina with a wide, light, sublateral stripe. Thorax with narrow black band just below anterior border of tegmina. Metafemur on external surface reddish-brown, internally reddish, ventrally yellow changing to light reddish, knee reddish. Metatibia and metatarsus contrastingly bluish-fuscous. Spines apically black. Tegmina fuscous, becoming even darker towards apex.

Head (Figs 15, 16, 18a). Moderately triangular, though lateral profile of frons and vertex fairly convex. Costa frontalis short, wide, markedly widened at antennal base, barely narrower than eye width, depressed, with few coarse punctures. Frons almost devoid of suborbital carina. Antenna very short, with 23 segments, l/w of median segments clearly <1. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 15, 16). Short, evenly widened to base, not incised before middle, prozona markedly longer than metazona, anterior sulcus of prozona indistinct, posterior sulcus distinct, not crossing median carina. Median carina distinct, rather elevated, lateral carinae distinct, narrow, slightly calloused, becoming weaker towards base. Anterior border straight, posterior border gently convex. Prozona almost impunctate, puncturation of metazona rather diffuse, even laterally not markedly vermiculate. Microreticulation of surface distinct, hence surface but moderately nitid, with some erect hairs.

Tegmina (Fig. 15). Elongate, narrow, in ♀ as long as abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 18b). Prosternal process wide, spatulate, somewhat wedge-shaped at apex as seen from laterally, apex slightly, anterior surface moderately excised. Mesosternal lobes meeting in middle. Lower surface of thorax with sparse, of abdomen with very sparse, erect hairs.

Legs (Fig. 15). Legs medium sized. Metafemur fairly elongate, smooth. Apex of lower lobe of knee moderately acute. Metatibia remarkably short compared with metafemur, with 10 external and 11 internal spines, upper surface sparsely covered with fairly elongate, erect hairs.

♂ genitalia. Unknown.

♀ genitalia (Fig. 18g). Supraanal plate triangular, though laterally very convex, with evenly rounded apex. Subgenital plate apically almost straight, with triangularly projecting apex. Valves elongate, both valves near base strongly hooked. Cercus narrow, triangular, acute.

Variation. Unknown.

Distribution (Fig. 82). Interior of southwestern part of Western Australia. Known only from type locality.

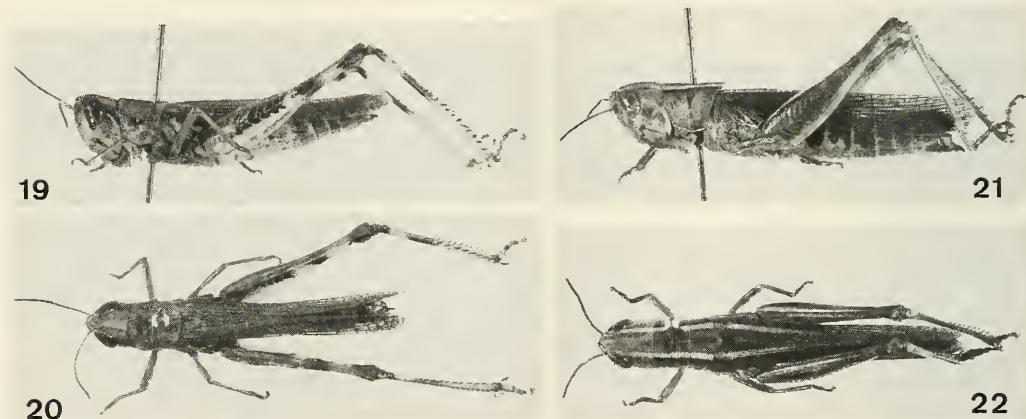
Habits. Largely unknown, holotype captured in February at lighth.

Etymology. Named on account of the very short antenna.

Sjoestedtocris inornata, spec. nov.

Figs 19, 20, 23, 82

Types. Holotype: ♂, Murdoch, 13 km S of Perth, W. Aust., 28 Jan. 1980, T. F. Houston 308 (WAM 87/1669). — Paratypes: 1 ♀, Mrs D. Edinger, March 1963, Garden Island, W. Australia (WAM 87/1623); 1 ♀, Largs Bay, 14. 2. 84, Tepper (SAMA).



Figs 19–22. *Sjoestedtocris*. 19–20. *S. inornata*, spec. nov. ♀ paratype. 19. Lateral view. 20. Dorsal view. 21–22. *S. rufotibialis*, spec. nov., ♀ holotype. 21. Lateral view. 22. Dorsal view. Lengths: 28.5 mm; 32.5 mm.

Diagnosis. Recognized by elongate pronotum, rather weak, irregular lateral pronotal carinae, very wide, markedly spatulate prosternal process, weak pattern consisting only of a light, oblique lateral stripe on head below eye, dark external surface of metafemur having two light rings, reddish metatibia bearing a subbasal light ring followed by a dark ring, regularly triangular ♂ supraanal plate, small, triangular ♂ cercus similar to ♀ cercus, and complicately coiled lophi in epiphallus.

Description

Measurements. Body length. ♂: 20.0 mm, ♀: 26.5–28.5 mm. Length of pronotum. ♂: 2.8 mm, ♀: 4.0–4.8 mm. Ratio length/width of pronotum. 1.78–1.83. Length of tegmen. ♂: 11.3 mm, ♀:

17.5–19.5 mm. Length of metafemur. ♂: 10.2 mm, ♀: 14.6–17.5 mm. Length ratio metatibia/ metafemur: 0.84–0.86 mm. Ratio length/width of metafemur. ♂: 4.4, ♀: 4.7–4.8.

Colour (Figs 19, 20). Dorsal surface greyish-yellowish with brownish or reddish tints, ventral and ventrolateral surfaces yellow. Head and pronotum with an inconspicuous, slightly darker lateral stripe, though very inconspicuous on pronotum. Head below this stripe with fairly distinct, oblique, light lateral stripe. Anterior surface of head rather mottled. Antenna reddish. Dorsal surface of abdominal segments more or less brownish, in ♂ even reddish. Tegmina infusate, without contrasting pattern. Metafemur whitish, external and internal surfaces with contrasting blackish stripe and two subapical light yellow rings. Knee and base of metatibia black, apical half of metatibia reddish, with fairly distinct subbasal light ring, followed by a more or less wide dark ring. Spines apically black. Metatarsus light reddish.

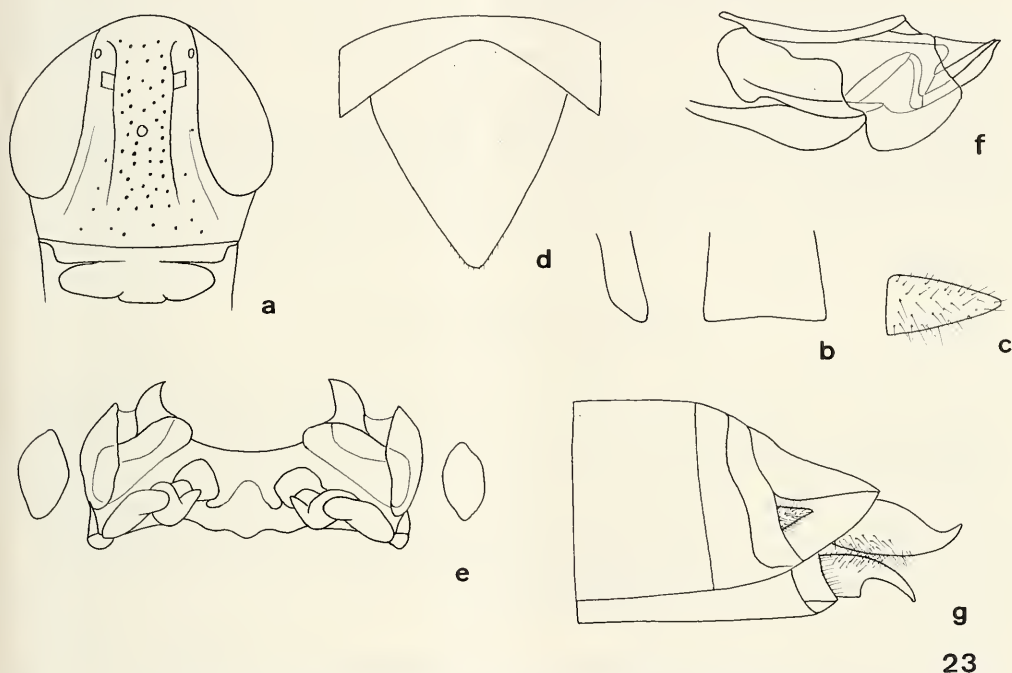


Fig. 23 a–g. *Sjoestedtocris inornata*, spec. nov. Legends see fig. 6.

Head (Figs 19, 20, 23a). Rather compact and convex, especially in ♀, lateral profile of frons slightly convex. Costa frontalis moderately elongate, moderately wide, barely widened at antennal base, slightly narrower than eye width, feebly convex, with dense, coarse puncturation. Frons with moderate, fairly elongate suborbital carina. Antenna elongate, with 24–25 segments, l/w of median segments almost 2. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 19, 20). Rather elongate, feebly widened towards base, slightly less than twice as long as wide, prozona markedly longer than metazona, posterior sulcus conspicuous and crossing median carina, anterior sulcus vestigial. Median carina conspicuous, elevated, lateral carinae rather indistinct, slightly irregular, especially in middle, in metazona even weaker. Anterior border straight, posterior border gently convex. Prozona dorsally almost impunctate, metazona dorsally irregularly punctate, puncturation laterally rather vermiculate. Surface moderately nitid, with some erect hairs.

Tegmina (Fig. 19). Elongate, narrow, about as long as or slightly shorter than abdomen. Anterior border almost without subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 23b). Prosternal process wide, very spatulate, apex barely exised. Mesosternal lobes rather widely separated. Lower surface of thorax with sparse, that of abdomen with very sparse, erect hairs.

Legs (Fig. 19). Metafemur moderately short, smooth. Apex of lower lobus of knee moderately acute. Metatibia with 10–12 external and 9–11 internal spines, upper surface rather sparsely covered with elongate, erect hairs.

♂ genitalia (Figs 23c–f). Tergum 10 divided, though meeting in middle, furcula barely marked. Supraanal plate regularly triangular. Cercus short, triangular, similar to ♀ cercus. Epiphallus as in fig. 23e, lophus short, complicately contorted, ancora short and wide, dentiform. Dorsal ectophallic sclerite with feeble, triangular dorsal projection. Endophallus as in fig. 23f, apodeme of cingulum as long as endophallic plate, aedeagal sclerites short.

♀ genitalia (Fig. 23g). Supraanal plate triangular, with rounded apex. Subgenital plate apically almost straight with short, convex, feebly projecting apex. Valves short, compact, lower valve near base strongly hooked. Cercus narrow, triangular, acute.

Variation. Some variation in shape of pronotum noted.

Distribution (Fig. 82). Southwestern corner of Western Australia, southern South Australia.

Habits. Unknown.

Etymology. Named on account of the rather uniform pattern of upper surface.

Sjoestedtocris rufotibialis, spec. nov.

Figs 21, 22, 24, 82

Types. Holotype: ♀, Coppin Pool area, 30 km S of Mt. Bruce, NW Div. W. Aust., 10–13 May 1980, T. F. Houston et al. 324 (WAM 87/1682).

Diagnosis. Recognized by very elongate, posteriorly slightly widened pronotum, moderately elongate, reddish antenna, very weak lateral pronotal carinae, only moderately wide, though spatulate prosternal process, pattern consisting of a light sublateral stripe on pronotum and tegmina, conspicuous dark lateral spots on 1st and 2nd abdominal segments, and red metatibia with whitish-grey dorsolateral surface, and not hooked upper ♀ valve.

Description

Measurements. Body length. ♀: 32.5 mm. Length of pronotum. ♀: 5.9 mm. Ratio length/width of pronotum: 2.02. Length of tegmen. ♀: 23.0 mm. Length of metafemur. ♀: 16.6 mm. Length ratio metatibia/metafemur: 0.75. Ratio length/width of metafemur. ♀: 4.45.

Colour (Figs 21, 22). Yellowish to light brown, dorsal surface of head greenish. Vertex, pronotum, and tegmina with a conspicuous, fairly wide, yellow sublateral band, less contrasting on head. Meso- and metapleurae with narrow, oblique, white stripes. 1st and 2nd abdominal segments laterally with large, conspicuous, black spot, rest of abdomen reddish. Antenna reddish throughout. Protibia and mesotibia and two basal segments of tarsi reddish. Metafemur yellowish-olivaceous, upper and lower borders narrowly white. Metatibia red, dorsolateral surface whitish-grey. Spines apically black. Basal segments of metatarsus reddish, others grey. Tegmina faintly infusate, veins reddish.

Head (Figs 21, 22, 24a). Rather short and obtuse, though lateral profile of frons almost straight. Costa frontalis elongate, rather narrow, distinctly widened at antennal base, considerably narrower than eye width, depressed, with moderately dense, very coarse puncturation. Frons with rather prominent suborbital carina. Antenna moderately elongate, with 22 segments, l/w of median segments c. 1.5. Vertex and costa frontalis with few, rather elongate, erect hairs.

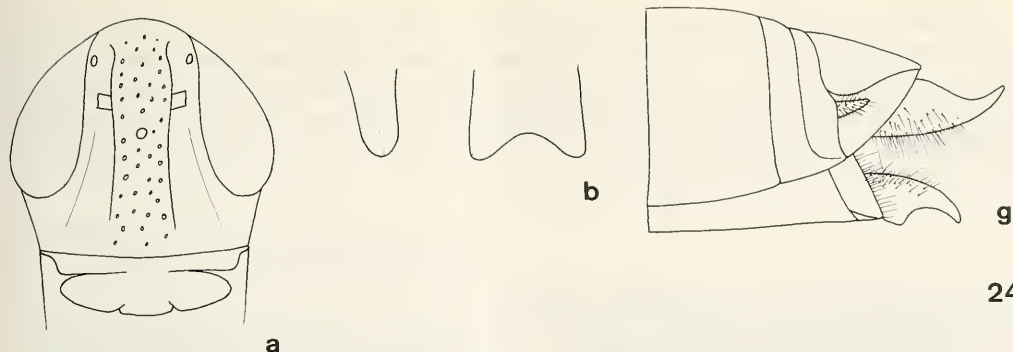


Fig. 24 a, b, g. *Sjoestedtocris rufotibialis*, spec. nov. Legends see fig. 6.

24

Pronotum (Figs 21, 22). Very elongate, slightly widened to base, twice as long as wide, prozona markedly longer than metazona, with two conspicuous sulci crossing median carina. Median carina conspicuous, elevated, lateral carinae rather weak, though calloused. Anterior border straight, posterior border gently convex. Prozona near apex indistinctly, finely punctate, posteriorly with few shallow, very large impressions, metazona dorsally and laterally densely punctate, puncturation rather vermiculate. Surface fairly nitid, except near apex and in metazona, with some erect hairs.

Tegmina (Fig. 21). Elongate, narrow, slightly surpassing abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 24b). Prosternal process moderately wide, spatulate, apex and anterior surface near apex slightly excised. Mesosternal lobes rather widely separated. Lower surface of thorax with moderately sparse, that of abdomen with sparse, erect hairs.

Legs (Fig. 21). Metafemur rather short, smooth. Apex of lower lobe of knee moderately acute. Metatibia with 9 external and 10 internal spines, upper surface rather sparsely covered with elongate, erect hairs.

♂ genitalia. Unknown.

♀ genitalia (Fig. 24g). Supraanal plate triangular, though laterally rather convex, with rounded apex. Suturenital plate apically almost straight with short, convex, slightly projecting apex. Valves fairly short, compact, lower valve near base somewhat hooked. Cercus narrow, triangular, acute.

Variation. Unknown.

Distribution (Fig. 82). Hamersley Range, central western part of Western Australia. Known only from type locality.

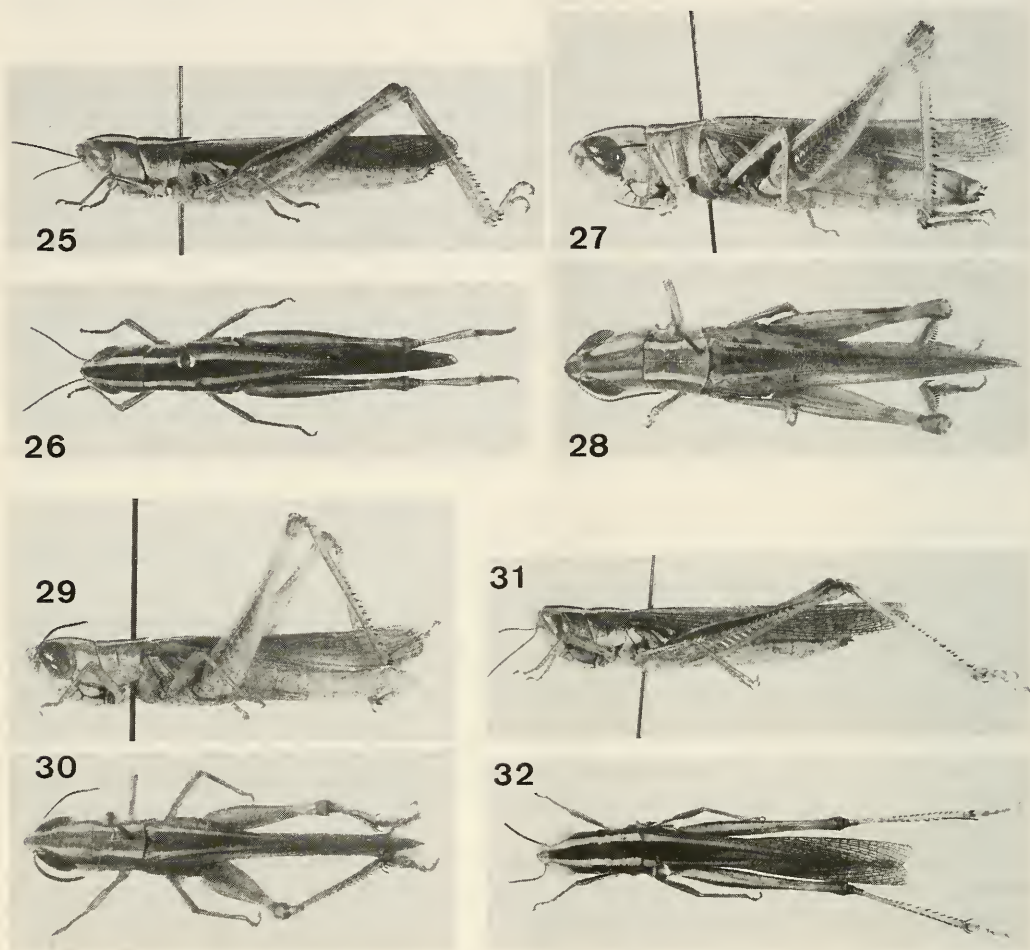
Habits. Unknown. Holotype collected in May.

Etymology. Named on account of the red metatibia.

Sjoestedtocris variabilis, spec. nov.

A very variable species comprising several populations throughout the whole of arid Western Australia south to about Kalgoorlie, only some of which can be clearly distinguished as subspecies by fairly stable characters. The various populations may be partly isolated, but partly not, with the result that gene flow may be interrupted to a different degree between populations. The problem is even more complicated, because rather few ♂♂ are known, hence the variability of ♂ genitalia is largely unknown. The taxonomical decisions within this complex are thus fairly provisional.

Diagnosis. Recognized by fairly stout body, convex to rather triangular head, variable pronotum with distinct lateral pronotal carinae, variable legs, pattern consisting of a conspicuous, light sublateral stripe on vertex, pronotum and tegmina, pale blue or yellow metatibia, triangular or rather circular ♂ supraanal plate with or without two basal humps, more or less elongate, usually bifurcate lophi in endophallus, dorsal ectophallic sclerite with large, sclerotized dorsal projection, and upper ♀ valve not or feebly hooked near base.



Figs 25–32. *Sjoestedtocris variabilis*, spec. nov. 25–26. *S. v. variabilis*, subspec. nov., ♀ paratype. 25. Lateral view. 26. Dorsal view. 27–28. *S. v. corpulenta*, subspec. nov., ♀ paratype. 27. Lateral view. 28. Dorsal view. 29–30. *S. v. pseudocorpulenta*, subspec. nov., ♀ paratype. 31. Lateral view. 32. Dorsal view. Lengths: 32.5 mm; 34.0 mm; 26.0 mm; 28.5 mm.

Sjoestedtocris variabilis variabilis, subspec. nov.

Figs 25, 26, 33, 83

Types. Holotype: ♂, Australien, WA. 27, 108 km wsw Hall's Creek, 16.–17. 11. 1987, M. & B. Baehr (WAM).
– Paratypes: 1 ♀, Australien, WA. 29, Fitzroy Crossing, 18.–20. 11. 1984, M. & B. Baehr (ZSM); 2 ♀♀,

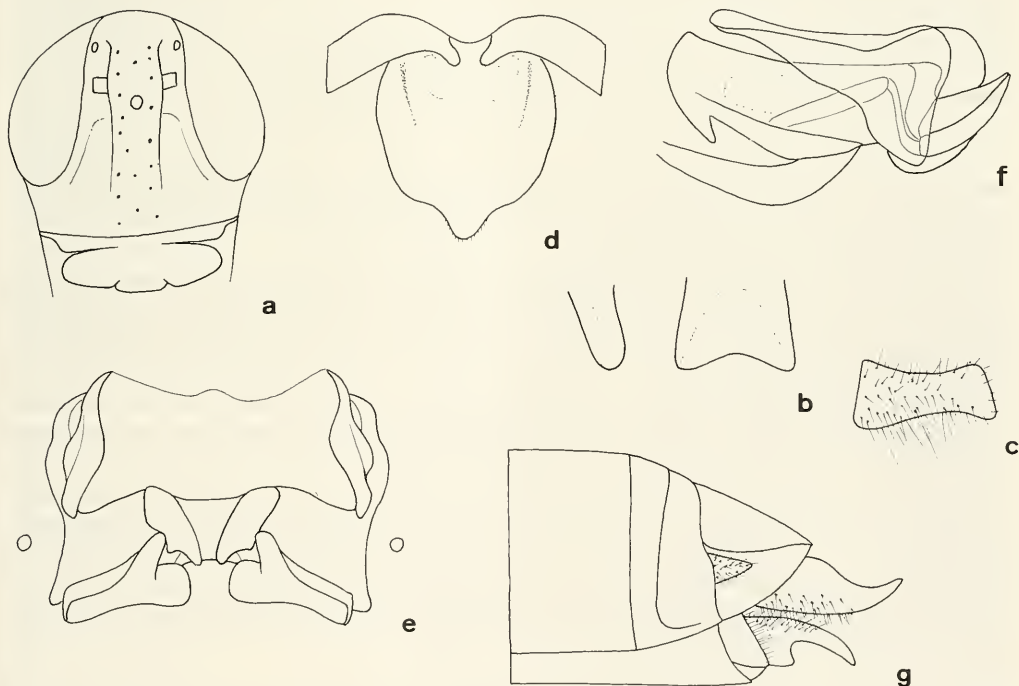
Nullagine, Western Australia, 19–20 Jan 1974, A. M. & M. J. Douglas (WAM 87/1642–3); 1 ♀, Duck Creek, Tom Price Road, 22.29 S, 118.04 E, Western Australia, 18 Jan 1974, A. M. & M. J. Douglas (WAM 87/1640); 1 ♀, Australien, WA. 48, Fortescue River b. Millstream, 3.–5. 12. 1984, M. & B. Baehr (ZSM); 1 ♀, 53–1418, Ashburton R. (WAM); 1 ♂, 1 ♀, Australien, WA 17. Winning, 120 km s. Nanutarra, 3. 11. 1987, M. Baehr (ZSM); 2 ♀♀, Mt. Gillet, 7. I. 1964, 124°E. 25°S. 190.M, N. W. Warburton, W. Australia (WAM 87/1626–27); 3 ♀♀ 50 mls. N.W. of Carnegie Stn, W. Australia, 1. II. 1967, M. de Graaf (WAM 87/1630–2, ZSM); 1 ♀, Mt. Romilly, W. Australia, 9. XII. 1971, W. S. Expedition, D. Williams (WAM 87/1635); 1 ♀, 25 km ENE of Yuinmery HS (28°34'S, 119°01'E), W. Aust., 11–19. Feb. 1980, T. F. Houston et al. 310–1 (WAM 87/1670); 1 ♀, A. Douglas leg. Feb. 56, Edjudina (WAM 87/1617).

Diagnosis. Recognized by moderately stout body, not markedly large, moderately acute, though slightly convex head, wide costa frontalis, elongate pronotum, usually rather elongate metafemur, variable colour and usually conspicuous pattern, more or less pale bluish or yellowish metatibia, rather circular ♂ supraanal plate with two very large basal humps, narrow ♂ cercus almost devoid of ventrodistal projection, and epiphallus with short, apically widely rounded lophi.

Description

Measurements. Body length. ♂: 20.5–21.0 mm, ♀: 29.5–36.0 mm. Length of pronotum. ♂: 3.1–3.35 mm, ♀: 4.5–5.1 mm. Ratio length/width of pronotum. ♂: 1.94–1.97, ♀: 1.70–1.96. Length of tegmen. ♂: 14.8–16.1 mm, ♀: 23.5–25.8 mm. Length of metafemur. ♂: 10.3–11.2 mm, ♀: 15.0–18.5 mm. Length ratio metatibia/metafemur: 0.79–0.84. Ratio length/width of metafemur: ♂: 4.45–4.65, ♀: 4.7–5.3.

Colour (Figs 25, 26). Upper surface pale yellowish-greenish to rather dark brown, ventral surface and legs yellow. Vertex, pronotum, and tegmina with a conspicuous, wide, white or yellow sublateral



33

Fig. 33 a–g. *Sjoestedtocris variabilis variabilis*, spec. nov. Legends see fig. 6.

stripe. Posterior border of tegmina darker than rest. Antenna yellowish. Metafemur with more or less distinct greyish to piceous stripe on upper part of external surface, knee light. Metatibia and metatarsus pale bluish or yellow, sometimes with indistinct, light subbasal ring. Spines basally whitish, apically black. Metatarsus yellow or pale bluish.

Head (Figs 25, 26, 33a). Not markedly large, moderately elongate and acute, lateral profile of frons and vertex slightly convex. Costa frontalis short, wide, slightly widened at antennal base, barely narrower than eye width, depressed or even slightly convex, with rather sparse, coarse puncturation. Frons with short and inconspicuous suborbital carina. Antenna moderately elongate, with 23–25 segments, l/w of median segments 1.3–1.5 (♂) – 2 (♀). Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 25, 26). Fairly elongate, usually almost twice as long as wide, slightly widened to base, prozona slightly longer than metazona, both sulci distinct or anterior sulcus abbreviated, usually both crossing median carina. Median carina distinct, elevated, calloused, lateral carinae conspicuous, complete, fairly wide, markedly calloused. Anterior border almost straight, posterior border gently convex. Prozona almost impunctate, metazona densely and regularly punctate, puncturation dorsally not, laterally somewhat vermiculate. Surface moderately nitid, with some erect hairs.

Tegmina (Fig. 25). Elongate, narrow, slightly longer than abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 33b). Prosternal process wide, spatulate, apex moderately, anterior surface deeply excised. Mesosternal lobes narrowly separated. Lower surface of thorax with moderately sparse, that of abdomen with sparse, erect hairs.

Legs (Fig. 25). Metafemur in ♂ fairly short and stout, in ♀ usually rather elongate, smooth. Apex of lower lobe of knee moderately acute. Metatibia with 11–13 external and 11–12 internal spines, upper surface fairly sparsely covered with elongate, erect hairs. Metatarsus moderately short.

♂ genitalia (Figs 33c–f). Tergum 10 divided, though narrowly meeting in middle, furcula short, obtuse. Tergum 9 projecting in middle. Supraanal plate rather circular, laterally very convex, with convexly projecting apex, basally with a very large hump on either side of middle. Cercus small, narrow, flattened, apex barely widened, almost straight, without ventrodistal projection. Epiphallus as in fig. 33e, lophus fairly wide, moderately elongate, medially bifurcate, median apex wide and rounded, ancora narrow, dentiform. Dorsal ectophallic sclerite with strongly sclerotized, triangular, medially not excised dorsal projection, directed very obliquely anteriorly. Endophallus as in fig. 33f, aedeagal sclerites moderately elongate.

♀ genitalia (Fig. 33g). Supraanal plate triangular, though laterally rather convex, with rounded apex. Subgenital plate apically almost straight with triangularly convex, fairly projecting apex. Valves moderately short, compact, lower valve near base strongly hooked, upper valve not hooked. Cercus triangular, fairly wide, acute.

Variation. This subspecies exhibits considerable variation in colour which is obviously lighter in the north and far inland, in relative length of pronotum, length of metafemur, and colour of metafemur which tends to be yellowish in the Nullagine area.

Distribution (Fig. 83). This subspecies inhabits a vast area from the southern boundary of the Kimberley Division through interior Western Australia to about 100 km north of Kalgoorlie. In the southern part of its areal it occurs only far inland. In the western part of its range this subspecies overlaps with *S. variabilis corpulenta*, in the northern part with *S. variabilis pseudocorpulenta*.

Habits. Some specimens collected at light, others between spinifex. Habits and distribution show that this is a deserticolous species.

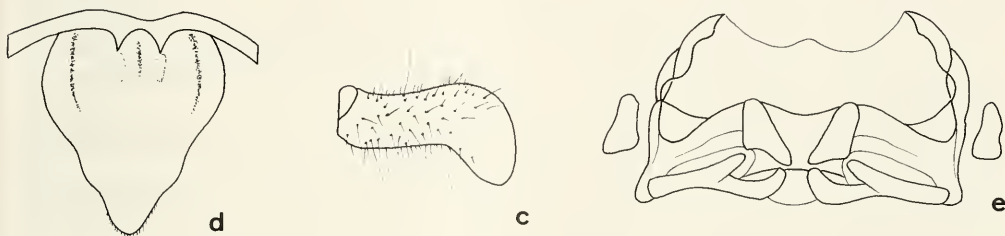
Etymology. Named on account of the variable shape and pattern.

Sjoestedtacrisc variabilis corpulenta, subspec. nov.

Figs 27, 28, 34, 84

Types. Holotype: ♂, Bamboo Creek, 20.56 S, 120.13 E, Western Australia, 11 April 1977, A. M. & M. J. Douglas ABGW (WAM 87/1649). — Paratypes: 1 ♂, W. Aust. Marble Bar, 27 Dec. 1975. GR Jones (SAMA); 1 ♂, 2 ♀♀, Australien, WA. 42, Dales Gorge, 60 km se. Wittenoom, 29.–30.11.1984, M. & B. Baehr (ZSM); 3 ♂♂, Australien, WA. 43, Joffre Falls, 70 km se. Wittenoom, 1.12.1984, M. & B. Baehr (ZSM); 1 ♂, 4 ♀♀, Australien, WA. 47, Hooley Creek, 68 km nw. Wittenoom, 2.–3.12.1984, M. & B. Baehr (ZSM); 7 ♀♀, Australien, WA. 48, Fortescue River, b. Millstream, 3.–5.12.1984, M. & B. Baehr (SAMA, ZSM); 1 ♀, 33 km SE Mt. Bruce (22°36'S, 118°08'E), W. A., 16–18 May 1980, T. F. Houston et al. 327 — (WAM 87/1684); 1 ♀, NE foot of Mt. Bruce (22°36'S, 118°08'E), W. Aust., 6–15 May 1980, T. F. Houston et al. 318 — (WAM 87/1680).

Diagnosis. Recognized by rather stout body, remarkably large, short, convex head, wide costa frontalis, short pronotum, short and stout metafemur, light, yellowish-greenish colour with usually bluish-green centre of head, pale bluish metatibia, irregularly triangular ♂ supraanal plate with two fairly large basal humps, ♂ cercus with large ventrodistal projection, and epiphallus with fairly elongate, narrow, distinctly bifurcate lophi.



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Fig. 34 c–e. *Sjoestedtacrisc variabilis corpulenta*, subspec. nov. Legends see fig. 6.

Description

Measurements. Body length. ♂: 21.5–24.0 mm, ♀: 26.5–34.5 mm. Length of pronotum. ♂: 3.15–3.45 mm, ♀: 3.75–5.1 mm. Ratio length/width of pronotum: 1.47–1.76. Length of tegmen. ♂: 1.52–1.75 mm, ♀: 19.5–26.5 mm. Length of metafemur. ♂: 11.5–12.0 mm, ♀: 13.1–17.6 mm. Length ratio metatibia/metafemur: 0.78–0.81. Ratio length/width of metafemur. ♂: 4.25–4.55 (1 specimen: 5.1), ♀: 4.2–4.7.

Colour (Figs 27, 28). Body inclusive legs light yellowish to pale greenish, on head and prothorax even feebly orange. Middle of vertex usually pale bluish. Vertex, pronotum, and tegmina with a rather conspicuous, wide, white sublateral stripe. Middle of pronotum and posterior border of tegmina light greyish. Antenna yellowish. Metafemur with more or less distinct greyish band on upper part of external surface, knee light. Metatibia and metatarsus pale bluish. Spines basally whitish, apically black.

Head (Figs 27, 28). Short and remarkably large, lateral profile of frons and vertex very convex. Costa frontalis short, wide, slightly widened at antennal base, barely narrower than eye width, depressed or even slightly convex, with rather sparse, coarse puncturation. Frons with fairly short and inconspicuous suborbital carina. Antenna moderately short, with 24–26 segments, l/w of median segments c. 1.2–1.5 (usually longer in ♀). Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 27, 28). Moderately short, slightly widened to base, prozona slightly longer than metazona, both sulci distinct, usually both crossing median carina. Median carina very distinct,

elevated, calloused, lateral carinae conspicuous, complete, fairly wide, markedly calloused. Anterior border perceptibly concave, posterior border gently convex. Prozona almost impunctate, metazona densely and regularly punctate, puncturation dorsally not, laterally somewhat vermiculate. Surface moderately nitid, with some erect hairs.

Tegmina (Fig. 27). As in nominate subspecies, usually slightly longer than abdomen.

Ventral surface. As in nominate subspecies. Prosternal process wide, spatulate, apex moderately, anterior surface deeply excised.

Legs (Fig. 27). Legs, especially metafemur, rather short and stout. Metatibia with 10–11 external and 11–12 internal spines, upper surface fairly sparsely covered with elongate, erect hairs. Metatarsus rather short.

♂ genitalia (Figs 34c–e). Tergum 10 divided, though narrowly meeting in middle, furcula moderately elongate, acute. Tergum 9 projecting in middle. Supraanal plate triangular, laterally somewhat bisinuate, basally with a moderate hump on either side of middle. Cercus fairly elongate, wide, flattened, apex rounded, with strong ventrodistal projection. Epiphallus as in fig. 34e, lophus narrow and elongate, medially distinctly bifurcate, ancora narrow, dentiform. Dorsal ectophallic sclerite with strongly sclerotized, triangular, medially slightly excised dorsal projection, directed somewhat obliquely anteriorly. Endophallus as in nominate subspecies.

♀ genitalia. As in nominate subspecies. Valves rather short, compact, lower valve near base strongly hooked, upper valve not hooked. Cercus triangular, fairly wide, acute.

Variation. Fairly homogeneous subspecies, only few specimens differ in single characters as relative length of pronotum or metafemur.

Distribution (Fig. 84). Region of Hamersley Ranges north to near Port Hedland, especially common in the gorges of the Hamersleys.

Habits. Usually collected between spinifex with which these grasshoppers match extremely well.

Etymology. Named on account of the stout shape of head.

Sjoestedtocris variabilis pseudocorpulenta, subspec. nov.

Figs 9, 30, 35, 84

Types. Holotype: ♂, Australien, WA. 27, 108 km wsw Hall's Creek, 16.–17.11.1987, M. & B. Baehr (WAM). – Paratype: ♂, Australien, WA. 28, Mary River, 115 km wsw Hall's Creek, 17.–18.11.1987, M. & B. Baehr (ZSM).

Diagnosis. Recognized by moderately stout body, not markedly large, moderately acute, though slightly convex head, fairly elongate pronotum, elongate metafemur, light colour with conspicuous pattern, pale bluish metatibia, irregularly triangular ♂ supraanal plate almost devoid of basal humps, ♂ cercus with large ventrodistal projection, and epiphallus with narrow, elongate, more or less distinctly bifurcate lophi.

Description

Measurements. Body length. ♂: 23.5–26.0 mm. Length of pronotum. ♂: 3.05–3.4 mm. Ratio length/width of pronotum: 1.73–1.77. Length of tegmen: ♂: 16.0–23.5 mm. Length of metafemur. ♂: 11–4–13.0 mm. Length ratio metatibia/metafemur: 0.80–0.82. Ratio length/width of metafemur. ♂: 4.95–5.15.

Colour (Figs 29, 30). Body inclusive legs light yellowish to pale greenish. Middle of vertex light bluish. Vertex, pronotum, and tegmina with a rather conspicuous, wide, white sublateral stripe. Middle of pronotum and posterior border of tegmina slightly darker. Antenna yellowish. Metafemur with rather ill defined greyish band on upper part of external surface, knee light. Metatibia and metatarsus pale bluish. Spines basally whitish, apically black.

Head (Figs 29, 30). Moderately short, somewhat acute, not markedly large, lateral profile of frons and vertex slightly convex. Costa frontalis short, wide, slightly widened at antennal base, slightly narrower than eye width, depressed, with rather sparse, coarse puncturation. Frons with fairly short and moderately distinct suborbital carina. Antenna rather short, with 23–25 segments, l/w of median segments c. 1.3. Vertex and costa frontalis with few, rather elongate, erect hairs.

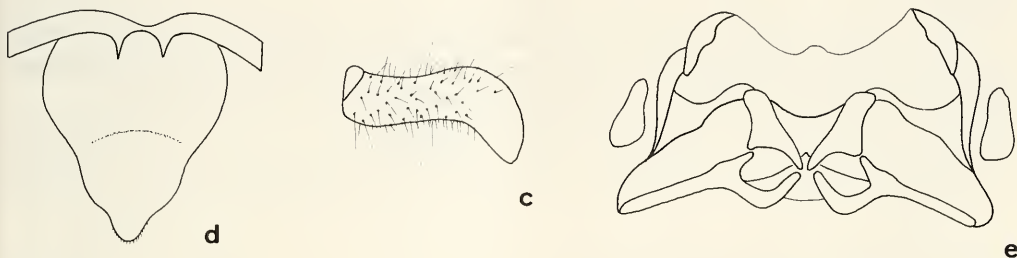


Fig. 35 c–e. *Sjoestedtocris variabilis pseudocorpulenta*, subsp. nov. Legends see fig. 6.

35

Pronotum (Figs 29, 30). Moderately elongate, slightly widened to base, prozona distinctly longer than metazona, anterior sulcus incomplete, not or barely crossing median carina, posterior sulcus distinct, crossing median carina. Median carina distinct, slightly elevated, calloused, lateral carinae conspicuous, almost complete, fairly wide, calloused. Anterior border almost straight, posterior border gently convex. Prozona almost impunctate, metazona densely and regularly punctate, puncturation dorsally not, laterally somewhat vermiculate. Surface moderately nitid, with some erect hairs.

Tegmina (Fig. 29). As in nominate subspecies, slightly longer than abdomen.

Ventral surface. As in nominate subspecies. Prosternal process wide, spatulate, apex moderately, anterior surface rather deeply excised.

Legs (Fig. 29). Metafemur elongate, smooth. Metatibia with 12–13 external and internal spines, upper surface fairly sparsely covered with elongate, erect hairs.

♂ genitalia (Figs 35c–e). Tergum 10 divided, though narrowly meeting in middle, furcula moderately elongate, acute. Tergum 9 projecting in middle. Supraanal plate triangular, laterally somewhat bisinuate, basally almost devoid of a hump on either side. Cercus fairly elongate, wide, flattened, apex rounded, with strong, somewhat acute ventrodiscal projection. Epiphallus as in fig. 35e, lophus narrow and very elongate, medially more or less distinctly bifurcate, ancora narrow, dentiform. Dorsal ectophallic sclerite with strongly sclerotized, triangular, medially slightly excised dorsal projection, directed somewhat obliquely anteriorly. Endophallus as in nominate subspecies.

♀ genitalia. Unknown.

Variation. Little variation noted, apart from some differences in shape of ♂ cercus and lophus in epiphallus.

Distribution (Fig. 84). Southwestern boundary of Kimberley Division. So far known from the closely adjacent type localities.

Habits. Both specimens collected at light in spinifex semidesert.

Etymology. Named on account of the similarity in some characters with the foregoing subspecies.

Sjoestedtacrisc variabilis interioris, subsp. nov.

Figs 31, 32, 36, 84

Types. Holotype: ♀, Well 28, Canning Stock Route, W. Australia, 28.XII.1971, N. S. Expedition IV, D. Williams (WAM 87/1639). — Paratypes: 1 ♀, Well 27, Canning Stock Route, W. Australia, 25.XII.1971, N. S. Expedition IV, D. Williams, WAM 87/1638 (ZSM); 1 ♀, Well 40, Salt Flats, N. S. E. IV, 15.XII.1971 (WAM 87/1637).

Diagnosis. Recognized by triangular head, elongate pronotum, fairly elongate metafemur, rather light colour, pattern consisting of a conspicuous, wide light sublateral stripe on vertex, pronotum and tegmina, yellowish metatibia, and upper ♀ valve being slightly hooked near base.

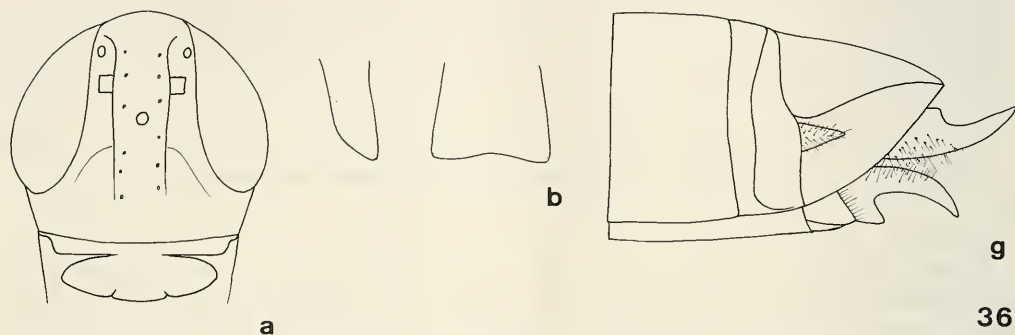


Fig. 36 a, b, g. *Sjoestedtacrisc variabilis interioris*, subsp. nov. Legends see fig. 6.

Description

Measurements. Body length. ♀: 27.5–31.5 mm. Length of pronotum. ♀: 4.4–4.95 mm. Ratio length/width of pronotum: 1.83–1.96. Length of tegmen. ♀: 22.8–25.0 mm. Length of metafemur. ♀: 15.3–16.9 mm. Length ratio metatibia/ metafemur: 0.79–0.82. Ratio length/width of metafemur. ♀: 4.8–5.25.

Colour (Figs 31, 32). Upper surface of body light brown, ventral surface inclusive legs yellowish. Vertex, pronotum, and tegmina with a conspicuous wide, white sublateral stripe. Posterior border of tegmina even slightly darker. Thorax laterally below anterior border of tegmen with narrow black stripe. Antenna dark yellowish. Metafemur with well defined piceous stripe on upper part of external surface, upper part of knee brown. Metatibia and metatarsus yellow. Spines apically black.

Head (Figs 31, 32, 36a). Moderately elongate, fairly acute, lateral profile of frons straight. Costa frontalis and suborbital carina as in nominate subspecies. Antenna rather elongate, with 24–25 segments, l/w of median segments almost 2.

Pronotum (Figs 31, 32). Moderately elongate, like in nominate subspecies, both sulci complete und crossing median carina. Median carina conspicuous, slightly elevated, calloused, lateral carinae conspicuous, complete, fairly wide, calloused. Anterior border straight. Prozona almost impunctate, metazona densely and regularly punctate, puncturation dorsally slightly, laterally rather vermiculate. Surface moderately nitid.

Tegmina (Fig. 31). As in nominate subspecies, in ♀ considerably longer than abdomen.

Ventral surface (Fig. 36b). As in nominate subspecies. Prosternal process wide, spatulate, apex moderately, anterior surface rather deeply excised. Mesosternal lobes narrowly separated.

Legs (Fig. 31). Metafemur rather elongate. Metatibia with 12–13 external and 11–12 internal spines, upper surface sparsely covered with comparatively short, erect hairs.

♂ genitalia. Unknown.

♀ genitalia (Fig. 36g). As in nominate subspecies. Valves moderately elongate, lower valve near base strongly hooked, upper valve slightly hooked. Cercus triangular, narrow, acute.

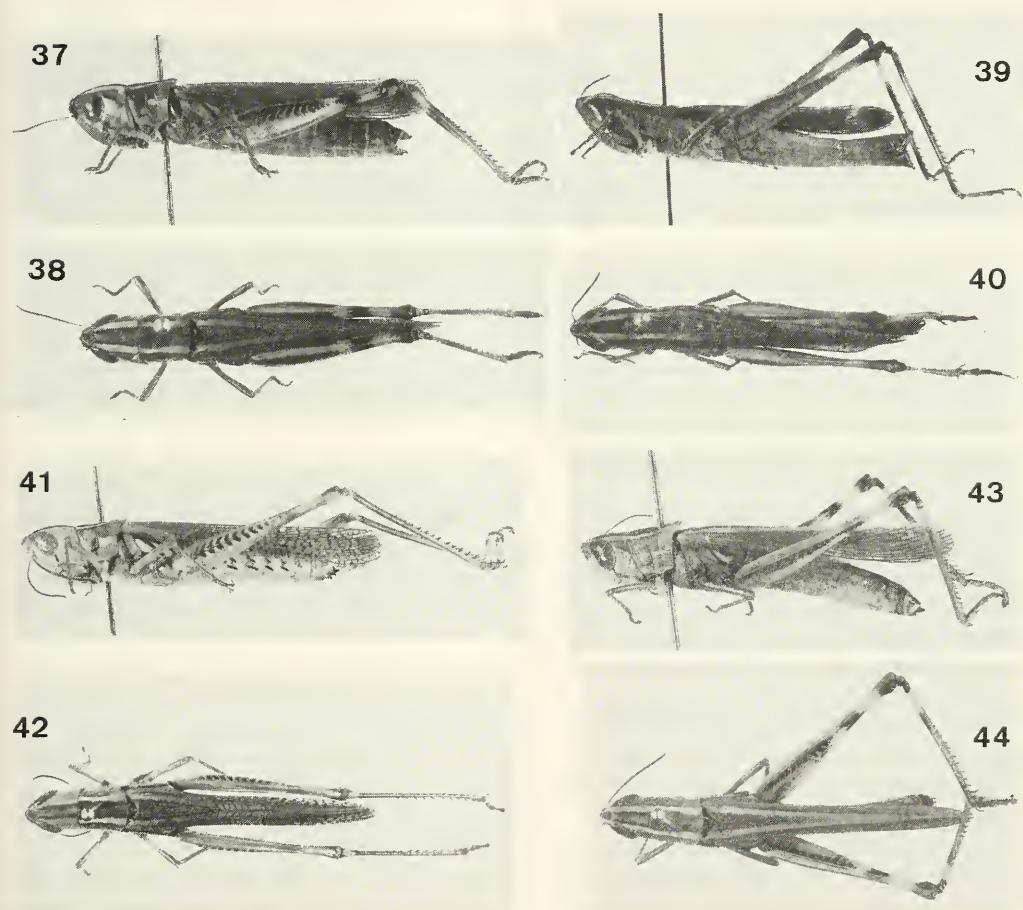
Variation. Little variation noted, apart from some differences in relative length of metafemur.

Distribution (Fig. 84). Canning Rock Route in interior of Great Sandy Desert, northwestern Australia.

Habits. Largely unknown. One specimen collected on salt flat. Apparently a strictly deserticolous subspecies.

Etymology. Named on account of distribution in the interior of Western Australia.

Note. Although ♂♂ are yet unknown, this subspecies is rather well recognized by the acute, triangular head and the slightly hooked upper ♀ valve. The yellow metatibia of this subspecies, however, is not unique, because some specimens from the Pilbara region, included in the nominate subspecies, have also yellow metatibae which is perhaps an adaption to especially arid conditions.



Figs 37–44. *Sjoestedtacrissus*. 37–38, *S. latifrons*, spec. nov., ♀ paratype. 37. Lateral view. 38. Dorsal view. 39–40, *S. gracilipes*, spec. nov., ♀ holotype. 39. Lateral view. 40. Dorsal view. 41–42, *S. roseifemorata*, spec. nov., ♀ holotype. 41. Lateral view. 42. Dorsal view. 43–44, *S. liveringae*, spec. nov., ♀ holotype. 43. Lateral view. 44. Dorsal view. Lengths: 32.0 mm; 31.0 mm; 29.7 mm; 33.0 mm.

Sjoestedtocris latifrons, spec. nov

Figs 37, 38, 45, 85

Types. Holotype: ♀, NE foot of Mt. Bruce (22°36'S, 118°08'E), W. Aust., 6–15 May 1980, T. F. Houston et al. 318– (WAM 87/1681). – Paratype ♀, 8 km N of Marandoo Camp (22°38'S, 118°06'E), W. A., 5–19 May 1980, T. F. Houston et al. 317–, WAM 87/1678 (ZSM).

Diagnosis. Recognized by rather short and convex head, very wide costa frontalis, fairly short pronotum, distinct lateral pronotal carinae, rather dark, brown colour, pattern consisting of a conspicuous, wide, light sublateral stripe on vertex, pronotum and tegmina, markedly ringed metafemur, blue metatibia with whitish and blackish subbasal rings, and markedly stout und short ♀ valves, the upper one being not hooked near base.

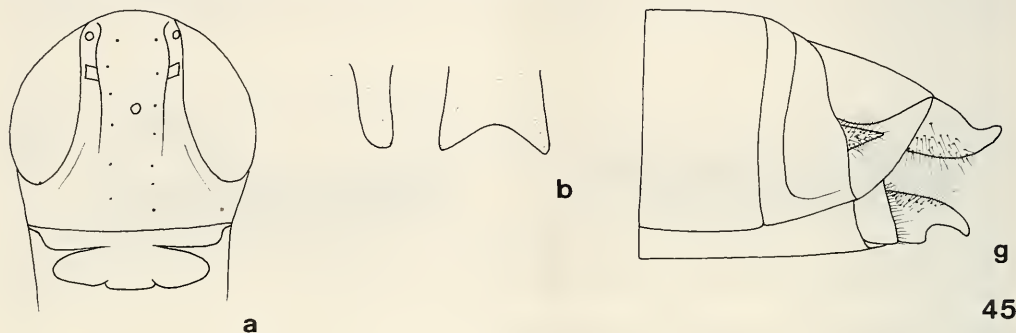


Fig. 45 a, b, g. *Sjoestedtocris latifrons*, spec. nov. Legends see fig. 6.

Description

Measurements. Body length ♀: 32.0–32.5 mm. Length of pronotum. ♀: 4.6–4.65 mm. Ratio length/width of pronotum: 1.64–1.66. Length of tegmen. ♀: 22.8–23.6 mm. Length of metafemur. ♀: 15.6–15.8 mm. Length ratio metatibia/ metafemur: 0.82–0.84. Ratio length/width of metafemur. ♀: 4.75.

Colour (Figs 37, 38). Upper surface of body, including abdomen and anterior and median legs reddish-piceous, lower surface yellow. Vertex, pronotum, and tegmina with a wide, white sublateral stripe, rather conspicuous on head, but fading posteriorly and inconspicuous on tegmina. Antenna reddish-brown. Metafemur with a distinctive piceous stripe on upper half of external surface, this stripe conspicuously interrupted twice near apex, ventral part yellowish, knee black. Metatibia apically bluish, with a white basal and an inconspicuous blackish subbasal ring. Spines basally whitish, apically black. Metatarsus bluish.

Head (Figs 37, 38, 45). Rather short and convex, lateral profile of frons and vertex convex. Costa frontalis short, very wide, slightly widened at antennal base, almost as wide as eye width, feebly convex, with very sparse, coarse puncturation. Frons with feeble and rather short suborbital carina. Antenna elongate, with c. 24 segments, l/w of median segments almost 2.5. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 37, 38). Rather short, slightly widened to base, prozona markedly longer than metazona, anterior sulcus indistinct, abbreviated, posterior sulcus distinct and crossing median carina. Median carina distinct, elevated, lateral carinae conspicuous, complete, strongly calloused, rather wide. Anterior border distinctly concave, posterior border gently convex. Prozona almost impunctate, metazona dorsally with very dense, regular puncturation, puncturation laterally fairly dense and somewhat vermiculate. Surface moderately nitid, with some erect hairs.

Tegmina (Fig. 37). Elongate, narrow, slightly longer than abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 45b). Prosternal process wide, spatulate, deeply excised at apex and at anterior surface. Mesosternal lobes narrowly separated. Lower surface of thorax with moderately sparse, that of abdomen with rather sparse, erect hairs.

Legs (Fig. 37). Metafemur moderately elongate, smooth. Apex of lower lobus of knee acute. Metatibia with 12–14 external and 11–12 internal spines, upper surface fairly densely covered with elongate, erect hairs. Metatarsus moderately elongate.

♂ genitalia. Unknown

♀ genitalia (Fig. 45g). Supraanal plate triangular, though laterally rather convex, with rounded apex. Subgenital plate apically almost straight with triangularly convex, fairly projecting apex. Valves very short and stout, with short, obtuse apex, lower valve near base strongly hooked, though angle rounded off, upper valve not hooked. Cercus triangular, fairly wide, acute.

Variation. Little variation noted.

Distribution (Fig. 85). Hamersley Ranges, central western part of Western Australia. So far known from the two closely adjacent type localities.

Habits. Unknown. So far collected in May only.

Etymology. Named on account of the very wide costa frontalis.

Sjoestedtocris gracilipes, spec. nov.

Figs 39, 40, 46, 83

Types. Holotype: ♀, Australien, NT, 2, Humpty Doo, 1.–5.11.1984, M. & B. Baehr (WAM).

Diagnosis. Recognized by elongate body, triangular head, elongate pronotum, very elongate and delicate legs, distinct lateral pronotal carinae, brown colour, pattern consisting of a fairly inconspicuous, light sublateral stripe on vertex, pronotum, and tegmina, fuscous metatibia with indistinct whitish subbasal ring, and not hooked upper ♀ valve.

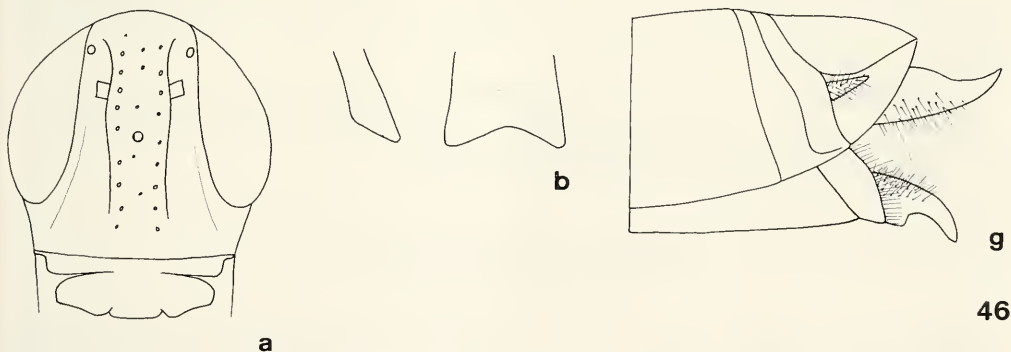


Fig. 46 a, b, g. *Sjoestedtocris gracilipes*, spec. nov. Legends see fig. 6.

Description

Measurements. Body length. ♀: 31.0 mm. Length of pronotum. ♀: 4.45 mm. Ratio length/width of pronotum: 1.96. Length of tegmen. ♀: 20.5 mm. Length of metafemur. ♀: 17.2 mm. Length ratio metatibia/metafemur: 0.84. Ratio length/width of metafemur. ♀: 6.25.

Colour (Figs 39, 40). Body inclusive legs more or less brownish, lower surface and abdomen dark yellow. Vertex, pronotum, and tegmina with a rather inconspicuous, fairly narrow, white sublateral stripe, this stripe rather fading on metazona of pronotum and on tegmina. Thorax just below tegmina with narrow black stripe. Antenna basally yellowish, apically light reddish. Metafemur yellowish-olivaceous, with indistinct light subapical ring, knee dark. Metatibia infusate, with fairly distinct subbasal ring. Spines basally whitish, apically black, Metatarsus light grey. Tegmina rather infusate, anterior border near base almost black.

Head (Figs 39, 40, 46a). Rather elongate and markedly triangular, lateral profile of frons almost straight. Costa frontalis elongate, rather narrow, not widened at antennal base, slightly narrower than eye width, depressed, with rather sparse, coarse puncturation. Frons with prominent and elongate suborbital carina. Antenna moderately elongate, with 23–24 segments, l/w of median segments c. 1.5. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 39, 40). Elongate, slightly widened to base, almost twice as long as wide, prozona markedly longer than metazona, anterior sulcus almost invisible, posterior sulcus distinct, crossing median carina. Median carina distinct, feebly elevated, lateral carinae moderately distinct, becoming narrower in metazona, calloused. Anterior border straight, posterior border gently convex. Prozona with some irregular impressions, metazona irregularly punctate, puncturation dorsally and on whole paranotum markedly vermiculate, dorsally even arranged in some irregular longitudinal lines. Surface rather nitid, with some erect hairs.

Tegmina (Fig. 39). Elongate, narrow, slightly shorter than abdomen. Anterior border with sub-basal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 46b). Prosternal process wide, spatulate, apex moderately, anterior surface rather deeply excised. Mesoternal lobes narrowly separated. Lower surface of thorax with moderately sparse, that of abdomen with sparse, erect hairs.

Legs (Fig. 39). All legs elongate and delicate. Metafemur very elongate, smooth. Apex of lower lobe of knee acute. Metatibia with 13 external and 11–13 internal spines, upper surface rather sparsely covered with elongate, erect hairs. Metatarsus remarkably elongate.

♂ genitalia. Unknown.

♀ genitalia (Fig. 46g). Supraanal plate triangular, though laterally rather convex, with rounded apex. Subgenital plate apically almost straight with triangular, rather projecting apex. Valves short, compact, lower valve near base strongly hooked, upper valve not hooked. Cercus narrow, triangular, acute.

Variation. Unknown.

Distribution (Fig. 83). Northernmost Northern Territory. Known only from type locality.

Habits. Collected in grass beside a dry creek.

Etymology. Named on account of the very elongate metafemur.

Sjoestedtocris roseifemorata, spec. nov.

Figs 41, 42, 47, 85

Types. Holotype: ♀, Pingandy Station, 23.59 S, 117.32 E, Western Australia, 11 March 1980, M. P. Kerkhoff (WAM 87/1677). — Paratype: ♀, 4154 Omilge S. of Ray Hill a Fortesque River. Pilbarra. W. Australia. 19. XI. 1970, Lemley Expedition, WAM 87/1634 (ZSM).

Diagnosis. Recognized by moderately acute head, rather elongate antenna, elongate pronotum, very delicate and elongate metafemur, inconspicuous pattern consisting of a light sublateral stripe on pronotum, reddish inner, upper, and lower surfaces and apex of metafemur, conspicuously ribbed pattern on outer surface of metafemur, blue metatibia, laterally blotched abdominal segments, conspicuously mottled tegmina, and ♀ upper valve being not hooked near base.

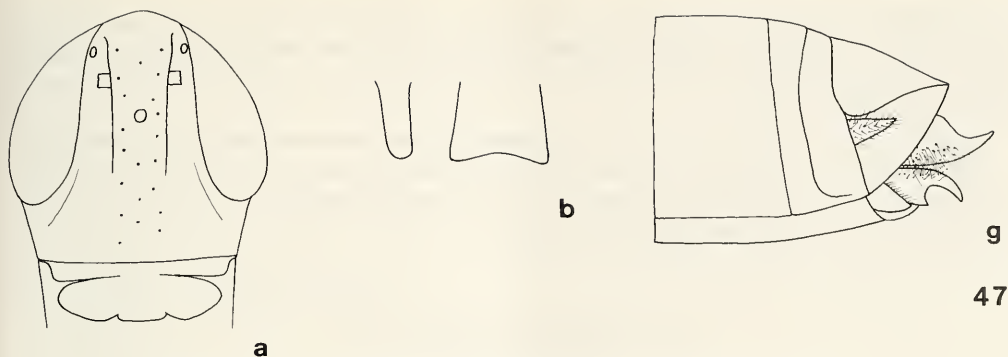


Fig. 47 a, b, g. *Sjoestedtocris roseifemorata*, spec. nov. Legends see fig. 6.

Description

Measurements. Body length. ♀: 29.3–29.7 mm. Length of pronotum. ♀: 4.35–4.6 mm. Ratio length/width of pronotum: 1.87–1.88. Length of tegmen. ♀: 20.5–22.5 mm. Length of metafemur. ♀: 15.8–16.5 mm. Length ratio metatibia/ metafemur: 0.85. Ratio length/width of metafemur. ♀: 6.0–6.05.

Colour (Figs 41, 42). Upper surface of body including legs yellowish-greenish to reddish-brown, lower surface yellow. Vertex, pronotum, and tegmina with a fairly inconspicuous, white sublateral stripe. Middle of vertex in light specimen darker than rest of surface. Antenna light brown. Abdomen yellow, each segment laterally with two oblique, sometimes connected, dark piceous stripes. Metafemur with a pattern of dark angles on each “segment” of external surface, giving the metafemur a conspicuously ribbed appearance. Internal, dorsal, and ventral surfaces of metafemur roseate, knee yellowish. Metatibia contrastingly pale blue. Spines apically black. Metatarsus bluish or partly reddish. Tegmina distinctly mottled.

Head (Figs 41, 42, 47a). Moderately triangular, lateral profile of frons feebly convex. Costa frontalis rather short, fairly wide, slightly widened at antennal base, slightly narrower than eye width, depressed, with sparse, coarse puncturation. Frons almost devoid of suborbital carina. Antenna elongate, with 23 segments, l/w of median segments almost 2.5. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 41, 42). Elongate, slightly widened to base, prozona markedly longer than metazona, anterior sulcus distinct, sometimes slightly abbreviated, then not crossing median carina, posterior sulcus distinct, crossing median carina. Median carina distinct, elevated, lateral carinae conspicuous, almost complete, strongly calloused, rather wide. Anterior border straight, posterior border gently convex. Prozona almost impunctate, metazona densely punctate, puncturation dorsally slightly, laterally rather vermiculate. Surface nitid, with some erect hairs.

Tegmina (Fig. 41). Elongate, narrow, slightly longer than abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 47b). Prosternal process wide, spatulate, slightly excised at apex, barely excised at anterior surface. Mesosternal lobes almost meeting in middle. Lower surface of thorax with moderately sparse, that of abdomen with rather sparse, erect hairs.

Legs (Fig. 41). Legs elongate, especially metafemur very elongate and delicate, smooth. Apex of lower lobe of knee moderately acute. Metatibia with 11–12 external and internal spines, upper surface rather sparsely covered with moderately elongate, erect hairs. Metatarsus elongate.

♂ genitalia. Unknown.

♀ genitalia (Fig. 47 g). Supraanal plate triangular, though laterally rather convex, with rounded apex. Subgenital plate apically almost straight with triangularly convex, fairly projecting apex. Valves rather short, lower valve near base strongly hooked, upper valve not hooked. Cercus triangular, moderately wide, apex acute.

Variation. There is some variation in colour, although the structure of pattern is very similar.

Distribution (Fig. 85). Region of Hamersley Ranges in central western part of Western Australia.

Habits. Unknown. Species so far collected in March and November.

Etymology. Named on account of the roseate metafemur.

Sjoestedtocris liveringae, spec. nov.

Figs 43, 44, 48, 83

Types. Holotype: ♀, 52–1441, Liveringa (WAM). – Paratype: ♀, 52–1440, Liveringa (ZSM).

Diagnosis. Recognized by rather acute haed, very elongate antenna, elongate pronotum, very elongate metafemur, rather light colour, inconspicuous pattern consisting of a light sublateral stripe on vertex, pronotum, and tegmina, markedly ringed metafemur, blue metatibia with whitish and blackish subbasal rings, light blue ♀ supraanal plate, and ♀ upper valve being not hooked near base.

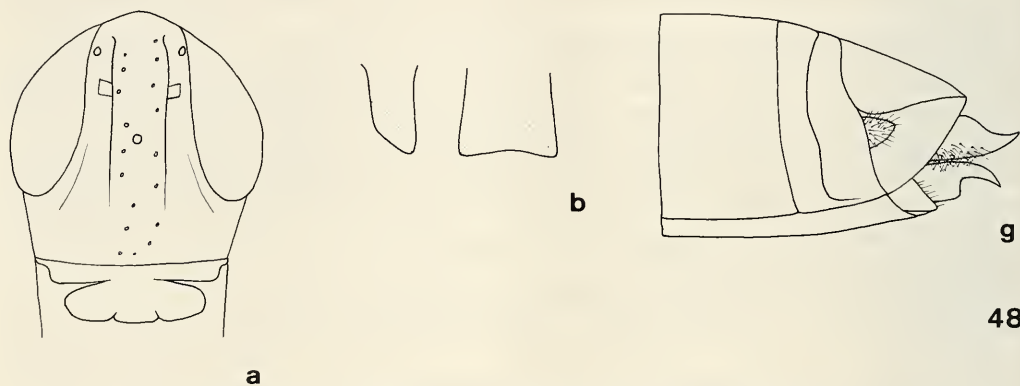


Fig. 48 a, b, g. *Sjoestedtocris liveringae*, spec. nov. Legends see fig. 6.

Description

Measurements. Body length. ♀: 32.0–33.0 mm. Length of pronotum. ♀: 4.9–4.95 mm. Ratio length/width of pronotum: 1.89–1.92. Length of tegmen. ♀: 23.5–24.5 mm. Length of metafemur. ♀: 17.9–18.5 mm. Length ratio metatibia/metafemur: 0.84–0.85. Ratio length/width of metafemur. ♀: 5.8–5.9.

Colour (Figs 43, 44). Upper surface of body light brownish, lower surface yellow. Vertex, pronotum, and tegmina with a wide, white sublateral stripe, rather conspicuous on head and pronotum, fading on tegmina. Antenna light reddish. Abdomen yellow, dorsally faintly bluish, ♀ supraanal plate and valves also pale bluish. Metafemur with a rather conspicuous brownish stripe on upper half of external surface, this stripe distinctly interrupted twice near apex, ventral part yellowish, lower surface pale blue, knee black. Metatibia apically pale blue, with a white basal and an inconspicuous blackish subbasal ring. Spines basally whitish, apically black. Metatarsus bluish. Tegmina light.

Head (Figs 43, 44, 48a). Moderately triangular, lateral profile of frons feebly convex. Costa frontalis moderately elongate, fairly wide, slightly widened at antennal base, slightly narrower than eye width, depressed, with sparse, coarse puncturation. Frons with rather feeble, short suborbital carina. Antenna very elongate, with 24 segments, l/w of median segments almost 3. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 43, 44). Elongate, slightly widened to base, prozona markedly longer than metazona, anterior sulcus indistinct, abbreviated, posterior sulcus distinct, crossing median carina. Median carina distinct, elevated, lateral carinae conspicuous, complete, strongly calloused, rather wide. Anterior border straight, posterior border gently convex. Prozona almost impunctate, metazona dorsally with dense, regular puncturation laterally fairly dense and rather vermiculate. Surface moderately nitid, with some erect hairs.

Tegmina (Fig. 43). Elongate, narrow, slightly longer than abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 48b). Prosternal process wide, spatulate, deeply excised at apex and anterior surface. Mesosternal lobes narrowly separated. Lower surface of thorax with moderately sparse, that of abdomen with rather sparse, erect hairs.

Legs (Fig. 43). Metafemur very elongate and delicate, smooth. Apex of lower lobus of knee moderately acute. Metatibia with 13–16 external and 12–14 internal spines, upper surface fairly densely covered with elongate, erect hairs. Metatarsus elongate.

♂ genitalia. Unknown.

♀ genitalia (Fig. 48g). Supraanal plate triangular, though laterally rather convex, with rounded apex, in apical part with a series of longitudinal grooves. Subgenital plate apically almost straight with triangular, fairly projecting apex. Valves short and stout, with fairly short apex, lower valve near base strongly hooked, upper valve not hooked. Cercus triangular, short and remarkably wide, apex rather obtuse.

Variation. Little variation noted.

Distribution (Fig. 83). Southern boundary of Kimberley Division, north-western Australia. Known only from type locality.

Habits. Unknown.

Etymology. Named on account of the type locality.

Sjoestedtocris marginata, spec. nov.

Figs 49, 50, 57, 86

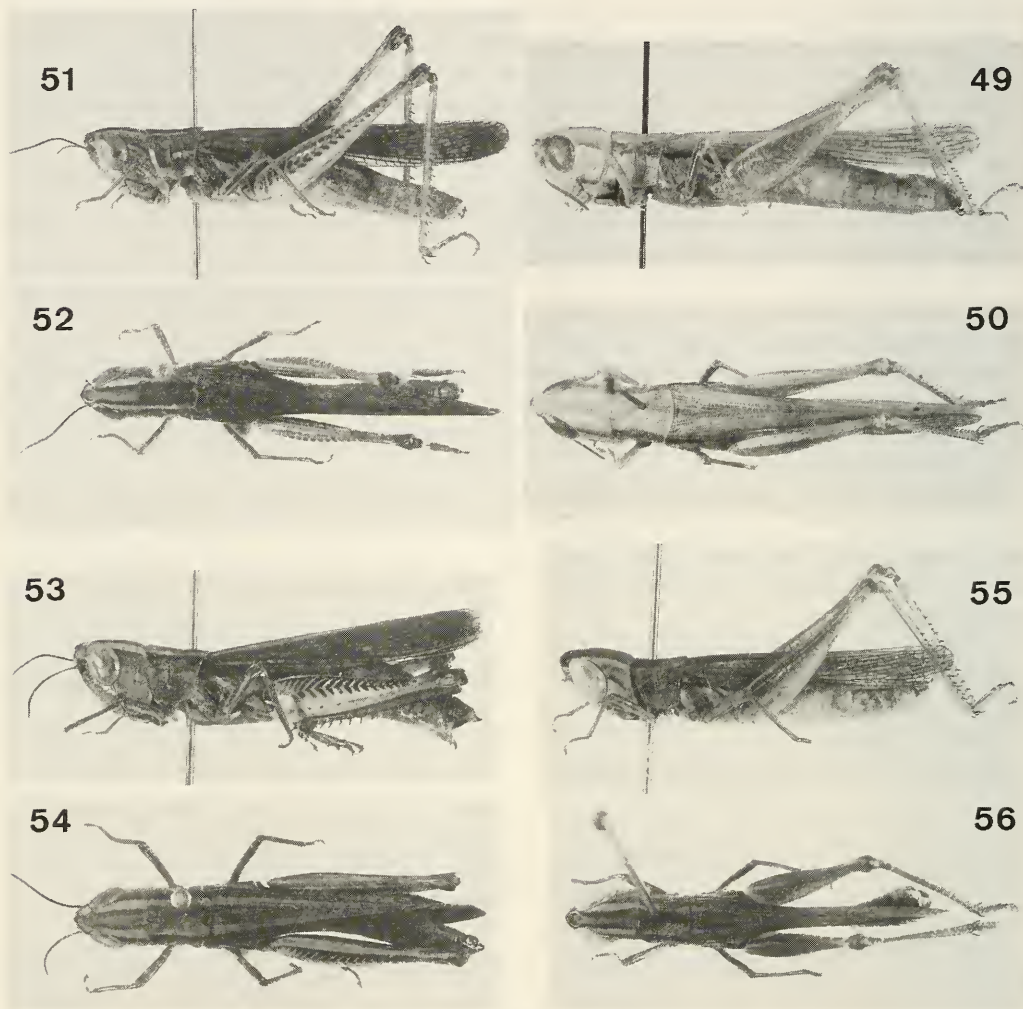
Types. Holotype: ♂, Australien, WA. 28, Mary River, 115 km wsw. Hall's Creek, 17.–18. 11. 1984, M. & B. Baehr (WAM). — Paratypes: 1 ♂, 3 ♀♀, same data (ZSM, SAMA); 1 ♀, Australien, WA. 25, 135 km n. Hall's Creek, 14. 15. 11. 1984, M. & B. Baehr (ZSM); 2 ♀♀, Australien, WA. 43, Joffre Falls, 70 km se. Wittenoom, 1. 12. 1984, M. & B. Baehr (ZSM); 1 ♂, Australien, WA. 47, Hooley Creek, 68 km nw. Wittenoom, 2.–3. 12. 1984, M. & B. Baehr (ZSM); 1 ♀, Bamboo Creek, 20.56 S, 120.13 E, Western Australia, 11 April 1977, A. M. & M. J. Douglas ABGW (WAM 87/1648).

Diagnosis. Recognized by convex, moderately triangular head, short antenna, very indistinct lateral pronotal carinae, rather short and thick metafemur, light colour, and inconspicuous pattern consisting of a dark lateral stripe on head, pronotum, and tegmina, roseate or yellow dorsal surface of abdomen, light greyish to slightly bluish metatibia, irregularly triangular ♂ supraanal plate, bifurcate lophus in epiphallus, and hooked upper ♀ valve.

Description

Measurements. Body length. ♂: 18.5–22.0 mm, ♀: 25.5–30.0 mm. Length of pronotum. ♂: 2.8–2.9 mm, ♀: 3.5–4.0 mm. Ratio length/width of pronotum: 1.62–1.74. Length of tegmen. ♂:

13.5–15.5 mm, ♀: 16.0–20.5 mm. Length of metafemur. ♂: 8.5–9.5 mm, ♀: 11.0–13.7 mm. Length ratio metatibia/metafemur: 0.74–0.78. Ratio length/width of metafemur. ♂: 3.85–4.4, ♀: 4.15–4.45.



Figs 49–56. *Sjoestedtocris*. 49–50. *S. marginata*, spec. nov., ♀ paratype. 49. Lateral view. 50. Dorsal view. 51–52. *S. infuscatum infuscatum*, spec. nov., ♀ paratype. 51. Lateral view. 52. Dorsal view. 53–54. *S. infuscatum validior*, subspec. nov., ♀ holotype. 53. Lateral view. 54. Dorsal view. 55–56. *S. houstoni*, spec. nov., ♂ holotype. 55. Lateral view. 56. Dorsal view. Lengths: 28.5 mm; 28.0 mm; 27.5 mm; 19.8 mm.

Colour (Figs 49, 50). Body inclusive legs light yellow or faintly greenish, upper surface of abdomen roseate or yellow. Head, pronotum, and tegmina with a rather inconspicuous, more or less brownish lateral stripe, this stripe fading on head. Vertex and pronotum with extremely faint, feebly darker median stripe, on vertex sometimes faintly roseate. Thorax with narrow blackish band just below anterior border of tegmina. Antenna light brown. Metafemur yellowish-greenish, sometimes with ill delimited, indistinct, darker stripe, knee light. Metatibia light greyish, sometimes even slightly

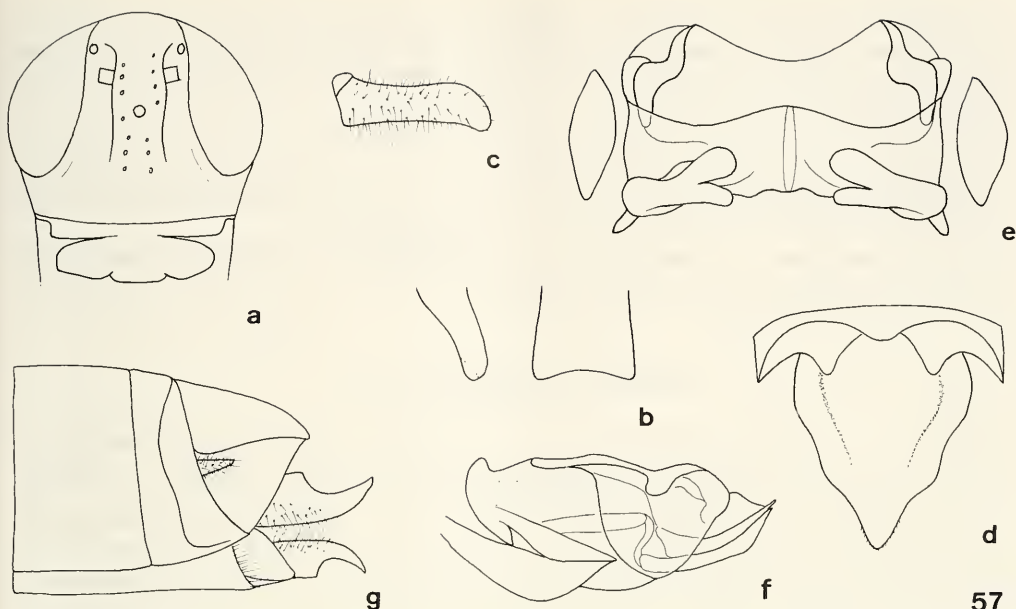


Fig. 57 a–g. *Sjoestedtocris marginata*, spec. nov. Legends see fig. 6.

bluish. Spines apically black. Metatarsus light grey. Tegmina barely infusate, apart from along anterior border, veins mostly light yellow-greenish.

Head (Figs 49, 50, 57a). Moderately elongate and fairly triangular, though lateral profile of frons and vertex markedly convex. Costa frontalis moderately elongate, rather narrow, feebly widened at antennal base, distinctly narrower than eye width, impressed in middle, with few coarse punctures. Frons with moderately distinct, fairly short suborbital carina. Antenna short, with 23–27 segments, l/w of median segments c. 1. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 49, 50). Moderately elongate, widened to base, slightly incised before middle, prozona markedly longer than metazona, anterior sulcus almost invisible, posterior sulcus distinct, not crossing median carina. Median carina distinct, feebly elevated, lateral carinae inconspicuous, disappearing in metazona, calloused. Anterior border straight, posterior border gently convex. Prozona near apex and metazona densely punctate, posterior part of prozona with few large, shallow impressions, puncturation barely vermiculate. Surface nitid, with some erect hairs.

Tegmina (Fig. 49). Elongate, narrow, in ♂ slightly surpassing abdomen, in ♀ about as long as abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 57b). Prosternal process rather wide, spatulate, apex fairly deeply, anterior surface moderately excised. Mesosternal lobes almost meeting in middle. Lower surface of thorax with moderately sparse, that of abdomen with sparse, erect hairs.

Legs (Fig. 49). Posterior legs rather short, metafemur fairly stout, smooth. Apex of lower lobe of knee acute. Metatibia with 7–10 external and 10–11 internal spines, upper surface rather sparsely covered with elongate, erect hairs.

♂ genitalia (Figs 57c–f). Tergum 10 completely divided, furcula very obtuse, far divided. Tergum 9 projecting in middle. Supraanal plate triangular, though laterally bisinuate, apex elongate, triangular. Cercus rather narrow and elongate, flattened, apex obliquely rounded, barely widened. Epiphallus as in fig. 57e, lophus short, bifid, widely separated, ancora bent, dentiform. Dorsal ectophallic sclerite without dorsal projection. Endophallus as in fig. 57f, aedeagal sclerites elongate, horizontal.

♀ genitalia (Fig. 57g). Supraanal plate triangular, laterally rather convex, with rounded apex. Subgenital plate apically bisinuate on either side, with slightly projecting apex. Valves rather short, compact, lower valve near base strongly hooked, upper valve moderately hooked. Cercus narrow, triangular, acute.

Variation. Apart from some variation of colouration and distinctness of pattern a very homogeneous species.

Distribution (Fig. 86). Northwestern Australia from southeastern border of Kimberley Division to Hamersley Range.

Habits. All specimens either captured amongst spinifex (*Triodia*) or at light in spinifex country.

Etymology. Named on account of the lineate pattern.

Sjoestedtacrís infuscata, spec. nov.

This species is rather homogeneous, but there is a population in extreme southeastern part of Western Australia distinguished by several characters which merits the description as a subspecies.

Diagnosis. Recognized by moderately acute, triangular head, wide, short, not sulcate costa frontalis, rather elongate antenna, elongate pronotum with very distinct, though narrow lateral carinae and extremely vermiculate lateral part of metazona, variable metafemur, dark colour with more or less conspicuous pattern, ventrally reddish metafemur, blue-grey metatibia, obtuse, closely adjacent furcula, triangular lophus and very elongate ancora in epiphallus, elongate cingular apodeme, and not hooked ♀ upper valve.

Sjoestedtacrís infuscata infuscata, spec. nov.

Figs 51, 52, 58, 86

Types. Holotype: ♂, ca. 2 km N – 6 km NE Comet Vale Siding (29.57 S, 121.07 E), W.A., 7–15. III. 1979, T. F. Houston et al. 256–47 (WAM 87/1653). – Paratypes: 1 ♀, 2.5 km N. of Mt Linden (29.19 S, 122.25 E), W. Aust. 17–23 March 1979, T. F. Houston et al. 259-1 (WAM 87/1657); 4 ♀♀, 7.5 km SE. of Banjiwarrn HS (27°42'S, 121°37'E), W. Aust., 24 March 1979, T. F. Houston et al., 260-1 (WAM 87/1659–1662, ZSM); 1 ♀, Pingandy Station, 23.59 S, 117.32 E, Western Australia, 8 March 1978, S. Kerkhoff (WAM 87/1650); 1 ♀, W. Aust. Mural Cres. Gill Pinnacle. At. light. 2 Nov. 1963, P. Aitken, N. B. Tindale (SAMA); 1 ♀, at light, Gill Pinnacle, Mural Crescent. W. A., 5 Nov. 1963, P. Aitken, N. B. Tindale (SAMA); 1 ♀, S. Aust. Mt. Davies. At light. 11 Nov. 1963, P. Aitken, N. B. Tindale (SAMA); 1 ♀, Australian 42/45/47, Alice Springs, NT, 15.–21. 9. 1972, M. Bachr (ZSM).

Diagnosis. Recognized by moderately acute, fairly triangular head with wide, short costa frontalis, rather elongate antenna, elongate pronotum with strongly vermiculate lateral part of metazona, rather elongate metafemur, dark colour with fairly inconspicuous pattern, and usually bluish or blue-grey metatibia.

Description

Measurements. Body length. ♂: 22.8 mm, ♀: 25.0–29.6 mm. Length of pronotum. ♂: 3.3 mm, ♀: 3.7–4.4 mm. Ratio length/width of pronotum: 1.83–1.91. Length of tegmen. ♂: 15.8 mm, ♀: 18.5–22.5 mm. Length of metafemur. ♂: 10.9 mm, ♀: 12.8–15.6 mm. Length ratio metatibia/metafemur: 0.78–0.80. Ratio length/width of metafemur. ♂: 4.75, ♀: 4.95–5.25.

Colour (Figs 51, 52). Dorsal surface of body inclusive anterior and median legs, and tegmina piceous, dorsal surface of abdomen light brownish, ventral surface yellow. Vertex, pronotum, and tegmina with light sublateral stripe, this stripe on pronotum very narrow. Thorax with narrow black band just below anterior border of tegmina. External surface of metafemur with piceous

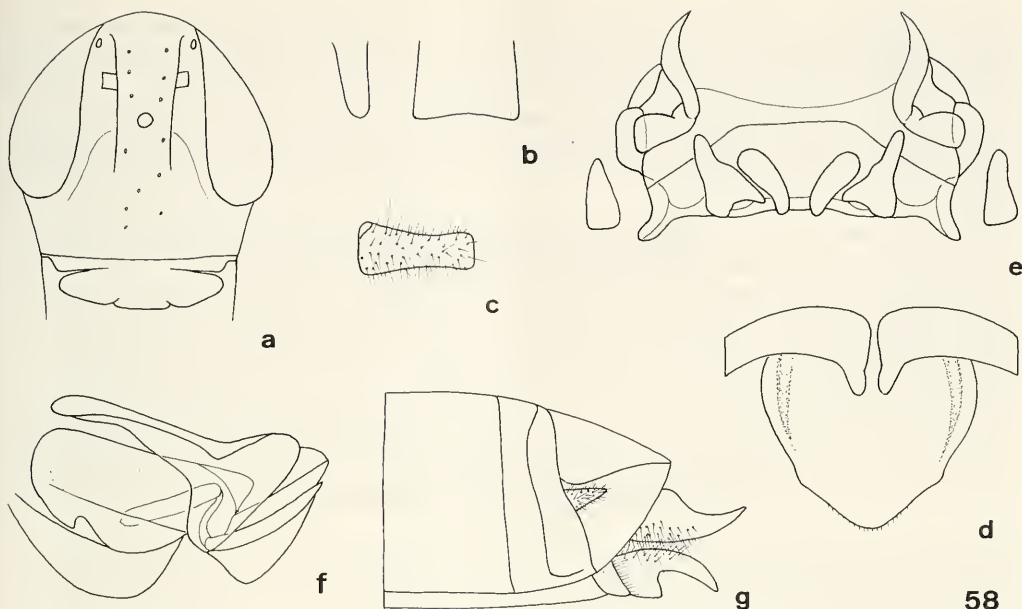


Fig. 58 a–g. *Sjoestedtocris infuscata infuscata*, spec. nov. Legends see fig. 6.

58

angles on each “segment” giving the surface a ribbed appearance, rest yellowish, knee light. Metatibia blue-grey or, rarely yellow. Spines black. Metatarsus blue-grey.

Head (Figs 51, 52, 58a). Moderately triangular, though lateral profile of frons and vertex rather convex. Costa frontalis short, wide, slightly widened at antennal base, barely narrower than eye width, depressed, with few coarse punctures. Frons with more or less distinct, short suborbital carina, less distinct in ♀♀. Antenna rather elongate, with 24–27 segments, l/w of median segments almost 2. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 51, 52). Elongate, widened to base, slightly incised before middle, prozona markedly longer than metazona, both sulci of prozona distinct and fully developed, both crossing median carina. Median carina distinct, feebly elevated, lateral carinae very conspicuous, though narrow, slightly calloused. Anterior border straight, posterior border gently convex. Prozona almost impunctate, puncturation of metazona dorsally diffuse, though with at least one longitudinal ridge, laterally extremely coarse and vermiculate, forming several conspicuous, calloused longitudinal ridges. Surface moderately dull, with some erect hairs.

Tegmina (Fig. 51). Elongate, narrow, in both sexes considerably surpassing abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 58b). Prosternal process wide, spatulate, apex fairly, anterior surface moderately excised. Mesosternal lobes almost meeting in middle. Lower surface of thorax with sparse, of abdomen with very sparse, erect hairs.

Legs (Fig. 51). Posterior legs rather elongate, especially in ♀♀, metafemur fairly narrow, smooth. Apex of lower lobe of knee moderately acute. Metatibia with 10–12 external and internal spines, upper surface rather sparsely covered with moderately elongate, erect hairs.

♂ genitalia (Figs 58c–f). Tergum 10 divided, furcula rather elongate, though obtuse, closely adjacent. Supraanal plate wide, laterally at base convex, then gently sinuate, apex wide, triangularly convex, laterally barely sinuate. Cercus small, narrow, short, flattened, apex straight, virtually not

widened. Epiphallus as in fig. 58e, lophus obtusely dentiform, widely separated, ancora strongly contorted, dentiform. Dorsal ectophallic sclerite with moderately sclerotized, short and wide dorsal projection. Endophallus as in fig. 58f, aedeagal sclerites rather elongate, fairly oblique.

♀ genitalia (Fig. 58g). Supraanal plate triangular, laterally rather convex, with rounded apex. Subgenital plate apically straight on either side, with slightly projecting apex. Valves elongate, narrow, lower valve near base strongly hooked, upper valve not hooked. Cercus narrow, triangular, acute.

Variation. Generally rather homogeneous subspecies, though some specimens have yellowish rather than blue-grey metatibia which may be caused by fixation in alcohol.

Distribution (Fig. 86). Interior of Western Australia from region of Hamersley Range to southwestern part of North Territory and northwestern corner of South Australia.

Habits. Collected either at lighth, or "ex *Triodia* & Sedges". Perhaps a deserticolous species.

Etymology. Named on account of its generally dark colouration.

Sjoestedtacriss infuscata validior, subsp. nov.

Figs 53, 54, 86

Types. Holotype: ♀, 8.3 km N of Eyre HS, W. Aust. (32.15 S, 126.18 E), 28 Feb–4 March 1984, T. F. Houston 566-6 (WAM 87/1705). – Paratype: ♀, same data, WAM 87/1704 (ZSM).

Diagnosis. Distinguished from nominate subspecies by shorter, less acute, rather convex head with wide, short costa frontalis, slightly shorter antenna, shorter pronotum with yet more vermiculate lateral part of metazona, rather short metafemur, more conspicuous pattern, and markedly infuscate ventral part of metatibia.

Description

Measurements. Body length. ♀: 26.5–27.5 mm. Length of pronotum. ♀: 4.1–4.2 mm. Ratio length/width of pronotum: 1.68–1.78. Length of tegmen. ♀: 18.0–19.0 mm. Length of metafemur. ♀: 13.4–13.6 mm. Length ratio metatibia/ metafemur: 0.76–0.77. Ratio length/width of metafemur. ♀: 4.4–4.5.

Colour (Figs 53, 54). Dorsal surface of body as in nominate subspecies, dorsal surface of abdomen brown, ventral surface yellow. Vertex, pronotum, and tegmina with conspicuous light sublateral stripe. Thorax with narrow black band just below anterior border of tegmina. Colour and pattern of metafemur as in nominate subspecies. Metatibia ventrally infuscate, dorsally more or less distinctly bluish. Spines black. Metatarsus blue-grey.

Head (Figs 53, 54). Less triangular and shorter than in nominate subspecies, lateral profile of frons and vertex convex. Costa frontalis as in nominate subspecies. Antenna moderately elongate, with 23 segments, l/w of median segments c. 1.5.

Pronotum (Figs 53, 54). Shorter than in nominate subspecies, otherwise similar. Prozona almost impunctate, puncturation of metazona dorsally extremely diffuse, though with a least one longitudinal ridge, laterally even coarser and more vermiculate than in nominate subspecies. Surface rather dull.

Tegmina (Fig. 53). As in nominate subspecies, in ♀ slightly surpassing abdomen.

Ventral surface. Prosternal process wide, spatulate, apex fairly, anterior surface rather deeply excised.

Legs (Fig. 53). Metafemur short and rather stout. Metatibia with 11–13 external and 12–13 internal spines, upper surface rather sparsely covered with moderately elongate, erect hairs.

♂ genitalia. Unknown.

♀ genitalia. Almost as in nominate subspecies, lower valve near base very strongly hooked, upper valve not hooked.

Variation. Little variation noted.

Distribution (Fig. 86). Extreme southeastern part of Western Australia close to South Australian border.

Habits. Collected “ex *Triodia* & Sedges”. Perhaps a deserticolous species.

Etymology. Named on account of its stouter build compared with the nominate subspecies.

Sjoestedtocris houstoni, spec. nov.

Figs 55, 56, 59, 85

Types. Holotype. ♂, 9.8 km SSE of Mt. Linden (29.19 S, 122.25 E), W. Aust., 17–23 March 1979, T. F. Houston et. al., 259 (WAM 87/1654).

Diagnosis. Recognized by rather acute, triangular head, short, not sulcate costa frontalis, fairly elongate pronotum, moderately elongate metafemur, reddish surface almost devoid of pattern, blue-grey metatibia, ♂ supraanal plate with conspicuous lateral denticles, ♂ cercus with narrow, acute, ventrolateral projection, and large, semilunar lophi in epiphallus.

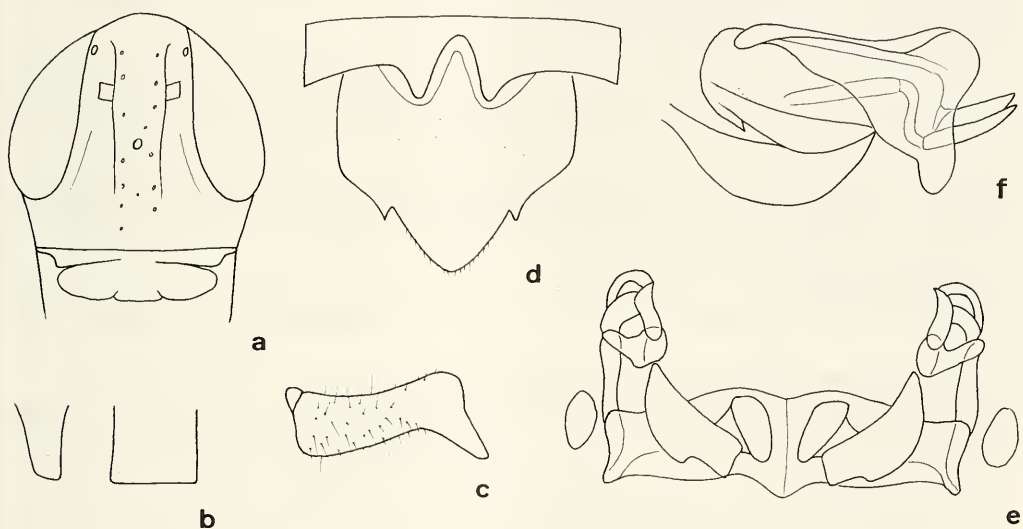


Fig. 59 a–f. *Sjoestedtocris houstoni*, spec. nov. Legends see fig. 6.

Description

Measurements. Body length. ♂: 19.8 mm. Length of pronotum. ♂: 2.9 mm. Ratio length/width of pronotum: 1.78. Length of tegmen. ♂: 14.3 mm. Length of metafemur. ♂: 10.3 mm. Length ratio metatibia/metafemur: 0.85. Ratio length/width of metafemur. ♂: 4.65.

Colour (Figs 55, 56). Dorsal surface of body inclusive anterior and median legs and metafemur reddish, ventral surface yellow. Head, pronotum, and tegmina almost devoid of pattern. Thorax with very narrow black band just below anterior border of tegmina. Tegmina rather deeply infusate. Metafemur dorsally reddish, laterally and ventrally yellow, knee light. Metatibia and metatarsus blue-grey. Spines apically black.

Head (Figs 55, 56, 59a). Rather elongate and triangular, lateral profile of frons straight, of vertex rather convex. Costa frontalis rather short, moderately wide, barely widened at antennal base, barely narrower than eye width, depressed, though not sulcate, with few coarse punctures. Frons with marked, though short suborbital carina. Antenna unknown, both antennae of holotype broken. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 55, 56). Rather elongate, widened to base, slightly incised before middle, prozona markedly longer than metazona, both sulci of prozona distinct, posterior sulcus crossing median carina. Median carina distinct, feebly elevated, lateral carinae distinct, rather conspicuous and slightly calloused. Anterior border straight, posterior border gently convex. Puncturation of surface diffuse, not well visible within distinct microreticulation. Metazona laterally with coarse, remarkably vermiculate puncturation. Surface rather dull, with some erect hairs.

Tegmina (Fig. 55). Elongate, narrow, in ♂ slightly surpassing abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 59b). Prosternal process rather wide, spatulate, apex feebly, anterior surface extensively excised. Mesosternal lobes almost meeting in middle. Lower surface of thorax with sparse, that of abdomen with very sparse, erect hairs.

Legs (Fig. 55). Posterior legs moderately elongate, metafemur fairly narrow, smooth. Apex of lower lobus of knee moderately acute. Metatibia with 12 external and internal spines, upper surface rather sparsely covered with moderately elongate, erect hairs.

♂ genitalia (Figs 59c–f). Tergum 10 divided, furcula moderately obtuse. Tergum 9 slightly projecting in middle. Supraanal plate wide, pentagonal, apex triangularly convex, laterally with short denticles. Base near furculae deeply excised, on disk with an oblique sulcus. Cercus rather narrow and elongate, flattened, apex with markedly acute ventrodiscal projection. Epiphallus as in fig. 59e, lophus widely separated, semilunar and dentiform, ancora strongly contorted, dentiform. Dorsal ectophallic sclerite with moderately sclerotized, short and wide dorsal projection. Endophallus as in fig. 59f, aedeagal sclerites short and horizontal.

♀ genitalia. Unknown.

Variation. Unknown.

Distribution (Fig. 85). Interior of southwestern part of Western Australia, known only from type locality.

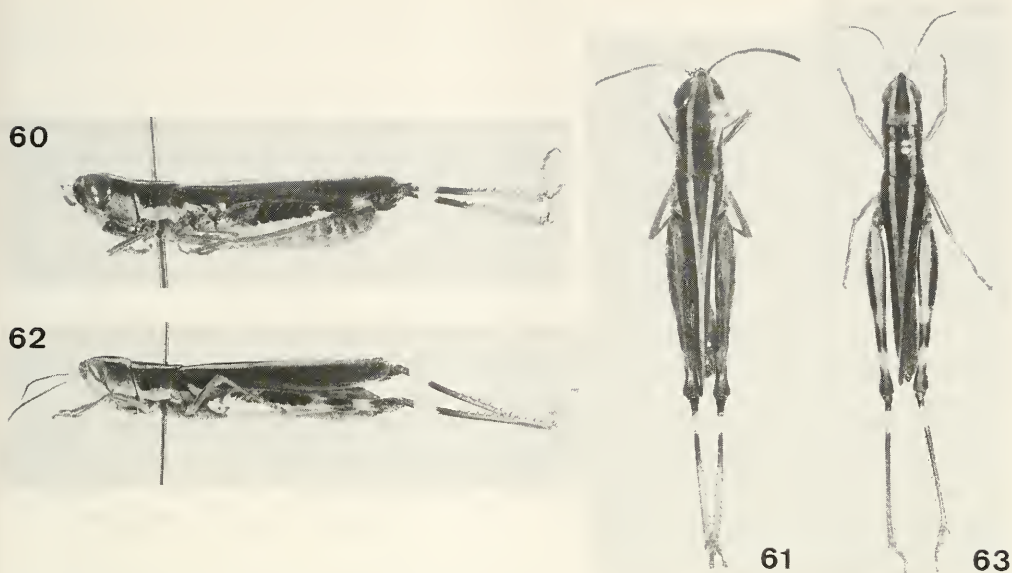
Habits. Unknown, holotype collected in March “on ground”.

Etymology. Named on in honour of the collector of this and several other Western Australian species of genus *Sjoestedtacriscus*.

Sjoestedtacriscus cinctipes, spec. nov.

Figs 60, 61, 64, 87

Types. Holotype: ♂, 2.5 km WSW of Glencoe (Israelite Bay), W. Australia, 9–13 March 1984, T. F. Houston 569 (WAM 87/1706). — Paratypes: 1 ♂, 1 ♀, Warne River, 49 km E of Paynes Find, Western Australia, 12–13 March 1982, T. F. Houston & B. Hanich 436 (WAM 87/1691–92); 1 ♀, 37 km SW Youanmi, Western Australia, 28.45 S, 118.31 E, 13–14 March 1982, T. F. Houston & B. Hanich 437 (WAM 87/1693); 1 ♀, Australien, WA 9., Murchison River crossing on Coastal Highway, 31. 10.–1. 11. 1987, M. Baehr (ZSM); 1 ♀, 37 km NW of Toolinna Rockhole, 32.45 S, 124.59 E, W. A., 24–28 Feb 1984, T. F. Houston 565 (WAM 87/1702); 1 ♀, 25 km ENE Yulinnery HS, 28°34'S, 119°01'E, W. Aust., 11–19 Feb. 1980, T. F. Houston et al. 310-1 (WAM 87/1671); 1 ♂, Thomsons Lake Reserve, 22 km S of Perth, Western Australia, 17 Jan. 1981, T. F. Houston 372, WAM 87/1686 (ZSM); 1 ♂, nr Abrakurrie Cave, 31.39 S, 128.29 E, 38 K 273° from Eucla, Western Australia, 7 March 1984, T. F. Houston 547-1 (WAM 87/1707); 1 ♀, Melaleuca Park, 12 km NE Wanneroo, Western Australia, 13 March 1977, E. McCrun (WAM 87/1647); 1 ♀, Rottneest Island, Western Australia, 12 Dec. 1976, T. W. Hallam (WAM 87/1646); 2 ♀ ♀, Murdoch, 13 km S. of Perth, W. Aust., 28 Jan. 1980, T. F. Houston 308–



Figs 60–63. *Sjoestedtocris*. 60–61. *S. cinctipes*, spec. nov., ♂ paratype. 60. Lateral view. 61. Dorsal view. 62–63. *S. bilineata*, spec. nov., ♀ paratype. 62. Lateral view. 63. Dorsal view. Lengths: 16.5 mm; 29.0 mm.

(WAM 87/1667–68, ZSM); 1 ♂, G. Bostock, 24. 1. 1966, Wendsley, W. Australia (WAM 87/1629); 1 ♂, J. Dell, 1. I. 1969, Mundaring Weir, W. Australia (WAM 87/1629); 1 ♀, A. M. Douglas, L. E. Koch, L. N. McKenna, 17. XII. 1968, Gngara, W. Australia (WAM 87/1633); 1 ♀, H. Udell, leg., Dimbleyung, W. A., 14. 12. 62 (WAM 87/1621); 1 ♀, L. N. McKenna, L. E. Koch, 21. I. 1964, Byford, W. Aust. (WAM 87/1628); 2 ♀♀, Mrs D. Edinger, March 1963, Garden Island, W. Australia (WAM 87/1624–25); 1 ♀, 42–331, Wellington Mills (WAM); 1 ♀, 29–1528, Rottnest (WAM).

Diagnosis. Recognized by moderately elongate, parallel pronotum, elongate antenna, vivid pattern consisting of a very distinctive light sublateral stripe on vertex, pronotum, and tegmina, a dark stripe on external surface of metafemur followed by a conspicuous light, subapical ring, red metatibia bearing a subbasal light ring followed by a dark ring, small, obtuse furcula, irregularly triangular ♂ supraanal plate, large ♂ cercus with fairly ventrodistal projection, wide epiphallus with contorted lophi and somewhat contorted ancora, rather elongate aedeagal sclerites in endophallus, and not hooked upper ♀ valve.

Description

Measurement. Body length. ♂: 16.5–18.0 mm, ♀: 23.5–28.5 mm. Length of pronotum. ♂: 2.7–2.95 mm, ♀: 4.2–4.4 mm. Ratio length/width of pronotum: 1.6–1.8. Length of tegmen. ♂: 11.5–12.5 mm, ♀: 18.5–23.5 mm. Length of metafemur. ♂: 10.3–10.8 mm, ♀: 14.4–16.5 mm. Length ratio metatibia/metafemur: 0.76–0.83. Ratio length/width of metafemur. ♂: 4.1–4.4, ♀: 4.7–5.0.

Colour (Figs 60, 61). Dorsal surface including tegmina brown to almost black, ventral and ventrolateral surfaces yellow. Vertex, pronotum, and tegmina with a conspicuous, narrow, yellow sublateral stripe. In ♂♂ commonly also with a black band across costa frontalis at position of median ocellus. Anterior abdominal segments with more or less distinct dark lateral spots, dorsal surface of abdominal segments more or less reddish. Metafemur yellow, external surface with conspicuous black stripe and subapical yellow ring, also with more or less distinct yellow spot

behind middle. Knee and base of metatibia black, apical half of metatibia red or roseate, with conspicuous subbasal light ring, followed by a more or less wide dark ring. Spines apically black. Metatarsus reddish.

Head (Figs 60, 61, 64a). Rather short and fairly obtuse, especially in ♀, lateral profile of frons slightly convex. Costa frontalis elongate, moderately wide, barely widened at antennal base, distinctly narrower than eye width, depressed or even slightly sulcate, with dense, coarse puncturation. Frons with distinct, rather elongate suborbital carina. Antenna elongate, with 22–24 segments, l/w of median segments > 2. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 60, 61). Rather elongate, parallel, prozona markedly longer than metazona, with two conspicuous sulci crossing median carina. Median carina distinct, elevated, lateral carinae distinct, wide, complete, almost straight, strongly calloused. Anterior border straight, posterior border gently convex. Prozona dorsally almost impunctate, laterally with some very coarse, irregular punctures, metazona dorsally and laterally irregularly punctate, lateral puncturation somewhat vermiculate. Surface moderately nitid, with some erect hairs.

Tegmina (Fig. 60). Elongate, narrow, almost attaining or even surpassing abdomen. Anterior border with feeble subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 64b). Prosternal process wide, very spatulate, apex feebly excised. Mesosternal lobes rather widely separated. Lower surface of thorax with fairly sparse, that of abdomen with sparse, erect hairs.

Legs (Fig. 60). Metafemur moderately elongate, especially in ♀♀, smooth. Apex of lower lobus of knee moderately acute. Metatibia with 11–13 external and 9–11 internal spines, upper surface rather sparsely covered with elongate, erect hairs.

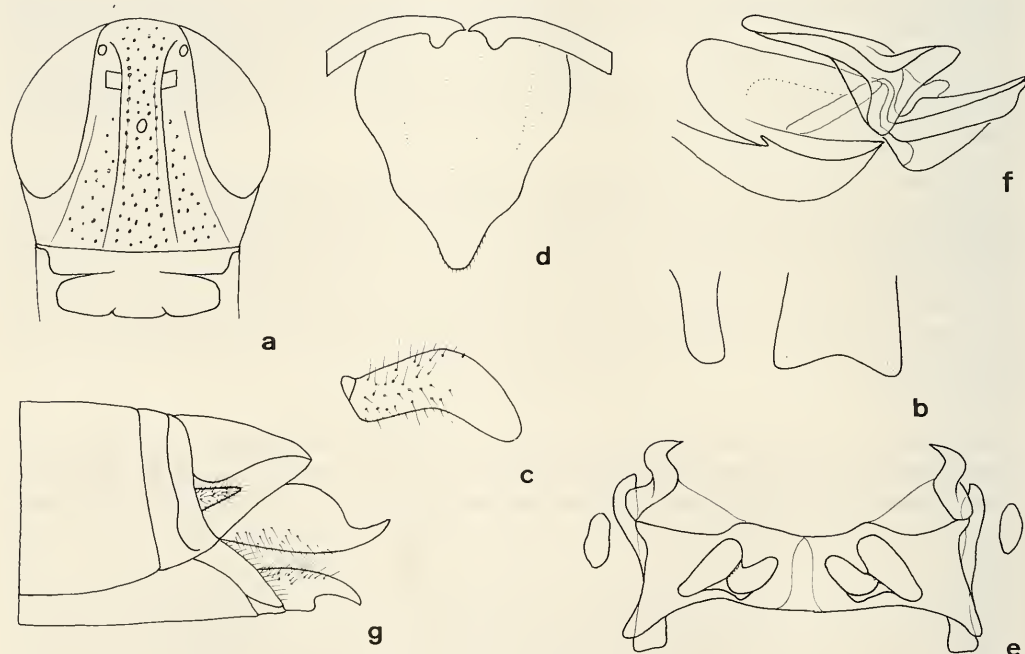


Fig. 64 a–g. *Sjoestedtocris cinctipes*, spec. nov. Legends see fig. 6.

♂ genitalia (Figs 64c–f). Tergum 10 completely divided, just narrowly meeting in middle. Tergum 9 with slight median projection. Furcula short, rounded. Supraanal plate triangular, laterally bisinuate, apex roundly produced. Cercus moderately short, wide, flattened, apex rounded off, with fairly large ventral projection. Epiphallus as in fig. 64e, lophus short, complicately contorted, ancora contorted, dentiform. Dorsal ectophallic sclerite with sclerotized, triangular dorsal projection. Endophallus as in fig. 64f, aedeagal sclerites rather elongate, horizontal.

♀ genitalia (Fig. 64g). Supraanal plate triangular, with rounded apex. Subgenital plate apically rather straight with short, convex, slightly projecting apex. Valves short, compact, lower valve near base strongly hooked, upper valve not hooked. Cercus narrow, triangular, acute.

Variation. Some sexual variation noted in shape of head and costa frontalis, the ♀♀ having shorter, more obtuse head and wider, not sulcate costa. Also some variation noted in expansion of red colour on metatibia. Otherwise a distinctive, rather homogeneous species.

Distribution (Fig. 87). Southwestern part of Western Australia from about Murchison River to South Australian border.

Habits. Barely noted. One specimen “swept from grass amongst rock”, a specimen caught by myself collected amongst spinifex (*Triodia*). Apparently a widespread, rather euryecological species occurring as well in fairly wet localities at the coast as in semiarid inland areas.

Etymology. Named on account of the conspicuously ringed metatibia.

Sjoestedtacrís bilineata, spec. nov

Figs 62, 63, 65, 87

Types. Holotype: ♀, 16 km W. of Lyons River HS, 24°38'S 115°20'E, W. Aust., 13–15 May 1981, B. Hanich & T. F. Houston 380–1 (WAM 87/1689). – Paratypes: 3 ♀♀, same data (WAM 87/1687–88, 1690, ZSM); 1 ♀, Hancock Gorge, 15 km S. Wittenoom, W. Aust., 15 May 1980, G. Marney, P. Duncan (WAM 87/1685); 1 ♀, Harding River, 21.12 S, 117.12 E, Western Australia, 17 June 1984, R. P. McMillan (WAM 87/1708).

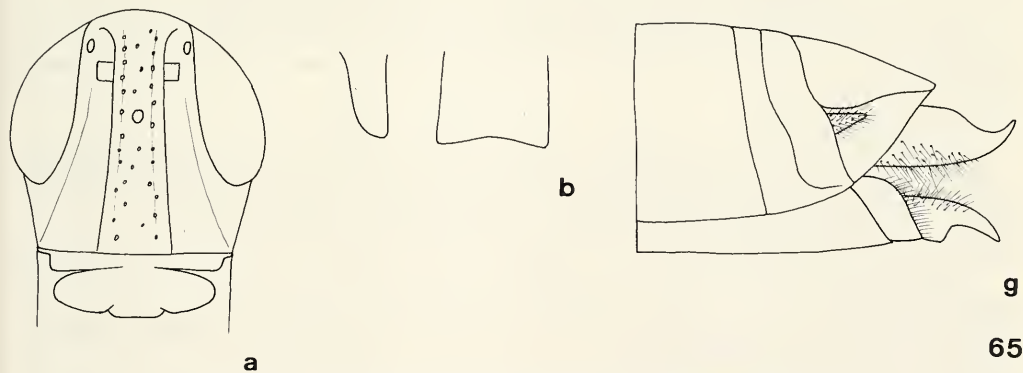


Fig. 65 a, b, g. *Sjoestedtacrís bilineata*, spec. nov. Legends see fig. 6.

Diagnosis. Recognized by very elongate, parallel pronotum, markedly triangular head with elongate costa frontalis and strong suborbital carina, elongate antenna, vivid pattern consisting of a very distinctive light sublateral stripe on vertex, pronotum, and tegmina, a dark stripe on external surface of metafemur broken by two conspicuous light, subapical rings, red metatibia bearing a subbasal light ring followed by a dark ring, and not hooked upper ♀ valve.

Description

Measurements. Body length. ♀: 27.5–31.0 mm. Length of pronotum. ♀: 4.4–5.3 mm. Ratio length/width of pronotum: 1.93–2.08. Length of tegmen. ♀: 17.5–22.0 mm. Length of metafemur. ♀: 14.5–17.3 mm. Length ratio metatibia/metafemur: 0.85–0.87. Ratio length/width of metafemur. ♀: 5.2–5.45.

Colour (Figs 62, 63). Dorsal surface including tegmina almost black, ventral and ventrolateral surfaces yellow. Vertex, pronotum, and tegmina with a conspicuous, narrow, yellow sublateral stripe almost continued to apex of tegmina. Dorsal surface of abdominal segments yellowish to light reddish, or brown. Metafemur whitish, external and internal surfaces with contrasting black stripe and two subapical yellow rings. Knee and base of metatibia black, apical half of metatibia reddish, with conspicuous subbasal light ring, followed by a more or less wide dark ring. Spines apically black. Metatarsus yellow.

Head (Figs 62, 63, 65a). Rather elongate and triangular, even in ♀♀, lateral profile of frons straight. Costa frontalis very elongate, rather narrow, barely widened at antennal base, slightly narrower than eye width, depressed or slightly sulcate, with moderately dense, coarse puncturation. Frons with prominent, elongate suborbital carina. Antenna elongate, with 24–25 segments, l/w of median segments > 2. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 62, 63). Elongate, parallel, almost twice as long as wide, prozona markedly longer than metazona, with two conspicuous sulci crossing median carina. Median carina conspicuous, elevated, lateral carinae distinct, straight, strongly calloused, becoming slightly weaker in metazona. Anterior border straight or feebly concave, posterior border gently convex. Prozona dorsally almost impunctate, laterally with some very coarse, though shallow punctures, metazona dorsally and laterally irregularly punctate, lateral puncturation somewhat vermiculate. Surface fairly nitid, with some erect hairs.

Tegmina (Fig. 62). Elongate, narrow, attaining or slightly surpassing abdomen. Anterior border with feeble subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 65b). Prosternal process wide, very spatulate, apex feebly excised. Mesosternal lobes rather widely separated. Lower surface of thorax with sparse, that of abdomen with very sparse, erect hairs.

Legs (Fig. 62). Metafemur elongate, smooth. Apex of lower lobus of knee moderately acute. Metatibia with 11–12 external and 10–12 internal spines, upper surface rather sparsely covered with elongate, erect hairs.

♂ genitalia. Unknown.

♀ genitalia (Fig. 65g). Supraanal plate triangular, with rounded apex. Subgenital plate apically almost straight with short, convex, slightly projecting apex. Valves short, compact, lower valve near base strongly hooked, upper valve not hooked. Cercus narrow, triangular, acute.

Variation. Little variation noted.

Distribution (Fig. 87). Northwestern part of Western Australia from about Gascoyne River to about Roeburne.

Habits. Most specimens collected “amongst rocks and grass”, habits otherwise unknown. Collected so far in May and June only.

Etymology. Named on account of the conspicuously bilineate pattern.

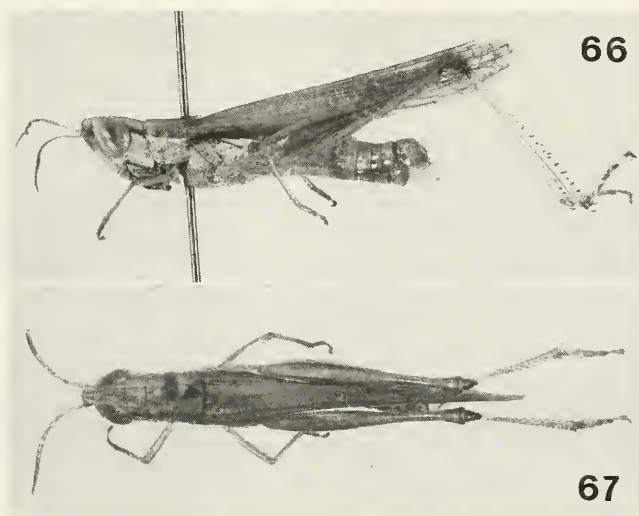
Note. This species is certainly very closely related to the foregoing *S. lineata*, and it is primarily distinguished by slightly larger size, longer, more triangular head, better developed facial carinae below eye, longer pronotum, longer metafemur, and even more contrasting pattern, especially on tegmina and metafemur. It is uncertain, however, whether *S. acutifrons* is merely a northern subspecies of *S. lineata* or not. This question will be unsolved, until the ♂ is at hand.

Sjoestedtocris uniformis, spec. nov.

Figs 66–68, 87

Types. Holotype: ♂, 2.5 km N. of Mt Linden (29.19 S, 122.25 E), W. Aust., 17–23 March 1979, T. F. Houston et al., 259–1 (WAM 87/1656). – Paratypes: 1 ♀, same data (WAM 87/1658); 1 ♀, 15 km NW Badja HS, Western Australia, 28.31 S, 116.40 E, 17–18 March 1982, T. F. Houston & B. Hanich 441–1, WAM 87/1694 (ZSM).

Diagnosis. Recognized by acute, triangular head with narrow, elongate, sulcate costa frontalis, moderately elongate antenna, rather elongate pronotum with moderately distinct, narrow lateral carinae, very elongate and delicate legs, light colouration almost devoid of pattern, whitish-grey metatibia, wide, near apex distinctly excised supraanal plate, very acute epiphallus with triangular lophi and extremely narrow ancora, and not hooked upper ♀ valve.



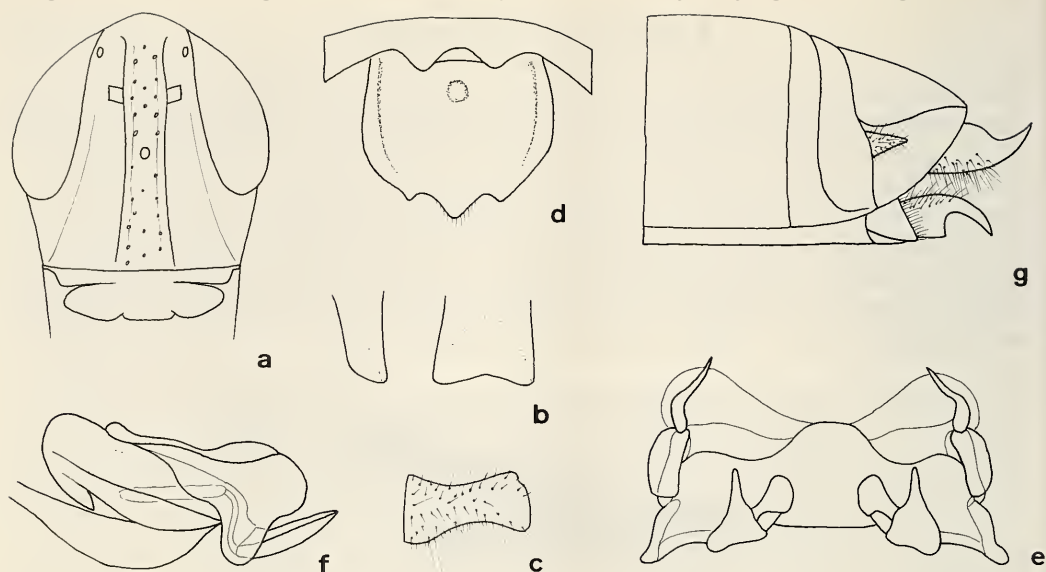
Figs 66 and 67. *Sjoestedtocris uniformis*, spec. nov., ♂ holotype. 66. Lateral view. 67. Dorsal view. Length: 15.6 mm.

Description

Measurements. Body length. ♂: 15.5 mm, ♀: 21.8–23.5 mm. Length of pronotum. ♂: 2.4 mm, ♀: 3.5–3.7 mm. Ratio length/width of pronotum: 1.75–1.81. Length of tegmen. ♂: 14.7 mm, ♀: 19.0–21.2 mm. Length of metafemur. ♂: 9.3 mm, ♀: 13.9–14.6 mm. Length ratio metatibia/metafemur: 0.83–0.85. Ratio length/width of metafemur. ♂: 5.65, ♀: 6.0–6.3.

Colour (Figs 66, 67). Dorsal surface of body including anterior and median legs, and tegmina yellow to light greyish, ventral surface whitish-yellow. Surface almost devoid of pattern, a lateral brownish stripe on head, pronotum, and tegmina inconspicuous or almost absent. Thorax with very narrow black band just below anterior border of tegmina. Metafemur on external surface with indistinct and ill delimited brown stripe, knee light. Metatibia whitish to light greyish. Spines apically black. Metatarsus yellowish-greyish.

Head (Figs 66, 67, 68a). Rather triangular, lateral profile of frons almost straight. Costa frontalis elongate, fairly narrow, barely widened at antennal base, barely narrower than eye width, more or less distinctly sulcate, with many coarse punctures. Frons with rather distinct, fairly elongate suborbital carina. Antenna moderately elongate, with 22–23 segments, l/w of median segments c. 1.5. Vertex and costa frontalis with few, rather elongate, erect hairs.



68

Fig. 68 a–g. *Sjoestedtocris uniformis*, spec. nov. Legends see fig. 6.

Pronotum (Figs 66, 67). Rather elongate, widened to base, slightly incised before middle, prozona markedly longer than metazona, anterior sulcus of prozona moderately distinct, posterior sulcus distinct, crossing median carina. Median carina distinct, rather elevated, lateral carinae distinct, though narrow, slightly calloused, becoming weaker towards base. Paranotum in middle with an irregular, calloused ridge. Anterior border straight, posterior border gently convex. Prozona almost impunctate, puncturation of metazona dorsally diffuse, laterally rather vermiculate. Surface moderately nitid, with some erect hairs.

Tegmina (Fig. 66). Elongate, narrow, in both sexes considerably surpassing abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 68b). Prosternal process wide, spatulate, somewhat wedge-shaped at apex as seen from laterally, apex slightly, anterior surface moderately excised. Mesosternal lobes almost meeting in middle. Lower surface of thorax with sparse, that of abdomen with very sparse, erect hairs.

Legs (Fig. 66). All legs elongate and markedly delicate. Metafemur narrow and elongate, especially in ♀♀, smooth. Apex of lower lobus of knee moderately acute. Metatibia with 11–13 external and internal spines, upper surface rather sparsely covered with fairly elongate, erect hairs.

♂ genitalia (Figs 68c–f). Tergum 10 divided, furcula very obtuse. Tergum 9 projecting in middle. Supraanal plate wide, narrowed to base, apex short, triangular, sides laterally of apex deeply excised. Cercus rather short, flattened, apex obliquely rounded, barely widened. Epiphallus as in fig. 68e, lophus triangular, acute, widely separated, ancora extremely narrow, very acute, slightly contorted. Dorsal ectophallic sclerite with moderately sclerotized, short and wide dorsal projection. Endophallus as in fig. 68f, aedeagal sclerites rather short and horizontal.

♀ genitalia (Fig. 68g). Supraanal plate triangular, laterally rather convex, with rounded apex. Subgenital plate apically straight on either side, with strongly projecting apex. Valves rather short, lower valve near base strongly hooked, upper valve not hooked. Cercus narrow, triangular, acute.

Variation. Only some sexual variation noted.

Distribution (Fig. 87). Interior of southwestern part of Western Australia.

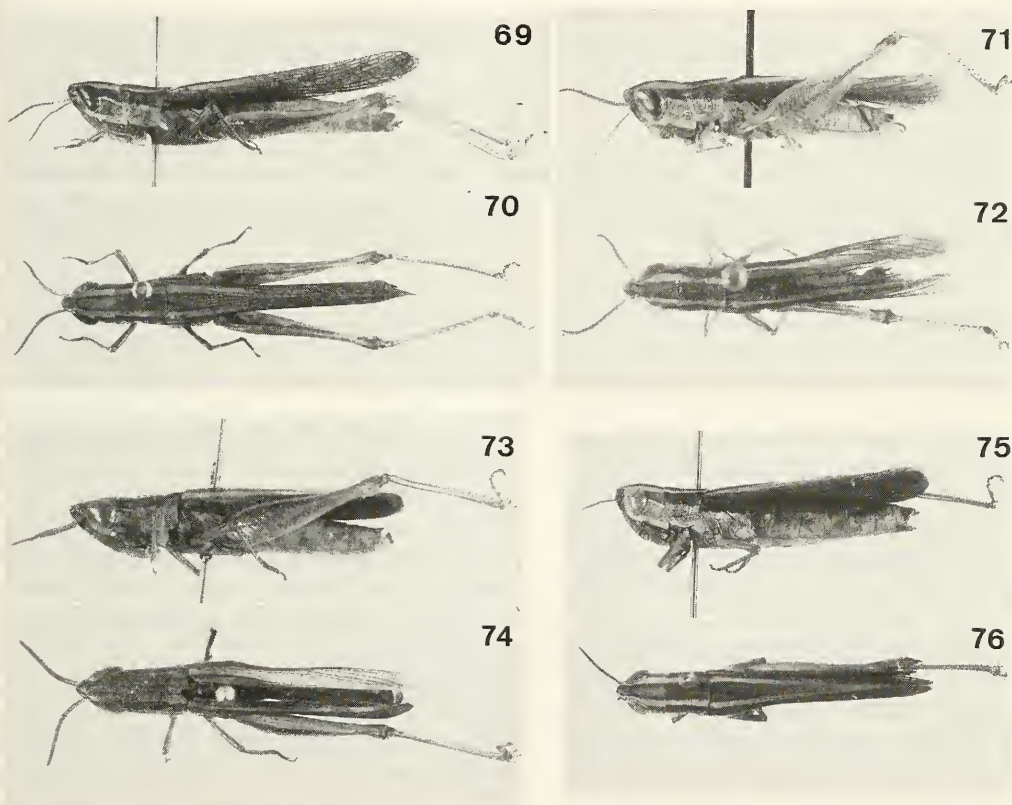
Habits. All specimens captured "at light at night" or "at mv lamp at night".

Etymology. Named on account of the rather uniform colouration.

Sjoestedtocris laticornis, spec. nov.

Figs 69, 70, 77, 88

Types. Holotype: ♀, S. Aust. at light. nr Agnes Creek Stn. 11 Oct. 1977. G. F. Gross, J. A. Forrest (SAMA).
 – Paratypes: 5 ♀♀, same data (SAMA, ZSM); 2 ♀♀, Madigan Gulf L. Eyre, S. A., 5 November 1955, At light, E. T. Giles (SAMA); 4 ♀♀, 7.5 km SE. of Banjiwarn HS (27°42'S, 121°37'E, W. Aust. 24 March 1979, T. F. Houston et al. 260–1 (WAM 87/1633–6, ZSM); 2 ♀♀, 12.5 km SSE. of Banjiwarn HS (27°42'S, 121°37'E, W. Aust. 22–28 Feb. 1979, T. F. Houston et al. 316–10 (WAM 87/1673–4)1; 1 ♀, W. Aust. 113 km NNE. of Neale Junction (28.12 S, 125.45 E), 16–17 Sept. 1982, B. Hanich & T. F. Houston 467 (WAM 87/1699); 1 ♀, 52–3226, Bruce Rock (WAM).



Figs 69–76. *Sjoestedtocris*. 69–70. *S. laticornis*, spec. nov., ♀ paratype. 69. Lateral view. 70. Dorsal view. 71–72. *S. sulcata*, spec. nov., ♂ holotype. 71. Lateral view. 72. Dorsal view. 73–74. *S. acutifrons*, spec. nov., ♂ holotype. 73. Lateral view. 74. Dorsal view. 75–76. *S. buningoniae*, spec. nov., ♀ holotype. 75. Lateral view. 76. Dorsal view. Lengths: 24.5 mm; 13.4 mm; 16.8 mm; 21.8 mm.

Digagnosis. Recognized by acute, triangular head, rather short, basally widened antenna, elongate, sulcate costa frontalis, elongate pronotum, elongate metafemur, rather inconspicuous pattern consisting of a more or less distinct dark lateral stripe on head, pronotum, and tegmina light greyish to even whitish metatibia, and narrow, elongate ♀ valves, both strongly hooked near base.

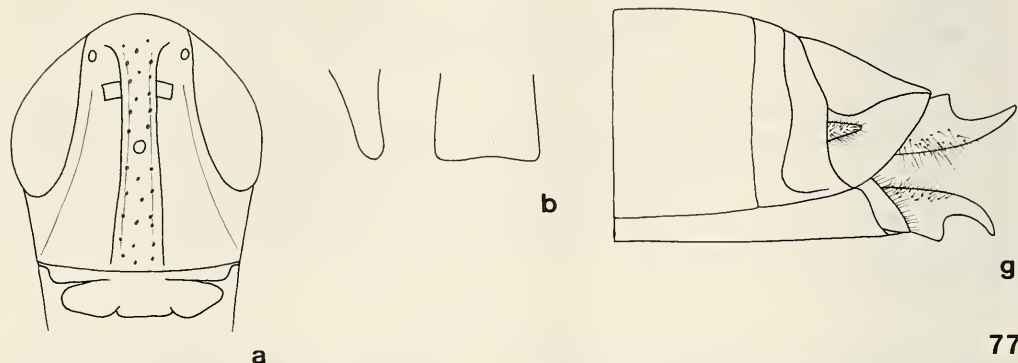


Fig. 77 a, b, g. *Sjoestedtocris laticornis*, spec. nov. Legends see fig. 6.

Description

Measurements. Body length. ♀: 23.0–25.5 mm. Length of pronotum: ♀: 3.1–3.9 mm. Ratio length/width of pronotum: 1.60–1.85. Length of tegmen: ♀: 16.5–18.8 mm. Length of metafemur. ♀: 11.1–12.5 mm. Length ratio metatibia/metafemur: 0.77–0.81. Ratio length/width of metafemur: ♀: 4.7–5.2.

Colour (Figs 69, 70). Body including legs yellow or almost whitish, upper surface of abdomen more or less distinctly roseate. Head, pronotum, and tegmina with a fairly inconspicuous, more or less brownish lateral stripe, this stripe sometimes fading on head. Vertex and pronotum with inconspicuous, feebly darker median stripe, or even without any trace of such stripe. Pronotum with fairly distinctive white stripe along lateral carinae. Thorax with more or less distinct blackish band just below anterior border of tegmina. Anterior surface of head conspicuously mottled. Antenna light brown. Metafemur with indistinct, dark stripe on upper part of external surface, knee light. Metatibia and metatarsus light greyish or even whitish. Spines apically black.

Head (Figs 69, 70, 77a). Elongate and triangular, lateral profile of frons straight. Costa frontalis very elongate, rather narrow, feebly widened at antennal base, distinctly narrower than eye width, sulcate, with many coarse punctures. Frons with marked, elongate suborbital carina. Antenna rather short, with 23–26 segments, basal segments markedly widened, l/w of median segments c. 1. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 69, 70). Fairly elongate, widened to base, slightly incised before middle, prozona markedly longer than metazona, anterior sulcus almost invisible, posterior sulcus distinct, not crossing median carina. Median carina distinct, feebly elevated, lateral carinae distinct, calloused, though disappearing in metazona. Anterior border straight, posterior border gently convex. Prozona near apex and metazona densely punctate, puncturation on dorsal part of metazona fairly reticulate, laterally vermiculate. Surface nitid, with some erect hairs.

Tegmina (Fig. 69). Elongate, narrow, in ♀ about as long as abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 77b). Prosternal process rather wide, spatulate, apex moderately deeply, anterior surface barely excised. Mesosternal lobes almost meeting in middle. Lower surface of thorax with sparse, that of abdomen with very sparse, erect hairs.

Legs (Fig. 69). Posterior legs fairly elongate, metafemur rather narrow and elongate, smooth. Apex of lower lobe of knee moderately acute. Metatibia with 9–11 external and 10–12 internal spines, upper surface moderately densely covered with elongate, erect hairs.

♂ genitalia. Unknown.

♀ genitalia (Fig. 77g). Supraanal plate triangular, laterally rather convex, with rounded apex. Subgenital plate apically almost straight, with slightly projecting apex. Valves elongate, narrow, both valves near base strongly hooked. Cercus narrow and elongate, triangular, acute.

Variation. Shape of pronotum and length of metafemur variable to some degree. There is apparently also some regional variation, as the South Australian specimens are very light coloured, whereas the Western Australian specimen have a darker and more vivid pattern.

Distribution (Fig. 88). Interior of South Australia to central Western Australia.

Habits. Largely unknown, most specimens captured at light. However, this is probably a real deserticolous specimen.

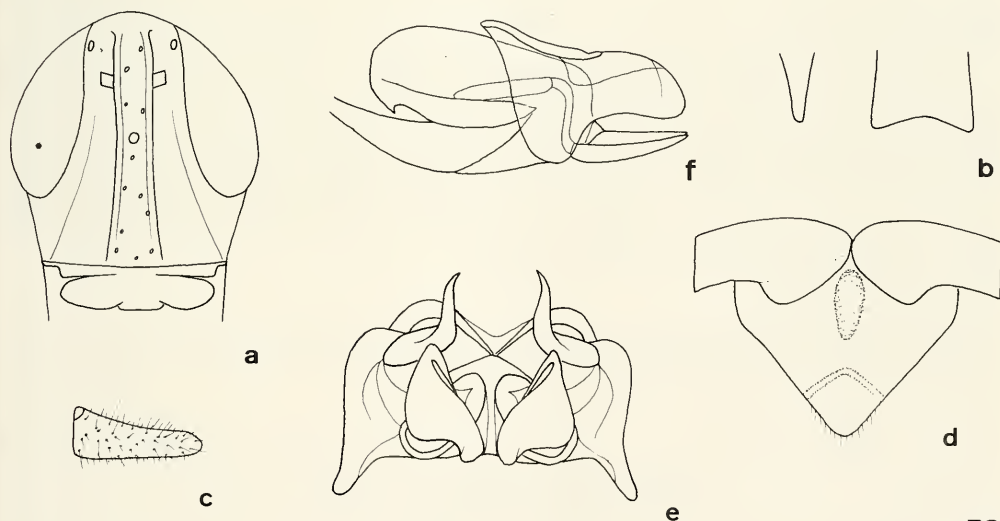
Etymology. Named on account of the dilatated basal antennal segments.

Sjoestedtocris sulcata, spec. nov.

Figs 71, 72, 78, 88

Types. Holotype: ♂, Australien 76, Hambidge Mallee, 60 km w. Cleve, SA, 22.12.1972, M. Baehr (SAMA).

Diagnosis. Recognized by very small size, short antenna, elongate, narrow, sulcate costa frontalis, distinct lateral pronotal carinae, rather short and thick metafemur, distinct pattern consisting of a light sublateral stripe on vertex, pronotum and tegmina, triangular ♂ supraanal plate, very wide, strongly sclerotized furcula, epiphallus with large, triangular, ventrally complicately contorted lophus, and remarkably short apodeme of cingulum.



78

Fig. 78 a–f. *Sjoestedtocris sulcata*, spec. nov. Legends see fig. 6.

Description

Measurements. Body length. ♂: 13.4 mm. Length of pronotum. ♂: 2.2 mm. Ratio length/width of pronotum: 1.74. Length of tegmen. ♂: 10.7 mm. Length of metafemur. ♂: 7.2 mm. Length ratio metatibia/ metafemur: 0.78. Ratio length/width of metafemur. ♂: 3.8.

Colour (Figs 71, 72). Somewhat faded, because specimen has been preserved in alcohol for several years. Body inclusive abdomen and legs yellow to light greyish. Vertex, pronotum, and tegmina with fairly distinct light sublateral stripe on either side. Thorax with narrow blackish band just below anterior border of tegmina. Antenna light brown. Legs flesh-coloured. Spines of metafemur apically black.

Head (Figs 71, 72, 78a). Moderately elongate and fairly triangular, though lateral profile of frons feebly convex. Costa frontalis elongate, rather narrow, feebly widened at antennal base, distinctly narrower than eye width, sulcate, with few coarse punctures. Frons with distinct, elongate suborbital carina. Antenna very short, with 23–24 segments, l/w of median segments < 1. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 71, 72). Moderately elongate, almost parallel, slightly incised before middle, prozona markedly longer than metazona, anterior sulcus almost invisible, posterior sulcus distinct, though not crossing median carina. Median carina distinct, feebly elevated, lateral carinae distinct, though narrow, slightly calloused. Anterior border straight, posterior border gently convex. Prozona almost impunctate, metazona densely punctate, posterior part of prozona with few large, shallow impressions, punctuation of lateral part of metazona moderately vermiculate. Surface moderately nitid, with some erect hairs.

Tegmina (Fig. 71). Elongate, narrow, in ♂ distinctly surpassing abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 78b). Prosternal process wide, thin, spatulate, apex fairly excised. Mesosternal lobes almost meeting in middle. Lower surface of thorax with sparse, that of abdomen with very sparse, erect hairs.

Legs (Fig. 71). Posterior legs short, metafemur fairly stout, smooth. Apex of lower lobus of knee acute. Metatibia with 10 external and 9–11 internal spines, upper surface rather sparsely covered with elongate, erect hairs.

♂ genitalia (Figs 78c–f). Tergum 10 divided, though meeting in middle, furcula very wide and obtuse, very strongly sclerotized. Supraanal plate wide, triangular, apex rounded. Base in middle with deep pit, near apex with narrow, oblique sulcus. Cercus small, narrow, attenuate, moderately flattened, apex rounded, virtually not widened. Epiphallus as in fig. 78e, lophi large, closely adjacent, triangular, inner surface rather complexly coiled, ancora strongly contorted, dentiform. Dorsal ectophallic sclerite without dorsal projection. Endophallus as in fig. 78f, apodeme of cingulum very short and wide, aedeagal sclerites, short, horizontal.

♀ genitalia. Unknown.

Variation. Unknown.

Distribution (Fig. 88). Eyre Peninsula, South Australia. Known only from type locality.

Habits. Holotype collected between spinifex in Mallee area.

Etymology. Named on account the deeply impressed costa frontalis.

Sjoestedtocris acutifrons, spec. nov.

Figs 73, 74, 79, 88

Types. Holotype: ♂, Kukerin 52–3207 (WAM).

Diagnosis. Recognized by small size, acute head with narrow, elongate, markedly sulcate costa frontalis, short antenna, elongate pronotum with distinct lateral pronotal carinae, rather short and

thick metafemur, moderately distinct pattern consisting of a dark lateral stripe on head, pronotum, and tegmina, and a narrow, light sublateral stripe on dorsal surface next to it, almost regularly triangular ♂ supraanal plate, epiphallus with wide, closely adjacent lophi and strongly bent ancora, and rather elongate cingular apodeme.

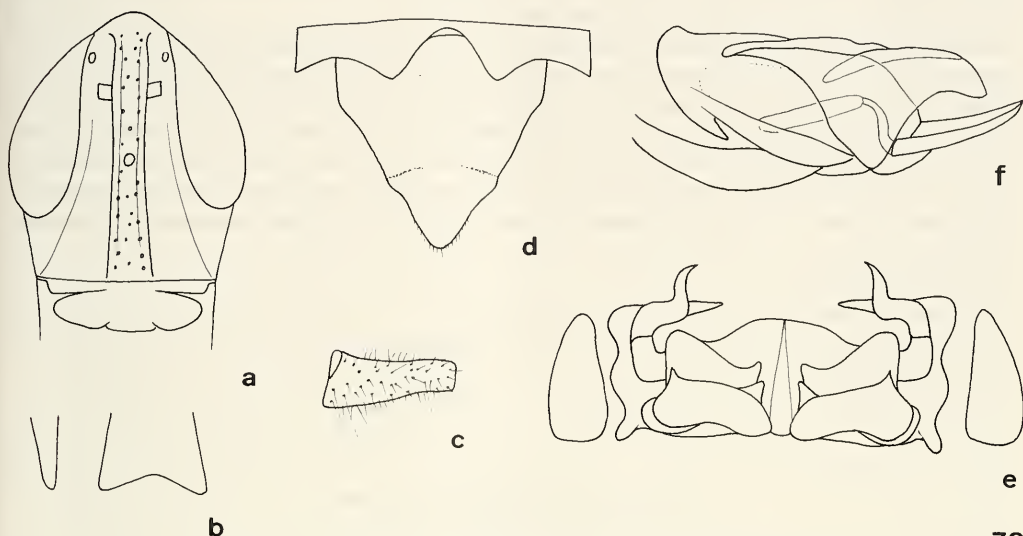


Fig. 79 a–f. *Sjoestedtocris acutifrons*, spec. nov. Legends see fig. 6.

79

Description

Measurements. Body length. ♂: 16.8 mm. Length of pronotum. ♂: 2.65 mm. Ratio length/width of pronotum: 1.8. Length of tegmen. ♂: 11.7 mm. Length of metafemur. ♂: 8.3 mm. Length ratio metatibia/metafemur: 0.74. Ratio length/width of metafemur. ♂: 4.15.

Colour (Figs 73, 74). Dorsal surface of body inclusive legs and tegmina light brown, of abdomen reddish, ventral surface yellow. Pattern rather inconspicuous. Vertex, pronotum, and tegmina with an indistinct, narrow, light sublateral stripe. Thorax with a narrow black band just below anterior border of tegmina. Metafemur on ventral surface yellowish, knee light. Metatibia grey. Spines apically black. Metatarsus light grey.

Head (Figs 73, 74, 79a). Very triangular, lateral profile of frons and vertex straight. Costa frontalis very elongate, narrow, barely widened at antennal base, considerably narrower than eye width, deeply sulcate, with many coarse punctures. Frons with marked, elongate suborbital carina. Antennae short, with 23–24 segments. l/w of median segments < 1. Vertex and costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 73, 74). Moderately elongate, widened to base, feebly incised before middle, prozona markedly longer than metazona, anterior sulcus of prozona indistinct, posterior sulcus distinct, not crossing median carina. Median carina distinct, rather elevated, lateral carinae distinct, rather narrow, slightly calloused, becoming slightly weaker towards base. Anterior border straight, posterior border gently convex. Prozona punctate near apex and along lateral carinae, punctuation of metazona rather diffuse, laterally somewhat vermiculate. Surface moderately nitid, with some erect hairs.

Tegmina (Fig. 73). Elongate, narrow, in ♂ slightly longer than abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 79b). Prosternal process wide, very thin, spatulate, apex rather deeply excised, anterior surface not excised. Mesosternal lobes almost meeting in middle. Lower surface of thorax with fairly sparse, that of abdomen with very sparse, erect hairs.

Legs (Fig. 73). Metafemur short and fairly stout, smooth. Apex of lower lobus of knee rather obtuse. Metatibia short compared with metafemur, with 10 external and 11 internal spines, upper surface sparsely covered with fairly elongate, erect hairs.

♂ genitalia (Figs 79c–f). Tergum 10 divided, barely meeting in middle, furcula strong, obtuse, very strongly sclerotized. Supraanal plate almost regularly triangular, laterally barely sinuate, apex shortly rounded, rather projecting. Base in middle somewhat impressed. Cercus small, narrow, attenuate, moderately flattened, apex transverse, virtually not widened. Epiphallus as in fig. 79e, lophi closely adjacent, large, transverse, inner surface complexly coiled, ancora strongly contorted, markedly dentiform. Dorsal ectophallic sclerite with very gentle dorsal projection. Endophallus as in fig. 79f, apodeme of cingulum moderately short and wide, aedeagal sclerites rather elongate, horizontal.

♀ genitalia. Unknown.

Variation. Unknown.

Distribution (Fig. 88). Southwestern part of Western Australia. Known only from type locality.

Habits. Unknown.

Etymology. Named on account of the acute head.

Sjoestedtacrís buningoniae, spec. nov.

Figs 75, 76, 80, 88

Types. Holotype: ♀, Buningonia Spring (Well), 31°26'S, 123°33'E, W. Aust., 18.–25.XI.1978, T. F. Houston, et al. 225– (WAM 87/1652).

Diagnosis. Recognized by fairly convex head with elongate, rather narrow, sulcate costa frontalis, very short antenna, short pronotum with distinct lateral carinae, vivid pattern, brownish to flesh-coloured metatibia, and short and obtuse ♀ valves, the upper one being hooked near base.

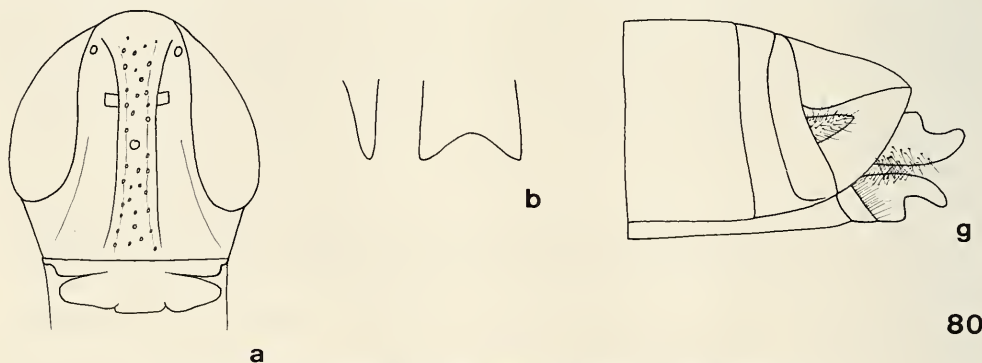


Fig. 80 a, b, g. *Sjoestedtacrís buningoniae*, spec. nov. Legends see fig. 6.

Description

Measurements. Body length. ♀: 21.8 mm. Length of pronotum. ♀: 3.25 mm. Ratio length/width of pronotum: 1.58. Length of tegmen. ♀: 16.0 mm. Length of metafemur. ♀: 10.35 mm. Length ratio metatibia/metafemur: 0.77. Ratio length/width of metafemur. ♀: 4.25.

Colour (Figs 75, 76). Dorsal surface of body and tegmina light brown, dorsal surface of abdomen reddish, ventral surface yellow. Legs dark yellowish to light brown. Antenna reddish-brown. Vertex, pronotum, and tegmina with a distinct, wide, sublateral, light stripe. Thorax with narrow black band just below anterior border of tegmina. Metafemur on external surface with extremely ill defined darker stripe, knee reddish. Metatibia and metatarsus brownish to flesh-coloured. Spines apically black. Tegmina fuscous, even darker towards apex.

Head (Figs 75, 76, 80a). Moderately convex, lateral profile of frons and vertex fairly convex. Costa frontalis elongate, moderately narrow, slightly widened at antennal base, considerably narrower than eye width, markedly sulcate, with rather dense, coarse punctures. Frons with ill defined, though rather elongate suborbital carina. Antenna very short, with 25 segments, l/w of median segments clearly < 1. Vertex and Costa frontalis with few, rather elongate, erect hairs.

Pronotum (Figs 75, 76). Rather short, barely widened to base, almost parallel, prozona markedly longer than metazona, anterior sulcus of prozona almost wanting, posterior sulcus distinct, not crossing median carina. Median carina distinct, rather elevated, laterall carinae distinct, fairly wide, calloused. Anterior border slightly concave in middle, posterior border gently convex. Prozona punctate near apex, metazona rather densely punctate, though dorsal puncturation rather diffuse, lateral puncturation distinctly vermiculate. Surface moderately nitid, with some erect hairs.

Tegmina (Fig. 75). Elongate, narrow, in ♀ feebly surpassing abdomen. Anterior border with slight subbasal dilatation. Alae barely shorter than tegmina.

Ventral surface (Fig. 80b). Prosternal process wide, spatulate, thin, apex deeply, anterior surface moderately excised. Mesosternal lobes narrowly separated in middle. Lower surface of thorax with sparse, that of abdomen with very sparse, erect hairs.

Legs (Fig. 75). Metafemur short, smooth. Apex of lower lobus of knee moderately acute. Metatibia with 11 external and internal spines, upper surface sparsely covered with fairly elongate, erect hairs.

♂ genitalia. Unknown.

♀ genitalia (Fig. 80g). Supraanal plate triangular, though laterally very convex, with evenly rounded apex. Subgenital plate apically almost straight, with feebly projecting apex. Valves short, stout, very obtuse, both near base strongly hooked. Cercus triangular, fairly wide, acute.

Variation. Unknown.

Distribution (Fig. 88). Interior of southwestern part of Western Australia. Known only from type locality.

Habits. Unknown, holotype captured in November.

Etymology. Named on account of the type locality.

Relationship

Certainly, at present material is too scarce to draw any final conclusions about phylogenetic relations of the mentioned genera and species, or to distribution and zoogeography. Presumably there are yet more species to be discovered in the vast areas of the Western, Central, and South Australian arid country, and the ranges of the known species will be also better fixed in future.

However, an attempt towards a grouping of the species into groups of related species may be useful, although this is at present rather difficult, because ♂♂ of several species are yet unknown. The following characters are mainly used for grouping of species into confidently natural groups. Some character states are reasonably regarded apomorphic, in others any decision about their phylogenetical value is difficult:

Head: Short, convex head: apomorphic. Wide, abbreviated, not sulcate costa frontalis: apomorphic. Reduction of subocular carina: apomorphic.

Prothorax: Well defined, calloused lateral carinae: apomorphic. Anteriorly and/or at apex deeply excised prosternal process: apomorphic.

Legs: Relatively elongate metafemur: (presumably) apomorphic.

Pattern: Presence of a well defined bilineate pattern: apomorphic. Any striking pattern or colouration of metafemur and/or metatibia: apomorphic.

♂ genitalia: Presence of furcula: apomorphic. Any deviations of the regular triangular shape of supraanal plate: apomorphic. Any special characteristics of the supraanal plate (grooves, bosses, denticles etc.): apomorphic. Ventrodistally enlarged cercus: apomorphic. Complicately built lophi and ancorae in epiphallus: apomorphic. Presence of a sclerotized dorsal process in ectophallic sclerite: apomorphic. Length of cingular process, and length and shape of phallic sclerites in phallus: uncertain.

♀ genitalia: Any deviation from narrow, triangular, acute shape of cercus: apomorphic. Stout, obtuse shape of valves: apomorphic. Not hooked upper valve: uncertain, but perhaps apomorphic.

Some characters are commonly connected, e. g. triangular shape of head with elongate and sulcate costa frontalis; absence of distinct bilineate pattern and weak lateral pronotal carinae.

The following species-groups which are based on the evaluation of the above character states are confidently regarded natural groups:

badia-group, characterized by wide costa frontalis, short antenna, short metafemur, and rather simple structure of ♂ genitalia, especially shape of epiphallus; *S. badia*, *S. validipes*, and (perhaps) *S. brevicornis*. Presumably a rather primitive group.

inornata-group: *S. inornata* only which represents perhaps a primitive species with regard to absence of distinctive pattern, absence of furcula, triangular ♂ supraanal plate without any special characteristics.

variabilis-group, characterized by wide costa frontalis, distinct pattern, usually marked colouration of metatibia, shape of ♂ supraanal plate, and shape of lophi (bifid) and ancora in epiphallus; *S. variabilis*, *S. latifrons*, *S. gracilipes*, *S. roseifemorata*, *S. liveringae*, and (presumably) *S. rufotibialis* and *S. marginata*, which are at least both closely related to the *variabilis*-group. Presumably a derivative group.

infuscata-group: *S. infuscata* only, a rather isolated species, characterized by certain characters of ♂ genitalia.

houstoni-group: *S. houstoni* only which is equally rather isolated, but perhaps related to *S. infuscata* by wide shape of ♂ supraanal plate, sclerotized dorsal process of ectophallic plate, rather similar shape of epiphallus, especially of ancora, equally elongate cingular apodeme.

cinctipes-group, perhaps a primitive group in view of the elongate, sulcate costa frontalis; further characterized by vivid pattern of metatibia and not hooked upper ♀ valve; *S. cinctipes*, *S. bilineata*, and (perhaps) *S. uniformis*.

laticornis-group, also a primitive group with regard to the elongate, sulcate costa frontalis, further characterized by very short antenna, thin, anteriorly not excised prosternal process, short metafemur, rather similar ♂ genitalia, and hooked upper ♀ valve; *S. laticornis*, *S. sulcata*, *S. acutifrons*, and (presumably) *S. buningoniae*.

Distribution

Although the actual ranges of most species are not well known due to lack of sufficient material, pure addition of the numbers of species recorded in different regions gives a quite impressive picture (Fig. 89): Apparently three main centres of species density exist with regard to the recorded occurrence of the species of the genera *Sjoestedtocris*, *Triodicolocris*, *Brachelytracris*, *Rusurplia*, and *Sumbilvia*, and all centres are located in Western Australia: Interior of southwestern Australia



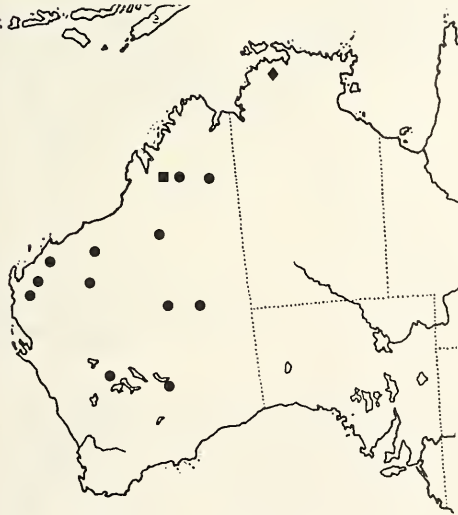
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82

Fig. 81. Distribution of *Triodicolacris eburnea*, spec. nov.: ■, *T. picta*, spec. nov.: ◆, *Brachyelytracris viridifemur*, spec. nov.: ▲, and *Rusurpia tristis* (Sjöstedt): ●.

Fig. 82. Distribution of *Sjoestedtacrisc badia* (Sjöstedt): ●, *S. validipes*, spec. nov.: ▼, *S. brevicornis*, spec. nov.: ▲, *S. inornata*, spec. nov.: ■, and *S. rufotibialis*, spec. nov.: ◆.



83



84

Fig. 83. Distribution of *Sjoestedtacrisc variabilis variabilis*, spec. nov.: ●, *S. gracilipes*, spec. nov.: ◆, and *S. liveringae*, spec. nov.: ■.

Fig. 84. Distribution of *Sjoestedtacrisc variabilis corpulenta*, subspec. nov.: ●, *S. variabilis pseudocorpulenta*, spec. nov.: ◆, and *S. variabilis interioris*, spec. nov.: ■.



85



86

Fig. 85. Distribution of *Sjoestedtocris latifrons*, spec. nov.: ■, *S. roseifemorata*, spec. nov.: ●, and *S. houstoni*, spec. nov.: ▼.

Fig. 86. Distribution of *Sjoestedtocris marginata*, spec. nov.: ●, *S. infusata infusata*, spec. nov.: ■, and *S. infusata validior*, subsp. nov.: ◆.



87



88

Fig. 87. Distribution of *Sjoestedtocris cinctipes*, spec. nov.: ●, *S. bilineata*, spec. nov.: ◆, and *S. uniformis*, spec. nov.: ■.

Fig. 88. Distribution of *Sjoestedtocris laticornis*, spec. nov.: ●, *S. sulcata*, spec. nov.: ◆, *S. acutifrons*, spec. nov.: ▼, and *S. buningoniae*, spec. nov.: ■.

(12 species); the Hamersley region in central western part of Western Australia (10 species); and the (southern) Kimberley Division (northern part virtually uncollected) in northwestern Australia (7 species). Outside of these main centres, namely in coastal southwestern Australia, Eyre Peninsula, central Australia (the interior parts of South Australia, Northern Territory, Western Australia), and far Northern Territory, only single or few species occur (Fig. 89).

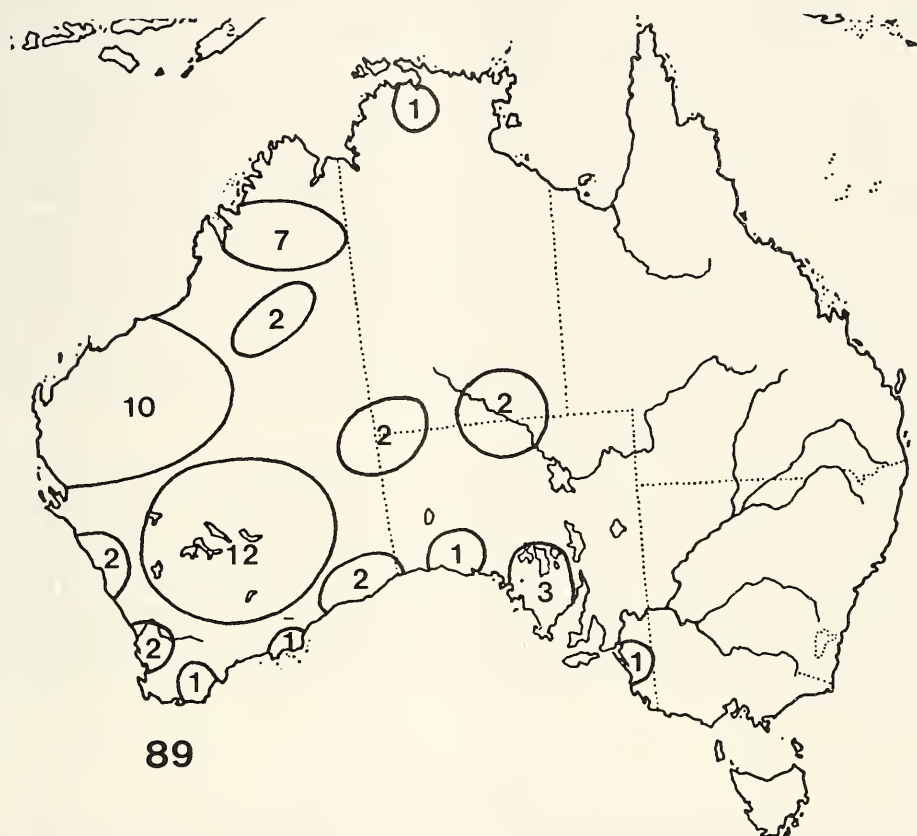


Fig. 89. Species density of genera *Sumbilvia*, *Triodicolacris*, *Brachyelytracris*, *Rusurplia*, and *Sjoestedtacr* in certain areas of their range.

That distribution pattern allows some conclusions: Almost all species are dry country inhabiting or even true deserticolous species, only very few species live in more mesic environments. However, most species seem to avoid the extremely barren desert and they apparently prefer either semiarid mallee, or saltbush, or spinifex country mixed with some tree or bush growth. Actually two or three species only live in other vegetation types than those mentioned above: *inornata* in coastal environments in the south, *gracilipes* in tropical grass savannah in the far north, and *cinctipes* also partly in non spinifex-type grasses in the southwest.

Comparison of the distribution pattern of the species-groups reveals some important differences: All species of the *variabilis*-group of genus *Sjoestedtacr*, as well as both species of *Triodicolacris* live in the northern Hamersley and/or Kimberley centres, respectively, or in the desert regions between them, or in far Northern Territory, whereas single species only of the other groups penetrate

into the northern centres. Hence, the faunas of the Hamersley and Kimberley centres which are rather separated by the Great Sandy Desert barrier, are more closely related than those of the Hamersley centre and the rather adjacent centre of interior Western Australia (Mallee centre). This is also demonstrated by the occurrence of subspecies of *S. variabilis* or even the same species (*S. marginata*) in both northern centres. The Mallee centre, however, shows some relations to semiarid South Australia, as both areas share at least 3 species (*Rusurplia tristis*, *Sjoestedtocris inornata*, *S. laticornis*).

In view of phylogenetic status and relations of the species of genus *Sjoestedtocris* as revealed above, some biographical conclusions can be drawn:

The presumably most primitive species (*S. inornata*) occurs along the southern, temperate border of the range of the genus in the southern parts of both, Western Australia and South Australia. Almost all species of the presumably primitive *cinctipes*- and *laticornis*-groups occur also in the southern part of the range of the genus, few species even extend from South Australia well into Western Australia. These distribution patterns strongly support the idea that the genus *Sjoestedtocris* (as perhaps genus *Rusurplia* as well) evolved in temperate environments at the southern border of the present range, most probably in South Australia, from where the basic stock(s) extended into southern (temperate) parts of Western Australia. From there the genus eventually spread into more arid environments in the interior of Western Australia, and at the same time it evolved rapidly. Later on, one stock of highly evolved, rather large, long-legged, distinctively patterned species invaded the Hamersley region to the north, from where they even later colonized the Kimberleys, and finally also tropical northern Australia.

This picture gets support by the supposed evolution of pattern within the genus. Whereas the (apparently most primitive) species (*S. inornata*, *S. badia*, *S. acutifrons*) — living at the southern border of the range in rather temperate environments not dominated by spinifex — lack a distinctive bilineate pattern on head, pronotum, and tegmina, most northern, more or less deserticolous species possess such a pattern, which in several species is combined with rather light, yellowish or greenish colouration. This type of pattern is highly cryptic and indeed, when such grasshoppers retreat into spinifex hummocks, they are very difficult to detect. Hence the evolution of pattern is considered an adaptation to life amongst spinifex which is perhaps the apomorphic state in the evolution of these grasshoppers.

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