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MILLIPEDES FROM AUSTRALIA, 11: AUSTRALIOSOMATINI FROM QUEENSLAND (DIPLOPODA, POLYDESMIDA, PARADOXOSOMATIDAE)

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ABSTRACT

A review is given of the Australiosomatini reported from Queensland. Three species and a subspecies are described as new: *Cladethosoma uncinatum* n. sp., *Heterocladosoma trabeatum* n. sp., *Heterocladosoma transversetaeniatum* (L. Koch), ssp. *perarmatum* n. ssp., and *Streptocladosoma solum* n. sp. Redescriptions of four species are provided: *Phyllocladosoma annulatipes* (Verhoeff), *P. broelemanni* (Verhoeff), *Heterocladosoma bifalcatum* (Silvestri) and *H. hamuligerum* (Verhoeff). Of two more species, information on the gonopods is given, leading to the generic reallocation of *Strongylosoma asperum* L. Koch in *Heterocladosoma*. Altogether five genera and 12 identifiable species are known.

INTRODUCTION

Knowledge of the paradoxosomatid fauna of Queensland is extremely fragmentary. All the available records are from localities situated within a coastal zone of at most 100 km. They focus in two areas: Cairns and the Atherton tableland in the north, and the region of Brisbane in the south. The Cape York peninsula and the entire intermediate coastal area between Cairns and Brisbane have been sampled only here and there. The vast inland territory of the state is still a terra incognita, not only with regard to the distribution of the Paradoxosomatidae, but also with respect to the occurrence of millipedes in general.

A collecting trip by the author and his wife of about four weeks in September and October 1980 (Jeekel, 1981), carried out in order to throw some more light on the fauna of the coastland, failed in its purpose owing to unfavourable climatic conditions. It became obvious, however, that a methodical survey of the soil fauna by local investigators is needed to obtain a satisfactory conspectus of the millipede fauna of Queensland.

Two tribes have been recognized among Australian Paradoxosomatidae: the Australiosomatini and the Antichiropodini (Jeekel, 1968). Although these two groups are maintained here, it must be emphasized that this division probably gives an oversimplified picture of the actual systematic relationship between the genera involved. With the recent discovery of more taxa, it becomes more and more obvious that the classification of the Australian Paradoxosomatidae is more complicated than formerly understood and needs a critical revision.

The present paper gives a survey of the

known Queensland Australiosomatini as defined in 1968, leaving the Antichiropodini for a subsequent paper.

The material used for the present study came from the following collections: the samples obtained by the author during the trip mentioned above and preserved in the Zoölogisch Museum, Amsterdam (Z.M.A.); a part of the collection made by Dr. E. Mjöberg before world war I and not seen by Verhoeff for his 1924 study, received on loan from the Naturhistoriska Riksmuseum, Stockholm (N.R.S.); some incidental samples received on loan from the South Australian Museum, Adelaide (S.A.M.), the American Museum of Natural History, New York (A.M.N.H.) and the Zoological Museum of the Moscow University (Z.M.M.). The author acknowledges the kind cooperation of the responsible curators of the institutions mentioned. Unfortunately, no material from the Queensland Museum, Brisbane, could be incorporated, since the unidentified collection had not yet been sorted.

The examination of this material has led to the discovery of three new species and a new subspecies. Moreover, additional information on little-known species could be obtained. Altogether the list of Queensland Australiosomatini now is as follows:

Phyllocladosoma annulatipes (Verhoeff)
P. broelemanni (Verhoeff)
Cladethosoma uncinatum n. sp.
Heterocladosoma bifalcatum (Silvestri)
H. asperum (L. Koch)
H. trabeatum n. sp.
H. transversetaeniatum (L. Koch)
H. transversetaeniatum ssp. *perarmatum* n. ssp.
H. hamuligerum (Verhoeff)
Streptocladosoma dissimile Jeekel
S. albovittatum Jeekel
S. solum n. sp.
Paraustraliosoma malandense Verhoeff

INTERRELATIONSHIP OF QUEENSLAND AUSTRALIOSOMATINI

In Queensland the Australiosomatini is represented by five genera which are well characterized and apparently phylogenetically rather isolated from each other. The diversity in random directions of the gonopod structure makes determining the interrelationship of the genera difficult. Subsequent to an earlier, more general discussion (Jeekel, 1968: 21-23), and pending a more comprehensive treatment of the Australian paradoxosomatids, it may be useful to evaluate the status of some of the gonopod characters, restricting our efforts to the five known Queensland genera.

The reduction of the femorite of the gonopods, and, sometimes, its almost complete loss, is a well-known feature of the Australiosomatini. It is obviously a derived character, but it occurs also elsewhere in the Paradoxosomatidae. Therefore, its monophyly in the Australiosomatinae must be questioned. In the Queensland Australiosomatini a reduced femorite is a general character.

The tibiotarsus may arise from near the base of the acropodite; its base is situated proximally of the base of the femoral process. This too is obviously a secondary condition, which occurs in all Queensland genera.

Characters not shared by all Queensland Australiosomatini are the following.

1. Acropodite: The whole acropodite may be torded 180° or more in relation to the prefemur, involving a different course of the spermal channel and different positions towards one another of the various gonopod branches. The torded condition is without doubt secondary. However, such torsions occur in the gonopods of widely diverse polydesmidan taxa, and the value is therefore dubious. In the Queensland Australiosomatini torsion of the acropodite is found in *Streptocladosoma* and *Paraustraliosoma*, but the result was probably reached along different phylogenetic lines.

2. Tibiotarsus: This may consist of a single branch, undivided or furcate, or split to the base into two long branches. The latter condition is obviously a secondary one, which among Queensland genera is found in *Cladethosoma* and *Heterocladosoma*. In *Paraustraliosoma* the tibiotarsus bears three processes on a relatively long common basis.

3. Femoral process: This may be absent or present. Absence is obviously a derived condi-

tion, although not necessarily monophyletic. In Queensland this absence occurs only in *Phyllocladosoma.*

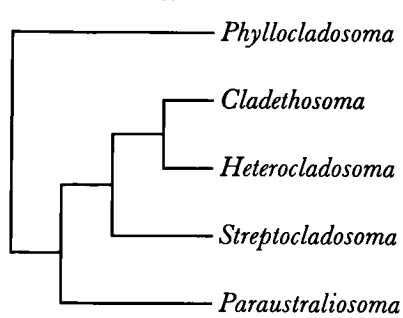
4. Femoral process: This may be either transversely widened and lamellate and supporting the solenomerite, or just more or less rodlike. The latter condition is considered primitive. The derived condition is found in *Cladethosoma* and *Paraustraliosoma*, but may have been reached along different lines.

5. Femoral process: The condition with the femoral process and solenomerite arising at the end of a relatively long common stem, the femoro-solenomerite, combined with a proximal basis of the tibiotarus, is obviously secondary. It is found in particular in the genera *Streptocladosoma* and *Heterocladosoma*, and a little less pronouncedly also in *Cladethosoma.* However, not at all in *Paraustraliosoma.*

6. Solenomerite: This may be rodlike, or flagellate. Although a flagellate solenomerite is dominant in Paradoxosomatidae and occurs also in other polydesmidan groups, the rodlike structure is considered to be the primitive condition in the Australiosomatini. A flagellate solenomerite is found in *Streptocladosoma* and *Paraustraliosoma*, but the condition is probably not monophyletic.

7. Solenomerite: A feature encountered exclusively in the Australian Paradoxosomatidae is the extension of the spermal channel, by the presence of a loop which runs through a separate lobe or process. Although a derived condition, its monophyly should be questioned. Among Queensland genera a loop is found only in *Phyllocladosoma.*

Making use of these gonopod characters, the suggested interrelationship of the Queensland genera is as follows:



The following arguments may explain this diagram.

In the first place it seems correct to regard *Phyllocladosoma* as the most isolated of the five genera. It has exclusively the derived states of the characters 3 and 7, considered to be of great importance.

Two genera that seem particularly close to one another are *Cladethosoma* and *Heterocladosoma.* They share the derived state of character 2, the tibiotarsal structure. The relationship is furthermore emphasized by the fact that in the two genera the same dissimilarity in size of the two tibiotarsal branches occurs.

A peculiar non-gonopod structure supports the relationship: the presence of small coxal protrusions in certain anterior legs of the male, at least in the 6th somite.

Streptocladosoma and *Paraustraliosoma* share the derived condition of two characters, 1 and 6. However, there seems to be sufficient reason for the belief that in this case the secondary state of these characters was reached along different lines. The elongate tapering solenomerite of *Paraustraliosoma* arises just distad of the apex of the prefemur, instead of at the end of a distinct femoro-solenomerite as in *Streptocladosoma.* Although in both genera the gonopods show torsions, these do not appear to be of a comparable nature.

Although character 4 in its derived state is found in *Cladethosoma* and *Paraustraliosoma*, and this may have some phylogenetic importance, the other characters of the gonopods do not support a particularly close relationship of the two genera.

The state of character 5 seems to support a fairly close relationship between *Heterocladosoma* and *Streptocladosoma*, as well as *Cladethosoma.* It alienates *Paraustraliosoma* from these three genera.

KEY TO QUEENSLAND GENERA

1. Solenomerite elongate, flagellate, tapering gradually towards the finely acuminate apex 2

— Solenomerite rodlike, stout, the apex truncate, rounded or triangular 3

2. Tibiotarsus of variable shape, rodlike or laminate and distally widening. Solenomerite and femoral proces coalesced to form a long femoro-solenomerite, which distad of middle splits into femoral process and an entirely free solenomerite *Streptocladosoma*

— Tibiotarsus, femoral process and solenomerite each arising just distad of apex of prefemur. Tibiotarsus distinctly shorter than femoral process or solenomerite, divided towards its apex into three processes. Femoral process strongly developed and of a complicated structure, distally supporting the apical part of the solenomerite ..... *Paraustraliosoma*

3. Acropodite of gonopods deeply subdivided into two main processes: tibiotarsus and solenomerite; femoral process absent. Solenomerite with a preapical triangular process in which the spermal channel makes a loop ..... *Phyllocladosoma*

— Acropodite consisting of three or more main processes arising from near the base. Spermal channel without preapical loop 4

4. Acropodite split almost to the base into 4 processes: a broad, lamellate femoral process, joined at its base with the rodlike solenomerite, and two rather similar lanceolate tibiotarsal branches *Cladethosoma*

— Femoral process and solenomerite forming a longish combined base, the femoro-solenomerite, which is distally split into the subsimilar solenomerite and femoral process; tibiotarsus consisting of two dissimilar processes: one lanceolate, the other more or less broadly expanded, with its apex acuminate and curved more or less laterad and proximad ..... *Heterocladosoma*

Phyllocladosoma Jeekel

Phyllocladosoma Jeekel, 1968: 26, 146.

Remarks

This genus is characterized by the gonopod acropodite being split almost to the base into two main branches: a distally laminate tibiotarsus and a long solenomerite ending in a rounded lobe and a preapical triangular process in which the spermal channel makes a loop. The femoral process is lacking, although a vestige of its base still may be visible.

In the field the four species of this genus are easily recognized by their conspicuous black and white colour pattern: V-shaped light markings pointing caudad on the metatergites and brightly annulated legs and antennae.

The range of the genus embraces northern New South Wales and southern Queensland. One of the two Queensland species has been recorded also from northern New South Wales. The two remaining species, *P. andersoni* (Verhoeff, 1928) and *P. dorrigense* (Verhoeff, 1928), are endemic there.

Key to the species

1. Tibiotarsus of gonopods medially at about half its length with a short triangular lobe or thumblike process pointing distad and situated just proximad of a constriction 2

— Tibiotarsus without such a process, medial margin proximad of constriction straight truncate ..... *andersoni*

2. End of tibiotarsus a large, rounded blade. Tibiotarsus broad at base, scarcely constricted distad of thumblike process .... *annulatipes*

— Tibiotarsus distad of middle distinctly constricted; the apical part in profile more or less unciform 3

3. Apical unciform lobe simply laminate, without additional lamellae ..... *broelemanni*

— Apical part of tibiotarsus more complicated, with at least one additional lamella .... *dorrigense*

Phyllocladosoma annulatipes (Verhoeff)

Dicladosoma annulatipes Verhoeff, 1924: 27, pl. 2 fig. 16. (1); Verhoeff, 1928: 97. (2)
Phyllocladosoma annulatipes; Jeekel, 1968: 26, 146, fig. 3. (3)

Previous records

Queensland: Glen Lamington (1); Mt. Tam-

bourine (3); New South Wales: Upper Richmond River (2).

Material

Queensland: Mt. Tambourine, E. Mjöberg leg., 3 ♂, 2 ♀, 7 fragmented juveniles (N.R.S.); Mt. Tambourine, A. M. Lea leg., 1 ♀ (S.A.M.).

Description

Colour: Head castaneous, paler in labral and lower clypeal areas and along sutures of lateral sclerites. Antennae also castaneous, darkest in 6th antennomere, tip whitish; antennomeres 2 to 5 distally narrowly annulated with yellow. Collum castaneous, with at anterior border a pair of rather small triangular, medially narrowly contiguous yellowish spots pointing caudad, and at posterior border a pair of similar, though a little larger, spots pointing cephalad. Margin of lateral sides also yellowish. Somites castaneous, somewhat paler in prosomites. Dorsum of prosomites with two subparallel paramedian yellowish bands enclosing a broad median dark band with somewhat convex sides. Metatergites with the continuation of these yellowish bands, which, however, are converging caudad so as to enclose a dark triangle pointing caudad. Caudal edge of triangle situated at or very near posterior margin of tergite. Width of triangle at waist about one third of width of somite; yellow bands extending laterad at waist to about three fifth of width of somite. Paranota entirely yellowish. Sides and venter pale castaneous to yellowish brown. Legs castaneous, apex of podomeres 2 to 6 rather broadly annulated with yellow. Anal somite of same colour as preceding somites, the dark median triangle ending at base of epiproct; epiproct yellowish all around. Paraprocts castaneous. Lateral and ventral margins of anal somite, margins of paraprocts and entire hypoproct yellowish.

Width: ♂: 4.4-5.3 mm, ♀: 4.5-4.9 mm. Juvenile ♂ (19 somites): 3.4-3.5 mm, juvenile ♀ (19 somites): 3.2 mm.

Head and antennae: Labrum rather widely and moderately deeply emarginate. Clypeus rather weakly convex, strongly impressed towards the labrum; lateral border straight or faintly convex, with a weak notch near the labrum. Headplate rugulose-punctate in clypeal region and rugulose at lateral side of vertex, otherwise smooth and rather shiny. Pubescence moderate in clypeus, weak in frontal region and lateral sclerites of head, vertex hairless. Frons not demarcated from clypeus or vertex. Antennal sockets separated by about 1.5 times the diameter of a socket or by 0.7 times the length of the 2nd antennomere. Postantennal "beanshaped" area distinct but very narrow, scarcely prominent. Postantennal groove of moderate width, rather deep; wall in front rather strongly developed. Vertex longitudinally faintly convex in upper part, moderately convex towards frons; transversely flat, rather convex towards the lateral edges and with a distinct rounded swelling (fig. 1). Vertigial sulcus moderately impressed, deepest anteriorly, with fine transverse wrinkles, running downward to a little below upper level of antennal sockets. Antennae of moderate length, rather slender, scarcely clavate, with 6th antennomere the thickest. Antennomeres subcylindrical, each widening a little distally, especially the 5th; the 6th elongate conical, with sides not inflated. Relative length of antennomeres 2 to 6: 1.00, 1.00, 0.95, 0.90, 0.75. Pubescence moderate, becoming dense in the distal antennomeres.

Collum: Little wider than head, subreniform in dorsal outline. Anterior border straight in middle, weakly convex more laterally and straight again towards lateral sides. Posterior border widely and weakly emarginate in middle, weakly convex more laterally and straight towards sides. Lateral sides (fig. 1) rather widely and evenly rounded. Surface of collum smooth and shiny, hairless, longitudinally widely and almost evenly convex, transversely flat in the middle, rather strongly convex more laterally, the sides perpendicular or even faintly incurved. Marginal rim narrow, premarginal furrow distinct, fading away towards middle of anterior border.

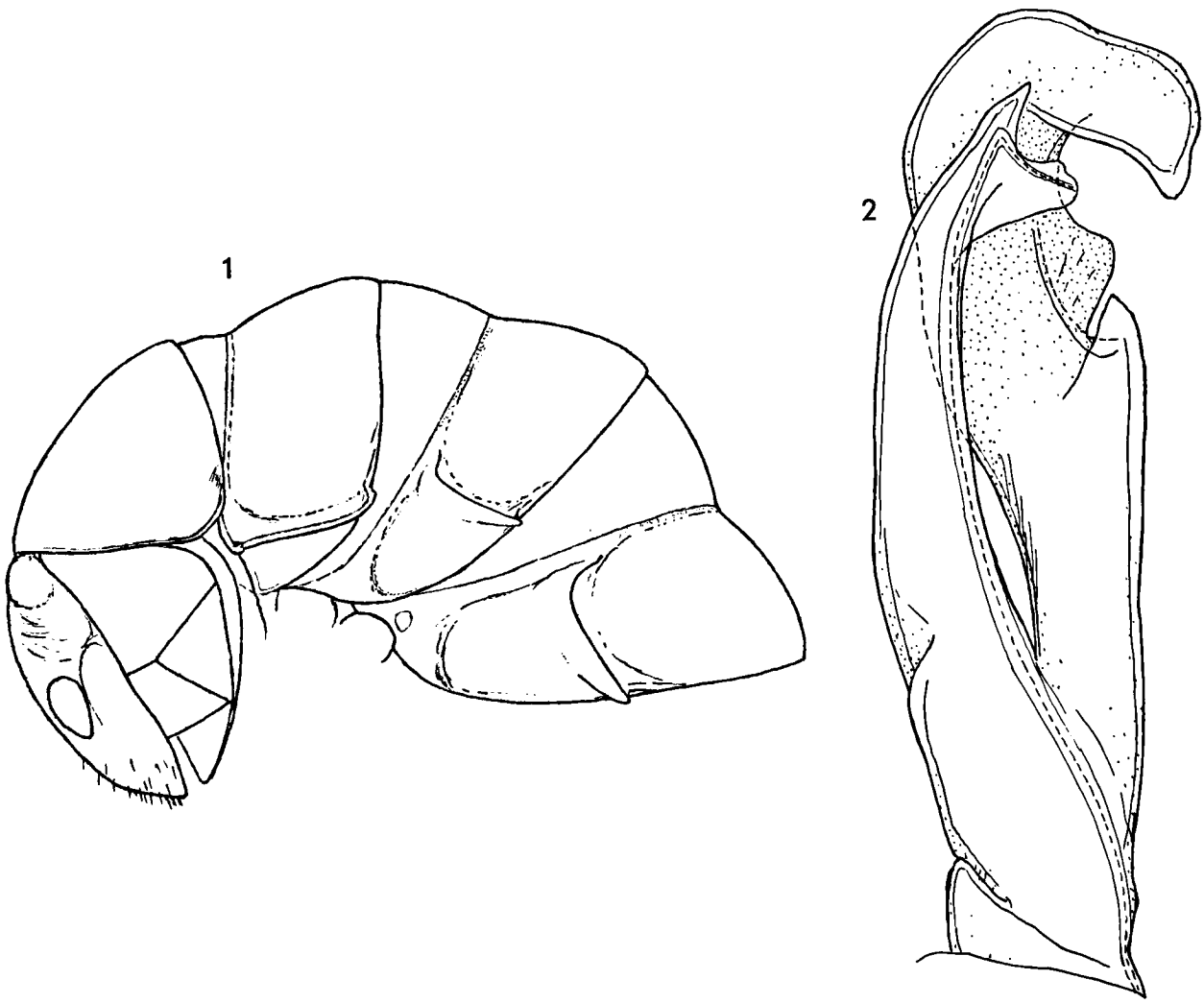


Fig. 1. *Phyllocladosoma annulatipes* (Verhoeff), left side of head and four anterior somites of ♂, lateral aspect. Fig. 2. *Phyllocladosoma broelemanni* (Verhoeff), ♂ from Sta. 4, acropodite of left gonopod, anterior aspect.

Somites: Constriction moderate. Waist rather narrow, moderately sharply demarcated from pro and metasomites, dorsally finely ribbed, more laterally finely striate down to lower level of sides. Prosomites somewhat silky, dulled by minute cellular structure. Metatergites more shiny, hairless, weakly leathery-rugulose with fine meandering sulci. Transverse furrow moderately impressed, with vague striation, present from 5th to 17th somite, weakly impressed also on 18th and vaguely indicated on 4th. Furrow fading away laterally at a distance from dorsal demarcation of paranota about equal to, or slightly less than dorsoventral diameter of a poreless paranotum. Sides smooth, up to 4th somite minutely densely granular. Pleural keels up to 4th somite represented by rounded crenulate ridges; in 5th somite a faint swelling, becoming almost obsolete in 6th and 7th somites.

Paranota: (fig. 1) Second somite a little wider than collum; the 3rd and 4th subequal in width, and a little wider than 2nd. Paranota of 2nd somite moderately developed, on a rather low

level, but visible from above. Anterior border not shouldered at base, widely convex and about transverse on axis of body. Lateroanterior edge widely angular, rounded, with a small rounded lateral tooth. Lateral border widely, and about evenly rounded, a little more convex in caudal half. Caudal edge narrowly rounded, widely angular, passing into caudal border which is short, convex, but narrowly concave at base. Paranota rather strongly sloping laterad. The margin in lateral aspect almost straight, widely curving upward in caudal half. Posterior edge produced caudally, projecting a little behind margin of somite. Marginal rim narrowish. Premarginal furrow curving narrowly upward anteriorly and caudally, shortly percurrent along caudal border of somite. Paranota of 3rd and 4th somites subsimilar. Anterolateral border not shouldered at base, rather widely rounded. Posterior edge in 3rd somite rectangular, slightly projecting. Posterior border shortish, about straight, narrowly concave at base. Lateroanterior border in 4th somite a little more widely rounded; posterior edge acutangular, pointed, projecting caudad. Paranota in lateral aspect dorsoventrally rather narrow, gradually narrowing in caudal half; slightly concave above; premarginal furrow rather strongly curving upward anteriorly and caudally, caudally following the margin of the somite shortly. Paranota of 5th and subsequent somites moderately developed. Anterior and lateral margins in dorsal aspect widely convex: in poriferous somites more strongly so than in poreless somites, where almost evenly rounded. Posterior border straight, short, the edges produced and slightly projecting caudally except in 19th somite. Paranota in lateral aspect moderately thick dorsoventrally, the poriferous about 1½ times as wide as the poreless ones, vaguely concave above, the premarginal furrow anteriorly scarcely turning upwards, almost reaching the waist, posteriorly shortly paralleling caudal border of somite. Poriferous paranota straight above; caudally a little convex above the pore, and a little concave again just in front of posterior edge, giving it the aspect of being caudally a little turned upwards. Ventral demarcation in lateral aspect present in caudal half of poriferous, and caudal third of poreless paranota, converging straight towards the upper demarcation in an angle of 45°. Pores rather small, in an oval pit, situated a little more near ventral demarcation.

Sternites and legs: Sternites of middle somites 1.4 times longer than wide. Cross impressions moderately developed; longitudinal impression rather wide and moderately deep, distinct especially between opposite coxae; transverse impression a little deeper, more furrowlike especially between successive coxae. No sternal cones. Pubescence rather dense; setae of moderate length. Sternite of somite 4 rather wide, concave, low; pubescence moderate with setae of moderate length. Sternite of 5th somite with sternal process broad, about 1.3 times wider than long, more or less parabolically rounded, but a little constricted at base. Process directed a little obliquely forward, towards apex curving a little backward, projecting slightly in front of sternite. Anterior side in profile widely convex, apically with a brush of short setae. Posterior surface widely concave, pubescence rather dense, with setae of moderate length. Transverse furrow rather deep; longitudinal impression of caudal half of sternite weak, pubescence rather dense with long setae. Sternite of 6th somite flattened, raised scarcely above ventral level of metasomal ring; transverse impression wide but weak. Coxal sockets widely separated, scarcely raised. Pubescence rather dense, with long setae. Sternite of 7th somite with laterocephal ridges rather low, minutely granulose. Sternite of 8th somite anteriorly somewhat flattened, weakly concave. Anterior coxae widely separated, the posterior a little less widely. Sternite not modified otherwise. Legs rather long and rather stout; prefemora dorsally moderately convex, femora faintly arched. Ventral pubescence of all podomeres dense, setae rather short. Dorsal pubescence dense in tarsi, a little less so in tibiae, otherwise unapparent. Scopulae of tibial and tarsi dense, gradually thinning out a little caudad, with tibial scopulae disappearing soon; tarsal scopulae absent only in the last two pairs

of legs. Leg of first pair with a strongly developed ventral femoral process. Coxae of legs of 2nd pair medially a little inflated, distally obliquely truncate, not produced. Coxae of legs of 6th somite distinctly elongate, but without ventrodistal cones, or these abortive. Relative length of podomeres 2 to 6 in middle part of body: 0.65, 1.00, 0.55, 0.60, 0.70.

Anal somite: Upper profile faintly convex, faintly concave at base. Dorsoventral width moderate. Epiproct from above broad at base, sides rather weakly concavely converging, more distally faintly convex, to become more strongly convex towards the truncate, rather narrow apex, which is weakly emarginate. Setae not on tubercles. Paraprocts with narrowish rims of moderate height. Setae not on tubercles. Hypoproct broadly triangular, sides faintly convex, the apex widely rounded, with a faint medial production. Setae on faint tubercles.

Gonopods: (for illustration see Jeekel, 1968) Coxa rather stout, but relatively short as compared to length of telopodite, bent caudad a little halfway, and narrowing somewhat in distal half. Anterior side with well developed setiferous area. Prefemur short, ovoid, oblique on axis of acropodite. Acropodite just distad of base split into two main branches: solenomerite and tibiotarsus. The latter arising from the caudal side, elongate, distally transversely compressed, constricted proximad of apex and bearing a small secondary triangular lobe there. Apex itself a rounded lamella, produced a little in medial direction. Solenomerite rodlike, gradually narrowing a little distad before apically curving towards medial side. Near apex a triangular process in which the spermal channel makes a loop before ending in the terminal rounded lobe.

Female: Interantennal space 1.4 times the diameter of a socket, or 0.7 times the length of the 2nd antennomere. Frons a little swollen, separated from vertex by a slight transverse depression. Vertex longitudinally rather strongly, but almost evenly convex; transversely widely and evenly convex, without lateral swellings. Relative length of antennomeres 2 to 6: 1.00, 0.95, 0.90, 0.85, 0.75. Collum transversely almost evenly convex, only vaguely flattened medially; the sides slant, almost vertical. Sternites of middle somites 1.2 times longer than wide between the coxal sockets. Relative length of podomeres 2 to 6 in legs of middle somites: 0.70, 1.00, 0.60, 0.65, 0.70. Ventral pubescence of all podomeres moderate to rather dense. Epigynal structure with ventral side of 3rd somite anteriorly deeply emarginate to embrace the coxae of the 2nd pair of legs. Anterior margin with a slightly thickened rim, medially with a short triangular production. Coxae of 2nd pair of legs modified: the protruding part caudally inflated and with a laterocaudal conical process pointing laterocaudad, and sometimes with a low flattened cone on posterior side. Coxa medioterminally with a distinct, sometimes pointed, conical process pointing distad.

Remarks

The specimens used for the above description were recorded previously (Jeekel, 1968) at the occasion of the proposal as new of the genus *Phyllocladosoma*. The drawings of the gonopods, published in 1968 to clarify the position of the genus, were made after the same material.

Phyllocladosoma broelemanni (Verhoeff)

Dicladosoma brölemanni Verhoeff, 1941: 12, fig. 9. (1)
Phyllocladosoma broelemanni; Jeekel, 1968: 26, 146.

Previous record
Queensland: Brisbane (1).

Material

Queensland: Maiala National Park, 30 km WNW of Brisbane, along Maiala circuit track, under logs, 27.IX.1980, Australia Exped., Sta. 2, 1 ♂, 1 ♀ (Z.M.A.); Kondalilla National Park, 11 km WSW of Nambour, along nature track in rainforest, under logs, 30.IX.1980, Australia Exped., Sta. 4, 3 ♂ (Z.M.A.).

Description

Colour: Pattern essentially the same as in *P. annulatipes*, but, obviously on account of a better state of preservation, the dark colour is blackish brown and the pale colour yellowish white. Head with a pale ring around the antennal sockets. Antennomeres quite narrowly annulated: the pale colour present only at the very base and very end of each antennomere; intersegmental membranes pale brownish. Collum with the anterior and posterior pale triangles, especially the posterior pair, small (Sta. 4), or of almost equal size, each extending to about mid-length of collum, so as to almost enclose a median, longitudinally rhomboid dark spot (Sta. 2). Venter dark brown; sternites pale brownish to rather dark brown. Pale annuli of legs almost equalling distal half of podomeres. Anal somite as in *P. annulatipes* (Sta. 4) or with the paramedian pale bands ending in front of the epiproct (Sta. 2).

Width: ♂: 4.0-4.2 mm; ♀: 4.4 mm.

Head and antennae: Antennal sockets separated by about 1.4 times the diameter of an antennal socket. Relative length of antennomeres 2 to 6: 1.00, 0.90-0.95, 0.85-0.95, 0.80-0.85, 0.70-0.75.

Collum: Middle of surface sometimes a little irregularly uneven.

Somites: Sides up to 4th somite granular and sometimes strongly rugulose.

Paranota: Marginal rim of paranota of 2nd somite may be straight in lateral aspect. Poriferous paranota in lateral aspect with caudal angle a little less than 45°.

Sternites and legs: Process of 5th sternite sometimes medially faintly angular. Relative length of podomeres 2 to 6 in middle somites: 0.65, 1.00, 0.60, 0.65, 0.75.

Anal somite: Upper profile with basal concavity absent. Hypoproct almost parabolically rounded.

Gonopods: (fig. 2) Tibiotarsus widening a little towards middle of length and bearing at medial side an acuminate triangular lobe pointing distad. Beyond this lobe a narrow incision followed by a broad triangular lamella. The terminal blade narrow, unciform, a little twisted, directed mesad and a little proximad. Solenomerite on lateral side distad of base with a slight incision (possibly the vestige of a femoral process). Spermal channel not fully penetrating the preterminal process.

Female: Antennal sockets separated by 1.3 times the diameter of a socket, or by about 0.7 times the length of the 2nd antennomere. Relative length of antennomeres 2 to 6: 1.00, 0.95, 0.95, 0.90, 0.85. Sternites in middle part of body 1.1 times longer than wide. Relative length of podomeres 2 to 6 in middle part of body: 0.75, 1.00, 0.55, 0.50, 0.75. Coxa of 2nd pair of legs mediodistally produced into a slender, acuminate, conical process, reaching about as far distad as two fifths of length of prefemur. Caudal side of apical part of coxa swollen, the swelling laterocaudally extended into a thick, rounded cone.

Remarks

In points not mentioned above the description of *P. annulatipes* applies.

P. broelemanni is very similar to *P. annulatipes*, differing mainly in a somewhat smaller size and in the gonopods of the male. Other mentioned differences in the peripheral morphology seem to extend the variability of each of the two species, rather than that they can be used for identification purposes. Study of more material of both species is needed to verify a possible distinction in the coxae of the second pair of legs of the female.

Cladethosoma Chamberlin

Cladethosoma Chamberlin, 1920: 105; Jeekel, 1979: 649; Jeekel, 1982: 141.
Leucotessara Verhoeff, 1928: 90, 92; Jeekel, 1968: 24.
Walestessara Verhoeff, 1937: 137.

Remarks

For a discussion on this genus and a key to its species reference must be made to a previous paper (Jeekel, 1982). Geographically the genus

focusses in northern New South Wales; with the discovery of the presently described new species its range is extended into southern Queensland.

In the gonopods the genus is well characterized by having four main branches arising from a mostly short common base: two narrow tibiotarsal branches, a generally large, laminate femoral process and a long, broadish solenomerite ending in a rounded laminate lobe. The tibiotarsal branches arise proximad of base of femoral branch, resulting in a short femoro-solenomerite.

Cladethosoma uncinatum nov. spec.

Type locality

Queensland: Christmas Creek, X.1912.

Material

♂ holotype and 2 ♂, 1 juv. ♂ (19 som.) 2 juv. ♀ (19 som.) paratypes, all from the above locality, leg. E. Mjöberg (N.R.S.).

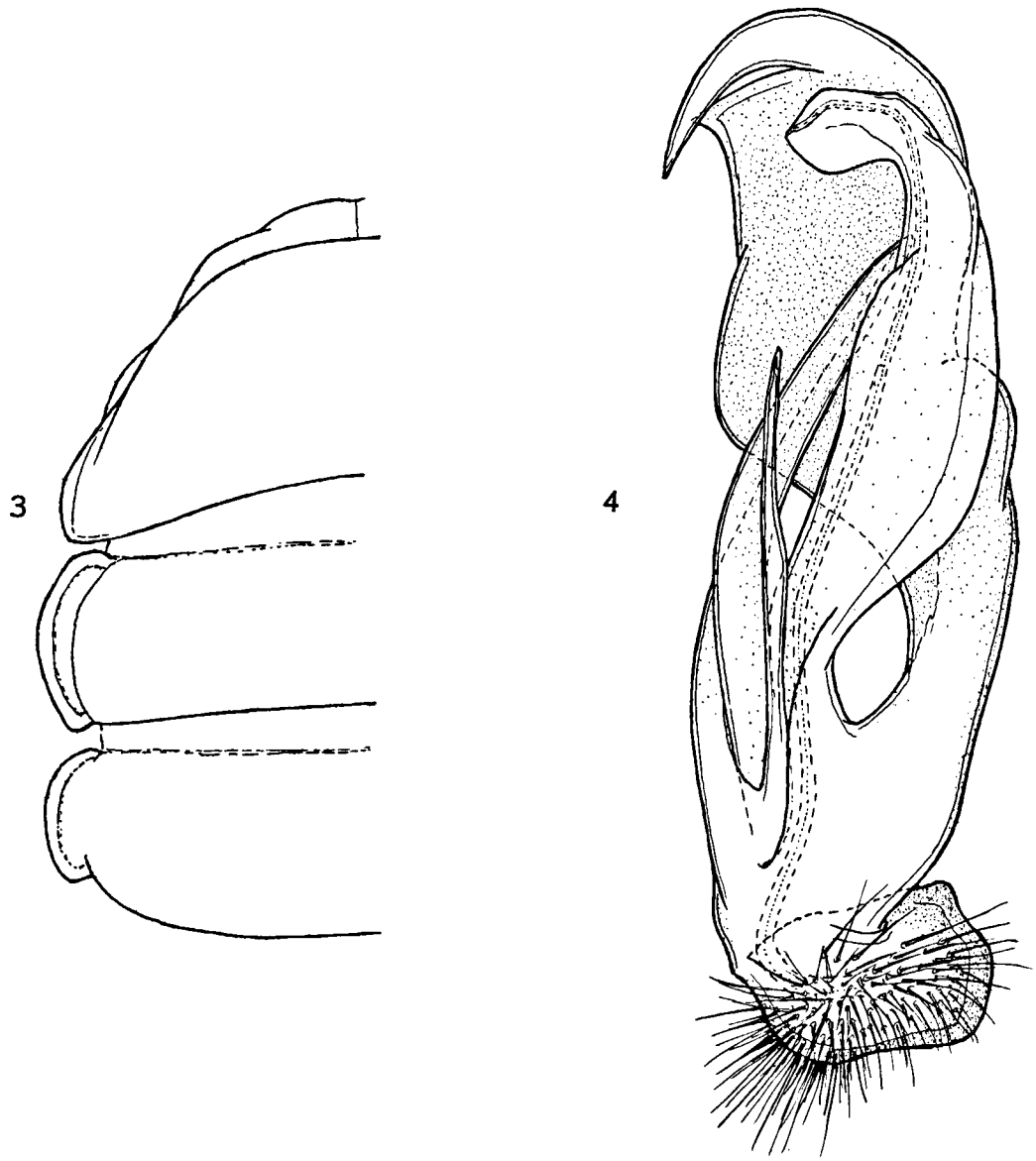
Description

Colour: Head blackish brown to brown, paler in labral area, around the antennal sockets, and at sutures of lateral sclerites. Antennae dark brown to brown, darkest in the distal antennomeres; tip whitish. Collum of same dark ground colour as head, but with a pair of broad paramedian brownish yellow bands, separated by a narrow median dark line, which just does not reach the anterior margin. Entire anterior margin and lateral lappets also brownish yellow. Somites having a similar pattern as collum; the dark stripe broadest in second half of metatergite (0.15 times width of somite) and almost interrupted at waist and at caudal margin of tergites. Widest part of yellowish bands about 0.6 times largest width of somites. Paranota up to 4th somites yellowish, from 5th somite onwards yellowish only in caudal half. Venter and sternites dark brown; legs dark brown, at joints very narrowly annulated with pale colour; tip of tarsi pale. Anal somite with same colour characteristics as somites; the dark median line disappearing near base of epiproct; margins yellowish. Paraprocts dark brown, their margins yellowish; hypoproct yellowish.

Width: ♂: 4.5-4.6 mm, juv. ♂ (19 somites): 3.1 mm; juv. ♀ (19 somites): 3.0-3.4 mm.

Head and antennae: Labral emargination of moderate width and depth. Clypeus rather weakly convex, rather strongly impressed towards labrum. Lateral margin weakly convex, with a distinct notch near labrum. Headplate rather coarsely rugulose and punctate in clypeal area, otherwise smooth, with some weak wrinkles in frons and lateral parts of vertex. Pubescence moderate in clypeus, weak in frontal area and on lateral sclerites of head; vertex with a pair of weak setae. Setae of moderate length. Antennal sockets separated by 1.3 times the diameter of a socket, or by 0.7 times the length of the 2nd antennomere. Postantennal "beanshaped" area narrow but distinctly demarcated. Postantennal groove rather wide and deep, the wall in front rather prominent. Vertex longitudinally moderately and evenly convex, transversely weakly and evenly convex, lateral edges with a low but distinct swelling. Vertigial sulcus weakly impressed in upper part, moderately so in lower part, with fine transverse wrinkles, running downward to just below upper level of antennal sockets. Antennae rather long and slender, scarcely clavate, with 6th antennomere thickest. Antennomeres cylindrical, widening slightly distally, the 5th apically somewhat clubshaped; 6th antennomere elongate obconical, its sides straight. Pubescence rather dense in proximal antennomeres, becoming dense in distal ones. Relative length of antennomeres 2 to 6: 0.90, 1.00, 1.00, 1.00, 0.80.

Collum: (fig. 3) A little, though distinctly wider than head, subtrapezoidal in dorsal outline. Anterior margin faintly convex in middle, becoming a little more strongly rounded laterally and finally faintly concave towards sides. Posterior margin widely and weakly emarginate in middle, widely and weakly convex towards lateral sides. Lateral margin rather



Figs. 3-4. *Cladethosoma uncinatum* nov. spec., holotype ♂. 3: left side of head and three anterior somites, dorsal aspect 4: telepodite of left gonopod, caudal aspect.

widely, somewhat asymmetrically, rounded, the rounding narrowest anteriorly. Surface of collum dullish, weakly coriaceous, hairless. Surface longitudinally weakly and evenly convex, transversely weakly convex becoming more convex laterally, and finally almost perpendicular, the extreme margin narrowly flaring and nearly horizontal, somewhat brimlike. Marginal rim laterally rather well developed and somewhat incrassate. Premarginal furrow anteriorly fading away towards middle of anterior border.

Somites: Constriction rather weak; waist narrowish, rather sharply demarcated from pro- and metatergites, dorsally finely striate to about level of paranota, otherwise smooth. Prosomites very dull, almost silky, and finely irregularly wrinkled. Metatergites dullish,

minutely coriaceous, hairless. Transverse furrow present on 5th to 18th somites, faintly indicated on 4th, smooth, rather deeply and sharply impressed, remaining separated from dorsal delimitation of paranota by a distance equal to about the dorsoventral diameter of a poreless paranotum. Sides smooth, scarcely granular in 2nd to 4th somites. Pleural keels of 2nd to 4th somites represented by rather weakly defined, somewhat crenulate curved ridges, caudally rounded and not produced; absent on 5th somite, and represented by a weak inflation near the posterior margin on somites 6 and 7, absent from 8th somite onwards.

Paranota: (fig. 3) 2nd somite a little wider than collum; 3rd a little narrower than 2nd and as wide as 4th. Paranota of 2nd somite rather well developed. Anterior margin in dorsal aspect basally thrust forward a little and rather narrowly rounded, more distally faintly convex and directed a little caudad. Lateroanterior edge narrowly rounded, produced lateroventrad in a small but distinct tooth. Lateral border widely and evenly convex; posterior edge narrowly rounded, produced caudad a little and projecting slightly behind caudal border of somite. Posterior border short, slightly convex. Paranota in lateral aspect on a rather low level, a little declivous. Marginal rim somewhat incrassate, of even width, widely and evenly concave dorsally. Premarginal furrow percurrent for some distance along caudal border of somite. Paranota of 3rd somite in dorsal aspect lateroanteriorly moderately widely rounded, more widely convex laterally. The posterior edge narrowly rounded, not caudally produced. Posterior border faintly convex, short. In lateral aspect marginal rim somewhat incrassate, straight, narrowly curving upward anteriorly, ventrally well demarcated; posterior edge narrowly rounded. Premarginal furrow curving upward caudally to parallel caudal border of somite for a short distance. Paranota of 4th somite similar to those of 3rd, but lateroanterior border in dorsal aspect more widely rounded, the narrowly rounded posterior edge not produced. Posterior border faintly convex. Marginal rim in lateral aspect straight, rather narrowly curving upward anteriorly and caudally; the premarginal furrow paralleling caudal border of somite for a short distance. Paranota of 5th and subsequent somites weakly developed; in dorsal aspect widely and almost evenly convex, diverging caudad, parallel to axis of body or faintly incurved towards caudal edge. Paranota ending just in front of caudal border of somites; caudal edge narrowly rounded, obtuse or about rectangular, becoming scarcely more acute in caudal half of body. Edge acuminate only in 19th somite, scarcely produced there, and not projecting behind margin of somite. Posterior border of paranota short, faintly convex. Paranota in lateral aspect of moderate width, with poriferous ones about 1½ times wider dorsoventrally than poreless. Dorsal demarcation faintly concave, anteriorly curving upward a little and fading away before reaching waist. Caudal half in poriferous paranota dorsally faintly convex. Ventral demarcation distinct in second half of paranota, weakly and convexly converging towards upper demarcation, meeting it in an acute angle; posterior edge quite narrowly rounded. Premarginal furrow following caudal margin of metatergite for a short distance. Pores of moderate size, in a shallow rounded or oval pit, situated a little more near ventral demarcation.

Sternites and legs: Sternites of middle somites as long as wide between anterior coxae. Cross impressions well developed; the transverse impression deepest, furrowlike, the longitudinal wide, concave, medially furrowed. Low, rounded sternal cones pointing caudad and a little ventrad on mediocaudal side of all coxal sockets, but distinct especially in the caudal pair of each sternite, from 8th to 17th somite. Pubescence moderate, with shortish setae. Sternite of somite 4 with median impression moderately deep and wide. Sternite of somite 5 with process between anterior coxae about two times broader than long, subpentagonal; medial angle wide, very narrowly rounded, the lateral edges rather narrowly rounded; lateral sides slightly converging distad. Anterior and posterior sides in lateral aspect weakly converging, anterior side faintly

convex, projecting scarcely in front of sternite, the apical portion with dense brush of short setae. Posterior side declivous, basally a little inflated, moderately setiferous. Transverse furrow moderately impressed. Posterior half of sternite with longitudinal impression moderately developed, caudally a little flattened, but well raised above ventral side of metasomal ring. Sternite of somite 6 flattened, lowest in caudal part but not level with ventral side of ring. No cross impression except a furrow between successive coxal sockets. Coxal sockets scarcely raised, separation between opposite sockets a little wider than in postgonopodial sternites. Pubescence moderate, but setae long. Sternite of somite 7 without ridge in front of gonopod aperture; the caudal coxae separated as in somite 6. Sternite of 8th somite scarcely modified, anteriorly slightly flattened, separation between opposite coxae normal. Legs of middle somites longish, moderately slender. Prefemora dorsally moderately convex, femora faintly arched. Dense tarsal (and in anterior legs also tibial) scopulae present in all legs except last two pairs. Other podomeres ventrally densely, almost brushlike pubescent with rather short setae. Dorsal pubescence rather dense in tarsi, otherwise unapparent. First pair of legs incrassate, with well developed ventral femoral process. Coxae of 2nd pair medially somewhat produced in a rounded lobe. Coxae of first pair of 6th somite with a distinct mediodistal rounded cone; similar though weaker cones on 2nd pair of 6th and 7th somites and on first pair of 8th somite. Relative length of podomeres 2 to 6: 0.65, 1.00, 0.60, 0.60, 0.75.

Anal somite: Upper side widely convex in profile, the epiproct slightly declivous. Epiproct dorsoventrally moderately thick, from above rather broad at base, with sides concavely converging, not parallel towards apex, but just before the apex a slight narrowing. End rather narrowly truncate, faintly emarginate. Setae not on tubercles. Paraprocts with setiferous tubercles minute. Marginal rims rather low, of moderate width. Hypoproct somewhat broadly triangular, with sides faintly concave in basal half and faintly convex near apex. Apex narrowly rounded; the setiferous tubercles minute, not projecting beyond the margin.

Gonopods: (fig. 4) Femoral section very short. Tibiotarsal branches very differently developed: the medial branch distinctly shorter than the lateral, and very slender. Solenomerite moderately transversely expanded towards the middle of its length. Femoro-solenomerite short. Femoral process narrow at base, considerably expanding transversely in its apical half. Just a little before the middle on lateral side a rounded lobe. Apex with a slender uncate process; preapical process acutely angular.

Female: Unknown.

Remarks

In the key to the species of *Cladethosoma* (Jeekel, 1982: 142), *C. uncinatum* comes next to *C. lucidum* (Verhoeff, 1928) described from New South Wales: Duggan's Gully, Upper Chichester, to which it indeed seems closely related. In the gonopods it appears to be distinct only in the shape of the femoral process. The lateral lobe halfway is simply rounded, whereas in *lucidum* it is distinctly produced into a rounded cone. The preapical triangular lobe is more acute. In the tibiotarsus there seems to be a greater difference in length between the two branches. The colour of *lucidum* appears to be quite different, the species apparently having a yellowish white ground colour (recently moulted ?). The collum is described as having three dark longitudinal bands, with the median the widest. In the peripheral characters a noteworthy difference may be the presence of a pair of paramedian swellings in the frontal region in *lucidum*. *C. lucidum* also appears to have rounded pleural keels up to the 6th somite. Coxal processes appear to be present only in the two pairs of legs of the 6th somite.

Heterocladosoma Jeekel

Heterocladosoma Jeekel, 1968: 25, 144; Jeekel, 1985: 19.

Remarks

Like *Cladethosoma* this genus is characterized by the tibiotarsus consisting of two prongs, one of which is broad, laminate, while the other is a slender style. The tibiotarsus arises from near the base of the acropodite. The remaining branch of the acropodite is a femoro-solenomerite which halfway its length or a little beyond is divided into a simple femoral process and a solenomerite which tapers a little towards the narrowly rounded apex. In one species the solenomerite has an additional process.

Geographically the genus is interesting because of its disjunct area: coastal Queensland from Cairns to Brisbane and South Australia. For the description of the South Australian species, *H. zebratum* and *H. galaxias*, reference is made to Jeekel, 1985.

Key to species

1. Largest tibiotarsal branch of gonopods projecting distad of femoral process and solenomerite. (Queensland) 2
— Tibiotarsal branches not overreaching the femoral process and solenomerite. (South Australia) 6
2. Femoro-solenomerite of gonopods apically trifurcate, ending in a solenomerite, a femoral process and an additional prong. Colour pattern typical: somites black, prosomites dorsally with a pair of paramedian yellowish spots enclosing a dark triangle .. .. *hamuligerum*
— Femoro-solenomerite apically bifurcate. Somites with a different colour pattern 3
3. Apex of largest tibiotarsal branch of gonopods spinelike, curved laterad and a little proximad. Profile of telopodite of gonopods transversely widened by the wide lateral curve of the femoro-solenomerite and its branches. Somites dark brown; caudal half of metatergites transversely banded with yellowish white 4
— Largest tibiotarsal branch apically tapering and curving laterad, but not spinelike. Profile of telopodite of gonopods transversely relatively narrow; the femoro-solenomerite not widely curved, but almost straight. Somites reddish brown to black, without conspicuous colour pattern 5
4. Largest tibiotarsal branch widening slightly in distal direction, its lateroanterior margin faintly rounded ..... *trabeatum*
— Largest tibiotarsal branch strongly widening towards middle of length, its lateroanterior margin widely rounded ..... *transversetaeniatum* s. str. and ssp. *perarmatum*
5. Apex of largest tibiotarsal branch abruptly curved laterad, rather shortly triangular ..... *asperum*
— Apex of largest tibiotarsal branch curved more widely laterodistad, narrow lamellar ..... *bifalcatum*
6. Largest tibiotarsal branch of gonopods crooked halfway. Somites blackish, body dorsally marked with a longitudinal series of large whitish spots ..... *galaxias*
— Largest tibiotarsal branch of gonopods more or less regularly fusiform. Somites pale yellowish, transversely banded with blackish brown in the waist area ..... *zebratum*

Heterocladosoma bifalcatum (Silvestri)

Eustrongylosoma bifalcatum Silvestri, 1898: 231, figs. 13-14 (1)

Heterocladosoma bifalcatum; Jeekel, 1968: 25, 144, fig. 2. (2)

Previous records

Queensland: Cairns (1); Colosseum (2).

Material examined

Queensland: Colosseum, October, E. Mjöberg leg., 3 ♂ (N.R.S.).

Description

Colour: Blackish brown, with a reddish tinge. Ring around antennal sockets, sutures of lateral sclerites of head, waist, poriferous paranota, venter, margins of anal somite and paraprocts,

and hypoproct a shade paler: dark reddish brown. Antennae, sternites and legs bloodred; 6th and 7th antennomeres somewhat infuscate; tip of antennae whitish.

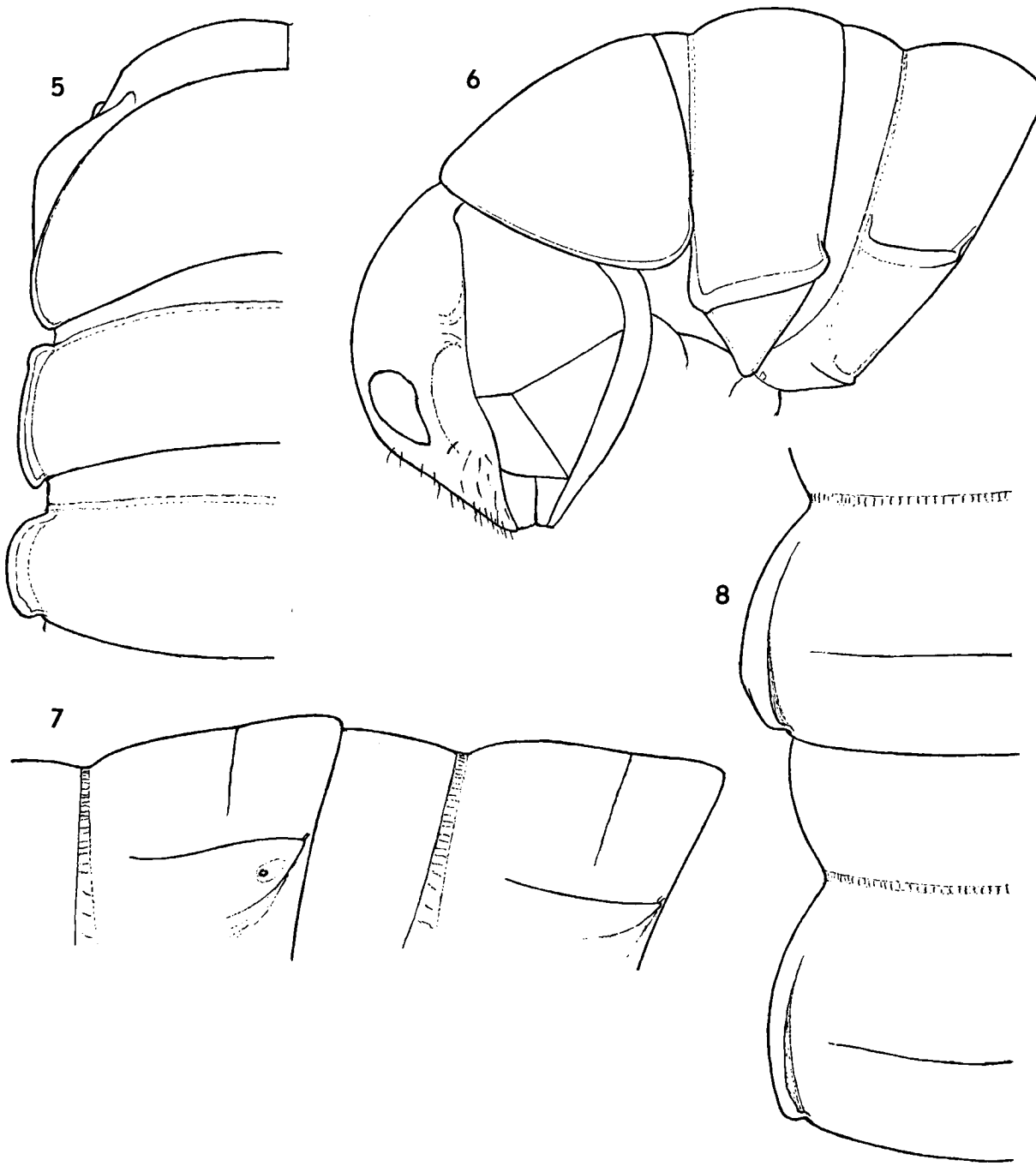
Width: 2.6-2.8 mm.

Head and antennae: Labrum widely but very weakly emarginate. Clypeus scarcely convex, weakly impressed towards labrum; lateral margin faintly rounded, with a distinct notch near labrum. Headplate punctate and coarsely rugulose in clypeal area, otherwise smooth and shiny. Pubescence moderate in clypeal part, weak in frontal area and on lateral sclerites; vertex hairless. Antennal sockets separated by 1.4 times the diameter of a socket or by 0.6 times the length of the 2nd antennomere. Postantennal "beanshaped" area narrow, almost obsolete. Postantennal groove rather wide, moderately deep; the wall in front moderately prominent. Vertex longitudinally rather strongly convex, especially in upper part; transversely rather weakly and evenly convex. Vertigial sulcus well impressed, especially anteriorly, running downward to just below the upper level of antennal sockets. Antennae of moderate length, not particularly slender, weakly clavate, 6th antennomere thickest. Antennomeres 2 to 5 subcylindrical-obconical, distinctly widening distad; the 6th obconical with sides straight or faintly convex. Pubescence moderate in proximal antennomeres to dense in distal ones. Relative length of antennomeres 2 to 6: 0.95, 1.00, 0.95, 0.85, 0.85.

Collum: (figs. 5-6) As wide as head, reniform in dorsal outline. Anterior and lateroanterior margins rather widely and almost evenly convex. Posterior margin widely and weakly concave, more laterally faintly convex. Lateral border rather widely and evenly rounded. Surface smooth or with some faint wrinkles, rather shiny, hairless; transversely moderately convex, slightly flattened in middle, laterally perpendicular; longitudinally faintly convex, distinctly more so near anterior and posterior borders. Marginal rim laterally rather narrow, the premarginal furrow almost fading away towards middle of anterior border.

Somites: Constriction moderate. Waist rather narrow, weakly demarcated from pro- and metasomites, dorsally rather weakly ribbed and laterally weakly striate down to lower part of sides. Prosomites dull, somewhat silky, with fine cellular structure. Metatergites shiny, smooth or with rather vague leathery wrinkles, hairless. Transverse furrow moderately impressed, smooth, present from 5th to 17th somite, weakly indicated on 4th and 18th somites. Furrow disappearing laterally at a distance from upper demarcation of paranota equal to about diameter of a poreless paranotum. Sides smooth, up to 3rd somite minutely granulose. Pleural keels represented by distinct, though rather weak, curved granular ridges in 2nd and 3rd somites; these weakly present also in 4th somite. In 5th and 6th somites only a faintly indicated swelling.

Paranota: (figs. 5-8) 2nd to 4th somites each a little wider than the preceding somite. Paranota of 2nd somite moderately developed. Anterior border from above widely convex, slightly thrust forward; lateroanterior edge rather narrowly rounded and merging into lateral margin, which anteriorly has a distinct lateral tooth. Lateral border widely convex, a little more convex in posterior half, where it converges caudad a little. Lateroposterior edge narrowly rounded, slightly produced caudad, and weakly projecting behind caudal margin of somite. Posterior border short, somewhat convex. Paranota horizontal, on a moderately low level; in lateral aspect with marginal rim of moderate and about even width, ventrally well demarcated, upper side faintly concave dorsally, sloping a little cephalad, only anteriorly and posteriorly rather abruptly curving upward. Premarginal furrow well impressed, rather weakly percurrent along caudal border of somite for a short distance. Paranota of 3rd and 4th somites subsimilar; from above rather, more or less symmetrically, convex, the 3rd about evenly convex, the 4th anteriorly more widely convex. Laterocaudal edge in 3rd somite rather narrowly rounded, faintly produced, but not projecting behind the margin of the somite; in 4th more widely rounded, not produced and



Figs. 5-8. *Heterocladosoma bifalcatum* (Silvestri), ♂. 5: left side of head and three anterior somites, dorsal aspect. 6: the same, lateral aspect. 7: left side of 10th and 11th somites, lateral aspect. 8: the same, dorsal aspect.

not projecting behind the margin. Posterior borders of paranota of 3rd and 4th somites almost obsolete. Paranota in lateral aspect with rim dorsoventrally moderately wide, the caudal two thirds ventrally demarcated. Upper surface in lateral aspect widely concave dorsally. Posterior edge in lateral aspect narrowly rounded; the premarginal furrow vaguely percurrent for

a short distance along caudal margin of somite. Paranota of 5th and subsequent somites rather weakly developed. Lateral border from above in poreless somites widely and about evenly convex, diverging caudad almost to near laterocaudal edge; in poriferous somites up to just a little in front of the pore area, and from there on somewhat incurved. Paranota ending caudally close to posterior margin of somite; lateroposterior edge obtusely angular, narrowly rounded, becoming scarcely more acute in caudal somites. Only in the 14th, 17th and 18th somites the edge is subacute and slightly produced caudad, but hardly projecting caudad of margin in 17th and 18th somites. Posterior border of paranota short, straight. Paranota in lateral aspect of moderate dorsoventral width, with poriferous 1½ times wider than poreless. Dorsal demarcation widely concave in poreless somites, weakly convex in poriferous somites; the demarcation anteriorly fading away well before reaching waist; caudally the premarginal furrow weakly parallels the caudal margin of the metatergites for a short distance. Ventral demarcation distinct in caudal half of paranota; in poreless paranota rather weakly, in poriferous ones rather strongly and convexly converging towards upper demarcation. Posterior edge in lateral aspect acutely angular, sharply rounded. Pores of moderate size, in an oval or rounded shallow pit, situated distinctly more close to ventral demarcation.

Sternites and legs: Sternites of middle somites 1.1 times longer than wide. Cross impressions moderately developed; the longitudinal impression wide, with a faint median furrow; the transverse hardly deeper, furrowlike, especially distinct between successive coxae. At base of posterior legs of each postgonopodial somite a vestigial cone. Pubescence moderate, setae shortish. Sternite of somite 4 with coxae rather widely separated, the longitudinal furrow rather deep and wide; pubescence moderate. Sternite of 5th somite between anterior legs with a short, broad, subtrapezoidal process, about 3 times wider than long; its distal margin faintly convex. Anterior and posterior sides in profile strongly converging. Process not inclined cephalad, not projecting in front of sternite. Posterior surface declivous towards the distinct but rather weakly impressed transverse furrow. Anterior surface apically densely set with short setae; posterior surface moderately setiferous, setae of moderate length. Posterior part of sternite somewhat flattened, slightly declivous caudad; longitudinal furrow weakly impressed. Pubescence moderate, setae long. Sternite of 6th somite flattened, but not level with ventral side of metasomal ring. Transverse furrow weakly impressed. Sockets of opposite coxae widely separated. Pubescence moderate with long hairs. Sternite of 7th somite with lateroanterior pregonopodial ridges weakly developed. Sternite of 8th somite with anterior coxal sockets more widely separated than posterior; anterior part of sternite a little flattened; caudal part not modified. Legs of middle somites of moderate length, rather slender. Prefemora dorsally moderately convex; femora not arched. Pubescence of legs ventrally rather dense, with moderately long setae, otherwise unapparent, but dorsal side of tarsi densely setiferous. Scopulae of tarsi (and tibiae) present in a few anterior legs, thinning out in pregonopodial legs and absent from 8th somite onwards. Legs of first pair with a weakly developed ventral femoral process. Coxae of legs of 2nd pair medially widely rounded, not produced. Coxae of second pair of legs of 6th somite with faintly indicated ventral coxal cone; vestigially present also in first pair of 6th and second pair of 7th somite. Relative length of podomeres 2 to 6 in middle part of body: 0.55, 0.90, 0.55, 0.60, 1.00.

Anal somite: Dorsal side in lateral aspect faintly convex, scarcely concave anteriorly. Epiproct dorsoventrally thick, shortish, from above broad at base. In dorsal aspect sides widely concave, converging rather strongly towards the moderately broad apex, near apex a little convex, with lateral setiferous tubercles almost obsolete. Apex straight truncate. Setae not on tubercles. Paraprocts with setiferous tubercles low, almost obsolete. Marginal rims moderately wide, rather low. Hypoproct

broadish subtriangular, almost semicircular. Setae not on tubercles.

Gonopods: (for illustration see Jeekel, 1968) Coxa of moderate width, relatively short as compared to length of telopodite, bent a little caudad apically. Anterior side with a setiferous area. Prefemur short, ovoid, strongly oblique on axis of acropodite. Acropodite erect, its femoral section very short. Tibiotarsus with caudal branch very slender, two thirds of length of anterior branch, rodlike, tapering gradually towards the acuminate apex. Anterior branch with narrow base, soon expanding into an elongate lamella, distally narrowing to a subacuminate apex curving laterad, and overreaching slightly the solenomerite and femoral process. Femoro-solenomerite long and slender, straight, distally dividing into the solenomerite and a simple femoral process, both curving mesad. Solenomerite and femoral process of subequal length, both distally tapering towards a subacuminate apex.

Female: Unknown.

Remarks

This is the type-species of the genus *Heterocladosoma*. The present description is based on the material briefly recorded and used for the illustrations of the gonopods in 1968.

The material agrees very well with the original description given by Silvestri. However, it is remarkable that the type material alledgedly came from Cairns, whereas the present specimens are labelled as coming from Colosseum, over 1000 km towards the South. As the range of the genus in Queensland otherwise covers only the southern part of the state, it seems likely that the Cairns record is erroneous.

Heterocladosoma asperum (L. Koch)

Strongylosoma asperum L. Koch, 1867: 245.

Distribution

Queensland: Brisbane.

Remarks

Already many years ago, Dr. R. L. Hoffman, Radford (Va.), U.S.A., gave me a pencil drawing of the telopodite of the right gonopod of a male specimen, probably the holotype, labelled "Strongylosoma asperum L. Koch" preserved in the British Museum (Natural History), London. This drawing is reproduced here (fig. 9). It clearly proves that the species belongs to *Heterocladosoma*.

The drawing shows the broad tibiotarsal branch, with a small recurved apex, the long and rather slender femoro-solenomerite, splitting distad of middle into the medial solenomerite, and the lateral femoral process. The smaller tibiotarsal branch is slender; perhaps its apex was not well separable from the femoral process. On this point the drawing was not sufficiently clear. However, together with the description by Koch, it will serve to recognize *H. asperum*, a long-standing enigma, in the future.

H. asperum in its gonopods suggests *H. bifalcatum*, but it is easily distinguished by many details.

Heterocladosoma trabeatum nov. spec.

Type locality

Queensland: vicinity of Priceden (?, = Brisbane ?), Eucalyptus forest, under Eucalyptus bark, 28.II.1977.

Material

♂ holotype, G. F. Kurćeva leg. (Z.M.M.).

Description

Colour: Head blackish brown; labral area, a ring around the antennal sockets, and sutures of lateral sclerites yellowish brown. Antennae blackish brown; intersegmental membranes yellowish brown, tip whitish. Collum blackish brown, posterior half white, the white band extending laterad 0.7 of total width of collum.

Somites of same dark colour with tergites behind the transverse furrow white, the white colour not reaching upper demarcation of paranota, extending laterad to 0.65 of total width of somites. Waist and lateral sides pale brown. Venter and sternites yellowish brown. Legs blackish brown, the ventral side of the proximal podomeres and the intersegmental membranes yellowish brown, tip of tarsi pale. Anal somite blackish brown, the epiproct white, the margins yellowish brown. Paraprocts blackish brown, the margins pale brown. Hypoproct yellowish brown.

Width: 4.6 mm.

Head and antennae: Clypeus moderately impressed towards labrum. Lateral part of vertex behind antennae rather coarsely wrinkled. Antennal sockets separated by 1.2 times the diameter of a socket or by 0.6 times the length of the 2nd antennomere. Postantennal groove rather deep. Vertex longitudinally widely and about evenly convex; transversely faintly concave in the middle, laterally rather strongly convex, with on each side a low but distinct swelling. Vertigial sulcus well impressed all along, with fine transverse wrinkles. Antennomeres 2 to 5 subcylindrical, widening distad a little; 6th elongate obconical, with straight sides. Pubescence rather dense to dense distally. Relative length of antennomeres 2 to 6: 0.95, 1.00, 0.90, 0.85, 0.70.

Collum: Subtrapezoidal in dorsal outline. Anterior margin straight in the middle, widely convex more laterally and faintly concave towards sides. Posterior margin weakly concave in the middle, more laterally weakly convex, and straight towards lateral sides. Sides evenly, rather widely rounded. Surface shiny, somewhat leathery wrinkled; longitudinally weakly and evenly convex; transversely faintly convex in the middle, flattened, rather strongly convex laterally with sides perpendicular or even faintly incurved. Premarginal furrow fading away towards the middle of the anterior border.

Somites: Metatergites with leathery sculpture composed of fine meandering sulci. Transverse furrow with faint longitudinal striation, the furrow fading away laterally at a distance equal to dorsoventral diameter of a poriferous paranotum or a little more. Sides granulate up to 4th somite, granulation also in lower part of 5th and 6th somites.

Paranota: 2nd and 3rd somites each a little wider than the preceding somite; the 4th slightly narrower than the 3rd. Lateroposterior edge of 2nd somite about rectangular from above, subacuminate. Paranota of 2nd somite sloping laterad, situated on a rather low level. Marginal rim in lateral aspect narrowish; upper side widely concave dorsally. Laterocaudal edge in 3rd somite obtusely angular, acuminate, weakly produced; in 4th somite more widely obtuse, scarcely produced. Posterior borders of 3rd and 4th paranota short, faintly concave. Premarginal furrows weakly percurrent for some distance along caudal margin of tergites. Paranota of 5th and subsequent somites in lateral aspect narrowish, especially the poreless which have about half the dorsoventral width of the poriferous. Dorsal demarcation in poriferous somites widely convex in their caudal half, widely concave in the anterior half. The demarcation anteriorly fading away rather close to the waist. Ventral demarcation in poriferous paranota moderately strongly converging.

Sternites and legs: Sternites of middle somites 1.4 times longer than wide between anterior coxae. Longitudinal impression moderate, rather wide, without median furrow. Transverse furrow distinctly deeper, medially also distinct. At base of coxae in postgonopodial sternites abortive sternal cones. Sternite of 4th somite wide, with medial impression moderately deep. Sternite of 5th somite with a broad, pentagonal process between anterior coxae, directed obliquely cephalad and projecting a little, though distinctly in front of sternite. Sides faintly convex, diverging distad a little, distally narrowly rounded. Distal sides faintly convex, the median edge subacuminate, rectangular. Process in profile broad at base, posterior side faintly concave; anterior side straight, halfway abruptly curving caudad and then distad again towards apex. Apical part of anterior surface with a dense brush of short setae. Posterior side

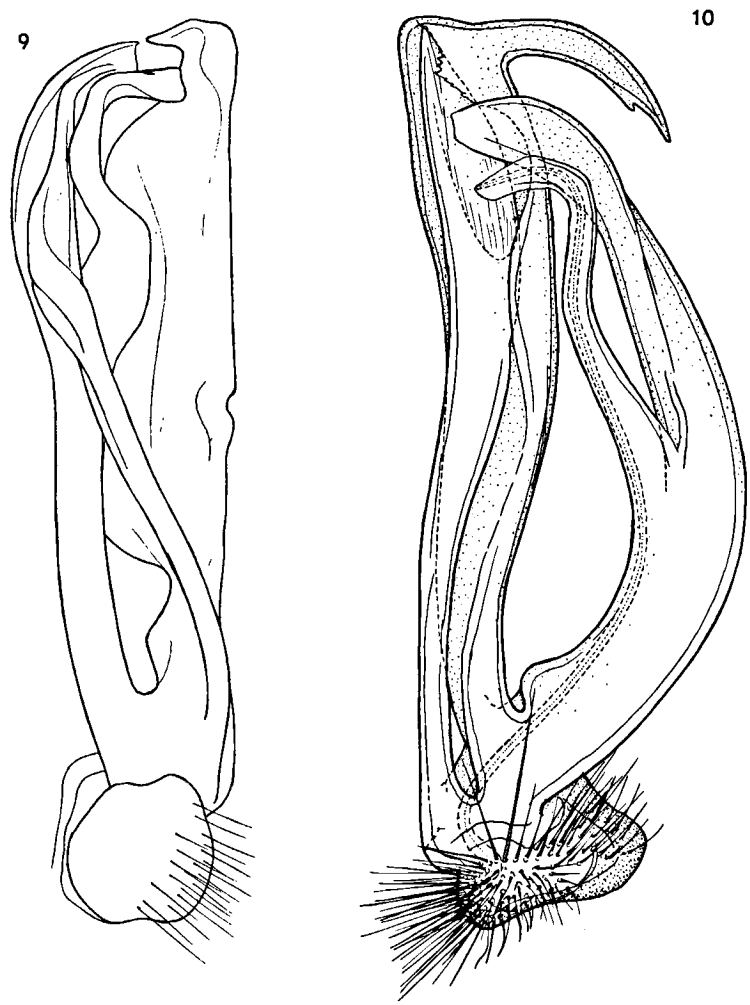


Fig. 9. *Heterocladosoma asperum* (L. Koch), ♂ syntype, telopodite of right gonopod, caudal aspect (courtesy R. L. Hoffman). Fig. 10. *Heterocladosoma trabeatum* nov. spec., holotype ♂, telopodite of left gonopod, caudal aspect.

moderately setiferous with setae of moderate length. Transverse furrow rather deep. Posterior part of sternite well raised, without median impression. Sternite of 6th somite caudally almost level with metasomal ring. Legs stoutish. Ventral pubescence of all podomeres dense with setae of moderate length; dorsal pubescence rather dense in tibiae and tarsi, otherwise unapparent. Femur of legs of first pair with a distinctly developed ventral tubercle. Coxae of 2nd pair mediodistally produced into a thick, short, rounded process. Coxae of both pairs of legs of 6th somite with a well developed medioventral cone; this abortively present also on 2nd pair of 7th somite. Relative length of podomeres 2 to 6: 0.70, 1.00, 0.65, 0.70, 0.85.

Anal somite: In dorsal aspect sides of epiproct weakly converging, widely concave; short before apex, beyond the rather well developed lateral setiferous tubercles, a stepwise narrowing; the apex rather broadly truncate, weakly emarginate. Laterobasal setiferous tubercles of anal somite well developed; dorsobasal setae not on tubercles. Paraprocts with setae not on tubercles. Hypoproct rather large, parabolically rounded, setiferous tubercles almost obsolete.

Gonopods: (fig. 10) Tibiotarsus strongly developed: the slender caudal branch almost as long as the broader anterior one and closely applied to the latter; its apex hollowed out, more or less similar to the apex of the tibiotarsus in *Streptocladosoma dissimile* Jeekel, 1980: 8, figs. 8-9, and to *H. zebratum*, *H. galaxias* and *H. transversetaeniatum*. Largest tibiotarsal branch relatively slender, apically recurved in a spiniform process, which bears a minor preapical lobe and which is directed laterocephalad and proximad. Femoro-solenomerite and femoral process together widely and almost evenly curved; bifurcation situated rather close to the base: about halfway of total length.

Female: Unknown.

Remarks

In points not mentioned the description of *H. bifalcatum* applies.

H. trabeatum seems closely related to *H. transversetaeniatum*. In the gonopods the two seem to differ mainly in the width of the anterior, large tibiotarsal branch. This branch is wide, almost semicircularly expanded in *transversetaeniatum*.

Heterocladosoma transversetaeniatum
(L. Koch)

Strongylosoma transverse-taeniatum L. Koch, 1867: 246. (1)
Polydesmus (Strongylosoma) transverse-taeniatum; Karsch, 1881: 44, pl. III fig. 23. (2)
Strongylosoma transversetaeniatum; Attems, 1898: 306, pl. 1 figs. 18-19.
Australiosoma transversetaeniatum; Attems, 1937: 237, fig 296.
Heterocladosoma transversetaeniatum; Jeekel, 1968: 25, 144.

Previous records

Queensland: Brisbane (1); Cape York (2); New South Wales: Sydney (2).

Remarks

No material of this species was available, except for the type-specimens of the new subspecies *perarmatum*. However, already many years ago, Dr. R. L. Hoffman, Radford (Va.), U.S.A., gave me a pencildrawing of the lateral aspect of the right gonopod of the male holotype in the Hamburg Museum (fig. 11). Compared with figs. 12 and 13, representing two aspects of the gonopods of the subspecies *perarmatum*, it is clear that these are almost identical. The only difference is found in the longer recurved apex of anterior larger tibiotarsal branch.

H. transversetaeniatum is obviously closely related to *H. trabeatum*, which differs mainly in the lesser width of the tibiotarsus.

Although Karsch (1881) obviously had before him material of this species, the given localities are manifestly incorrect.

Heterocladosoma transversetaeniatum
(L. Koch), subspecies **perarmatum** n. ssp.

Type locality

Queensland: Rockhampton, 15.XI.1924.

Material

♂ holotype and 2 ♂, 1 ♀ paratypes, all with the above data, C. Barrett leg. (A.M.N.H.).

Description

Colour: Probably originally similar to that of *H. trabeatum*, and obviously agreeing with the colour of the typical subspecies. Owing to the bad state of preservation, however, the dark ground colour is now brown to pale brown. The pale transverse bands of the metatergites reach the dorsal delimitation of the paranota, extending laterad to 0.9 of total width of metasomites.

Width: ♂: 4.0-5.1 mm, ♀: 4.8 mm.

General morphology as described for *H. trabeatum*, and probably agreeing almost entirely with that of the typical subspecies. Differing from *H. trabeatum* in the following particulars. Vertigial sulcus weakly developed, scarcely impressed. Sternites of middle somites 1.1 times longer than wide. Epiproct relatively a lit-

tle shorter and with sides more strongly converging than in *H. trabeatum.*

Gonopods: (figs. 12-13) Differing from those of the typical subspecies apparently only in the distinctly greater length of the recurved terminal spine of the larger tibiotarsal branch.

Female: The single specimen is badly fragmented and lacks the head and four anterior somites. Sternites as long as wide between the coxal sockets. Transverse furrow moderately impressed; longitudinal impression shallow, wide, not furrowlike. Pubescence moderate. Legs with prefemora not incrassate, the femora straight. Pubescence ventrally moderate on all podomeres. Relative length of podomeres 2 to 6: 0.70, 1.00, 0.55, 0.60, 0.75.

Remarks

In spite of the bad preservation, the material is recorded here because of the interest of the type locality, situated 500 km to the North of Brisbane.

The gonopods of non-typical material of *transversetaeniatum* as illustrated by Karsch (1881) suggest those of *perarmatum* rather than those of the typical form.

"*Eustrongylosoma*" *transversefasciatum* Silvestri, 1897: 12, was very briefly described and moreover based on a female specimen. In its colour pattern it seems to agree with *H. transversetaeniatum*, but more definite conclusions cannot be made. Comprehensive collections from the type-locality Gayndah are needed to reveal the identity of this species.

Heterocladosoma hamuligerum (Verhoeff)

Australiosoma hamuligerum Verhoeff, 1924: 26, pl. 1 fig. 15; Attems, 1937: 236.
Heterocladosoma hamuligerum; Jeekel, 1968: 25, 144.

Previous record

Queensland: Blackal Range.

Material

Queensland: (no further data), E. W. Fischer leg., 2 ♂, 1 ♀ (S.A.M.).

Description

Colour: Obviously the material is in a bad state of preservation, and this appears to have had its influence on the colour: the distinctive pattern described by Verhoeff is not visible. Head blackish brown; labrum, area around antennal sockets, and sutures between the lateral sclerites faded to dilute brown. Antennae rather dark brown, the membranes and tip whitish. Collum and somites blackish brown; dorsal part of prosomites, and posterior part of paranota may be a shade paler. Venter also paler; sternites and legs brown to reddish brown, membranes and tip of tarsi pale. Anal somite blackish brown, the end of the epiproct light brown. Paraprocts dark, with lighter margins. Hypoproct pale brown.

Width: ♂: 4.6-4.7 mm, ♀: 4.2 mm.

Head and antennae: Labrum widely but rather weakly emarginate. Clypeus flattened, or even faintly concave. Orad of antennal sockets a distinct impression. Sockets separated by 1.4 times the diameter of a socket or by 0.55 times the length of the 2nd antennomere. Frons somewhat convex, separated from vertex by a slight depression. Vertex with a well impressed medial sulcus, with minute transverse wrinkles, running downward to upper level of antennal sockets. Surface of vertex transversely flat or even a little impressed in the middle, widely convex more laterally, becoming a little more convex near lateral edge, but without swellings. Antennae longish, moderately slender, scarcely clavate. 5th antennomere subcylindrical, a little inflated near its apex. Relative length of antennomeres 2 to 6: 1.00, 1.00, 1.00, 1.00, 0.75.

Collum: Slightly wider than head, reniform to subtrapezoidal in dorsal outline. Anterior margin straight in the middle, widely convex more laterally and straight again towards the lateral rounding. Lateral rounding rather broadly parabolical. Posterior border widely and distinctly concave, widely convex more laterally. Surface longitudinally widely and almost evenly convex; transversely flat or vaguely concave in the middle, becoming widely convex more laterally, the lateral sides

Fig. 11. *Heterocladosoma transversetaeniatum* (L. Koch), syntype ♂, telopodite of right gonopod, lateral aspect (courtesy R. L. Hoffman). Figs. 12-13. *Heterocladosoma transversetaeniatum* (L. Koch), ssp. *perarmatum* nov., holotype ♂. 12: acropodite of left gonopod, caudal aspect. 13: right gonopod, medial aspect.

more strongly convex and distinctly incurved, appressed to the body.

Somites: Waist of moderate width; striate, not ribbed, down to lower end of sides. Metatergites shiny and rather weakly leathery, with fine meandering sulci. Transverse furrow present from 5th to 16th somite, weakly indicated on 4th and 17th somites. Furrow laterally disappearing at a distance from the paranota of about the dorsoventral diameter of a poriferous paranotum. Sides with fine leathery sculpture; up to 3rd somite finely and densely granular, dispersed granular on the 4th. Sides of 7th somite with a slight swelling above posterior leg.

Paranota: Second somite scarcely wider than collum; 3rd a little wider than 2nd, the 4th about as wide as 3rd. Paranota of 2nd somite weakly developed. Lateral border from above passing without angle, but with a rather narrow rounding, into the almost obsolete caudal border; caudally not produced nor projecting. Paranota on a rather low level, weakly prominent, scarcely or not visible from above. Marginal rim in lateral aspect narrowish, brimlike, weakly sloping cephalad; the premarginal furrow distinct, weakly curved, concavity upward, anteriorly and caudally rather narrowly curving upward; furrow over some distance paralleling the caudal border of the somite. Paranota in 3rd somite with laterocaudal edge widely angular, not produced caudad. In 4th somite laterocaudal edge almost obsolete: the angle very wide, scarcely noticeable. Marginal rim dorsoventrally rather wide, the dorsal and ventral demarcations moderately convergent. Ventral demarcation in 3rd somite present in posterior half, in 4th present in posterior two thirds of paranotum. Premarginal furrow percurrent over a short distance along posterior margin of somite. From 5th somite onwards the caudal edge is obtusely angular from above; only in the 18th somite it is about rectangular and faintly produced caudad, scarcely projecting. Lateral margin of poriferous paranota in dorsal aspect strongly convex from pore area onwards, giving these paranota a rather conspicously convex aspect. Poriferous paranota dorsoventrally about two times wider than the poreless. Dorsal demarcation of poriferous paranota mostly rather convex. Dorsal furrow disappearing anteriorly rather near the waist, caudally scarcely paralleling the posterior margin. Ventral demarcation marking caudal two thirds in poriferous, and caudal half in poreless paranota. Pores in a small pit.

Sternites and legs: Sternites of middle somites 1.2 longer than wide. Cross impressions rather strongly developed; the longitudinal impression rather deeply concave, without median line; the transverse impression also deep, especially between the coxae. No sternal cones. Pubescence moderately dense, the setae of moderate length. Sternite of 4th somite with a rather deep longitudinal furrowlike impression. Sternite of 5th somite with process between the anterior legs about 1½ times broader than long, subrectangular to subparabolical in ventrocaudal outline. Lateral sides widely convex, with rather narrowly rounded edges. Anterior surface of process in profile straight vertical, scarcely projecting in front of sternite. Posterior half of sternite without longitudinal furrow, the surface flat declivous, not raised above ventral level of metasomal ring; coxal sockets only slightly raised. Sternite of 6th somite entirely level with the ring, halfway with a wide transverse impression; coxal sockets weakly raised. Sternites of 8th (and 9th) somites not modified, but with coxal sockets a little more raised than in the 10th and subsequent somites. Legs in middle part of body longish, but not particularly slender. Prefemora weakly convex dorsally, femora scarcely arched. Femoral process of legs of 1st pair vestigial. Coxae of pregonopodial legs not elongate. Coxae of legs of 2nd pair of 6th somite (fig. 14) with a long ventral process. Coxae of anterior legs of 6th somite without cone, but medially slightly convex. Coxae of legs of 7th somite distinctly elongate, ventrally faintly produced distad. Relative length of podomeres 2 to 6 in middle part of body: 0.70, 1.00, 0.55, 0.65, 1.00.

Anal somite: Dorsal profile widely and

almost evenly convex. Apex of epiproct broadish, just in front of apex a faint stepwise narrowing. Apical edges narrowly rounded, apex faintly emarginate.

Gonopods: (fig. 15) Caudal branch of tibiotarsus about three quarters of length of anterior branch; its apex acuminate, but hollow, as in e.g. *H. trabeatum.* Largest tibiotarsal process broad, laminate, constricted at base; its apex curving outward, beaklike, overreaching distinctly solenomerite and femoral process. Femoro-solenomerite rather slender, weakly curved, divided towards the apex in a rather small femoral process and a solenomerite, which halfway bears an additional process; all processes curving mesad.

Female: Antennal sockets separated by 1.25 times the diameter of a socket of by 0.65 times the length of the 2nd antennomere. Vertex transversely widely and almost evenly convex, medially with a weak impression caused by the vertigial sulcus. Relative length of antennomeres 2 to 6: 1.00, 0.95, 0.85, 0.85, 0.80. Surface of collum transversely widely convex, distinctly more convex towards the lateral sides; the latter vertical. Sternites of middle somites 1.15 times longer than wide. Relative length of podomeres 2 to 6: 0.65, 1.00, 0.60, 0.65, 0.90. Epigynal structure consisting of a wide emargination of the ventral side of the 3rd somite, medially with a small triangular production, laterally on each side with a raised triangular lobe directed cephaloventrad, apical angle wide. Coxae of 2nd pair of legs distally swollen, but without processes or lobes.

Remarks

In the points not mentioned the description of *H. bifalcatum* applies.

The material at hand, unfortunately without specified locality, and rather poorly preserved, matches the description by Verhoeff well, except that the colour pattern appears to be lost. In the gonopods there is much similarity with the type-species, except that in *hamuligerum* the solenomerite has a more complicated structure than in all other *Heterocladosoma.*

Streptocladosoma Jeekel

Streptocladosoma Jeekel, 1980: 2.

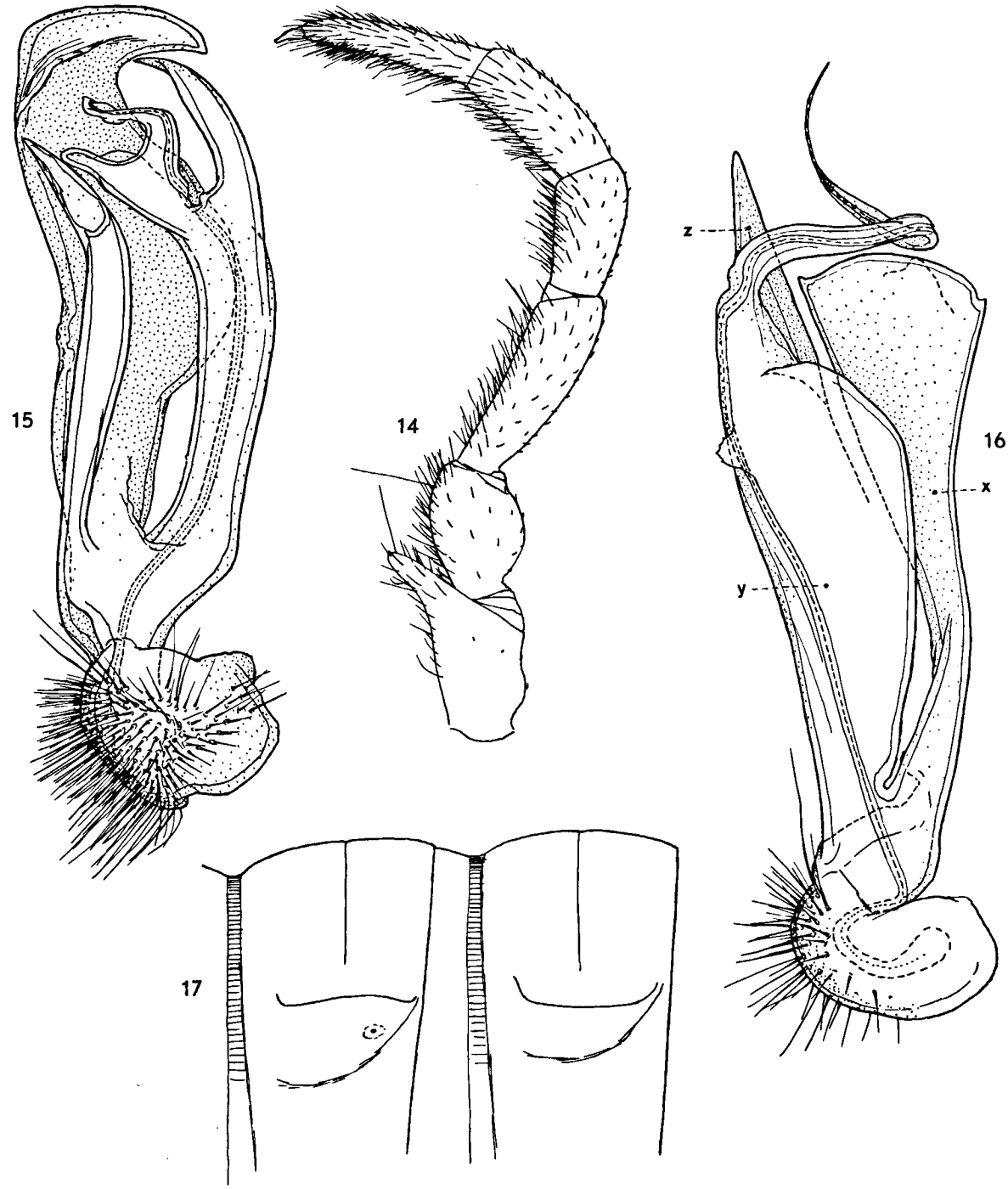
Remarks

This genus is well characterized by the structure of the gonopods. In these the base of the acropodite is twisted about 180° around its longitudinal axis affecting the course of the spermal channel as well as the position of the main gonopod branches towards each other. The acropodite is split almost to its base into two main branches: tibiotarsus and femoro-solenomerite. The femoral process is small, and arises a little distad of the middle of the femoro-solenomerite. The solenomerite is a long and narrow ribbon, gradually tapering towards the apex.

Two species occurring in northern Queensland were known, a third from the area of Rockhampton is described in the present paper.

Key to species

1. Large species (width ♂, ♀: 4.5-5.0 mm). Pleural keels of somites 6 and 7 of male not particularly strongly developed. Colour variegated blackish on a beige background: a narrow continuous median blackish stripe, and blackish spots on and above paranota. Femoral process of gonopods densely covered by minute scales, the margin fringed. Solenomerite relatively short, curved in a spiral. Female with anterior border of collum medially widely emarginate so as to expose caudal part vertex of head ..... *dissimile*
— Small species (width of ♂, ♀: 1.8-2.5 mm). Pleural keels of somites 6 and 7 of male represented by strongly developed ridges. Colour blackish brown with a yellowish or whitish median band, either continuous, or interrupted in caudal half of metatergites. Gonopods of male with a simply triangular femoral process and a long flagellate solenomerite. Anterior border of collum not emarginate (not known for *solum*) 2



Figs. 14-15. *Heterocladosoma hamuligerum* (Verhoeff), ♂. 14: 2nd leg of 6th somite. 15: telopodite of left gonopod, caudal aspect. Fig. 16. *Streptocladosoma solum* nov. spec., holotype ♂, telopodite of left gonopod, laterocaudal aspect. x, tibiotarsus; y, femoro-solenomerite; z, femoral process. Fig. 17. *Strongylosoma rubripes* L. Koch, holotype ♀, left side of 10th and 11th somites, lateral aspect.

2. Waist of somites smooth. Transverse furrow of metatergites present from 5th somite onwards. Sternite of somite 5 of male with a deep transverse furrow. Pale dorsal band continuous. Gonopods of male with tibiotarsus rodlike, slightly tapering towards the rounded apex, and projecting distinctly distad of femoral process ..... *albovittatum*

— Waist of somites dorsally distinctly ribbed. Transverse furrow of metatergites present from the 3rd somite onwards. Sternite of somite 5 of male without transverse impression. Gonopods with tibiotarsus widening distad and broadly truncate. Femoral process projecting distinctly distad of tibiotarsus ..... *solum*

Streptocladosoma dissimile Jeekel

Streptocladosoma dissimile Jeekel, 1980: 2, figs. 1-9.

Distribution

Queensland: Iron Range.

Streptocladosoma albovittatum Jeekel

Streptocladosoma albovittatum Jeekel, 1980: 5, figs. 10-16.

Distribution

Queensland: Townsville.

Streptocladosoma solum nov. spec.

Type locality

Queensland: Hamilton Creek, 3 km S of Mt. Morgan, Eucalyptus forest along the Burnett Highway, under logs, 20.X.1980.

Material

♂ holotype, Australia Exped., Sta. 33 (Z.M.A.).

Description

Colour: Head, including lateral sclerites, blackish brown; labrum and beanshaped area behind antennal sockets pale brownish. Antennae blackish brown; intersegmental membranes pale, tip whitish. Collum blackish brown; medially a longitudinal oval whitish spot, about one quarter of width of collum, connected with anterior and caudal borders by a short, fine whitish line. Somites, including paranota, blackish brown. Prosomites with a mediodorsal whitish band. Metatergites in front of transverse furrow with a subtrapezoidal white spot of about half the width of the somite, narrowest anteriorly. White spot of about half the width of the somite, narrowest anteriorly. White spots narrowly separated by the dark waist. Sides, sternites and legs slightly paler brown. Intersegmental membranes of podomeres of same colour, tip of tarsi pale. Anal somite blackish brown, with a broad whitish mediodorsal band which leaves only the very margins of the epiproct dark. Paraprocts and hypoproct pale brownish.

Width: 2.2 mm.

Head and antennae: Labrum rather widely, moderately deeply emarginate. Clypeus rather weakly impressed towards labrum. Lateral border of clypeus straight, weakly emarginate near labrum. Vertex with two hairs; setae on headplate partly longish. Antennal sockets separated by 0.55 times length of 2nd antennomere. Beanshaped area behind antennae distinct but narrow, slightly inflated. Postantennal impression wide and moderately deep; the wall in front rather weakly prominent. Vertex longitudinally almost flat in lower part, moderately convex in upper part; transversely rather weakly convex, a little more so towards the lateral edges; no swellings. Vertigial sulcus moderately impressed, running downward to just below upper level of sockets. Antennae moderately long, slightly clavate, with 5th and particularly 6th antennomere thickest. Antennomeres 2 to 4 subcylindrical, of subequal width, widening a little distad; 5th and particularly 6th more obconical, the sides of the 6th scarcely convex. Relative length of antennomeres 2 to 6: 1.00, 1.00, 0.95, 0.85, 0.80.

Collum: Subsemicircular in dorsal outline, a little wider than head. Lateroanterior border faintly convex. Caudal border weakly and

widely emarginate, widely convex towards sides. Lateral sides rather widely, symmetrically rounded. Surface smooth and shiny, a few hairs. Collum transversely widely convex, a little more convex towards sides; sides almost perpendicular. Marginal rim well demarcated, of moderate width, somewhat raised. Premarginal furrow laterally distinct, almost disappearing towards the middle of the anterior border.

Somites: Waist of moderate width or somewhat narrowish, well demarcated from pro- and metasomites, strongly longitudinally ribbed, laterally beaded down to lower level of sides. Only 19th metatergite with some longish hairs. Transverse furrow present from 3rd to 17th tergite, indicated on the 2nd and 18th, well impressed, with faint longitudinal sculpture, disappearing laterally at a distance from dorsal demarcation of paranota about equal to dorsoventral diameter of a poreless paranotum. Sides in anterior somites somewhat granular, soon almost smooth, or somewhat uneven. Pleural keels up to 4th somite represented by distinct rounded crenulate ridges, caudally not produced. In 5th rather strongly raised and flaring, with a caudally rounded edge, not projecting behind margin. In 6th and 7th somites strongly developed: a thick, swollen, rather coarsely granulate lobe, caudally rounded, produced, and projecting distinctly behind the margin of the somites. In 8th and 9th somite only a granular swelling, from 10th somite onwards just granulate, scarcely swollen, the granulation soon disappearing in subsequent somites.

Paranota: 2nd somite a little wider than collum; the paranota rather weakly developed, a little declivous. Lateroanterior edge narrowly rounded; lateroposterior edge obtusely angular, rounded, faintly produced caudad. Marginal rim of moderate width, in the anterior half with two long lateral setae. Paranota of 3rd somite lateroanteriorly widely convex, faintly convex in posterior half. Lateroposterior edge obtusely angular, rounded, scarcely produced caudad. 4th somite a little narrower than 3rd. Lateroposterior edge of paranota obtusely angular, rounded, not produced. Paranota of 5th and subsequent somites with lateroposterior edges obtusely angular, rounded, not or scarcely produced, becoming acutely angular, subacuminate, and projecting slightly behind the margin in the 17th to 19th somites. Poreless paranota in lateral aspect rather concave dorsally; the poriferous ones also a little concave, but faintly convex halfway of their length.

Sternites and legs: Sternites of middle somites 1.1 times longer than broad between anterior coxae. Cross impressions with longitudinal impression wide and shallow, transverse impression distinct, furrowlike. Sternite of 5th somite with process between anterior legs 2 times wider than long, the distal margin widely rounded, the edges narrowly rounded. Anterior side with a brush of short setae; posterior side of process rather densely set with moderately long hairs. Sternite without transverse furrow except between successive coxae, flatly declivous, caudally not raised above level of metasomal ring. Between posterior coxal sockets a transverse series of long setae. Sternite of 6th somite not raised above level of metasomal ring, without cones, coxal sockets not raised, especially those of posterior legs widely separated. Between the coxal sockets two transverse rows of 4 setiferous tufts each, setae long. Sternite of 7th somite with laterocephalad of gonopod aperture a strongly developed, finely rugolose transverse ridge. Coxal sockets of posterior legs widely separated. Sternite of 8th somite not raised between anterior legs, coxal sockets widely separated, not raised. Transverse furrow weak, posterior part of sternite about normal. Legs with dense tarsal (and partly tibial) scopulae up to 10th somite, which are gradually thinning out in subsequent legs. Coxae of anterior legs of 5th somite with a rather small but distinct mediodistal rounded cone. Relative length of podomeres 2 to 6: 0.65, 1.00, 0.60, 0.65, 0.65.

Anal somite: Dorsal outline straight. Epiproct from above moderately wide, the sides concavely converging, to become almost parallel; beyond the well developed lateral setiferous tubercles a stepwise narrowing, the

apical portion rather narrow, subquadrate, the end truncate, weakly emarginate, with edges narrowly rounded. Setae on surface of anal ring arising from low tubercles. Paraprocts with setiferous tubercles low but distinct. Hypoproct longish, parabolically rounded, with median edge and the setiferous tubercles projecting a little outside margin.

Gonopods: (fig. 14) Tibiotarsus (x) narrow at base, expanding beyond the middle in a transverse, broadly truncate lamella. Near its end on medioanterior side a small secondary lappet. Femoro-solenomerite (y) almost as long as tibiotarsus, broadly expanded towards lateral side in a rounded lamella. On caudal side a minute lappet. Femoral process (z) a narrow triangle pointing distad. Solenomerite a slender flagellum curving laterad, cephalad, mesad and finally distad.

Female: Unknown.

Remarks

This species may be closely related to *S. albovittatum* on account of its small size, most of its peripheral morphological features and of its gonopods having a simple triangular femoral process and a long flagellate solenomerite. It differs, however, in a number of important characters as indicated in the key.

Paraustraliosoma Verhoeff

Paraustraliosoma Verhoeff, 1924: 24; Jeekel, 1968: 25; Jeekel, 1979: 649.

Remarks

The status of this genus was briefly discussed in a previous paper (Jeekel, 1979), where the complicated structure of the gonopods was elucidated. Here too, the acropodite is split almost to the base into three main branches: tibiotarsus, solenomerite and femoral process. The solenomerite is a long and slender style, gradually tapering towards the acuminate end. The tibiotarsus is peculiar in having its base at the laterocaudal side of the end of the prefemur and in being situated laterad of the other two main branches; in the type-species it is subdivided into three apical processes. The femoral process arises from about the same level as the tibiotarsus; its shape is complicated by several bends, the apex being directed cephalad, and apically divided into two small prongs.

The type and only known species has been described from the Atherton plateau in northern Queensland.

Paraustraliosoma malandense Verhoeff

Paraustraliosoma malandense Verhoeff, 1924: 25, figs. 13-14; Jeekel, 1979: 650, figs. 1-2.

Distribution

Queensland: Malanda; Herberton.

SPECIES INCERTAE SEDIS

The following species more or less probably belong to the tribe Australiosomatini, but their generic position cannot be established.

Strongylosoma dubium L. Koch, 1967: 247 (Brisbane)

The type material of this species has not yet been traced and may be lost. The colour of this species is described as black, with brownish red antennae and red legs. The original description furthermore points in the direction of an australiosomatine species. Its width (without paranota) is given as 2.5 mm, its length 36 mm.

Judging from the colour one might suspect this to be a species of *Heterocladosoma* (compare for instance *H. bifalcatum*).

Strongylosoma rubripes L. Koch, 1867: 247 (Brisbane)

The type specimen is preserved in the Hamburg Museum and was kindly sent to me on loan by Dr. G. Rack. It is a female and belongs doubtless to the Australiosomatini. The following descriptive notes were made.

Width: 3.9 mm.

Head and antennae: Clypeus flattened, rather weakly impressed towards labrum; its pubescence moderate. Frons a little swollen, with a slight depression behind, separating it from vertex. Vertex transversely widely and evenly convex, with median furrow rather well impressed. (Antennae missing).

Collum: Trapezoidal in dorsal outline; a little wider than head. Lateral sides slant, almost vertical. Lateral rounding asymmetrical: anteriorly distinctly more strongly rounded than posteriorly. Marginal rim of moderate width, not brimlike, disappearing at level of lateral edge of vertex.

Somites: Waist of moderate width, finely but distinctly longitudinally striate down to about middle of lateral sides. Metatergites shiny, with leathery sculpture of meandering sulci. Transverse furrow visible from 5th to 15th tergite, sharply but not deeply impressed, disappearing laterally at a distance equal to dorsoventral diameter of a poriferous paranotum. Sides of 5th and subsequent somites smooth and without pleural keels; up to 4th somite finely granular, and with pleural keels represented by curved crenulate ridges without caudal lappet.

Paranota: (fig. 17) Second somite of about same width as collum; the paranota rather weakly developed, on a rather low level, with anterior border moderately convex, lateral edge widely angular, with a distinct rounded lateral tooth. Lateral border weakly and evenly convex, passing into caudal border by a moderately wide rounding. In lateral aspect rim narrowish, straight in anterior half, curving widely upward in second half. Paranota in general weakly prominent. None of posterior edges produced, either simply rounded or widely and minutely angular.

Sternites and legs: Sternites of middle somites scarcely longer than wide. Cross impressions well developed, the transverse impression furrowlike; the longitudinal moderately widely transversely concave, with a vague central stria. (Legs mostly lost).

Anal somite: (badly damaged).

Epigynal structure: Ventral side of 3rd somite widely and rather deeply, more or less triangularly, emarginate. Medially a small triangle produced ventrocephalad. Lateral edges of emargination strongly produced in ventrocephal direction as broad triangular processes (apical angle about 90°). Coxa of 2nd pair of legs only slightly swollen distally. The apex caudolaterally produced in a small acuminate conical process pointing laterodistad.

Judging from the colour (see original description), peripheral morphology and epigynal structure this might well be a small species of the genus *Heterocladosoma*. However, the surroundings of Brisbane have been explored insufficiently to relate this female with certainty to any of the other paradoxosomatids occurring in the area.

Eustrongylosoma transversefasciatum
Silvestri, 1897: 12 (Gayndah).

It has been suggested above that this might be a species related to or identical with *Heterocladosoma transversetaeniatum*. Unfortunately Silvestri's description is too brief to enable recognition, and the type material is almost certainly lost. Perhaps when the fauna of the surroundings of Gayndah has been explored it will be possible to identify this species.

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