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An illustrated key to the spirostreptidan (Diplopoda: Spirostreptida) genera of Southern Africa

by

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ABSTRACT

Twenty three genera and 228 species of the millipede order Spirostreptida are currently known from Southern Africa. Non-specialists face considerable problems in identifying spirostreptidan millipedes even to generic level. This publication provides an illustrated and annotated key to the genera of the four families of spirostreptidans (Julomorphidae, Spirostreptidae, Harpagophoridae and Odontopygidae) represented in Africa south of the Zambezi and Kunene Rivers. Data on diversity within each genus and its distribution in and outside of Southern Africa are provided, as are references for keys to species where these exist.

INTRODUCTION

Southern Africa has a rich diplopod fauna with approximately 552 species and 71 genera recorded to date (Hamer 1998). The order Spirostreptida is represented by four families, 23 genera and 228 species in Africa south of the Zambezi and Kunene Rivers. The spirostreptidans are probably the most familiar, conspicuous and commonly encountered group of diplopods in the tropics.

Many publications have dealt with the Southern African spirostreptidan fauna or at least covered some species from here, and several publications do include keys to genera (Attems 1928; Kraus 1960; Schubart 1966; Hoffman 1973 1994; Lawrence 1965 1973; Krabbe 1982). Non-diplopod specialists, however, still encounter problems in identifying spirostreptidans even to generic level. There are two main reasons for this: the keys seldom explain the rather complicated terminology used and the keys of Kraus (1960), Schubart (1966), and Krabbe (1982), although in combination cover most of the genera in Southern Africa, are in German and are not in readily accessible publications. The keys of Kraus (1960) and Krabbe (1982) are further complicated by the inclusion of non-Southern African genera. Most of the genera that occur in the subregion are endemic, or nearly so.

Diplopods are important and abundant soil arthropods and are informative in ecological and biodiversity studies. For most researchers, however, identification even to genus either requires the assistance of experts, or a lengthy and frustrating learning period using foreign, fragmented literature, thus severely hampering both

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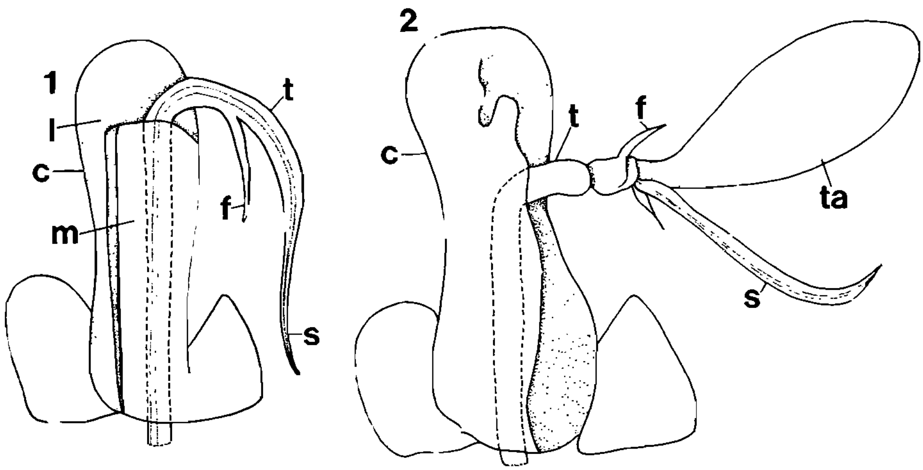
taxonomic and ecological research on millipedes. The aim of this key is, therefore, to allow non-specialists to identify spirostreptidans to genus, to provide references to keys to species for each genus where these are available, and to give some brief information about the geographic distribution and diversity within genera.

It should be noted that this key reflects the current taxonomic state of knowledge. Hoffman (1985) considered the classification of three of the families dealt with here to be in order, but he also suggested that many of the genera within these families require revision. For the present work genera were not revised and there are problems with large genera that require splitting, others that require redefinition, genera that occur in, but have not previously been recorded from the subregion, and quite possibly even genera that have not yet been described.

Six spirostreptidan species were, at some stage, placed 'temporarily' or erroneously in genera that certainly do not occur in Southern Africa, and these genera (*Spirostreptus* Brandt, 1833; *Urotropis* Silvestri, 1896; *Phyllogonostreptus* Carl, 1918; *Thyropygus* Pocock, 1894; *Haplothysanus* Attems, 1909 and *Solenozophyllum* Attems, 1914) have been excluded. Two genera (*Kartinikus* Attems, 1914 and *Plagiotaphrus* Attems, 1914) are currently known from the type material only. In the case of the latter genus, the one species from Southern Africa is known from a single female, but *Plagiotaphrus* occurs in Angola so there is a possibility that this is a valid record for the subregion. Of course, much work remains to be done on Southern African spirostreptidans and ideally the current key should be published only after several thorough revisions have been completed – but this would cause a lengthy delay. In addition, it is hoped that the key will act as a catalyst in stimulating future research.

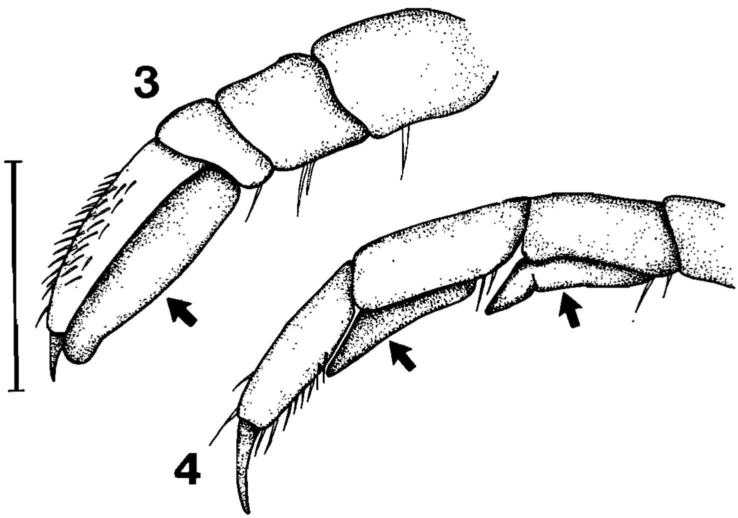
MATERIAL AND METHODS

Nomenclature and classification used follows Hamer (1998), and this work should be referred to for synonyms and references. Existing keys, together with generic



Figs 1–2. Spirostreptidan gonopod terminology used in key; oral view of generalised morphology of gonopods. 1. Spirostreptidae. 2. Odontopygidae. c = telocoxite; f = femoral process; l = lateral lamella of telocoxite; m = median lamella of telocoxite; s = solenomerite with sperm duct; t = telopodite; ta = tarsus.

diagnoses from the literature, were used to compile the key presented here. Diagrams were done using material in the South African and Natal Museums, utilising a Wild M5A stereo microscope and drawing tube. All scale bars for figures represent 0.1 mm unless otherwise stated. For four genera material was not available and illustrations were redrawn from other publications. Terminology used (illustrated in Figs 1 & 2) is from Kraus (1960), Krabbe (1982) and Hoffman (1987 1994).



Figs 3–4. Distal region of legs of male, showing position of pads. 3. Spirobolida. 4. Spirostreptida.

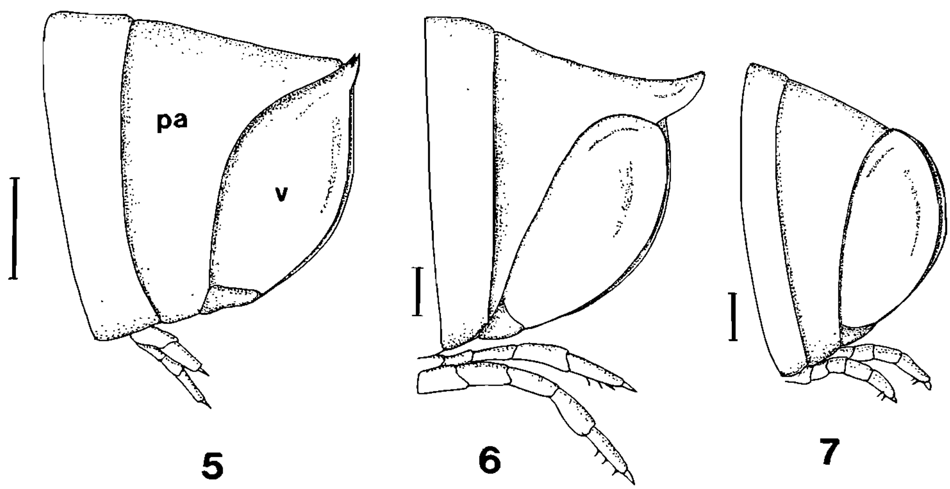
THE SPIROSTREPTIDA OF AFRICA SOUTH OF THE ZAMBEZI AND KUNENE RIVERS

Characteristics of the Spirostreptida

The spirostreptidan order contains worm-like millipedes which have elongate, cylindrical bodies comprising 40–70 body rings. They have a compact group of ocelli arranged in the form of a triangle at the base of the antenna. They can be distinguished externally from the other worm-like order, the Spirobolida, by the absence of a fleshy pad on the last segment of the legs of the male (Fig. 3). Instead, most spirostreptidans possess a similar pad on the fourth and fifth segments of the leg (Fig. 4). In addition, the spirobolids are characterised by a distinct mid-ventral frontal suture on the head, while this is absent in the spirostreptidans. The gonopods of the two orders are also distinct.

Characters used in the key

Females or juveniles currently have little value when identifying millipedes, even to the generic level. The gonopods, found on the seventh body ring of mature males, are modified legs which serve to transfer sperm to the reproductive opening of the female. These gonopods are extremely elaborate and are the most useful character in millipede identification. In the Spirostreptidae, Harpagophoridae and Odontopygidae there are two main parts to each gonopod. These are the telocoxite and telopodite (Figs 1 & 2), and both structures are used extensively in this key. The shape of the telocoxite, however, often varies in shape interspecifically and is thus more useful

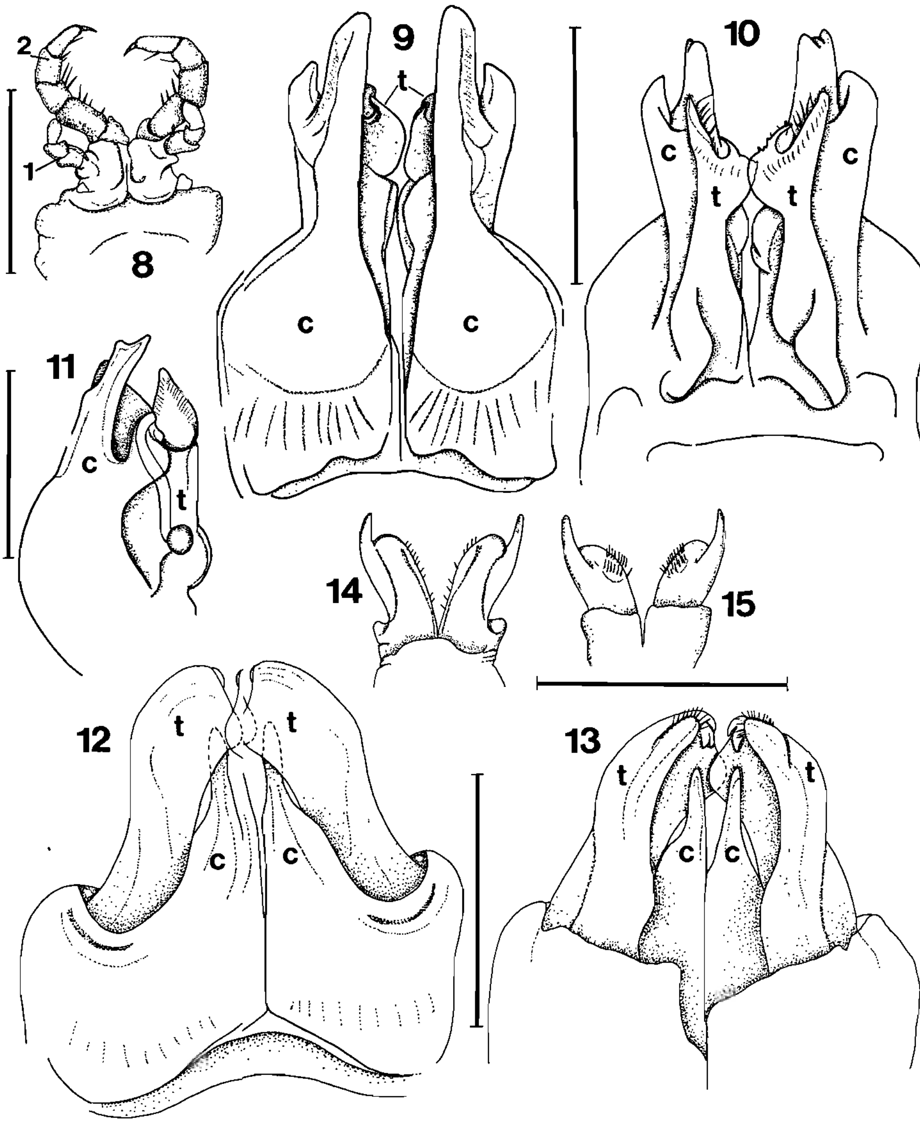


Figs 5–7. Posterior body rings and anal valves, showing characteristic spines (but absent in 7). 5. Odontopygidae. 6. Harpagophoridae. 7. Spirostreptidae. pa = preanal ring; v = anal valve.

as a specific, rather than a generic character in the spirostreptidans. The form of the telopodite, particularly the number and shape of processes arising from it, is essential for generic identification. In the fourth family, the Julomorphidae, the gonopods are quite different from those of the other families, and comprise an elaborate anterior gonopod, followed by a smaller and much simpler posterior gonopod (Figs 9, 10, 12, 13, 14, 15). The anterior gonopods consist of a telocoxite and telopodite (Figs 10 & 13), both of which are useful in generic and species identifications.

The gonopods are usually withdrawn into the body, but either a pair of dark structures ventrally on the seventh body ring or a distinct gap in this same position indicates that a specimen is a male. In the odontopygids the seventh body ring is often swollen and broader than the others are. The presence of white pads on the ventral surface of legs of males is another way of distinguishing the sexes (see Lawrence 1984).

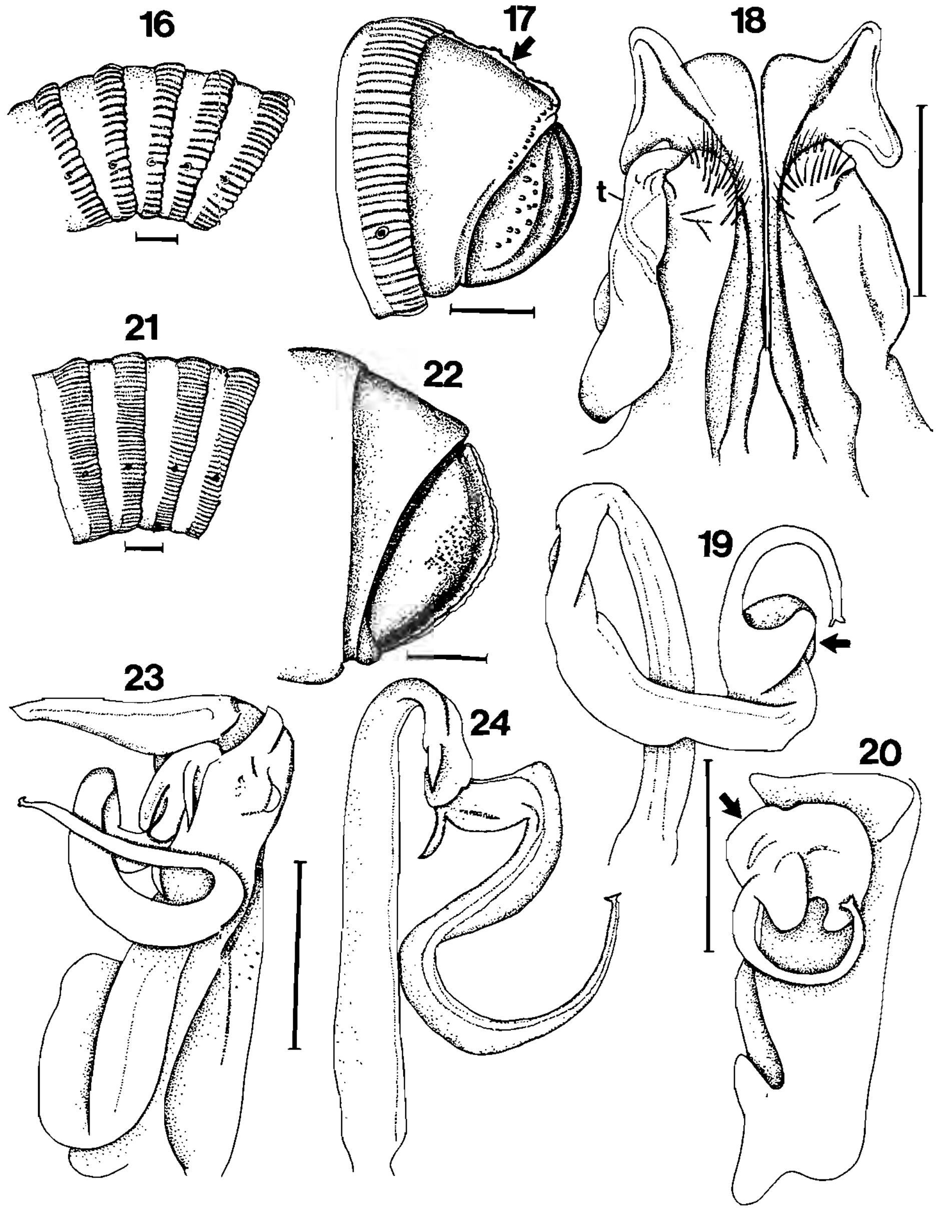
Gonopods generally need to be dissected out of a specimen for identification purposes. To achieve this, the seventh body ring and the position of the gonopods must be identified. Bending the body backwards in this region, or using a pair of strong forceps inserted between the body rings often separates these and exposes the gonopods. Once they can be clearly seen the gonopods can be removed by carefully cutting through the basal muscle tissue that attaches them to the body. An effort should be made to avoid separating the two gonopods as this usually results in damage to the basal/sternal region which provides useful taxonomic characters. The telopodite should be separated from the telocoxite. Part of the telopodite lies behind the median fold of the telocoxite (Figs 1 & 2). By inserting fine forceps behind the median fold of the telocoxite and grasping the telopodite, the basal region can be located and cut with fine scissors, and the telopodite can then be carefully worked free of the telocoxite. Orientation of the gonopods is an important consideration when using the key and illustrations.



Figs 8–15. Julomorphidae. 8. Anterior (oral) view of first two pairs of legs of male. 9–11. *Stenjulomorpha*, sp 1. 9. Oral view of anterior gonopods. 10. Posterior (aboral) view of anterior gonopods. 11. *Stenjulomorpha* sp 2. Median view of anterior gonopods. 12–15 *Julomorpha* sp. 12. Oral view of anterior gonopods. 13. Aboral view of anterior gonopods. 14. Oral view of posterior gonopods. 15. Aboral view of posterior gonopods. 1 = first pair of legs; 2 = second pair of legs; c = telocoxite; t = telopodite.

Key to the Spirostreptida of Southern Africa

1 Anal valves each with a small tooth, or preanal ring with a large tooth or spine (Figs 5 & 6) 2
– Penultimate body ring and anal valves smooth, without teeth or spines (Fig. 7)...3



Figs 16–24. Characters of *Calostreptus* and *Lophostreptus*. 16–20. *Calostreptus carinatus* Attems, 1928. 16. Lateral view of body rings showing longitudinal ridges. 17. Lateral view of anal ring showing dorsal granular keel (arrowed). 18. Oral view of gonopods. 19. Aboral view of telopodite removed from telocoxite (arrow indicates inflated region). 20. Aboral view of left gonopod (arrow indicates inflated region). 21–24. *Lophostreptus cameranii* Silvestri, 1896. 21. Lateral view of body rings showing ridges. 22. Lateral view of anal ring and anal valve. 23. Oral view of right gonopod. 24. Oral view of left telopodite (removed from telocoxite). t = telopodite.

2 Each anal valve tipped with a small tooth on the upper surface (Fig. 5); body slender, ratio of body length to body width 14–17: 1 ....**Odontopygidae**....18
– Preanal ring with a large spike or tooth (Fig. 6); ratio of body length to body width about 12: 1 ....**Harpagophoridae**....16

3 Small (generally less than 30 mm long and 3 mm wide); first pair of legs of male much reduced relative to size of second pair of legs (Fig. 8)...**Julomorphidae**....4
– Medium to very large body size, first pair of legs of male not reduced, resembling the remaining legs ....**Spirostreptidae**....5

Julomorphidae (modified from Schubart 1966)

4 Telocoxite of anterior gonopods with broad, simple or more complex lamella that covers the telopodite when viewed from the front (Figs 9, 10, 11) .... **Julomorpha**
– Telocoxite of anterior gonopods with median lamella strongly narrowed distally, so that only the basal part of the telopodite is covered (Figs 12, 13)...................... **Stenjulomorpha**

Spirostreptidae (modified from Hoffman 1971; Lawrence 1965 1973)

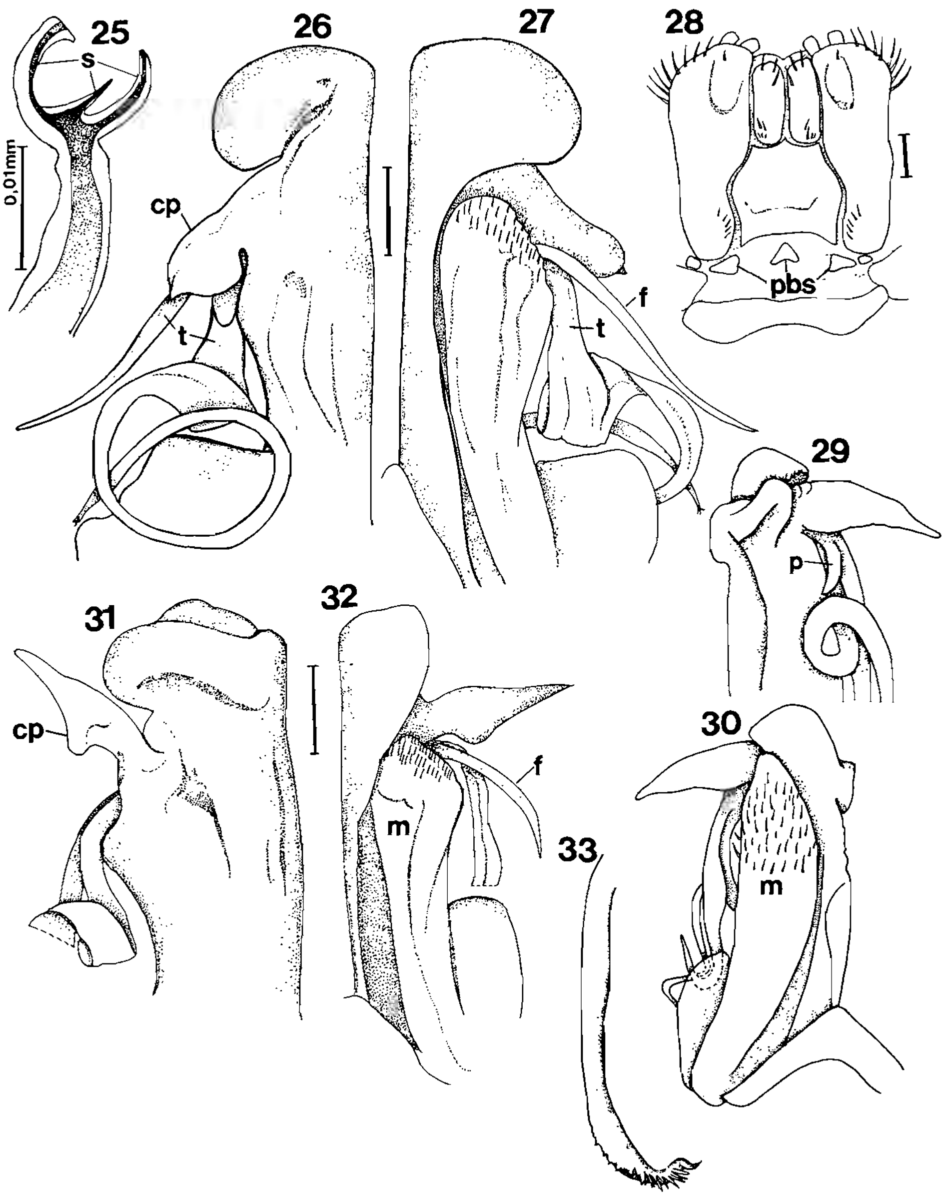
5 Posterior half of each body ring distinctly wider than anterior half, and most of each body ring broken up by numerous strongly raised, short, longitudinal ridges (Figs 16 & 21) 6
– Body rings without such patterning 7

6 Preanal ring dorsally with a distinct granular keel in the middle (Fig. 17); gonopod telopodite with complex inflated area about two-thirds along length (Figs 18, 19, 20); 47–48 body rings ....**Calostreptus**
– Preanal ring dorsally without a median granular keel (Fig. 22); gonopod telopodite lacking inflated area, more-or-less evenly tapered along length (Figs 23 & 24); 44–54 body rings ....**Lophostreptus**

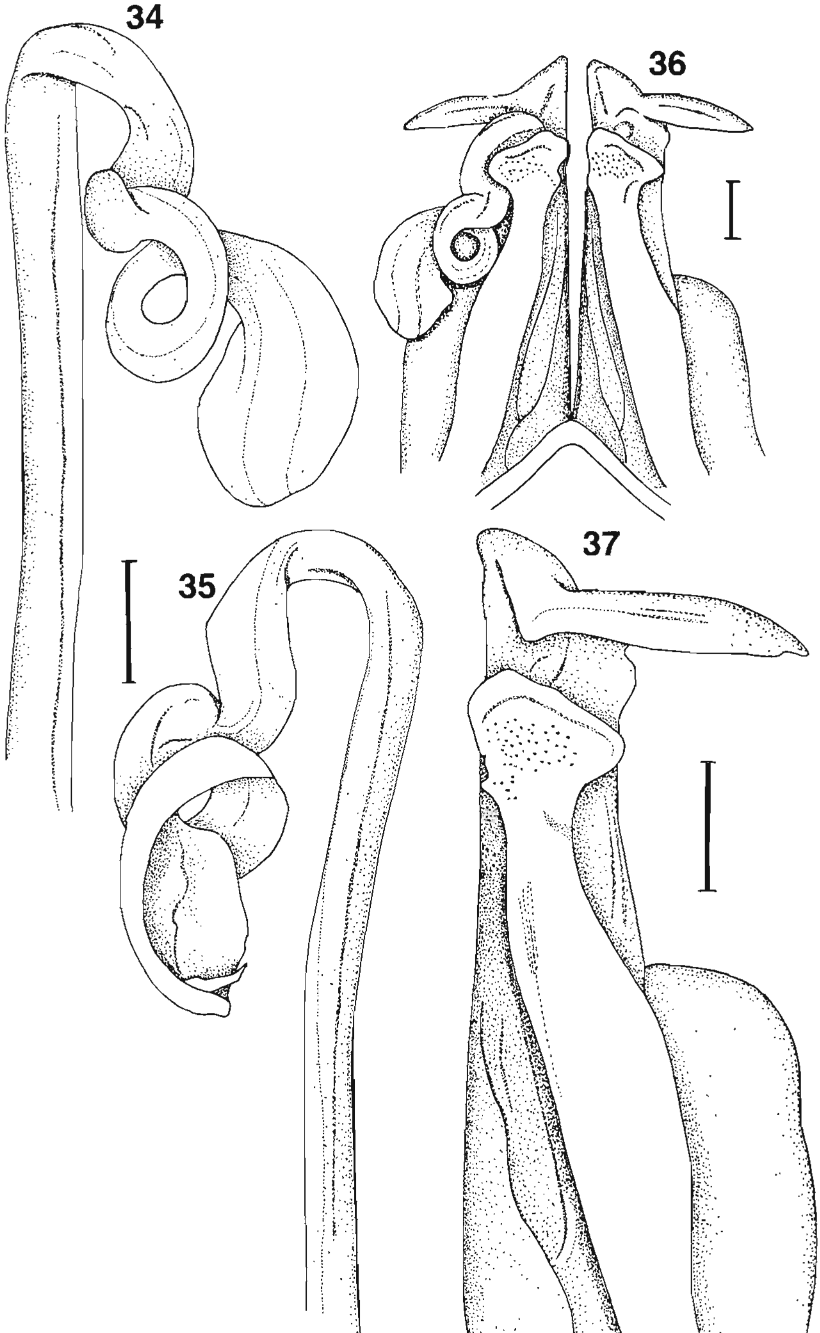
7 Animal large to gigantic (length 100–270 mm; width 10–18 mm); seminal duct of gonopod distally with 3 branches, and with each division running out on a separate solenomerite (Fig. 25) 8
– Animal small to large (length 30–150 mm; width 3–12 mm); seminal duct of gonopod unbranched distally 10

8 Prebasilar plate of gnathochilarium divided into 3 widely separated sclerites (Fig. 28); lateral edge of telocoxite produced into a prominent digitiform lobe behind point of exit of telopodite (Figs 26 & 27) ....**Triaenostreptus**
– Prebasilar plate undivided or with only 2 distinct sclerites; lateral edge of telocoxite not projecting laterally as described above 9

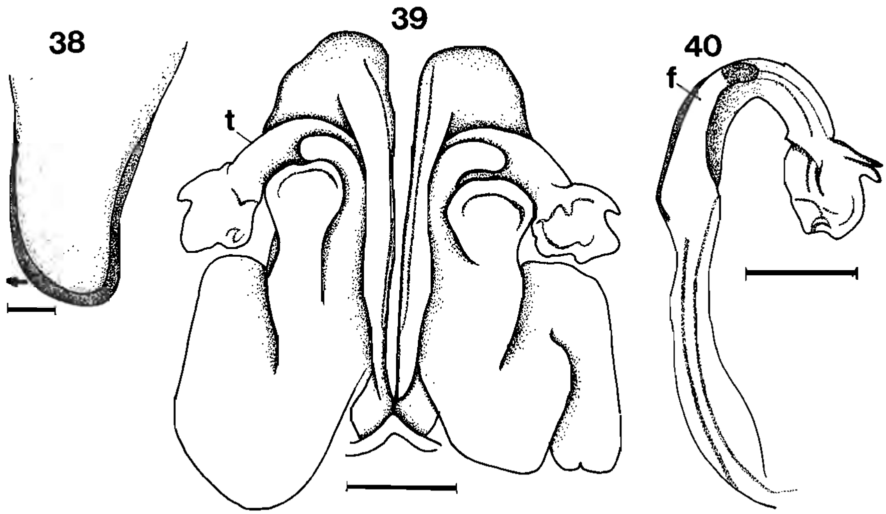
9 Gonopod telopodite with short, tongue-like process (visible from aboral side) in addition to femoral process; median lamella of telocoxite about four-fifths height of lateral lamella (Figs 29 & 30) ....**Plagiotaphrus**
– Gonopod telopodite only with femoral process and without additional shorter process; median lamella of telocoxite less than three-quarters height of lateral lamella (Figs 31 & 32); femoral process sometimes spinous or tasseled distally (Fig. 33) ....**Archispirostreptus**



Figs 25–33. Characters of *Triaenostreptus*, *Archispirostreptus* and *Plagiotaphrus*. 25. 3-branched solanomerite. 26–28. *Triaenostreptus* sp. 26. Aboral view of right gonopod. 27. Oral view of left gonopod. 28. Ventral view of gnathochilarium. 29–30. *Plagiotaphrus sulcifer* Attems, 1914. 29. Aboral view of distal region of left gonopod. 30. Oral view of right gonopod. Figs 29 and 30 modified from Attems (1914). 31–32. *Archispirostreptus conatus* (Attems, 1928). 31. Aboral view of right gonopod. 32. Oral view of left gonopod. 33. *A. gigas* (Peters, 1855), distal region of femoral process. cp = digitiform lobe of telocoxite; f = femoral process; m = median lamella of telocoxite; p = tongue-like process; pbs = sclerites of prebasilar plate; s = solanomerite; t = telopodite.



Figs 34–37. Characters of *Orthoporoides* sp. 34. Oral view of left telopodite. 35. Aboral view of left telopodite. 36. Oral view of gonopods, left telopodite removed. 37. Detail of left telocoxite of gonopod.



Figs 38–40. *Camaricoproctus planidens* Lawrence, 1965. 38. Lateral view of male collum, anterior indicated by arrow. 39. Oral view of gonopods. 40. Oral view of left telopodite removed from telocoxite. f = femoral process; t = telopodite.

10 Telopodite of gonopods without femoral, or other processes (Figs 34 & 35).......... **Orthoporoides**
– Telopodite of gonopods with femoral or other processes 11

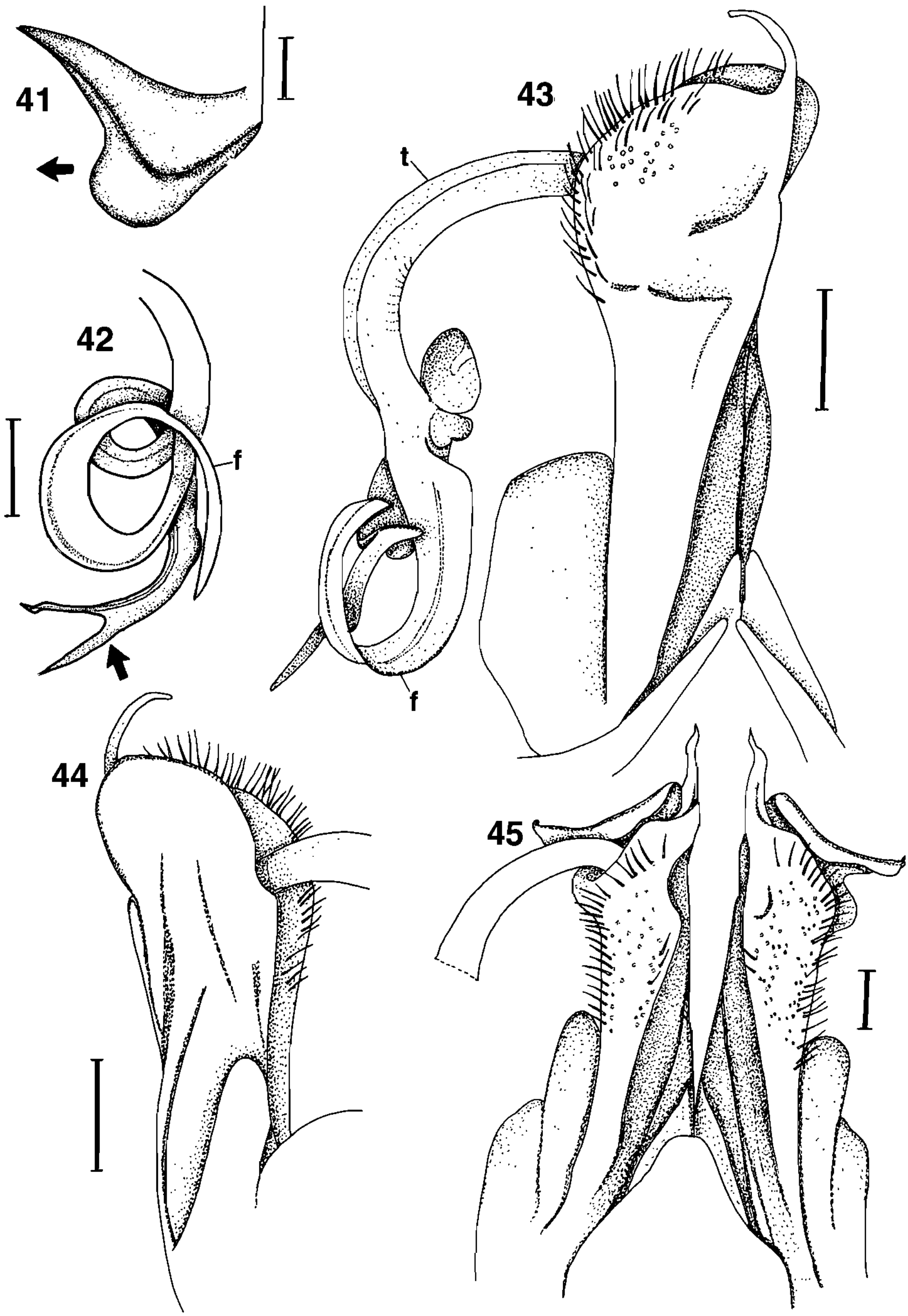
11 Gonopod telopodite short and thick, with apex wide and complex (Figs 39 & 40), and not reaching base of telocoxite ....**Camaricoproctus**
– Gonopod telopodite slender with apex simple and usually tapered, reaching base of telocoxite 12

12 Gonopod telopodite apically deeply forked (Fig. 42); femoral process long and often curved into a complete or almost complete circle (Figs 42 & 43)................. **Doratogonus**
– Gonopod telopodite apically not deeply forked; femoral process never curved into a circle 13

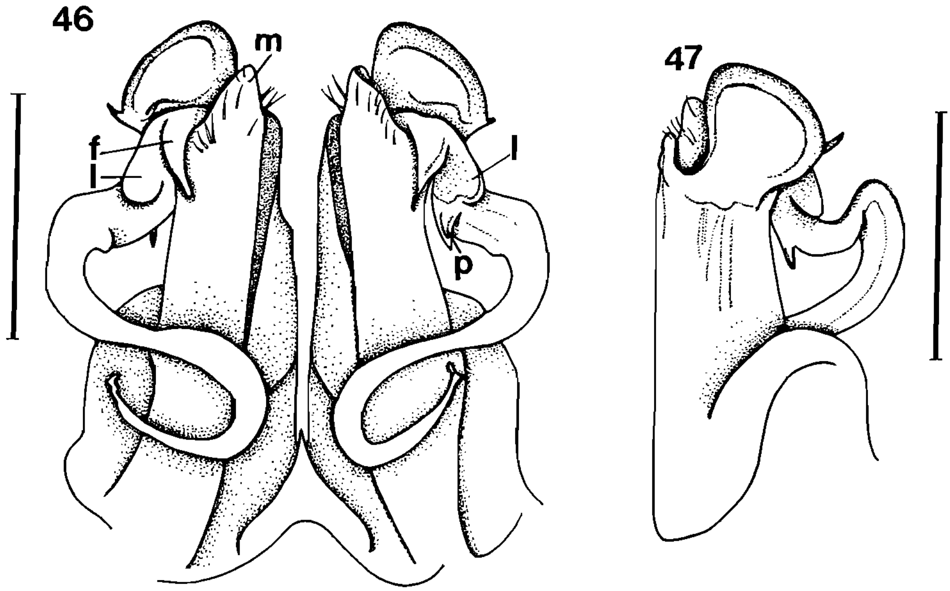
13 Femur of gonopod telopodite with 2 short processes/spines (Figs 46 & 48).......14
– Femur of gonopod telopodite with 1 process/spine (Figs 53 & 54).....................15

14 Femoral, plus one other process present just distal to exit-point of telopodite from telocoxite; femoral lobe present (Figs 46 & 47), median lamella of telocoxite without median projection (Fig. 46)........................**Synophryostreptus**
– Two short spines about halfway down length of telopodite (Fig. 48); femoral lobe absent, median lamella of telocoxite apically with broad, angular median projection (Fig. 49) ....**Bicoxidens**

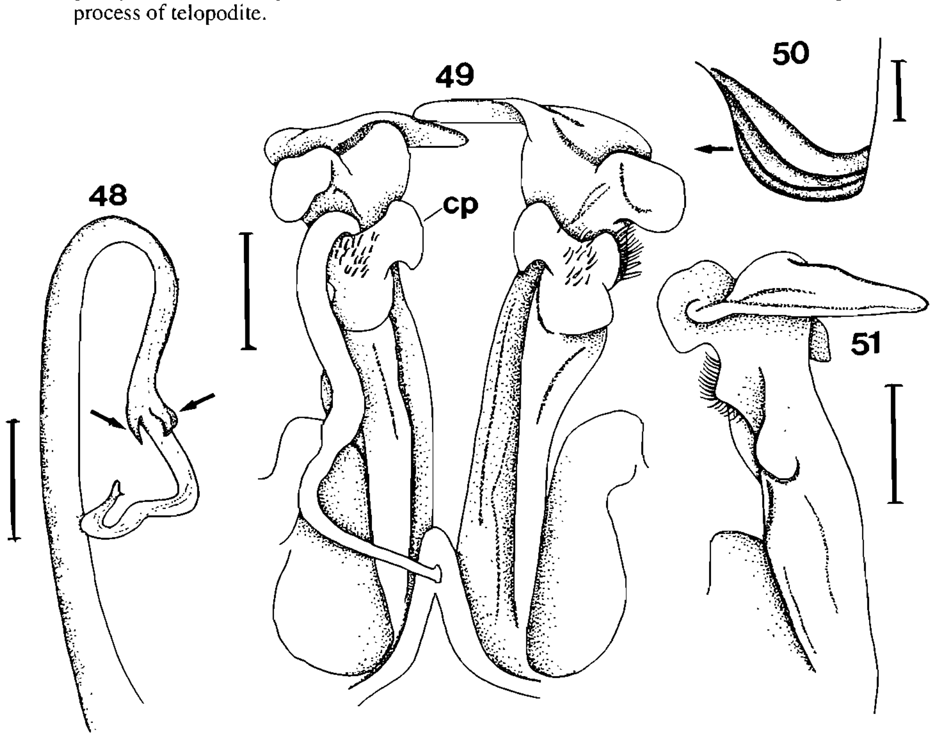
15 Origin of femoral process distal to exit-point of telopodite from telocoxite; proximal half of telopodite much broader than distal half, with an abrupt change in width between the 2 regions, and with distal region with folded appearance (Figs 52, 53) ....**Brevitibius**



Figs 41–45. Characters of *Doratogonus*. 41–42. *Doratogonus cristulatus* (Porat, 1872). 41. Lateral view of male collum (anterior indicated by arrow). 42. Oral view of portion of telopodite (arrow indicates forked apex). 43–45. *Doratogonus* sp. 43. Oral view of right gonopod. 44. Aboral view of right telocoxite. 45. Oral view of telocoxites of different, unidentified species. f = femoral process; t = telopodite.

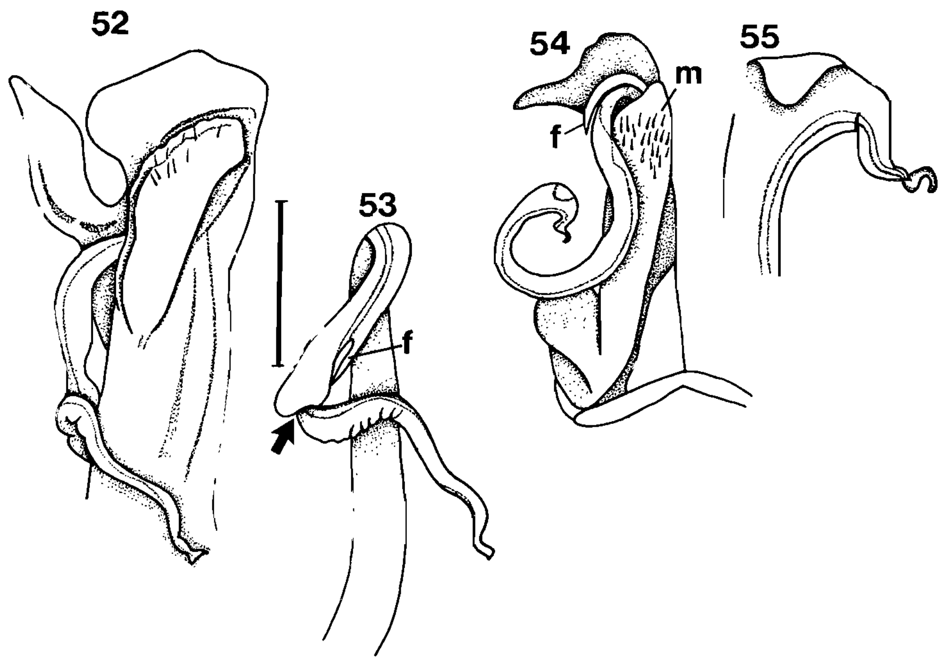


Figs 46–47. *Synophryostreptus punctatus* Attems, 1928. 46. Oral view of gonopods. 47. Aboral view of gonopod. f = femoral process; l = femoral lobe; m = median lamella of telocoxite; p = second process of telopodite.



Figs 48–51. *Bicoxidens flavicollis* Attems, 1928. 48. Aboral view of right telopodite (arrows indicate two spinous femoral processes). 49. Oral view of gonopods. 50. Lateral view of male collum (arrow indicates anterior). 51. Aboral view of left gonopod. cp = process of median lamella of telocoxite.

– Origin of femoral process hidden by median lamella of telocoxite; telopodite approximately the same width along most of its length, and distally without folds (Fig. 54) .... **Kartinikus**



Figs 52–55. Characters of *Brevitibius* and *Kartinikus*. 52–53. *Brevitibius angolanus* (Attems, 1934). 52. Oral view of gonopod. 53. Aboral view of telopodite (arrow indicates abrupt change in width). 54–55. *Kartinikus australis* Attems, 1914. 54. Oral view of gonopod. 55. Detail of apex of telopodite. f = femoral process; m = median lamella of telocoxite. Figs 54–55 slightly modified from Attems (1914).

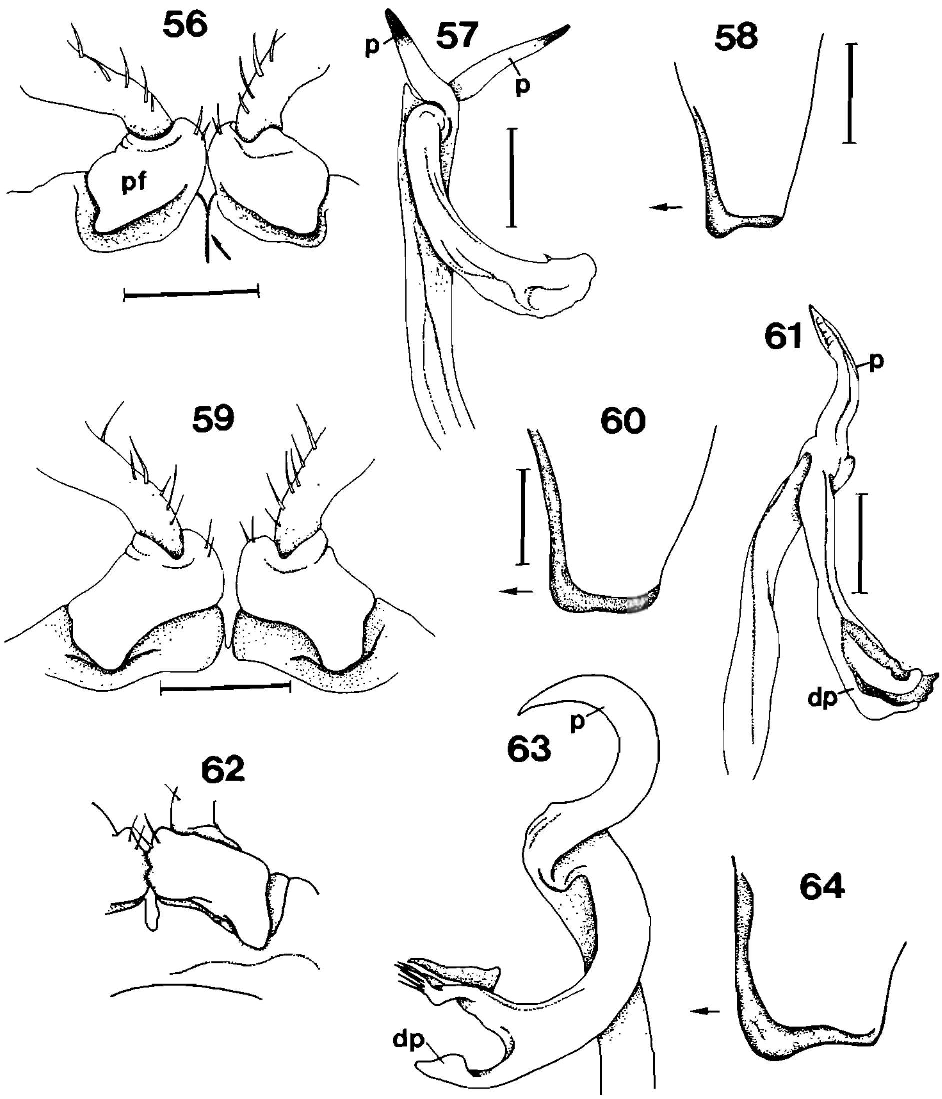
Harpagophoridae (Hoffman 1994)

16 Gonopod telopodite with 2 spiniform processes (Figs 57, 65, 68); syncoxosternum of first pair of male legs medially suturate between coxal elements (Fig. 56) .... **Harpagophora**

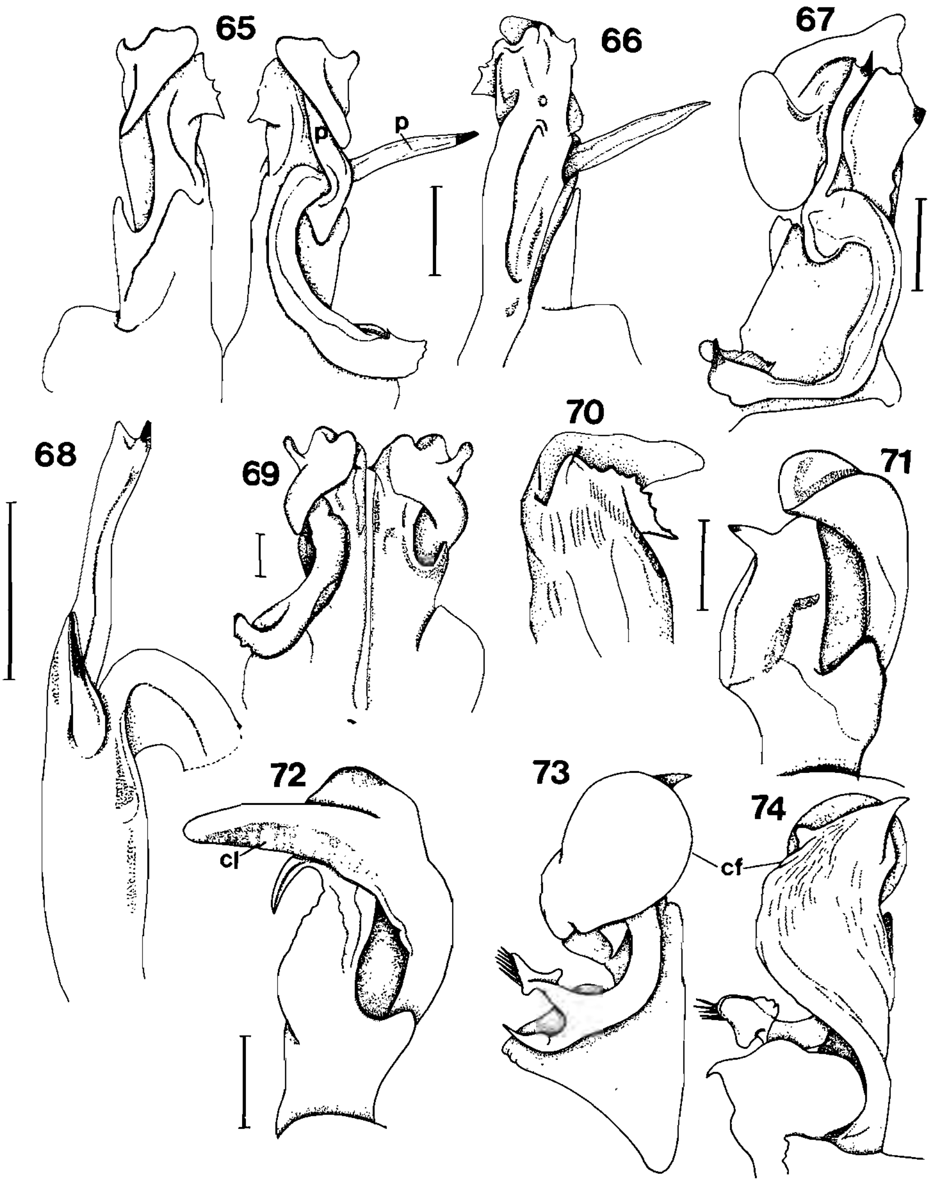
– Gonopod telopodite with 1 spiniform process (Figs 61, 63); syncoxosternum of first male legs without trace of median suture (Figs 59, 62) 17

17 Prefemora of first pair of legs of males of normal size and not in contact medially (Fig. 59). Telopodite of gonopod with a thin, laminate distal process closely associated with other apical elements (Fig. 61); distal ends of telocoxal folds (lamellae) completely lobed and folded against each other (Figs 69, 70, 71, 72) .... **Zinophora**

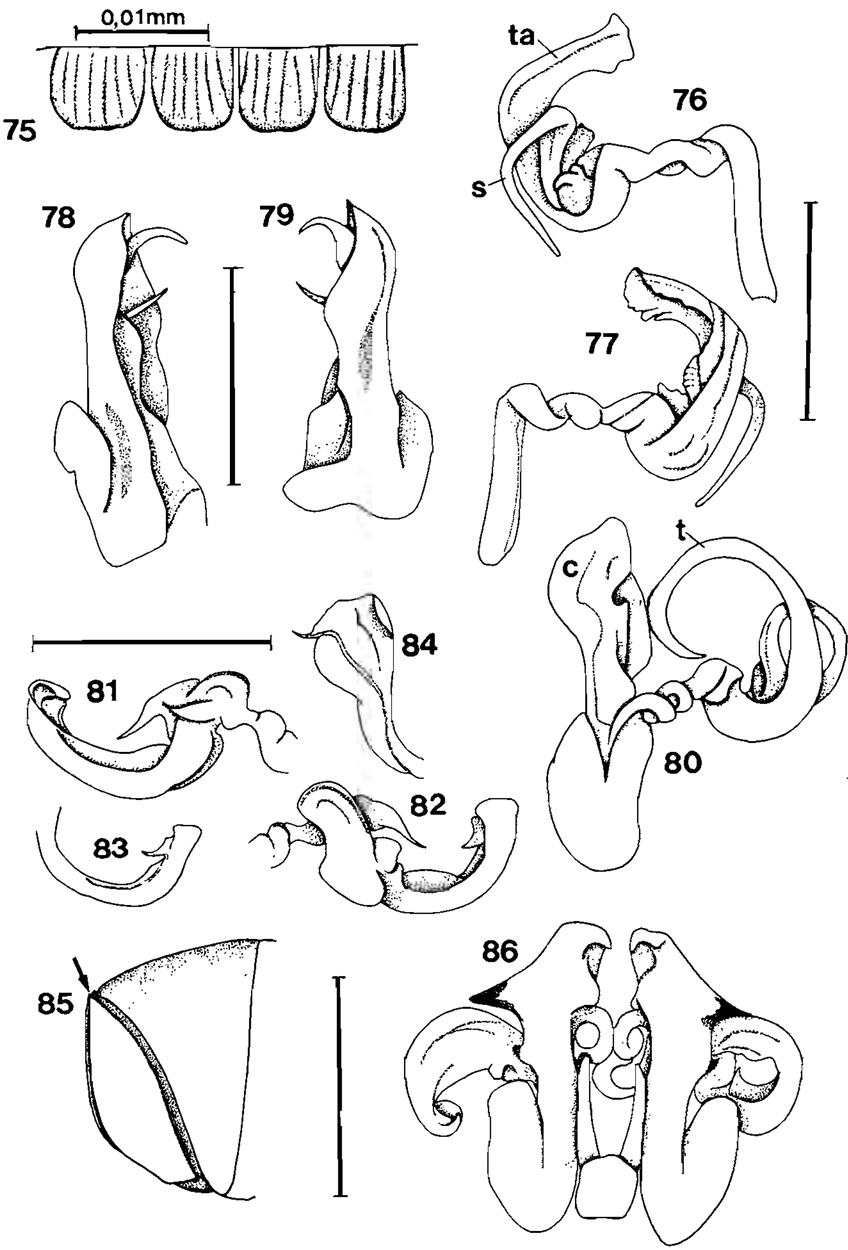
– Prefemora of first legs of males notably reduced in size and broadly in contact medially (Fig. 62). Telopodite of gonopod with slender elongate process located substantially proximal to and widely separated from the other apical elements (Figs 63, 73); distal ends of telocoxal folds (lamellae) simple, without lobes or processes (Figs 73 & 74) .... **Poratophilus**



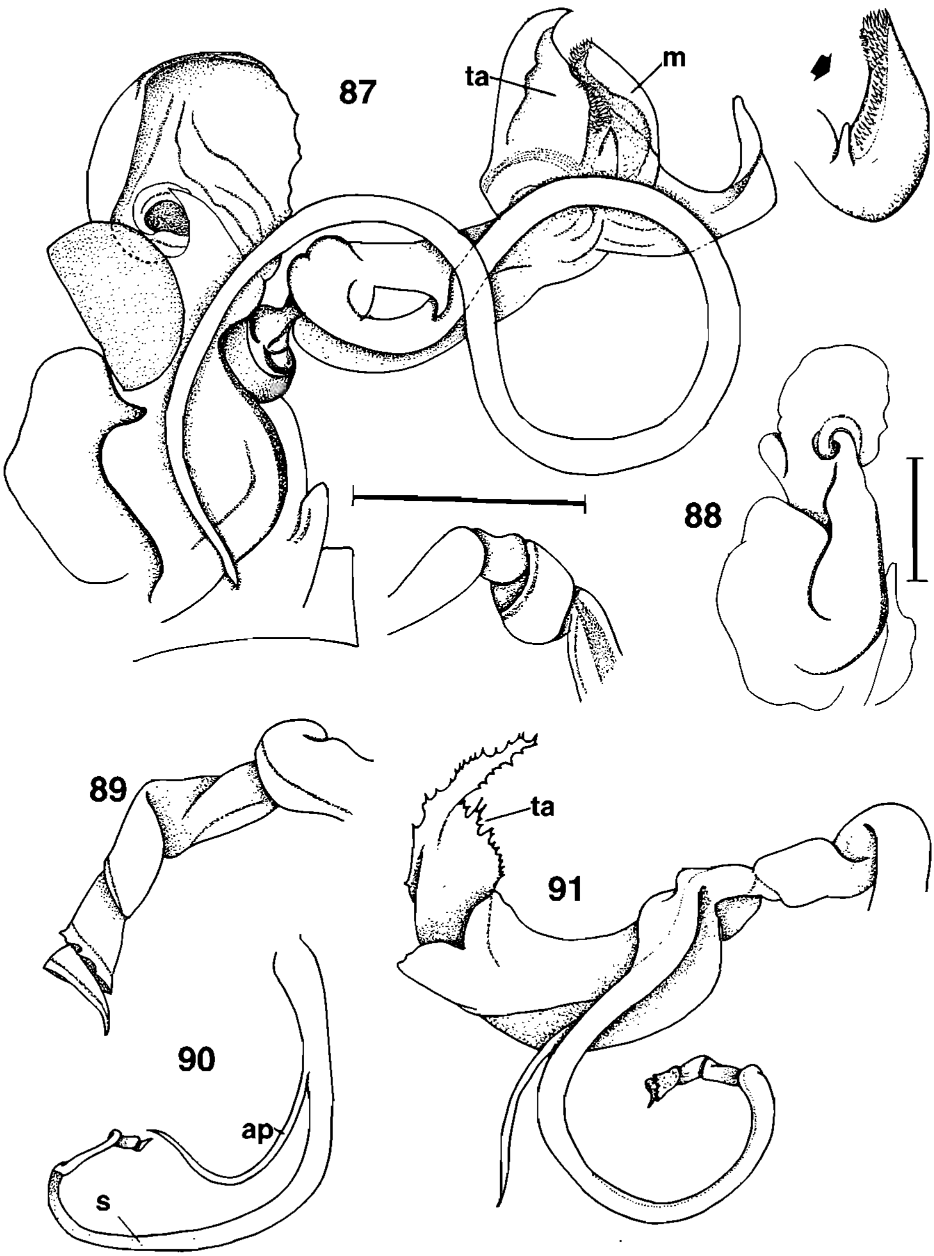
Figs 56–64. Characters of *Harpagophora*, *Zinophora* and *Poratophilus*. 56–58. *Harpagophora levis* Attems, 1928. 56. Oral view of first pair of legs of male (arrow indicates suture between coxal elements). 57. Oral view of left telopodite removed from telocoxite. 58. Lateral view of male collum (arrow indicates anterior). 59–61. *Zinophora* sp. 59. Oral view of first pair of legs of male. 60. Lateral view of male collum (arrow indicates anterior). 61. Oral view of right telopodite. 62–64. *Poratophilus gorteri* Hoffman, 1994. 62. Oral view of first pair of legs of male. 63. Oral view of right telopodite. 64. Lateral view of male collum (arrow indicates anterior). 62–64 slightly modified from Hoffman (1994). dp = distal laminate process; p = spiniform processes; pf = prefemora.



Figs 65–74. Characters of *Harpagophora*, *Zinophora* and *Poratophilus*. 65–66. *Harpagophora levis* (Attems, 1928). 65. Oral view of gonopods, right telopodite removed. 66. Aboral view of right gonopod. 67-68. *H. polyodus* Attems, 1909. Oral view of right gonopod. 68. Oral view of portion of right telopodite from Fig. 67. 69-72. *Zinophora*. 69. *Z. brevispina* (Lawrence, 1965), oral view of gonopods, left telopodite removed. 70. *Z. similis* (Carl, 1917), aboral view of distal part of telocoxite. 71-72. Unidentified *Zinophora* spp., oral view of telocoxites. 73–74. *Poratophilus gorteri* Hoffman, 1994. 73. Oral view of right gonopod. 74. Aboral view of left gonopod. Figs 73–74 slightly modified from Hoffman (1994). cf = telocoxal folds; cl = telocoxal fold lobe; p = telopodite spinous processes.



Figs 75–86. Characters of *Patinatius* and *Ctenoiulus*. 75–79. *Patinatius bidentatus* Kraus, 1960. 75. Detail of metazona fringe. 76. Oral view of telopodite removed from telocoxite. 77. Aboral view of same. 78. Oral view of telocoxite. 79. Aboral view of same. 80. *P. barbertonensis* Kraus, 1960, oral view of left gonopod. 81–86. *Ctenoiulus* species. 81–83. *C. vumbae* (Kraus, 1960). 81. Oral view of distal part of telopodite. 82. Aboral view of same. 83. Detail of solanomerite. 84. *C. gorongozensis* (Kraus, 1960), detail of solanomerite. 85–86. *C. vumbae*. 85. Lateral view of anal ring and anal valves (arrow indicates small spines of anal valves). 86. Aboral view of gonopods. Figs 83–84 redrawn from Kraus (1960). c = telocoxite; s = solanomerite; t = telopodite; ta = tarsus.



Figs 87–91. Characters of *Chaleponcus* and *Helicochetus*. 87–88. *Chaleponcus limbatus* Attems, 1914. 87. Oral view of left gonopod. 88. Aboral view of right telocoxite. Figs 89–91. *Helicochetus* spp. 89. *H. electricus* Kraus, 1958 (Democratic Republic of Congo), distal part of solanomerite. 90. *H. rarus* Kraus, 1958 (Democratic Republic of Congo), detail of solanomerite. 91. *H. electricus*, oral view of right telopodite. Figs 89–91 redrawn from Kraus (1966). ap = accessory basal process of solenomerite; m = spinous median lobe of tarsus; s = solanomerite; ta = tarsus.

Odontopygidae (modified from Kraus 1960)

18 Fringes of metazonae composed of broad, almost square plates with rounded corners, and with several small, longitudinal grooves (Fig. 75); gonopod telopodite without femoral spine (Figs 76 & 77) .... **Patinatius**

– Fringes of metazonae with smooth, even margin, or with margin uneven with tooth-like projections with one or several points (Fig. 95), or if broadly rounded plates present, these lacking longitudinal grooves; femoral spine sometimes present on gonopod telopodite 19

19 Distal part of solenomerite twisted into a tight spiral (Figs 89 & 90); solenomerite with long, slender, basal accessory process (Figs 90 & 91) .... **Helicochetus**

– Distal part of solenomerite not twisted into a tight spiral; if spiralled only loosely (Fig. 92 & 93), long slender process near base of solenomerite absent 20

20 Tarsus distally divided into 3 lobes, median one with a large pad of spines or hairs (Fig. 87) .... **Chaleponcus**

– Distal region of tarsus not with 3 distal lobes 21

21 Tarsus with a large main lobe and a smaller basal lobe usually with fine spines, although these may be confined to the edge of the lobe (Figs 92 & 93) .... **Spinotarsus**

– Tarsus of gonopod without a smaller spinous basal lobe 22

22 Solenomerite irregularly broadened distally, often with a distal spinous process (Figs 81, 82, 83, 84) .... **Ctenoiulus**

– Solenomerite simple, whip-shaped (Figs 96 & 97) .... **Prionopetalum**

Distribution, diversity and references for keys to species

Suborder Cambalidea

Julomorphidae

Julomorpha Porat, 1872

14 species, all Southern Africa (Eastern and Western Cape, Lesotho). Key to species (German) provided by Schubart (1966).

Stenjulomorpha Schubart, 1966

4 species, all South Africa (Eastern Cape). Key to species (German) provided by Schubart (1966).

Suborder Spirostreptidea

Spirostreptidae

Archispirostreptus Silvestri, 1895

14 species, 2 recorded from Southern Africa (Northern Province, Zimbabwe); mainly in East and Central Africa.

Bicoxidens Attems, 1928

5 species, Northern Province, Zimbabwe. Key provided by Schubart (1966) (German).

Brevitibius Attems, 1950

1 valid species recorded from northern Namibia and Angola.

Camaricoproctus Attems, 1926

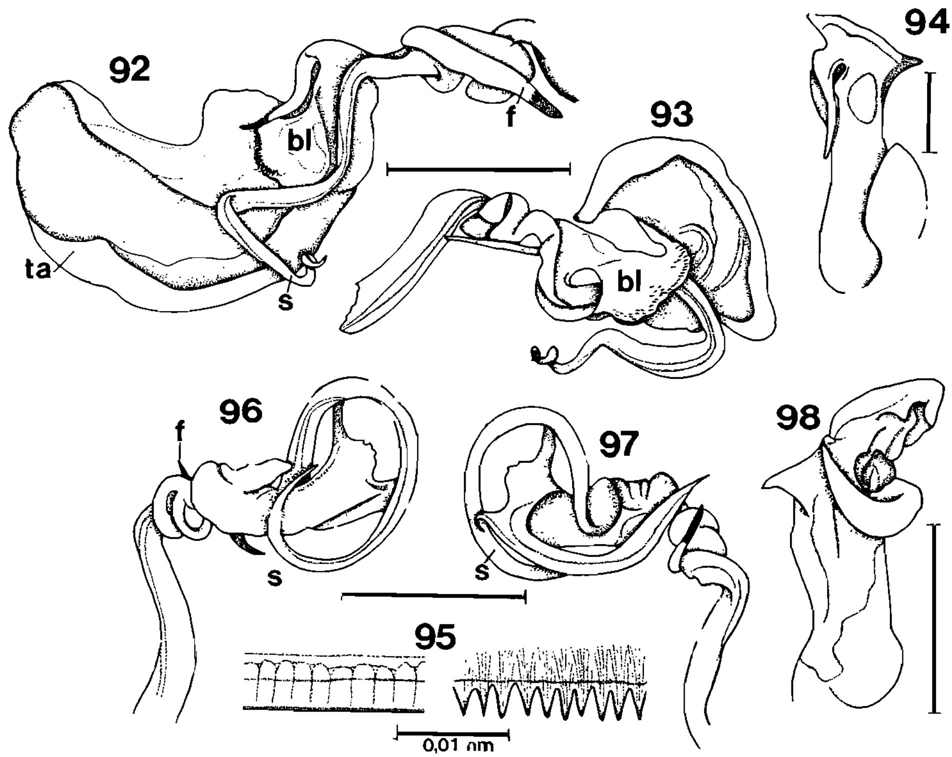
8 species, all from South Africa: KwaZulu-Natal, North-West Province, Northern Province, Eastern and Western Cape. (Note: the gonopod telopodite of this genus is very unlike that of the other members of the family. It has been suggested that *Camaricoproctus* might be better placed in the Harpagophoridae).

Calostreptus Cook, 1896

3 species, 1 from Mozambique and Zimbabwe, 1 from Tanzania and 1 from Angola.

Doratogonus Attems, 1914

About 25 species, at least 20 in Southern Africa, mainly in eastern part of South Africa, with only 1 species known from Namibia. Other species are from subequatorial Africa. Key in two parts (*Alloporus* Porat, 1872 and *Doratogonus*) provided by Schubart (1966) in German.



Figs 92–98. Characters of *Spinotarsus* and *Prionopetalum*. 92. *Spinotarsus tristis* Kraus, 1960, oral view of right telopodite. 93–94. *Spinotarsus* sp 1. 93. Oral view of right telopodite. 94. Oral view of right telocoxite. 95. *Spinotarsus* sp 2 and 3, detail of metazona fringe. 96–98. *Prionopetalum pulchellum* Kraus, 1960. 96. Aboral view of right telopodite. 97. Oral view of right telopodite. 98. Oral view of left telocoxite. bl = basal lobe of tarsus; f = femoral process; s = solanomerite; ta = tarsus.

Kartinikus Attems, 1914
2 species, mainly in East and Central Africa, 1 species recorded once from Namibia.

Lophostreptus Cook, 1895
9 species, 2 from Southern Africa (North-West Province, Northern Province and Mpumalanga in South Africa, Zimbabwe, Mozambique), other species from Central and East Africa, also Somalia and Ethiopia (Krabbe 1982).

(Note: some confusion between this genus and *Synophryostreptus*, see below).

Orthoporoides Krabbe, 1982
7 species, 6 in South Africa (Western and Eastern Cape, KwaZulu-Natal), 1 supposedly in Lesotho and East Africa (doubtful) and 1 in Central and East Africa. Key to species provided by Schubart (1966) under the genus *Orthoporus* (German).

Plagiotaphrus Attems, 1914
3 species, 1 from Zimbabwe, others from Malawi and Angola. Zimbabwean species known only from one female.

Synophryostreptus Attems, 1926
3 species, 1 from North-West Province, 1 from Northern and North-West Province and Mpumalanga, and 1 from Mozambique. (Note: The latter two species, *S. carli* (Attems, 1928) and *S. rugosostriatus* (Schubart, 1966), will key out as *Lophostreptus* species. Both were formerly included in that genus but were transferred to *Synophryostreptus* by Krabbe (1982). There is very little difference in the gonopod telopodite of *Synophryostreptus* and *Lophostreptus*; the main difference between the two genera being the shallower, less obvious ridges on the body rings of the type species of *Synophryostreptus*, *S. punctatus* Attems, 1928, and a difference in the apical region of the telocoxites.

Triaenostreptus Attems, 1914
8 species, all Southern Africa (KwaZulu-Natal, Eastern, Northern and Western Cape, and Namibia). Key to species provided by Hoffman (1971).

Harpagophoridae

Harpagophgora Attems, 1909
8 species, all Southern Africa (KwaZulu-Natal, Eastern, Northern and Western Cape, Namibia).

Poratophilus Silvestri, 1897
3 species; 1 known only from types and locality for these unknown, 1 species from Lesotho described from a female and 1 species from Northern Province.

Zinophora Chamberlin, 1927
About 16 species (Hoffman 1979/80),12 in Southern Africa (Free State, Gauteng, KwaZulu-Natal, Mpumalanga, Eastern, Northern and Western Cape, Northern Province, Mozambique, Namibia, Zimbabwe) and others in Angola, Tanzania and Democratic Republic of Congo. Key to species provided by DeMange (1970) in French.

Odontopygidae

Chaleponcus Attems, 1914

About 19 species, all in Southern Africa (Gauteng, KwaZulu-Natal, Mpumalanga, Northern Cape, Northern Province, Mozambique, Namibia, Zimbabwe). Key to species provided by Kraus (1966) in German.

Ctenoiulus Cook, 1893

6 species, 2 in Southern Africa (Mozambique, Zimbabwe Highlands), others in Angola. Key to species in Kraus (1960) under the genus *Solenozophyllaria* (German).

Helicochetus Attems, 1909

13 species, 2 in Southern Africa (Mozambique), others in East and Central Africa. Key to species provided by Kraus (1960) in German.

Patinatius Attems, 1928

14 species, all from eastern South Africa (Eastern Cape, KwaZulu-Natal, Mpumalanga, Northern Province). Key provided by Alderweireldt (1998).

Prionopetalum Attems, 1909

21 species, 1 in Southern Africa (Mozambique), others in East and Central Africa. Key to species provided by Kraus (1960) (German).

Spinotarsus Attems, 1909

About 96 species. Most (89) in South Africa (Eastern and Western Cape, Gauteng, KwaZulu-Natal, Mpumalanga, Northern Province, North-West Province, Botswana, Mozambique, Namibia, Swaziland, Zimbabwe), others in Angola and Congo. Key to species by Kraus (1960 1966) (German).

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