

## New species of Pauropoda (Myriapoda) from Tasmanian temperate rainforests

ULF SCHELLER

Häggeboholm, Häggesled, S-53194 Järpås, Sweden (ulf.scheller@telia.com)

### Abstract

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Seventeen species new to science belonging to five genera in two families are described from a collection of Pauropoda made during an intensive survey of temperate rainforest in Tasmania. The new species are *Allopaupopus fraterculus* sp. nov., *Allopaupopus inusitatus* sp. nov., *Decapaupopus heis* sp. nov., *Decapaupopus attenuatus* sp. nov., *Decapaupopus ungulatus* sp. nov., *Decapaupopus convexus* sp. nov., *Decapaupopus saltuarius* sp. nov., *Decapaupopus terrestris* sp. nov., *Nesopaupopus tasmaniensis* sp. nov., *Stylopaupopoides erectus* sp. nov., *Stylopaupopoides rounsevelli* sp. nov., *Stylopaupopoides quadripartitus* sp. nov., *Stylopaupopoides scissus* sp. nov., *Stylopaupopoides hetaeros* sp. nov., *Stylopaupopoides eximius* sp. nov., *Pauropus vandiemi* sp. nov. and *Borneopaupopus dignus* sp. nov. The high level of local endemism in Tasmanian rainforest is emphasised.

### Keywords

biodiversity, *Allopaupopus*, *Decapaupopus*, *Nesopaupopus*, *Stylopaupopoides*, *Pauropus*, *Borneopaupopus*, Australia, endemism

### Introduction

An intensive survey of invertebrates of rainforest in Tasmania was carried out between 1989 and 1990 funded by the National Rainforest Conservation Programme (Coy et al., 1993). Several higher taxa collected during the survey were distributed to specialist taxonomists for study. A large number of Pauropoda formed part of this collection. It contained seventeen new species and two already described species (Greenslade, 2008). The current paper describes the new species from this collection and reports the collecting sites for all the species studied. Other Arthropoda were described or recorded by Clark and Greenslade (1996) and Greenslade (2008).

The Pauropoda are a little known group of soil organisms being small, cryptic Myriapoda but they are widespread in distribution and can be abundant (Scheller, 1990). The fauna often exhibits a high level of local endemism in forest soils as is demonstrated by the collection described here. Pauropods can inhabit strata from litter to the subsoil in a variety of plant communities and soil types, even agricultural habitats (Scheller, 1990).

### Materials and Methods

Specimens were collected from 19 rainforest sites in different regions of Tasmania and at different altitudes. The sites covered four different rainforest types. A number of collection methods were used to collect specimens. They included funnel extraction of leaf litter, soil and moss, pitfall trapping and pyrethrin knockdown from tree trunks. The collecting methods

and sites are described in detail by Coy et al. (1993) and documented by Greenslade (2008) as localities 1 to 19.

All specimens were preserved in ethanol. In the descriptions below, individuals have been classified as adults, subadults and juveniles according to the number of pairs of legs. The sex of adults and subadults was recorded.

Holotypes have been lodged in the Australian National Insect Collection, CSIRO, Canberra; paratypes and other material are deposited in the Queen Victoria Museum, Launceston, Tasmania.

### Abbreviations

*Deposition:* ANIC, Australian National Insect Collection, CSIRO, Canberra, ACT, Australia; QVM, Queen Victoria Museum, Launceston, Tasmania, Australia.

*Morphology:* ad., adult; subad., subadult; juv., juvenile with number of pairs of legs as indicated.

*Collectors:* ATW, A.Trumbull-Ward; DR, D. Rounsevell; HM, H. Mitchell; JD, J. Diggle; MN, M. Neyland; PG, P. Greenslade; RC, R. Coy; SS, S. Smith.

GR = grid reference; NRCP, National Rainforest Conservation Programme; PKD, pyrethrin knock down collecting method.

### Systematics

The characters studied to identify species are those used by previous workers, in particular Hansen (1902), Remy (1931, 1952a, 1956c) and Scheller (1985, 1988, 1993). The setal

nomenclature used here follows these publications. All setal names are in italics. The length of body, excluding the antennae, is given and the range of variation in adult paratypes (subadult in *Decapauropus convexus*) is provided in brackets in mm and other measurements are given in micrometres. For most measurements the range for adult paratypes is given in brackets either before (lower figure) or after (higher figure) the mean measurement. Lengths and ratios of lengths of setae are given in the descriptions. Distances between setae are given as eg.  $a_1-a_1=...$  if distance between same seta on left and right side of body is measured and as eg.  $a_1-a_2=$  if distance between setae on the same side of the body is measured. The number of pairs of legs, either nine or less, is given before the specimen details.

### Checklist of Tasmanian Pauropoda

#### Pauropodidae

##### *Allopauropus* Silvestri, 1902

*Allopauropus fraterculus* sp. nov.

*Allopauropus inusitatus* sp. nov.

*Decapauropus heis* sp. nov.

*Decapauropus attenuatus* sp. nov.

*Decapauropus ungulatus* sp. nov.

*Decapauropus convexus* sp. nov.

*Decapauropus saltuarius* sp. nov.

*Decapauropus terrestris* sp. nov.

##### *Nesopauropus* Scheller, 1997

*Nesopauropus tasmaniensis* sp. nov.

##### *Stylopauropoides* Remy, 1956

*Stylopauropoides ringueleti* Remy, 1962

*Stylopauropoides erectus* sp. nov.

*Stylopauropoides rounsevelli* sp. nov.

*Stylopauropoides quadripartitus* sp. nov.

*Stylopauropoides scissus* sp. nov.

*Stylopauropoides hetaeros* sp. nov.

*Stylopauropoides eximius* sp. nov.

##### *Pauropus* Lubbock, 1867

*Pauropus dolosus* Remy, 1956

*Pauropus vandiemeni* sp. nov.

#### Brachypauropodidae

##### *Borneopauropus*, Scheller, 1994

*Borneopauropus dignus* sp. nov.

### Systematics

#### Genus *Allopauropus* Silvestri

Type species: *Allopauropus brevisetus* Silvestri, 1902: Fasc. 95, no. 12, pl. 5.

#### *Allopauropus fraterculus* sp. nov.

(Figs. 1–11)

*Material Examined. Holotype.* Ad. ♀ (female), Bruny Island, Mount Mangana, Loc. 12 (43°22.1'S, 147°17.0'E), moss on dead log, 4–9. iv.1989 (JD,PG).

*Paratypes.* Big Sassy Creek, Loc. 7, (42°08.5'S, 147°54.3'E), rainforest, rotten log, 6 ad. ♀ (2 males, 4 females), 17.v.1989 (JD). Rivaux Creek, (41°15'S, 146°40'E), litter, 1 ad. ♀ (female), 20.xii.1988 (PG).

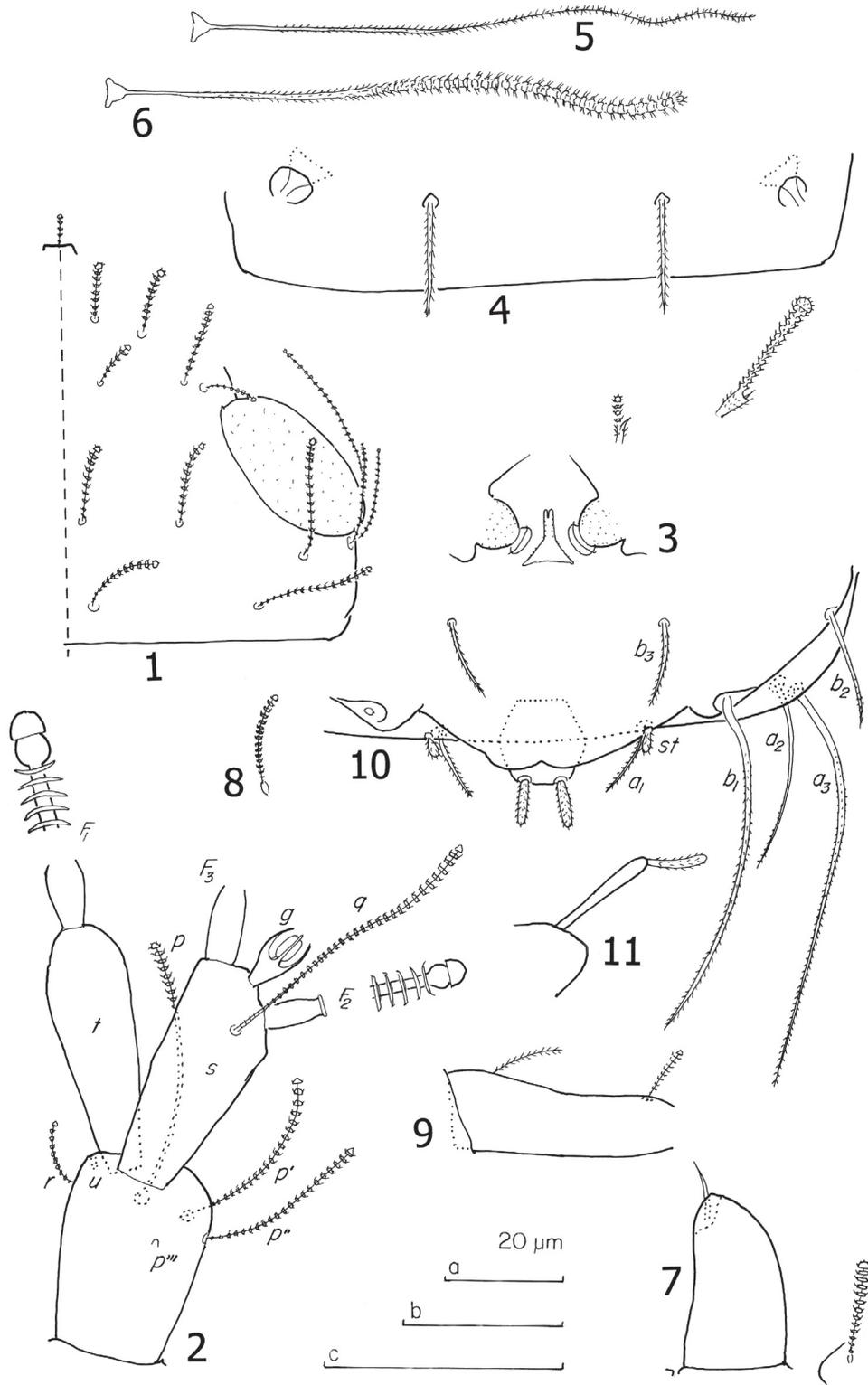
*Other material* (185 specimens). Loc. 1, moss on *Nothofagus*, 1 subad. ♀ (female), 1.iv.1989 (JD) and moss on dead trunk, 1 ad. ♀ (female), 31. iv. 1989 (PG). Loc. 2, moss on ground, 1 ad. ♀ (female), 1 juv. ♀, 21. iv.1989 (HM,JD). Loc. 4, litter, 1 ad. ♀ (male), (HM) and soil core, 1 subad. ♀ (female), 1 juv. ♀, 3–8.xi. 1989 (RC). and moss on log, 2 ad. ♀ (female), 18.xi.1989 (HM). Loc. 6, moss on tree trunk, 1 ad. ♀ (male), 1 subad. ♀ (female), 3 juv. ♀, 11.vi.1990 (ATW). Loc. 7, rotten log, 119 ad. ♀ (27 male, 56 female, 36 sex?), 30 subad. ♀ (2 female, 28 sex?), 10 juv. ♀, 8 juv. ♀, 17.v.1989 (JD). Loc. 12, moss on dead log, 1 ad. ♀ (female), 4–9.iv.1989 G) and moss on log, 1 ad. ♀ (female), 9. xi.1989 (PG). Loc. 13, litter, 2 ad. ♀ (male, female), 27.ii.1989 (SS).

*Diagnosis.* The new species is very close to *A. maorium* Remy described from New Zealand (Remy1956a), in natural habitats also known from New Caledonia and southern Chile, but can be distinguished in the following manner. The antennal globulus *g* has a thin stalk, only 4–5 bracts and longish capsule in *fraterculus* but has a thick stalk, several bracts, and spherical capsule in *maorium*; the 4th antennal segment has the seta *u* (not mentioned by Remy in *maorium*); the anal plate is an almost regular hexagon in *fraterculus*, but is 5-sided with posterior margin in a long curve in *maorium*.

*Description. Length.* -(0.55-) 0.69(-0.72) mm.

*Head.* -Tergal setae of medium lengths, sublateral and lateral ones fairly long, subcylindrical-cylindrical, annulate, blunt. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=(10-)11(-12)$ ; 2nd row:  $a_1=(8-)9(-11)$ ,  $a_2=14(-16)$ ,  $a_3=(9-)10(-12)$ ; 3rd row:  $a_1=(9-)11$ ,  $a_2=(14-)16(-17)$ ; 4th row:  $a_1=(12-)16$ ,  $a_2=(20-)21(-26)$ ,  $a_3=(18-)21$ ,  $a_4=(18-)19(-20)$ ; lateral group setae:  $l_1=l_2=(17-)19(-21)$ ,  $l_3=(32-) 40(-45)$ . The ratio  $a_i/a_1-a_1$  in 1st row 0.7(-0.8), 2nd row 0.6(-0.7), 3rd row (1.3-)1.5(-1.6) and 4th row 1.3(-1.5). Temporal organs small, their length in tergal view 0.6(-0.7) of their shortest distance apart, posterior aperture absent. Head cuticle almost glabrous.

*Antennae.* -Segment 4 with 5 subcylindrical annulate blunt setae; their relative lengths:  $p=100$ ,  $p'=(58-)61(-66)$ ,  $p''=(54-)56(-59)$ ,  $r=(22-)23$ ,  $u=(3-)4$ . The  $p'''$  rudimentary. Tergal seta *p* (1.1-)1.2 times as long as tergal branch *t*. The latter somewhat clavate, (2.7-)3.0(-3.1) times as long as its greatest diameter and as long as (-1.1 times as long as) sternal branch *s*, that branch (2.2-)2.4 times as long as its greatest diameter; anterodistal corner of *s* distinctly truncate. Seta *q* as seta *p* of 4th segment, (as long as-) 1.2 times as long as *s*. Relative lengths of flagella (basal segments included) and



Figs. 1–11. *Allopauropus fraterculus* sp.nov., holotype 1–6, 8–11; paratype 7: 1, head, median and right part, tergal view; 2, right antenna, sternal view; 3, collum segment, median and left part, sternal view; 4, tergite VI, posterior part; 5,  $T_2$ ; 6,  $T_3$ ; 7, right genital papilla and seta on coxa of 2nd pair of legs, anterior view; 8, seta on trochanter of 9th pair of legs; 9, tarsus of 9th pair of legs; 10, pygidium, posterior and left part, sternal view; 11, anal plate, lateral view. Scale line a for figures 5, 6, 8, 9; b for figures 1–3, 4, 7; c for figures 10, 11.

basal segments:  $F_1=100$ ,  $bs_1=8(-12)$ ;  $F_2=42(-54)$ ,  $bs_2=(6-)-7(-9)$ ;  $F_3=85(-100)$ ,  $bs_3=10(-11)$ . The  $F_1$  (2.7-)3.1 times as long as  $t$ ,  $F_2$  and  $F_3$  1.4(-1.5) and (2.7-)2.8(-2.9) times as long as  $s$  respectively. Distal calyces hemispherical; distal part of flagellar axes between last lamella and calyx strongly widened, ball-shaped. Globulus  $g$  (1.5-)1.8(-1.9) times as long as wide; (4-)5 bracts, capsule ovoid, distinctly longer than wide; width of  $g$  0.5 of the greatest diameter of  $t$ . Antennae glabrous.

*Trunk.*-Setae of collum segment somewhat clavate, dense but distinctly annulate, blunt, furcate but with rudimentary glabrous pointed secondary branches; sublateral setae 3.0(-3.1) times as long as submedian ones; sternite process triangular, with anterior lengthening narrow and with apical incision; appendages barrel-shaped, caps with collar; process and basal segment of appendages with minute pubescence.

Setae on tergites subequal in length; on anterior tergites as on tergal side of head, on posterior tergites cylindrical and with oblique pubescence. There are 4+4 setae on tergite I, 6+6 on II-IV, 6+4 on V, 4+2 on VI. Submedian posterior setae on VI 0.5(-0.6) of their distance apart and (2.4-)2.5 times as long as pygidial setae  $a_1$ . Tergites almost glabrous.

Relative lengths of bothriotricha:  $T_1=100$ ,  $T_2=(98-)-101(-105)$ ,  $T_3=102(-106)$ ,  $T_4=(116-)-128(-134)$ ,  $T_5=(124-)-135(-141)$ . They have simple, straight axes, thin in all but  $T_3$ , the latter with thicker axes, in proximal half compact and in distal half annulate, each annulus with a whorl of erect hairs. Pubescence hairs on  $T_1$ ,  $T_2$ ,  $T_4$  and  $T_5$  oblique in proximal 1/3, more outwards erect.

Genital papillae (paratypes) glabrous, conical, with inner sides only a little curved, outer sides strongly convex, 1.4(-1.8) times as long as their greatest diameter; seta (0.3-)0.4 of the length of organ.

*Legs.*-Setae on coxa and trochanter of leg 9 similar, simple, subcylindrical, annulate, blunt, those more anteriorly with glabrous blunt, rudimentary secondary branches. Coxal seta on leg 2 in male as other coxal setae but somewhat clavate. Legs short, tarsus of leg 9 subcylindrical, 2.9(-3.4) times as long as its greatest diameter. Proximal seta thin and with oblique pubescence, its length (0.3-)0.4 times length of tarsus and (1.3-)1.5 times as long as distal seta; the latter somewhat clavate, annulate, blunt. Cuticle of tarsus almost glabrous.

*Pygidium. Tergum.*-Posterior margin between  $st$  straight (or somewhat convex). Relative lengths of setae:  $a_1=10$ ,  $a_2=(25-)-27(-30)$ ,  $a_3=(56-)-73$ ,  $st=(2-)-3$ . The  $a_1$ ,  $a_2$  and  $a_3$  shortly pubescent, subcylindrical, tapering, pointed, curved inwards,  $a_1$  also pointing inwards;  $st$  straight and clavate, with distinct pubescence, pointing inwards. Distance  $a_1-a_1$  (2.2-)2.7 times as long as  $a_1$ ; distance  $a_1-a_2$  (3.5-)5.0 times as long as distance  $a_2-a_3$ ; distance  $st-st$  (6.4-)9.0 times as long as  $st$  and (as long as-)1.1 times as long as distance  $a_1-a_1$ . Cuticle minutely granular.

*Sternum.*-Posterior margin between  $b_1$  with broad and low lobe below anal plate; hind area divided into two rounded parts by a posteromedian incision. Relative lengths of setae ( $a_1=10$ ):  $b_1=(38-)-50$ ,  $b_2=(14-)-18$ ,  $b_3=(9-)-12$ , all setae tapering, pointed and with very short oblique pubescence;  $b_1$  about as long as their distance apart, sometimes with distal swelling;  $b_2$  (0.8-)0.9 of the length of distance  $b_1-b_2$ ,  $b_3$  0.3 of their

distance apart. Anal plate somewhat longer than broad, glabrous, hexagonal, with anterior and posterior margins subequal in length; two cylindrical, blunt appendages with short oblique pubescence protrude from posterosternal margin, 0.6(-0.7) of the length of plate, somewhat pointing outwards.

Subad. 8.-Setae  $d_1$  on pygidial tergum 0.5 of their distance apart; setae  $d_2$  0.7 of the length of  $d_1$  and 0.8 of distance  $d_1-d_2$ .

*Etymology*—From Latin *frater, fratris* = brother (of *A. maeriorum*).

*Distribution in Tasmania.* Most specimens were collected from a rotten log at Big Sassy Creek but the species seems to be very widely distributed in the State.

#### *Allopauropus inusitatus* sp.nov.

(Figs. 12–24)

*Material Examined. Holotype.* Ad. 9 (female), Bruny Island, Mount Mangana, (43°22.1'S, 147°17.0'E), litter, 9.iv.1989 (PG).

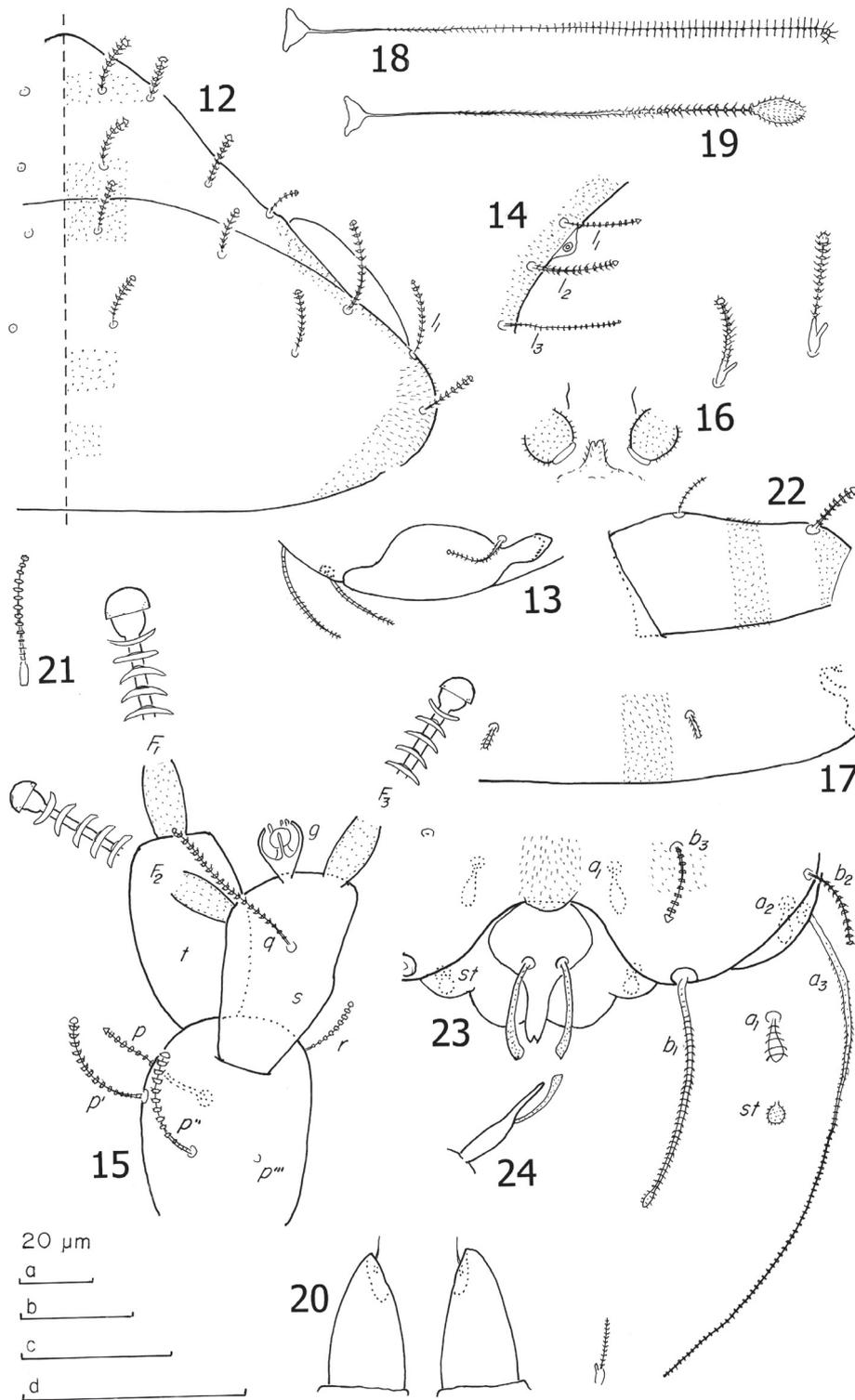
*Paratypes.* Same data as holotype, 2 ad. 9 (male, female), 1 juv. 6, 2 juv. 3. Loc. 8, Sandspit River, (42°42.1'S, 147°51.5'E), litter, 11 ad. 9 (5 male, 6 female), 1 juv. 6, 1 juv. 3, 22.v.1989 (PG).

*Other material* (7 specimens). Loc. 7, moss on log, 1 ad. 9 (female), 17.v.1989 (HM). Loc. 12, leaf litter, 1 juv. 3, 9.iv.1989 (PG), and in moss, 1 ad. 9 (female), 9.iv.1989 (JD), and in moss on dead log, 1 ad. 9 (female), 1 juv. 6, 2 juv. 3, 4.iv.1989 (JD, PG).

*Diagnosis.* *Allopauropus inusitatus* is easily recognised and well delineated by the combination of good characters in the shape of the temporal organs, anal plate, the  $T_3$ , the antennae and legs. It is closest to *A. sphaeruliger* Remy, described from the Ivory Coast (Remy, 1948) and later found in Gambia, Gabon, Angola, Madagascar, Réunion and Mauritius and also in Asia, Pondichéry, Sri Lanka and Japan and in South America in Brazil. It is distinguished from that species by the shape of the temporal organs (only slightly visible in tergal view in *inusitatus*; but clearly visible in *sphaeruliger*), the shape of the tergal antennal branch (1.4-)1.6 times as wide as long; not 2.0(-2.8), the number of tergal setae on tergite V (6+6; not 6+4), trichobothrium  $T_3$  (with simple pubescence and distal ovoid swelling, not with branched pubescence and distal swelling absent) and some pygidial characters (setae  $a_1$  clavate, not cylindrical; the proportion  $a_2/a_3$  about 0.1, not 0.5–0.8; appendages of the anal plate directed posteriorly and with short pubescence, not club-shaped, strongly pointing outwards, with long pubescence hairs).

*Description. Length.*-(0.96-)1.23(-1.24) mm.

*Head.*-Tergal setae short to medium length, somewhat clavate, annulate, blunt; lateral ones subcylindrical, annulate. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=(9-)-10(-12)$ ; 2nd row:  $a_1=(9-)-10(-11)$ ,  $a_2=9(-12)$ ,  $a_3=6(-9)$ ; 3rd row:  $a_1=9(-12)$ ,  $a_2=9(-13)$ ; 4th row:  $a_1=10(-14)$ ,  $a_2=10(-15)$ ,  $a_3=(13-)-15(-16)$ ,  $a_4=10(-14)$ ; lateral group setae:  $l_1=(13-)-14(-16)$ ,  $l_2=13(-16)$ ,  $l_3=(16-)-19(-20)$ . The ratio  $a_1/a_1-a_1$  in 1st row (0.7-)0.8(-0.9), 2nd row (0.6-)0.7(-0.9), 3rd row (0.7-)0.8(-0.9) and 4th row 0.6(-0.9). Temporal organs small and laterosternal with narrow anterosternal extension the distal part of which raised from



Figs. 12–24. *Allopauropus inusitatus* sp.nov., holotype 12–19; 21–24, paratype 20: 12, head, median and right part, tergal view; 13, left temporal organ, sternal view; 14, temporal organ, posterior part; 15, left antenna, sternal view; 16, collum segment, median and left part, sternal view; 17, tergite VI, posterior part; 18,  $T_1$ ; 19,  $T_3$ ; 20, genital papillae and seta on coxa of 2nd pair of legs; 21, seta on coxa of 9th pair of legs; 22, tarsus of 9th pair of legs; 23, pygidium, posteromedian and left part, sternal view, to the right setae  $a_1$  (above) and  $st$ ; 24, anal plate, lateral view. Scale line a for figure 20; b for figures 18,19; c for figures 12–14, 16, 17, 21, 22; d: 15, 23, 24. Figs. 39–43.

head surface; their length in tergal view 0.4(-0.5) of their shortest distance apart; small aperture at posterior margin between  $l_1$  and  $l_2$ . Head cuticle distinctly granular and with transverse suture anterior of 3rd row of setae.

**Antennae.** Segment 4 with 4 subcylindrical annulate blunt setae; their relative lengths:  $p=100$ ,  $p'=(85-96)(-104)$ ,  $p''=(85-92)(-96)$ ,  $r=(48-53)(-62)$ . The  $p'''$  seta rudimentary,  $u$  absent. Tergal seta  $p$  (0.6-)0.8 of the length of tergal branch  $t$ . The latter fusiform, (1.4-)1.6 times as long as its greatest diameter and (0.8-)0.9 of the length of sternal branch  $s$ , that branch (1.4-)1.7 times as long as its greatest diameter; anterodistal corner of  $s$  truncate. Seta  $q$  subcylindrical, annulate, blunt, (almost as long as-)1.0(-1.2) times as long as  $s$ . Relative lengths of flagella (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=9(-10)$ ;  $F_2=(43-47)(-49)$ ,  $bs_2=7(-8)$ ;  $F_3=(83-87)(-95)$ ,  $bs_3=7(-9)$ . The  $F_1$  (4.2-)4.6(-4.8) times as long as  $t$ ,  $F_2$  and  $F_3$  which are thinner than  $F_1$  are 1.5(-1.9) and (3.5-)4.2(-5.0) times as long as  $s$  respectively. Distal calyces subhemispherical; distal part of flagellar axes widened only just below calyces. Globulus  $g$  (1.2-)1.3(-1.4) times as long as wide; 5(-6) bracts, capsule small, bottom convex; width of  $g$  0.4(-0.5) of the greatest diameter of  $t$ . Antennae almost glabrous, minute pubescence on basal segments of flagella only.

**Trunk.**-Setae of collum segment (subcylindrical-) somewhat clavate, annulate, blunt, furcate but with rudimentary glabrous blunt secondary branches; sublateral ones (1.2-)1.4 times as long as submedian ones; sternite process short, with shallow anterior incision (or almost blunt); appendages barrel-shaped with flat caps; process and basal segment of appendages with distinct, almost erect pubescence.

Setae on tergites thin, cylindrical, annulate, blunt decreasing in length posteriorly. There are 4+4 setae on tergite I, 6+6 on II-V, 4+2 on VI. Submedian posterior setae on VI 0.1(-0.2) of their distance apart and (0.9-)1.0(-1.1) times as long as pygidial setae  $a_1$ . Tergites with short dense pubescence.

Relative lengths of bothriotricha:  $T_1=100$ ,  $T_2=(82-)?(-118)$ ,  $T_3=(75-82)(-98)$ ,  $T_4=(90-101)(-110)$ ,  $T_5=(81-95)(-100)$ . They have thin, simple, straight axes,  $T_3$  with distal swelling. Pubescence hairs on  $T_1$ ,  $T_2$ ,  $T_4$  and  $T_5$  oblique in proximal 1/3, more outwards erect;  $T_3$  with oblique hairs, very short on proximal half, longer and in whorls on nodulated axis below distal swelling.

Genital papillae (paratypes) glabrous, conical, with convex inner and outer sides, 1.4-1.7 times as long as their greatest diameter; seta 0.4-0.5 of the length of organ.

**Legs.**-Setae on coxa and trochanter of leg 9 similar, simple, subcylindrical, annulate, blunt. More anteriorly, these setae with glabrous blunt rudiments of secondary branches. Coxal seta on leg 2 in male not divergent. Tarsus of leg 9 short, thick, barrel-shaped, (1.9-)2.1(-2.2) times as long as its greatest diameter. Setae subcylindrical, annulate, proximal seta thin, its length 0.2 of the length of tarsus and (0.6-)0.7(-0.8) of the length of distal seta; the latter distinctly thicker than proximal seta. Cuticle of tarsus with short but distinct pubescence.

**Pygidium.** Tergum.-Posterior margin between  $st$  rounded and with shallow median indentation. Relative lengths of setae  $a_1=10$ ,  $a_2=10(-15)$ ,  $a_3=(106-107)(-129)$ ,  $st=5(-7)$ . The  $a_1$  and  $st$

straight and clavate, the former striate and the latter with short pubescence;  $a_2$  cylindrical, annulate, somewhat curved inwards;  $a_3$  thin, subcylindrical, tapering, striate-annulate, pointing outwards and curved inwards. Distance  $a_1-a_1$  (2.5-)2.7(-4.8) times as long as  $a_1$ ; distance  $a_1-a_2$  (2.2-)2.3(-3.7) times as long as distance  $a_2-a_3$ ; distance  $st-st$  (7.6-)9.5(-11.0) times as long as  $st$  and (1.0-)1.1(-1.5) times as long as distance  $a_1-a_1$ . Cuticle glabrous.

**Sternum.**-Posterior margin between  $b_1$  with a broad indentation and a small posteromedian lobe below anal plate. Relative lengths of setae ( $a_1=10$ ):  $b_1=(43-47)(-55)$ ,  $b_2=(17-18)(-23)$ ,  $b_3=(14-15)(-33)$ . The  $b_1$  subcylindrical, tapering, striate, distally annulate;  $b_2$  and  $b_3$  subcylindrical annulate. The  $b_1$  about as long as their distance apart;  $b_2$  (0.4-)0.6 times as long as distance  $b_1-b_2$ ,  $b_3$  (0.3-)0.4 of their distance apart. Anal plate (1.1-)1.2 times as broad as long, glabrous, spatulate, anteriorly constricted and posteriorly protruding into a median lobe being somewhat longer than broad, lobe with small posteromedian incision, lateral margins of plate anterior of posterior lobe strongly convex; two appendages protrude from sternal side at the base of the posterior lobe, being 0.7 of the length of plate, cylindrical but with small distal swelling, curved inwards and shortly pubescent.

**Etymology.**-From Latin *inusitatus* = unusual, extraordinary (shape of the temporal organs).

**Distribution in Tasmania.** *Allopauropus inusitatus* was found at three sites only, indicating a south-eastern range.

### Genus Decapauropus Remy

Type species: *Decapauropus cuenoti* Remy, 1931: 67-83, Figs. 1-3, 6-12.

#### *Decapauropus heis* sp.nov.

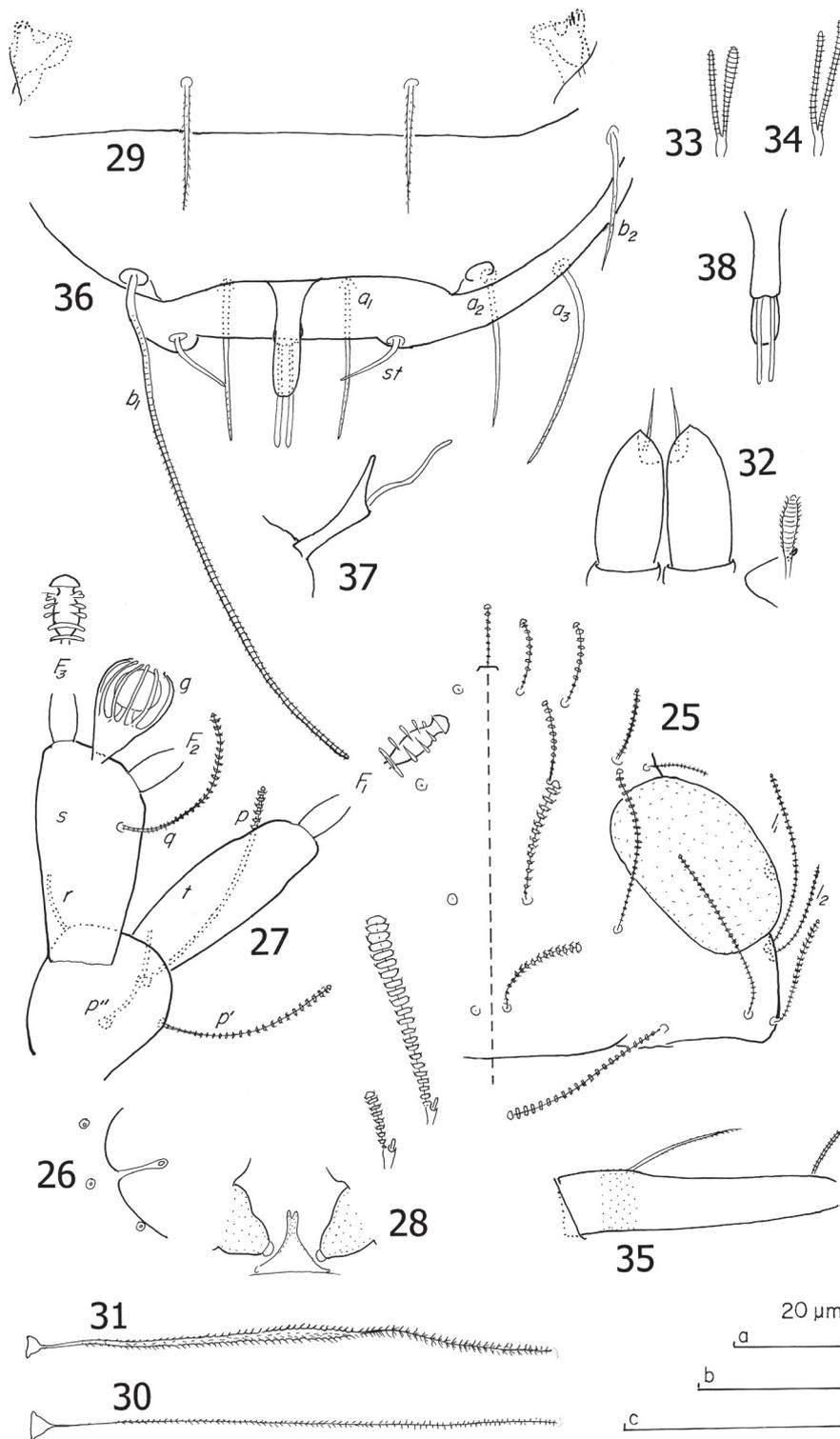
(Figs. 25-38)

**Material Examined.** *Holotype.* Ad. 9 (female), Bruny Island, Mount Mangana, Loc. 12, (43°22.1'S, 147°17.0'E), litter, 9.iv.1989 (PG).

*Paratypes.* Same data as holotype, 1 ad. 9 (female). Sandspit River, Loc. 8, (147°51.5'S, 42°42.1'E), leaf litter, 3 ad. 9 (1 male, 2 female), 22.v.1989 (PG).

*Other material.* 50 specimens. Loc. 2, soil core, 1 ad. 9 (female), 21.iv.1989 (JD,HM). Loc. 7, leaf litter, 1 ad. 9 (female), 12.v.1989 (PG). Loc. 8, soil core, 2 ad. 9 (female), 22.v.1989 (PG). Loc. 11, south track, leaf litter, 1 ad. 9 (female), 21.iii.1989 (PG,JD). Loc. 12, litter, 16 ad. 9 (7 male, 9 female), 3 subad. 8 (1 male, 2 female), 9.iv.1989, and leaf litter, 6 ad. 9 (female), 1 subad. 8 (female), 9.iv.1989 (PG), and leaf litter, 1 ad. 9 (female), 4.iv.1989 (JD,PG), and in moss, 3 ad. 9 (1 male, 2 female), 9.iv.1989 (JD). Loc. 13, litter, 3 ad. 9 (1 male, 2 female), 27.ii.1989 (SS). Loc. 16, litter, 4 ad. 9 (2 male, 2 female), 1 subad. 8 (female), 1 juv. 6, 20.xii.1988 (PG). Loc. 18, leaf litter, 2 subad. 8 (female), 1 juv. 6, xii.1987 (MN). Loc. 19, leaf litter, 3 ad. 9 (female), 20.vi.1989 (PG).

**Diagnosis.** The species may be closest to *D. acer* Scheller from Central Amazon (Scheller 1994). They are similar in the antennal morphology, the process of the collum segment, the bothriotricha, the pygidial chaetotaxy and the singular shape of the anal plate. Reliable distinguishing characters are the thick



Figs. 25–38. *Decapauropus heis* sp.nov., holotype 25–31, 33–38; paratype 32: 25, head, median and right part, tergal view; 26, posterior part of temporal organ; 27, right antenna, sternal view; 28, collum segment, median and left part, sternal view; 29, tergite VI, posterior part; 30,  $T_1$ ; 31,  $T_3$ ; 32, genital papillae and seta on coxa of 2nd pair of legs, anterior view; 33, seta on coxa of 9th pair of legs, 34, seta on trochanter of 9th pair of legs; 35, tarsus of 9th pair of legs; 36, pygidium, posterior part, sternal view; 37, anal plate, lateral view; 38, anal plate, tergal view. Scale line a for figures 30–35; b for figures 25, 28; c for figures 26, 27, 29, 36–38.

annulate setae on the collum segment and the proportionately longer collum appendages in *D. heis*, also the posterosternal lobe of the anal plate, which is absent in *D. acer* and the shape of the anal plate appendage.

*Description.* *Length.*-(0.51)-0.61(-0.65) mm.

*Head.*-Tergal setae annulate and of different lengths, in 1st and 2nd rows of medium lengths, in 3rd and 4th rows rather long; anterior and submedian ones somewhat clavate, sublateral and lateral ones cylindrical. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=10(-11)$ ; 2nd row:  $a_1=11(-12)$ ,  $a_2=10(-12)$ ,  $a_3=7$ ; 3rd row:  $a_1=17(-20)$ ,  $a_2=20(-23)$ ; 4th row:  $a_1=15(-16)$ ,  $a_2=(23-)$ 24,  $a_3=25(-26)$ ,  $a_4=(13-)$ 16; lateral group setae:  $l_1=(17-)$ 25,  $l_2=(12-)$ 14,  $l_3=(16-)$ 19. The ratio  $a_i/a_{i-1}$  in 1st row (1.1)-1.2, 2nd row 0.6(-0.8), 3rd row 1.7(-2.1) and 4th row (3.4-) $3.7(-3.8)$ . Temporal organs oval in tergal view, their length 0.8(-0.9) of their shortest distance apart; small aperture near surface in median part at level of  $l_2$  aperture with thin interior canal backwards. Head cuticle almost glabrous; temporal organs with delicate pubescence.

*Antennae.*-Segment 4 with four subcylindrical, annulate, blunt setae; their relative lengths:  $p=100$ ,  $p'=(69-)$ 73(-81),  $p''=(40-)$ 41(-52),  $r=(24-)$ 25(-26). Neither  $p'''$ , nor  $u$ . Tergal seta  $p$  (as long as-) 1.2 times as long as the length of tergal branch  $t$ . The latter fusiform, (2.4-) $2.6(-2.9)$  times as long as its greatest diameter and about as long as sternal branch  $s$ , that branch 1.8(-2.3) times as long as its greatest diameter; anterodistal corner of  $s$  truncate. Seta  $q$  subcylindrical, annulate, blunt, 0.8 (-as long as)  $s$ . Relative lengths of flagella (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=(6-)$ 7(-8);  $F_2=(70-)$ 82(-85),  $bs_2=(7-)$ 8;  $F_3=(76-)$ 86,  $bs_3=8$ . The  $F_1$  (3.2-) $3.6$  times as long as  $t$ ,  $F_2$  and  $F_3$  2.2(-2.5) and (2.6-) $2.8(-2.9)$  times as long as  $s$  respectively. Distal calyces somewhat flattened; distal part of flagella axes fusiform. Globulus  $g$  1.5(-1.6) times as long as wide; 12(-13) bracts; capsule spherical; width of  $g$  0.9(-as wide as) the greatest diameter of  $t$ . Antennae almost glabrous.

*Trunk.*-Setae of collum segment somewhat clavate, distinctly annulate, blunt, furcate but with rudimentary glabrous blunt secondary branches; sublateral ones (1.8-) $2.1(-2.5)$  times as long as submedian ones; sternite process narrow, with anterior lengthening with apical incision; appendages conical strongly narrowing distally and with proportionately very small caps; process and basal segment of appendages very delicately granular.

Setae of about the same length on all tergites, on anterior ones subcylindrical, annulate, blunt, on posterior tergites cylindrical, tapering, pointed, with short oblique pubescence. There are 4+4 setae on tergite I, 6+6 on II-IV, 6+4 on V, 4+2 on VI. Submedian posterior setae on VI 0.6(-0.7) of their distance apart and 0.8(-0.9) of the length of pygidial setae  $a_i$ . Tergites glabrous. Relative lengths of bothriotricha:  $T_1=100$ ,  $T_2=(103-)$ 109(-121),  $T_3=(97-)$ 100(-119),  $T_4=(115-)$ 119(-130),  $T_5=(169-)$ 180(-182), axes simple, straight, in all but  $T_3$  being very thin, with proximal 2/3 somewhat fusiform and distal 1/3 thin. Pubescence hairs very short and thin on all but  $T_3$ , on the latter stronger.

Genital papillae (paratypes) glabrous, fusiform, (1.9-) $2.1$  times as long as their greatest diameter; seta 0.5(-0.6) the length of organ.

*Legs.*-Setae on coxa and trochanter of leg 9 similar, furcate, branches subequal in length, striate, blunt; they are cylindrical except the main branch of coxal seta somewhat clavate, more anteriorly, these setae with rudimentary secondary branches, setae on trochanter longest, those on coxae somewhat clavate. Coxal seta on leg 2 in male not divergent. Tarsus of leg 9 slender, (3.7-) $4.4$  times as long as its greatest diameter. Proximal seta tapering, pointed, with very short oblique pubescence; distal seta cylindrical striate blunt. The former 0.4 of the length of tarsus and 2.0(-2.2) times as long as the latter. Cuticle of tarsus with delicate pubescence.

*Pygidium.* *Tergum.*-Posterior margin between  $st$  somewhat indented, straight. Relative lengths of setae:  $a_1=100$ ,  $a_2=(86-)$ 93(-98),  $a_3=(136-)$ 137(-157),  $st=53(-71)$ . These setae thin, tapering, almost glabrous,  $a_1$  and  $a_2$  almost straight,  $a_3$  and  $st$  curved inwards, the latter one also pointing inwards. Distance  $a_1-a_1$  0.7(-0.8) of the length of  $a_i$ ; distance  $a_1-a_2$  (1.4-) $1.8$  times as long as distance  $a_2-a_3$ ; distance  $st-st$  (2.3-) $2.5(-2.6)$  times as long as  $st$  and (1.7-) $1.8(-2.0)$  times as long as distance  $a_1-a_1$ . Cuticle somewhat granular.

*Sternum.*-Posterior margin between  $b_1$  with broad shallow indentation. Relative lengths of setae ( $a_1=100$ ):  $b_1=(335-)$ 338(-381),  $b_2=(87-)$ 90(-108). The  $b_1$  thin, subcylindrical, striate;  $b_2$  as  $a_1$  and  $a_2$  of pygidial tergum. The  $b_1$  (1.6-) $1.8$  times as long as their distance apart;  $b_2$  0.8(-0.9) times as long as distance  $b_1-b_2$ . Anal plate broadest anteriorly, glabrous, linguiform with parallel lateral margins and rounded posteriorly; about three times longer than broad; from the thickened median part protrudes posteriorly from sternal side a narrow, and in the vertical plane undulated appendage about as long as plate; lateral margins of appendage thickened or curved, so it looks like two thread-like parallel structures.

*Etymology.*-From Greek *heis* = one (the appendage of the anal plate).

*Distribution in Tasmania.* The range is wide but it has not been collected from the central and north-eastern parts.

### *Decapauropus attenuatus* sp.nov.

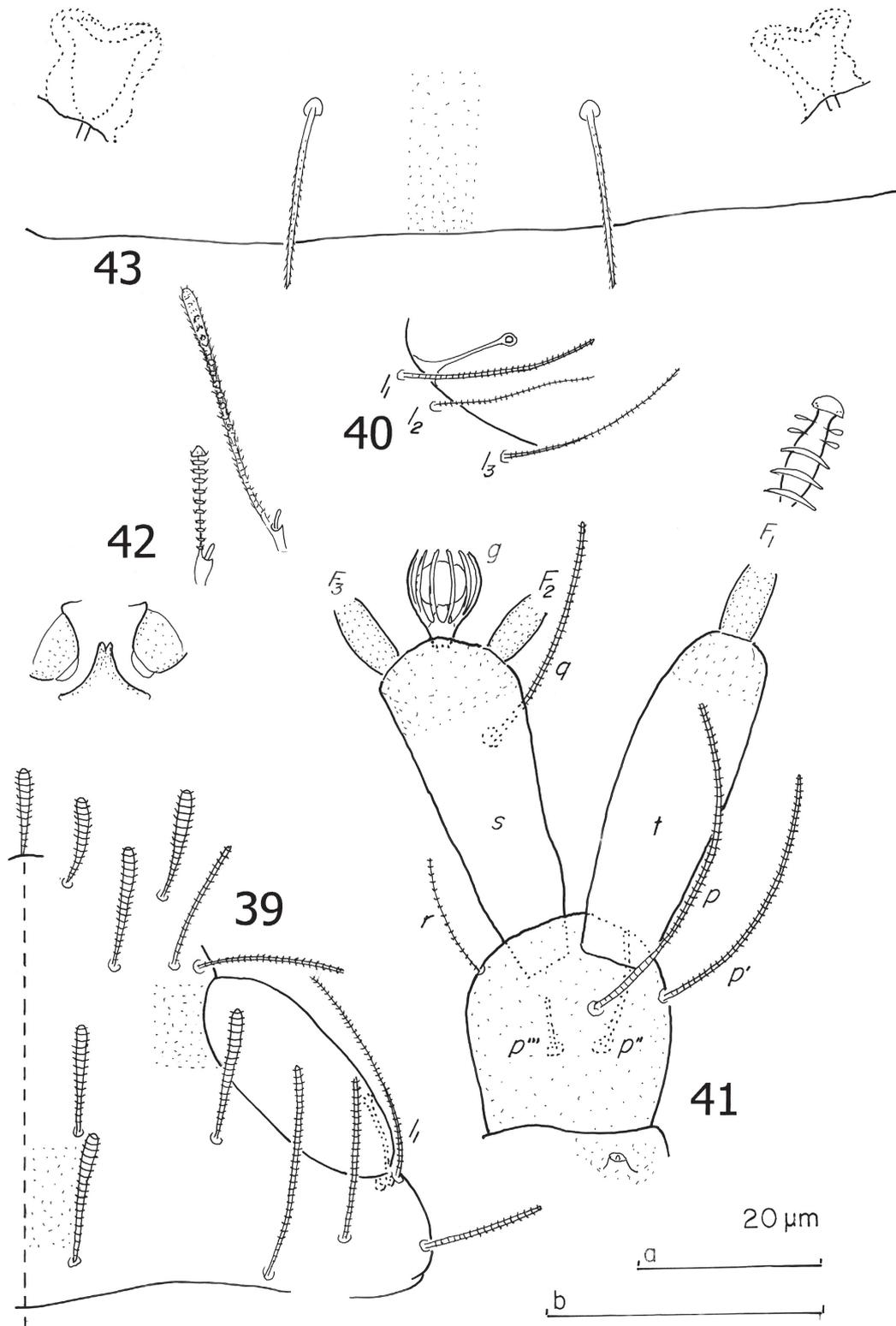
(Figs. 39-50)

*Material Examined.* *Holotype.* Ad. 9 (female), Bruny Island, Mount Mangana, Loc. 12, (43°22.1'S, 147°17.0'E), litter, 4.iv.1989 (PG).

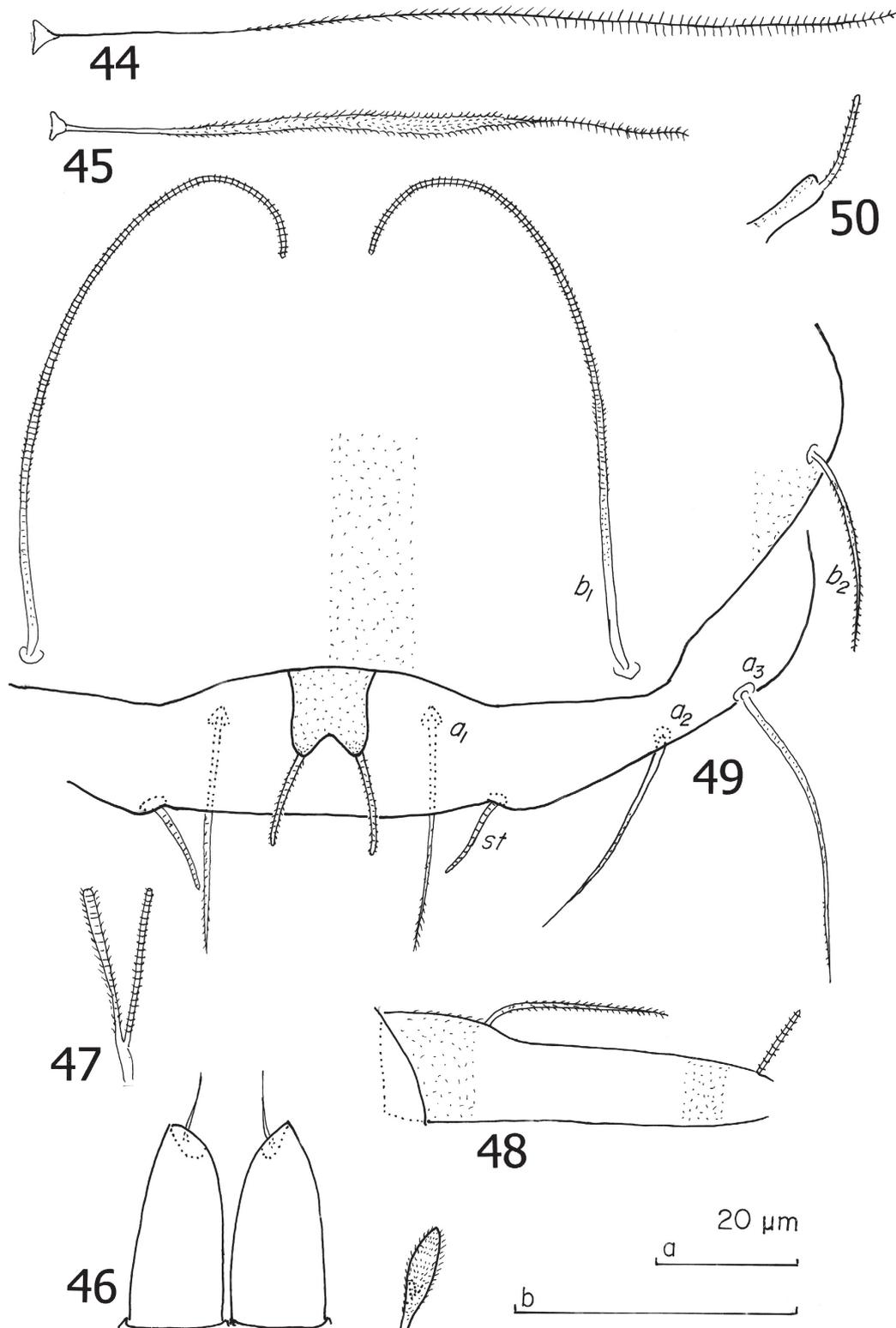
*Paratypes.* Locality as for holotype, in moss, 3 ad. 9 (2 male, 1 female), 1 subad. 8 (female), 9.iv.1989 (JD).

*Other material.* 10 specimens. Loc. 4, moss on log, 1 ad. 9 (female), 1 subad. 8 (female), 18.xi.1989 (HM). Loc. 7, rotten log, 1 ad. 9 (female), 17.v.1989 (JD). Loc. 11, moss on dead log, 1 ad. 9 (female), 21.iii.1989 (JD). Loc. 12, moss on log, 1 juv. 3, 9.xi.1989, and leaf litter, 2 ad. 9 (female), 9.iv.1989, and moss on dead log, 2 ad. 9 (male, female), 9.iv.1989 (PG), and in moss, 1 ad. 9 (female), 9.iv.1989 (JD).

*Diagnosis.* The affinities are difficult to trace but the species is well delineated by the combination of the following characters: rather long tergal head setae, anterior ones clavate; the  $T_3$  with proximal 2/3 fusiform but very thin distally; the shape of the



Figs. 39–43. *Decapauropus attenuatus* sp.n., holotype: 39, head, median and right part, tergal view; 40, right temporal organ, posterior part, lateral view; 41, left antenna, tergal view; 42, collum segment, median and left part, sternal view; 43, tergite VI, posterior part. Scale line a for figures 39, 40, 42; b for figures 41, 43.



Figs. 44–50. *Decapauropus attenuatus* sp.nov., holotype 44–45, 47–50; paratype 46: 44,  $T_1$ ; 45,  $T_3$ ; 46, genital papillae and seta on coxa of 2nd pair of legs; 47, seta on trochanter of 9th pair of legs; 48, tarsus of 9th pair of legs; 49, pygidium, posteromedian and left part, sternal view; 50, anal plate, lateral view. Scale line a for figures 44–48; b for figures 49, 50.

anal plate with concave lateral margins, distal incision and two long appendages which are curved inwards.

*Description. Length.*-(0.56)-0.63(-0.74) mm.

*Head.*-Most tergal setae of medium length, some posterolateral rather long, anterior and submedian ones somewhat clavate, others cylindrical, striate, blunt but lateral group setae pointed. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=10(-12)$ ; 2nd row:  $a_1=(11-13)$ ,  $a_2=(14-16(-18))$ ,  $a_3=(13-16)$ ; 3rd row:  $a_1=11(-12)$ ,  $a_2=13(-15)$ ; 4th row:  $a_1=(14-15(-16))$ ,  $a_2=19(-23)$ ,  $a_3=(17-19)$ ,  $a_4=(13-15(-16))$ ; lateral group setae:  $l_1=(22-25)$ ,  $l_2=13(-18)$ ,  $l_3=? (22)$ . The ratio  $a_i/a_1-a_i$  in 1st row 1.0(-1.1), 2nd row (0.6)-0.7, 3rd row 1.0(-1.2) and 4th row 1.4(-1.7). Length of temporal organs 0.7(-0.9) of their shortest distance apart; small aperture in posterior part anterior of  $l_1$ . Head cuticle somewhat granular, temporal organs glabrous.

*Antennae.*-Segment 4 with five thin cylindrical striate setae; their relative lengths:  $p=100$ ,  $p'=(71-76(-78))$ ,  $p''=(22-24(-28))$ ,  $p'''=11(-18)$ ,  $r=24(-27)$ ,  $u$  absent. Tergal seta  $p$  (1.4-1.5(-1.6) times as long as tergal branch  $t$ . The latter fusiform, 2.8(-3.6) times as long as its greatest diameter and as long as sternal branch  $s$ , that branch (2.0-2.2(-2.6) times as long as its greatest diameter; anterodistal corner of  $s$  truncate. Seta  $q$  cylindrical, striate, as long as (-1.2 times as long as)  $s$ . Antennal flagella often broken; relative lengths (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=(6-8)$ ;  $F_2=(78-81)$ ,  $bs_2=7$ ;  $F_3=(80-92)$ ,  $bs_3=(6-8)$ . The  $F_1$  2.8(-3.4) times as long as  $t$ ,  $F_2$  and  $F_3$  ?(1.8-2.7) and (2.0-2.9) times as long as  $s$  respectively. (Antennal flagella broken in holotype). Distal calyces somewhat flattened; distal part of flagellar axes fusiform. Globulus  $g$  (1.2-1.3) times as long as wide; nine bracts, capsule spherical; width of  $g$  0.6(-0.8) of the greatest diameter of  $t$ . Antennae with short pubescence.

*Trunk.*-Setae of collum segment somewhat clavate, annulate, blunt, furcate, but with rudimentary glabrous blunt secondary branches; sublateral ones (1.8-2.1(-2.6) times as long as submedian ones; sternite process triangular with small anterior incision; appendages obliquely barrel-shaped with flattened caps; process and basal segment of appendages with delicate pubescence.

Setae on anterior tergites cylindrical, annulate, blunt; on posterior tergites somewhat shorter, subcylindrical, tapering, with oblique pubescence. 4+4 setae on tergite I, 6+6 on II-IV, 6+4 on V, 4+2 on VI. Submedian posterior setae on VI (0.6-0.7 of their distance apart and (0.8-0.9) of the length of pygidial setae  $a_i$ . Tergites with short minute pubescence.

Relative lengths of bothriotricha:  $T_1=100$ ,  $T_2=95(-101)$ ,  $T_3=(97-112(-113))$ ,  $T_4=(107-108(-130))$ ,  $T_5=(165-167(-187))$ , with simple straight axes, in all but  $T_3$  very thin; the latter with proximal 2/3 thickened, fusiform, tapering into a thin distal 1/3. Pubescence hairs on  $T_1$ ,  $T_2$  and  $T_4$  similar, hairs thin, straight, rather sparse, on proximal halves short and oblique, erect and longer distally. The  $T_5$  with very short oblique pubescence.

Genital papillae (paratypes) subcylindrical, glabrous, 2.2(-2.3) times as long as their greatest diameter; seta 0.3(-0.4) of the length of organ.

*Legs.*-Setae on coxa and trochanter of leg 9 similar, furcate; branches striate, blunt, subequal in length, primary branch somewhat clavate, secondary branch cylindrical, these seta more anteriorly with blunt glabrous rudimentary secondary branches; setae on trochanter somewhat widened distally, those on coxa clavate. Coxal seta on leg 2 in male clavate too. Tarsus of leg 9 slender, 3.8(-4.3) times as long as its greatest diameter. Setae thin, proximal one tapering pointed, with oblique pubescence; distal one cylindrical, blunt, striate; proximal seta (0.4-0.5) of the length of tarsus and (2.2-2.5(-2.6) times as long as distal seta. Cuticle of tarsus with distinct pubescence.

*Pygidium. Tergum.*-Posterior margin between  $st$  rounded and with shallow median indentation. Relative lengths of setae:  $a_1=100$ ,  $a_2=(100-106(-113))$ ,  $a_3=(135-137(-160))$ ,  $st=(60-62(-80))$ , setae thin, tapering, pointed, indistinctly striate, somewhat curved inwards,  $a_1$  and  $a_3$  with short pubescence distally;  $a_1$  directed posteriorly,  $a_2$  and  $st$  pointing inwards,  $a_3$  somewhat pointing outwards. Distance  $a_1-a_2$  0.9(-1.2) times as long as  $a_1$ ; distance  $a_1-a_2$  (1.5-1.8) times as long as distance  $a_2-a_3$ ; distance  $st-st$  (2.1-2.4) times as long as  $st$  and (1.4-1.7) times as long as distance  $a_1-a_1$ . Cuticle glabrous.

*Sternum.*-Posterior margin between  $b_1$  with a broad shallow indentation. Relative lengths of setae ( $a_i=100$ ):  $b_1=(343-362(-404))$ ,  $b_2=(80-94(-100))$ , setae thin,  $b_1$  subcylindrical, tapering, striate, blunt;  $b_2$  tapering, pointed, striate. The  $b_1$  (1.3-1.4(-1.5) times as long as their distance apart;  $b_2$  (0.8-0.9) of distance  $b_1-b_2$ . Anal plate as long as (-1.2 times as long as) broad, granular, broadest anteriorly, with somewhat indented lateral margins and posterior margin divided into two rounded lobes by a broadly V-shaped indentation; from posterosternal margin of the lobes protrude backwards two pointing outwards appendages slightly curving inwards, being 1.3(-1.6) times as long as the length of plate.

*Stage subad. 8.* The setae  $d_2$  of pygidial tergum thin, straight, cylindrical, striate, 0.4 of the length of pygidial setae  $a_i$ ;  $d_2-d_2$  about 10 times longer than  $d_2$ .

*Etymology.*-From Latin *attenuatus* = drawn out, thin ( $T_3$ ; setae of the pygidial tergum).

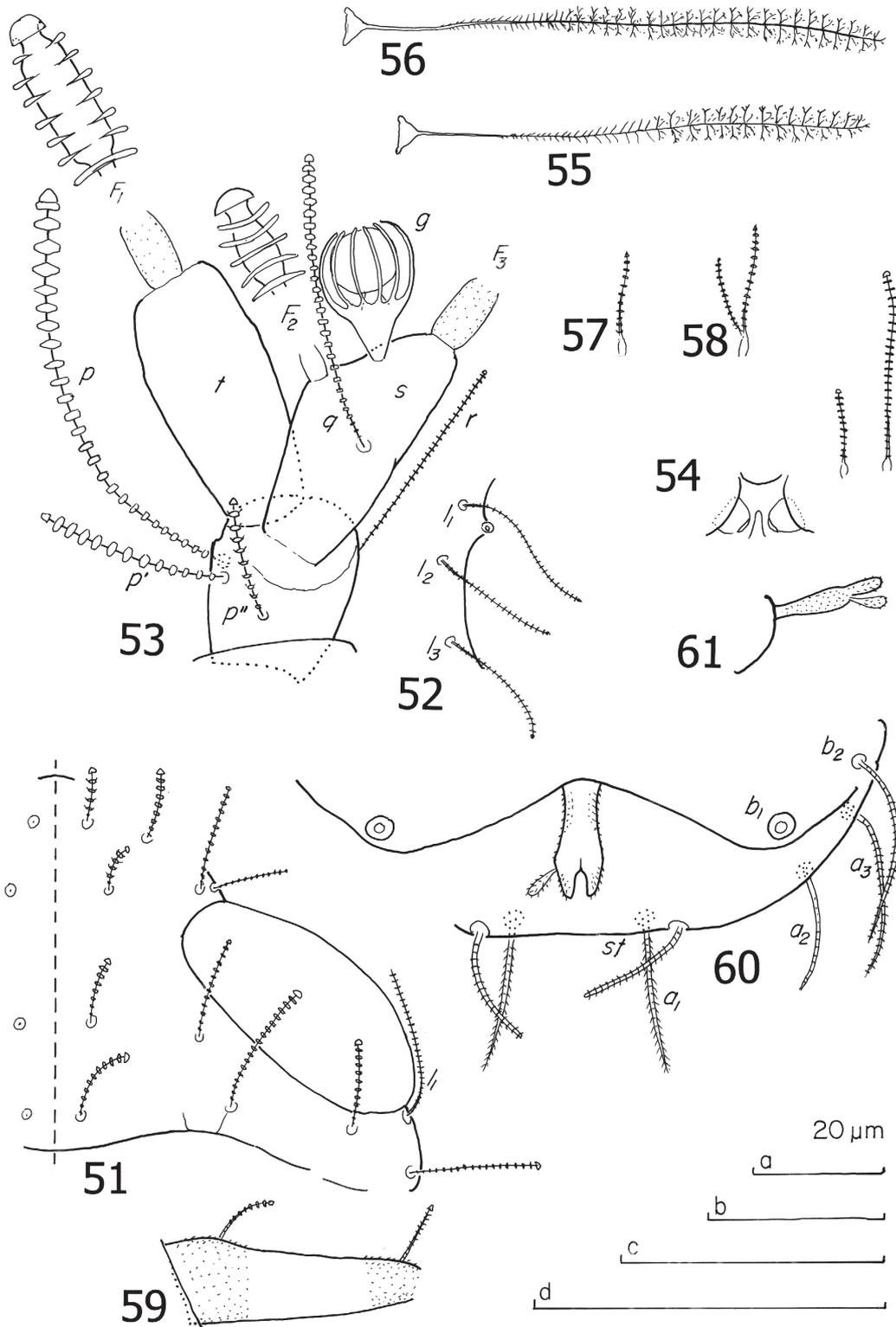
*Distribution in Tasmania.* Seems to be a rare species collected in the eastern parts only.

### *Decappauropus ungulatus* sp. nov.

(Figs. 51-61)

*Material Examined. Holotype.* Ad. ♀ (female), Rivaux Creek, Loc. 16, (43°10'S, 146°38.6'E), litter, 20.xii.1988 (PG).

*Diagnosis.* A single adult specimen is available but the singular shape of the anal plate in combination with the unusual shape of the antennal setae, the very small collum process and appendages and the arrangement and shape of the pubescence on the bothriotricha, make it well defined. It has some similarity with *D. fibratus* Scheller from Sri Lanka (Scheller 1970), but the  $T_3$  and the anal plate are dissimilar (the former with distal swelling in *D. fibratus*, not in *D. ungulatus*; the appendages of the anal plate short, cylindrical and glabrous in *D. fibratus*, distinctly longer, clavate and pubescent in *D. ungulatus*).



Figs. 51–61. *Decapauropus ungulatus* sp.nov., holotype: 51, head, median and right part, tergal view; 52, temporal organ, posterolateral part, lateral view; 53, left antenna, sternal view; 54, collum segment, median and left part, sternal view; 55,  $T_1$ ; 56,  $T_3$ ; 57, seta on coxa of 9th pair of legs; 58, seta on trochanter of 9th pair of legs; 59, tarsus of 9th pair of legs; 60, pygidium, posterior and left part, sternal view; 61, anal plate, lateral view. Scale line a for figures 55, 56; b for figures 51, 52, 54, 57–59; c for figures 60, 61; d: 53.

*Description.* Length.-0.66 mm.

*Head.*-Tergal setae annulate, blunt, submedian ones somewhat clavate, lateral ones cylindrical. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=13$ ; 2nd row:  $a_1=8$ ,  $a_2=20$ ,  $a_3=15$ ; 3rd row:  $a_1=12$ ,  $a_2=20$ ; 4th row:  $a_1=a_3=17$ ,  $a_2=26$ ,  $a_4=19$ ; lateral group setae:  $l_1=30$ ,  $l_2=l_3=27$ . The ratio  $a_i/a_j-a_i$  in 1st row 1.0, 2nd row 0.5, 3rd row 0.9, 4th row 1.7. Temporal organs oval in tergal view, their length 1.1 times as long as their distance apart; small aperture outside posterior margin anterior of  $l_1$ . Head cuticle and temporal organs glabrous.

*Antennae.*-Segment 4 with 4 annulate setae:  $p$ ,  $p'$  and  $p''$  somewhat clavate and distinctly annulate,  $r$  cylindrical; their relative lengths:  $p=100$ ,  $p'=44$ ,  $p''=30$ ,  $r=52$ . Neither  $p'''$ , nor  $u$ . Tergal seta  $p$  1.7 times as long as the length of tergal branch  $t$ . The latter somewhat fusiform, 2.1 times as long as its greatest diameter and as long as sternal branch  $s$ , that branch twice as long as its greatest diameter; anterodistal corner of  $s$  deeply truncate. Seta  $q$  subcylindrical, annulate, blunt, 1.2 times as long as  $s$ . Relative lengths of flagella (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=7$ ;  $F_2=34$ ,  $bs_2=4$ ;  $F_3=?$ ,  $bs_3=7$ . The  $F_1$  4.3 times as long as  $t$ ,  $F_2$  1.3 times as long as  $s$ . Distal calyces of  $F_1$  subhemispherical, those of  $F_2$  flattened. Distal part of flagella axes thickened, cylindrical in  $F_1$ , fusiform in  $F_2$ . Globulus  $g$  proportionally large, 1.5 times as long as wide; 10 bracts; capsule spherical; width of  $g$  0.8 of the greatest diameter of  $t$ . Antennae glabrous.

*Trunk.*-Setae of collum segment cylindrical, annulate, blunt; rudiments of secondary branches not clear. Sublateral setae 2.3 times as long as submedian ones; sternite process very small and narrow; appendages subcylindrical with small flattened caps. Process and appendages glabrous.

Setae on tergites not studied.

Relative lengths of bothriotracha:  $T_1=100$ ,  $T_2=108$ ,  $T_3=117$ ,  $T_4=127$ ,  $T_5=148$ ; with simple, straight axes, somewhat thickened in  $T_3$  only. Pubescence on proximal half of  $T_1$ - $T_4$  simple, oblique, increasing in length outwards, more distally longer, branched, arranged in whorls;  $T_5$  with short oblique pubescence of simple hairs.

*Legs.*-Setae on coxa and trochanter of leg 9 cylindrical, annulate, pointed; the former simple and the latter furcate with secondary branch somewhat shorter than primary branch, these setae of legs 1-8 simple. Tarsus of leg 9 distinctly tapering, 2.9 times as long as its greatest diameter. Setae cylindrical, annulate, blunt; proximal one 0.3 of the length of tarsus and 1.1 times as long as distal seta. The latter more densely annulate than the former. Cuticle of tarsus with short pubescence.

*Pygidium.* Tergum.-Posterior margin between  $st$  straight. Relative lengths of setae:  $a_1=100$ ,  $a_2=83$ ,  $a_3=126$ ,  $st=79$ , setae thin, cylindrical, striate, all but  $st$  directed posteriorly, pointed;  $st$  blunt, pointing inwards;  $a_1$  curved outwards and somewhat pointing outwards,  $a_2$  and  $a_3$  curved inwards. Distance  $a_1-a_1$  0.8 of the length of  $a_1$ ; distance  $a_1-a_2$  1.3 times as long as distance  $a_2-a_3$ ; distance  $st-st$  1.6 times as long as  $st$  and 1.5 times as long as distance  $a_1-a_1$ . Cuticle glabrous.

*Sternum.*-Posterior margin between  $b_1$  with deep broadly V-shaped indentation. Relative lengths of setae ( $a_1=100$ ):  $b_1=?$ ,  $b_2=125$ . The  $b_2$  as pygidial  $a_3$ , 1.9 times as long as distance

$b_1-b_2$ . Anal plate 2.4 times as long as broad with concave lateral margins and decreasing in width in distal 1/3, posterior margin with a deep median incision with parallel sides; two clavate pointing outwards appendages protrude posteriorly from sternal side; their length 0.3 of the length of plate; lateral margins and appendages with short pubescence.

*Etymology.*-From Latin *ungula* = hoof (shape of the anal plate).

*Distribution in Tasmania.* Probably rare, distribution outside the type locality unknown.

### *Decapauropus convexus* sp. nov.

(Figs. 62-71)

*Material Examined.* Holotype. Subad. 8 (female), Savage River, Loc. 1, (41°18.5'S, 145°16.3'E), soil core, 21.iv.1989 (JD).

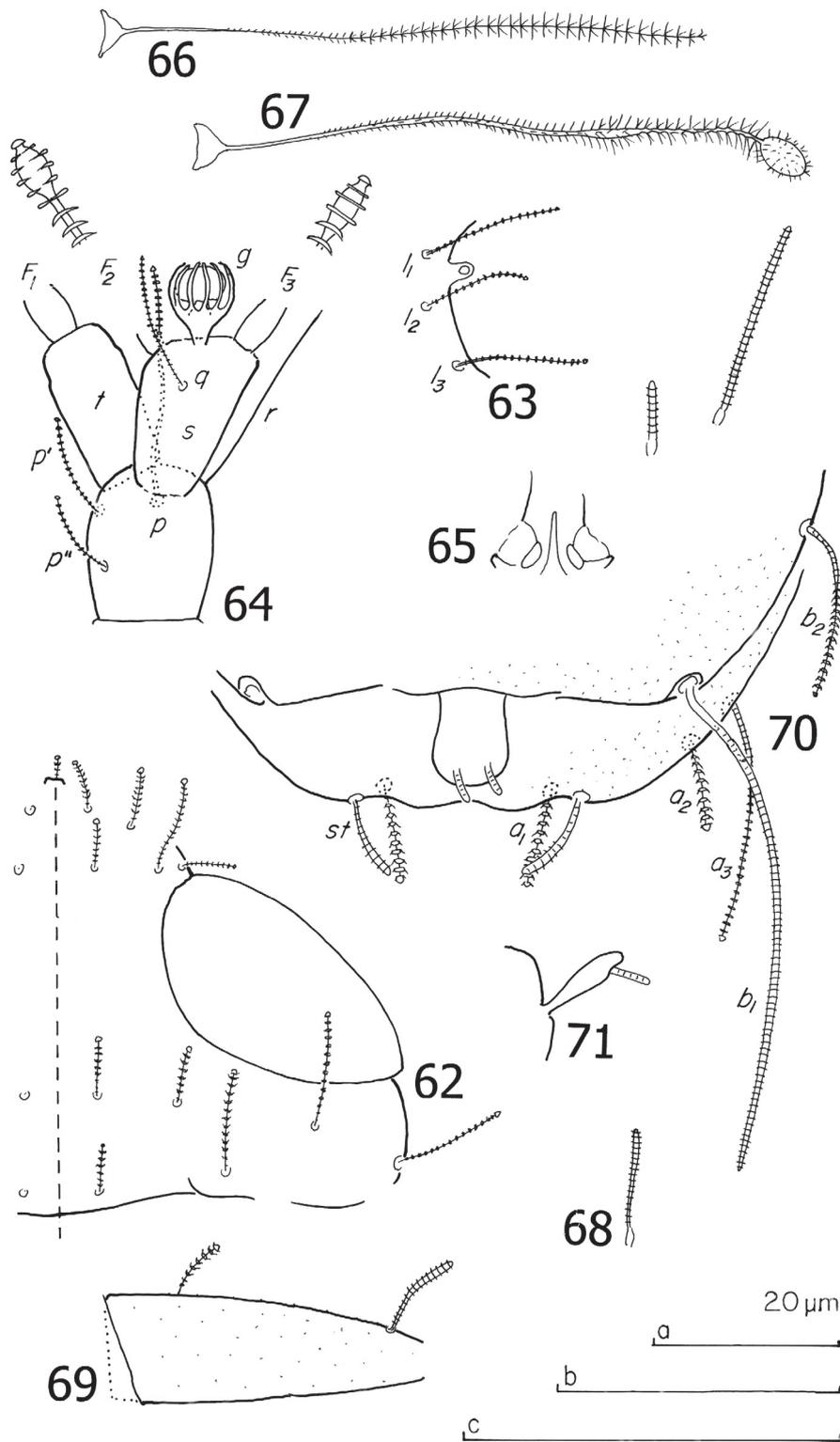
*Paratype.* Same data as holotype, 1 subad. 8 (male).

*Diagnosis.* *Decapauropus convexus* shows superficial similarities in the shape of the  $T_3$  and some pygidial characters with three species described by Remy: *D. burghardti* (1941) from France, *D. pachypus* (1948) from the Ivory Coast and *D. zaiianus* (1952a) from Spain and Morocco. Good distinguishing characters in relation to *burghardti* are the tergal antennal branch 1.7-1.8 times longer than wide, not long and slender; the distal swelling of  $T_3$  well delineated from the bothriotrix axis, axis not slowly becoming thicker distally; the posterior margin of the pygidial tergum has a shallow median indentation between the  $st$ , not a distinct rounded lobe. *Decapauropus convexus* can be distinguished from *D. pachypus* by the subspherical antennal globulus, not longish, the proportionately longer tarsi, by the posteromedian indentation in the pygidial tergum, not a triangular projection; and by the thin appendages of the anal plate, not thick and clavate. Distinguishing characters in relation to *D. zaiianus* are the size of the antennal globulus, the length of which is about half of the length of sternal branch  $s$ , not 0.7 of that length, the shape of the distal swelling of the  $T_3$  which is ovoid, not longish and subcylindrical; and the number of appendages of the anal plate, being two not four. *D. convexus* has some similarity too with *D. insignis* Remy, 1961 from India, but is distinguished especially by the much smaller antennal globulus, the proportionately shorter and thicker tergal antennal branch and by the shape of the seta  $st$  which are curved and somewhat clavate, rather than straight and lanceolate.

*Description.* Length.-0.48(-0.50) mm.

*Head.*-Most tergal setae short, posterolateral ones of medium length, subcylindrical, densely annulate, blunt; relative lengths of setae (holotype only), 1st row:  $a_1=10$ ,  $a_2=12$ ; 2nd row:  $a_1=10$ ,  $a_2=20$ ,  $a_3=12$ ; 3rd row:  $a_1=10$ ,  $a_2=13$ ; 4th row:  $a_1=10$ ,  $a_2=23$ ,  $a_3=a_4=24$ ; lateral group setae:  $l_1=30$ ,  $l_2=24$ ,  $l_3=32$ . The ratio  $a_i/a_j-a_i$  0.8 in 1st row, 0.6 in 2nd and 4th rows and 0.7 in 3rd row. Temporal organs large; their length in tergal view 1.2 times as long as their shortest distance apart; small aperture in posterior margin on a level with  $l_1$ . Head cuticle glabrous.

*Antennae.*-Segment 4 with four subcylindrical annulate setae,  $p$ ,  $p'$  and  $p''$  blunt,  $r$  pointed; their relative lengths:  $p=100$ ,



Figs. 62–71. *Decapauropus convexus* sp.nov., holotype: 62, head, median and right part, tergal view; 63, temporal organ, posterior part, lateral view; 64, left antenna, sternal view; 65, collum segment, median and left part, sternal view; 66,  $T_1$ ; 67,  $T_3$ ; 68, seta on trochanter of 9th pair of legs; 69, tarsus of 9th pair of legs; 70, pygidium, posterior and left part, sternal view; 71, anal plate, lateral view. Scale line a for figures 62, 63, 66, 67; b for figures 64, 65, 68, 69; c for figures 70, 71.

$p'=44(-47)$ ,  $p''=28(-30)$ ,  $r=(72-)$ 75 and 80. The  $p'''$  rudimentary,  $u$  absent. Tergal seta  $p$  1.6(-1.8) times as long as tergal branch  $t$ . The latter subcylindrical, (1.7-)1.8 times as long as its greatest diameter and 0.9 of the length of sternal branch  $s$ ; that branch 1.7 times as long as its greatest diameter; anterodistal corner of  $s$  truncate. Seta  $q$  subcylindrical, annulate, blunt, 0.8(-0.9) of the length of  $s$ . Relative lengths of flagella (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=7$ ;  $F_2=(41-)$ 42,  $bs_2=4$ ;  $F_3=(79-)$ 81,  $bs_3=7(-8)$ . The  $F_1$  4.9(-5.4) times as long as  $t$ ,  $F_2$  and  $F_3$  (1.8-)1.9 and (3.6-)3.7 times as long as  $s$  respectively. Distal calyces small subhemispherical; distal part of flagella axes somewhat fusiform in  $F_1$  and  $F_3$ , distinctly fusiform in  $F_2$ . Globulus  $g$  spherical with thin stalk, 1.2 times as long as wide; about nine bracts, capsule subspherical with somewhat flattened bottom; width of  $g$  0.5 of the greatest diameter of  $t$ . Antennae glabrous.

*Trunk.*-Setae of collum segment cylindrical, striate, blunt, rudiments of secondary branches probably absent; sublateral setae 2.5 times as long as submedian ones; sternite process very narrow; appendages small with rounded caps; process and appendages glabrous.

Setae on tergites thin, cylindrical, annulate, blunt and of the same length on all tergites; 4+4 setae on tergite I, 6+6 on II-IV, 4+4 on VI. Relative lengths of bothriotricha (holotype only):  $T_1=T_3=100$ ,  $T_2=107$ ,  $T_5=135$ , with thin, simple, straight axes,  $T_3$  with distal swelling. Pubescence hairs on  $T_5$  and on proximal 1/3 of  $T_1$ ,  $T_2$ ,  $T_3$  and on  $T_4$  oblique; on  $T_1$ ,  $T_2$  and  $T_4$  pubescence erect, sparse and whorled in outer 2/3; also on outer half of  $T_3$ , pubescence on distal swelling somewhat shorter than on the axis below it.

Genital papillae (paratype) small, conical, blunt.

*Legs.*-Setae on coxa and trochanter of leg 8 simple, cylindrical, striate, blunt; more anteriorly similar but coxal setae somewhat thicker than those on trochanter. Tarsus of leg 8 short, strongly tapering, (2.8)3.0 times longer than its greatest diameter. Setae cylindrical, blunt, proximal one annulate, distal one striate; proximal seta 0.2 of the length of tarsus and 0.6 of the length of distal seta. Tarsus with very delicate pubescence.

*Pygidium. Tergum.*-Posterior margin between  $st$  with two low submedian lobes separated by a shallow median indentation. Relative lengths of setae:  $a_1=100$ ,  $a_2=93(96)$ ,  $a_3=241(250)$ ,  $st=93(115)$ , setae blunt,  $a_1$  and  $a_2$  subcylindrical, straight, annulate, the former pointing inwards, the latter pointing outwards;  $a_3$  and  $st$  curved inwards, the former cylindrical and annulate, the latter somewhat clavate, striate, pointing inwards. Distance  $a_1-a_1$  (1.4)1.6 times as long as  $a_1$ ; distance  $a_1-a_2$  (2.3)2.6 times as long as distance  $a_2-a_3$ ; distance  $st-st$  (2.1)2.2 times as long as  $st$  and 1.3(1.6) times as long as distance  $a_1-a_1$ . Cuticle almost glabrous.

*Sternum.*-Posterior margin between  $b_1$  somewhat indented. Relative lengths of setae ( $a_1=100$ ):  $b_1=463(490)$ ,  $b_2=185(192)$ . The  $b_1$  cylindrical, densely striate, blunt;  $b_2$  as  $a_3$  of pygidial sternum. The  $b_1$  (1.1)1.2 times as long as their distance apart;  $b_2$  0.9 of distance  $b_1-b_2$ . Cuticle sparsely pubescent. Anal plate subrectangular with slightly concave lateral margins and rounded posterolateral corners, 1.2 times as long as broad, glabrous; two parallel cylindrical and blunt appendages

protrude backwards from posterior part of sternal side; length of appendages 0.5 of the length of the plate.

*Etymology.*-From Latin *convexus* = well rounded (at the top, posterior part of the anal plate).

*Distribution in Tasmania.* Known from a single site in north-eastern Tasmania.

#### *Decapauropus saltuarius* sp. nov.

(Figs. 72-81)

*Material Examined. Holotype.* Ad.9 (male), Bruny Island, Mount Mangana, Loc. 12, (147°17.0'S, 43°22.1'E), in moss, 9.iv.1989 (JD).

*Paratypes.* 3 specimens. Cradle Mountain, Loc. 4, (41°35.4'S, 145°55.9'E), in moss on log, 1 ad. 9 (female), 1 juv. 6, 18.xi.1989 (HM).

*Diagnosis.* This species is well defined by the shape of the anal plate and the combination of good characters in the antennae ( $t$  and  $s$  of the same length, anterior truncation of  $s$  inconsiderable) and the last pair of legs (tarsus somewhat bow-shaped, pubescent and with very thin setae). Since many of these characters are widespread and shared with several other species, the relationships are difficult to discern.

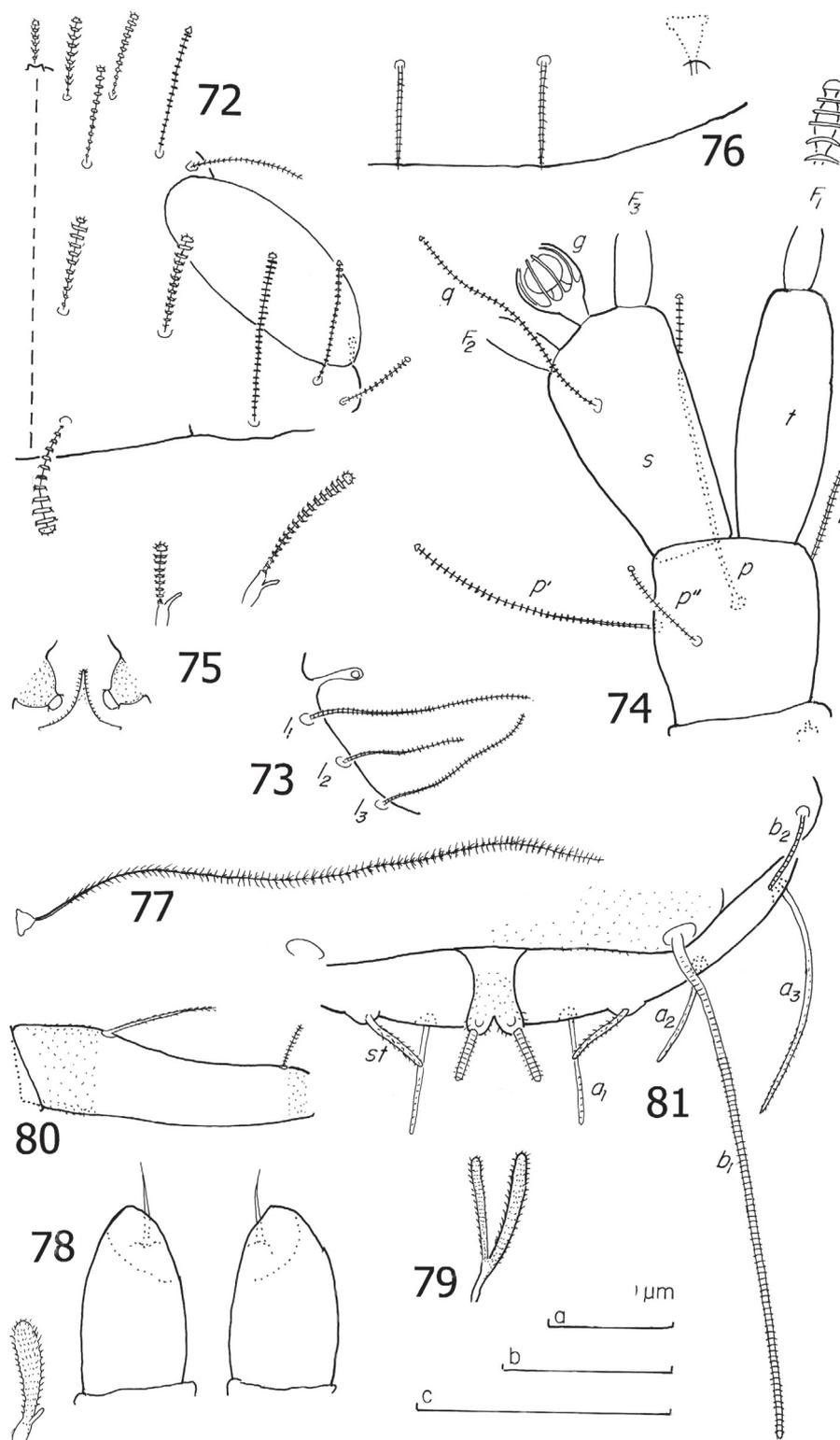
*Description. Length.*-0.64 mm.

*Head.*-Tergal setae annulate blunt, of medium length,  $a_2$  of 4th row long; lateral and sublateral ones subcylindrical, submedian ones clavate. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=11$ ; 2nd row:  $a_1=12$ ,  $a_2=a_3=15$ ; 3rd row:  $a_1=11$ ,  $a_2=12$ ; 4th row:  $a_1=14$ ,  $a_2=20$ ,  $a_3=14$ ,  $a_4=10$ ; lateral group setae:  $l_1=32$ ,  $l_2=15$ ,  $l_3=20$ . The ratio  $a_j/a_{j-1}$  in 1st row 1.4, 2nd row 1.0, 3rd row 1.4 and 4th row 1.5. Temporal organs oval in tergal view, as long as their distance apart; small aperture in an anterior position of  $l_1$ . Head cuticle almost glabrous.

*Antennae.*-Segment 4 with five cylindrical setae, all but  $p'''$  annulate-striate blunt;  $p'''$  very thin with delicate pubescence. Relative lengths of setae:  $p=100$ ,  $p'=84$ ,  $p''=34$ ,  $p'''=10$ ,  $r=32$ ;  $u$  absent. Tergal seta  $p$  1.2 times as long as tergal branch  $t$ . The latter fusiform, 2.7 times as long as its greatest diameter and as long as sternal branch  $s$ ; that branch 1.8 times as long as its greatest diameter; anterodistal corner of  $s$  truncate. Seta  $q$  cylindrical, annulate, somewhat tapering, as long as  $s$ . Relative lengths of flagella (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=8$ ;  $F_2=61$ ,  $bs_2=8$ ;  $F_3=86$ ,  $bs_3=9$ . The  $F_2$  thinnest;  $F_1$  3.3 times as long as  $t$ ,  $F_2$  and  $F_3$  2.0 and 2.8 times as long as  $s$  respectively. Distal calyces subhemispherical; distal part of flagella axes fusiform. Globulus  $g$  1.4 times as long as wide; about nine bracts, capsule subspherical; width of  $g$  0.7 of the greatest diameter of  $t$ . Antennae almost glabrous.

*Trunk.*-Setae of collum segment subcylindrical, annulate, blunt, furcate, but with rudimentary glabrous blunt secondary branches; sublateral ones twice as long as submedian ones; sternite process thin pointed; appendages subconical with rounded caps with collar; process and basal segment of appendages with distinct but short, erect pubescence.

Setae on tergites thin, cylindrical, annulate-striate insignificantly decreasing in length posteriorly; 4+4 setae on tergite I, 6+6 on II-IV, 6+4 on V, 4+2 on VI. Submedian



Figs. 72–81. *Decapauropus saltuariusr* sp.nov., holotype: 72, head, median and right part, tergal view; 73, temporal organ, posterior part, lateral view; 74, left antenna, sternal view; 75, collum segment, median and left part, sternal view; 76, tergite VI, posterior part; 77,  $T_3$ ; 78, genital papillae and seta on coxa of 2nd pair of legs; 79, seta on trochanter of 9th pair of legs; 80, tarsus of 9th pair of legs; 81, pygidium, posterior and left part, sternal view: Scale line a for figures 77, 80; b for figures 72, 73, 75, 76, 78, 79; c for figures 74, 81.

posterior setae on VI 0.7 of their distance apart and 1.3 times as long as pygidial setae  $a_1$ . Tergites glabrous. Relative lengths of bothriotricha:  $T_1=100$ ,  $T_2=104$ ,  $T_3=108$ ,  $T_4=129$ ,  $T_5=166$ , axes thin, simple, straight, thickest in  $T_3$ . Pubescence hairs short oblique on proximal parts and on almost the whole  $T_3$ , more outwards longer erect, strongest on  $T_3$ .

Genital papillae oviform, glabrous, 1.7 times as long as their greatest diameter; seta about 0.5 of the length of organ.

*Legs.*-Setae on coxa and trochanter of leg 9 similar, furcate, branches subequal in length; main branch thick, blunt, with short pubescence in whorls; secondary branch similar but thinner, somewhat clavate, more anteriorly, with glabrous blunt rudiments of the secondary branches. Coxal seta on leg 2 in male not deviating. Tarsus of leg 9 somewhat curved, 3.6 times as long as its greatest diameter. Setae thin, proximal one tapering and pointed with short depressed pubescence, distal one cylindrical striate; proximal seta 0.4 of the length of tarsus and 2.5 times as long as distal seta. Cuticle of tarsus with short pubescence.

*Pygidium. Tergum.*-Posterior margin between  $st$  evenly rounded. Relative lengths of setae:  $a_1=a_2=100$ ,  $a_3=222$ ,  $st=67$ . These setae cylindrical, blunt, indistinctly striate;  $a_1$  straight and somewhat pointing outwards,  $a_2$  and  $a_3$  curved inwards, the former also pointing inwards,  $st$  straight and pointing inwards. Distance  $a_1-a_1$  1.2 times as long as  $a_1$ ; distance  $a_1-a_2$  1.2 times as long as distance  $a_2-a_3$ ; distance  $st-st$  3.5 times as long as  $st$  and 1.9 times as long as distance  $a_1-a_1$ . Cuticle glabrous.

*Sternum.*-Posterior margin between  $b_1$  almost straight. Relative lengths of setae ( $a_1=100$ ):  $b_1=455$ ,  $b_2$  about 130; setae cylindrical blunt striate. The  $b_1$  1.4 times as long as their distance apart;  $b_2$  about 0.5 of distance  $b_1-b_2$ . Anal plate 1.5 times as long as broad, with convex lateral margins and a V-shaped posterior incision separating two short, subcylindrical posterolateral lobes; from distal part of lobes, two straight, cylindrical, blunt, outwardly pointing appendages, 0.6 of the length of the plate; anterior part of plate glabrous, posterior part shortly pubescent, appendages distinctly striate, anterior of each base of appendage a small sternal knob.

*Etymology.*-From Latin *saluarius* = of the forest.

*Distribution in Tasmania.* Found on two widely separated sites.

### *Decapauropus terrestris* sp. nov.

(Figs. 82–93)

*Material Examined. Holotype.* Ad.9 (female), Savage River Pipeline Road, Loc. 1, (41°18.5'S, 145°16.3'E), soil core, 21.iv.1989 (JD).

*Paratypes.* Frodshams Pass, Loc. 9, (42°49.7'S, 146°22.9'E), soil core, 2 ad. 9 (female), 20.x.1989 (RC).

*Other material.* 2 specimens. Loc. 9, soil core, 1 juv. 3, 20.x.1989 (RC). Loc. 5, soil core, 1 ad. 9 (male), 22.xi.1989 (HM).

*Diagnosis.* The shape of the antennae and the anal plate indicate that the new species is related to *D. vicinus* Remy from Madagascar (Remy 1956c). They can be reliably distinguished as in *A. terrestris* there is a large semicircular lobe between the  $st$  (not in *vicinus*), the  $st$  are thin and cylindrical (not broad

distally) and the anal plate narrows anteriorly (not the opposite).

*Description. Length.*-(0.59-)0.61 mm.

*Head.*-Tergal setae of short to medium length, subcylindrical, densely annulate, blunt. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=(9-)$ 11; 2nd row:  $a_1=(7-)$ 8,  $a_2=(16-)$ 20,  $a_3=(13-)$ 17; 3rd row:  $a_1=14$ ,  $a_2=(13-)$ 18; 4th row:  $a_1=(7-)$ 10,  $a_2=?$ (18),  $a_3=(15-)$ 20,  $a_4=18$ (-19); lateral group setae:  $l_1=?$ ,  $l_2=17$ ,  $l_3=18$ . The ratio  $a_1/a_1-a_1$  in 1st row 0.9(-1.0), 2nd row (0.4-)0.5, 3rd row 0.9 and 4th row 1.0(-1.3). Temporal organs oval in tergal view, their length 1.5 times as long as their shortest distance apart; an unusually large aperture inside posterior margin on a level with  $l_1$ . Head cuticle glabrous.

*Antennae.*-Segment 4 with 5 cylindrical annulate blunt setae; their relative lengths:  $p=100$ ,  $p'=43$ (-50),  $p''=28$ (-29),  $r=(45-)$ 46. The  $p'''$  rudimentary,  $u$  absent. Tergal seta  $p$  (1.5-)1.6 times as long as tergal branch  $t$ . The latter fusiform, 2.0(-2.2) times as long as its greatest diameter and as long as sternal branch  $s$ ; that branch directed downwards and (1.7-)1.8 times as long as its greatest diameter; anterodistal corner of  $s$  only a little more truncate than posterior one. Seta  $q$  cylindrical annulate blunt, 1.2 times as long as  $s$ . Relative lengths of flagella (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=5$ (-6);  $F_2=35$ (-37),  $bs_2=4$ (-5);  $F_3=(83-)$ 85,  $bs_3=5$ . The  $F_1$  (5.3-)5.6 times as long as  $t$ ,  $F_2$  and  $F_3$  1.8(-1.9) and 4.4 times as long as  $s$  respectively. Distal calyces subhemispherical; distal part of flagellar axes fusiform. Globulus  $g$  proportionately large, 1.4 times as long as wide; 15 bracts and capsule bottom flattened; width of  $g$  1.1 times as long as the greatest diameter of  $t$ . Antennae glabrous.

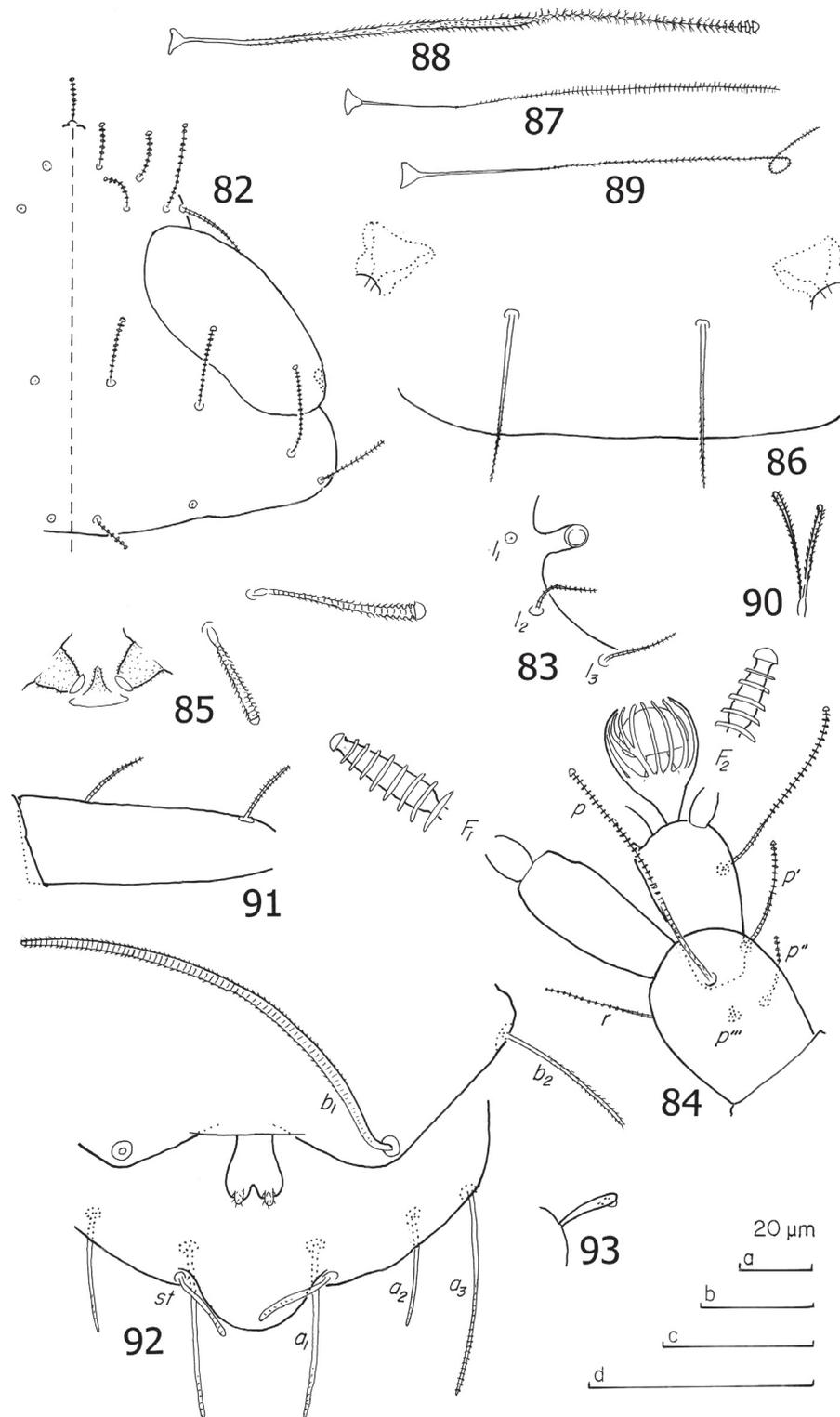
*Trunk.*-Setae of collum segment clavate, densely annulate-striate, distal segment large, hemispherical, rudiments of secondary branches probably absent. Sublateral setae 1.8 times as long as submedian ones; sternite process triangular, blunt; appendages narrowing distally and with flat caps; process and basal segment of appendages with distinct, almost erect, short pubescence.

Setae on tergites thin, cylindrical, on anterior tergites as on head, on posterior tergites tapering pointed with short pubescence distally; 4+4 setae on tergite I, 6+6 on II–IV, 6+4 on V, 4+2 on VI. Submedian posterior setae on VI (0.8-)0.9 of their distance apart and about as long as pygidial setae  $a_1$ . Tergites glabrous.

Relative lengths of bothriotricha:  $T_1=100$ ,  $T_2=106$ (-113),  $T_3=(127-)$ 135,  $T_4=(112-)$ 140,  $T_5=166$ (-170), all with simple straight axes, very thin except in proximal 2/3 of  $T_3$ ;  $T_3$  with whip-like distal half; pubescence thin erect except on  $T_3$ , there oblique on thickened part, more distally erect and in distinct whorls, most distal part annulate with a subhemispherical distal segment. A specimen from Mount Victoria with  $T_3$  thinner, without widened distal segment.

*Legs.*-Setae on coxa and trochanter of leg 9 similar, furcate with subcylindrical blunt branches. Tarsus of leg 9 short, somewhat tapering, 2.8 times as long as its greatest diameter. Setae subsimilar, thin, cylindrical, striate; their length 0.2 of the length of tarsus. Cuticle of tarsus with very delicate pubescence.

*Pygidium. Tergum.*-Posterior margin between  $st$  with large semicircular lobe. Relative lengths of setae:  $a_1=100$ ,  $a_2=73$ (-80),



Figs. 82–93. *Decapauropus terrestris* sp.nov., holotype: 82, head, median and right part, tergal view; 83, temporal organ, posterolateral part, lateral view; 84, left antenna, tergal view; 85, collum segment, median and left part, sternal view; 86, tergite VI, posterior part; 87,  $T_1$ ; 88,  $T_3$ ; 89,  $T_5$ ; 90, seta on trochanter of 9th pair of legs; 91, tarsus of 9th pair of legs; 92, pygidium, median and left part, sternal view; 93, anal plate, lateral view. Scale line a for figure 88; b for figures 86, 87; c for figures 82, 83, 85, 90, 91; d for figures 84, 89, 92, 93.

$a_3=127(-140)$ ,  $st=47(-60)$ ; setae almost straight, blunt;  $a_1$ ,  $a_2$  and  $a_3$  directed posteriorly,  $st$  pointing inwards, almost glabrous except  $a_3$  being striate in distal half. Distance  $a_1-a_1$  1.4 times as long as  $a_1$ ; distance  $a_1-a_2$  (1.3-)1.4 times as long as distance  $a_2-a_3$ ; distance  $st-st$  (1.5-)1.8 times as long as  $st$  and 1.2 times as long as distance  $a_1-a_1$ . Cuticle glabrous.

**Sternum.**-Posterior margin between  $b_1$  with a broad indentation below anal plate. Relative lengths of setae ( $a_1=100$ ):  $b_1=(253-)287$ ,  $b_2=93(-107)$ , setae cylindrical,  $b_1$  densely striate,  $b_2$  with short, oblique pubescence. The  $b_1$  (1.6-)1.8 times as long as their distance apart;  $b_2$  as long as distance  $b_1-b_2$ . Anal plate narrowest anteriorly and with somewhat concave lateral margins, being 1.2 times as long as broad and with two short, rounded, posterior lobes separated by a V-shaped incision; the plate glabrous and with two very short, cylindrical, blunt, shortly pubescent appendages on the sternal side of the posterior lobes.

**Etymology.**-From Latin *terra*, *terrestris* = of the earth (soil living).

**Distribution in Tasmania.** Seems to be a rare but very widely distributed species.

### Genus *Nesopauropus* Scheller

Type species: *Nesopauropus ceylonicus* (Scheller, 1970): 63-65, fig. 29.

### *Nesopauropus tasmaniensis* sp.nov.

(Figs. 94-104)

**Material examined.** *Holotype.* Ad.9 (female), Mount Michael, Loc. 6, (41°10.9'S, 148°00.4'E), soil core, 11.xi.1989, (RC).

**Diagnosis.** *Nesopauropus tasmaniensis* is the sixth species in the genus. It is easily distinguished from the previously described species, three from Sri Lanka (Scheller 1970) and two from the Seychelles (Scheller 1982), by the shape of the anal plate: very short, blunt, parallel, posterior appendages and in between a distinct median incision. Disregarding the very dissimilar anal plate, the new species may have most in common with two species from Sri Lanka, *subtilis* Scheller and *unifibratus* Scheller (Scheller 1970).

**Description.** *Length.*-0.63 mm.

**Head.**-Tergal setae annulate, submedian ones rather short, somewhat clavate, sublateral and lateral ones at least of medium length, subclavate-cylindrical. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=14$ ; 2nd row:  $a_1=10$ ,  $a_2=25$ ,  $a_3=22$ ; 3rd row:  $a_1=10$ ,  $a_2=17$ ; 4th row:  $a_1=11$ ,  $a_2=?$ ,  $a_3=?$ ,  $a_4=18$ ; lateral group setae:  $l_1=30$ ,  $l_2=28$ ,  $l_3=25$ . The ratio  $a_1/a_1-a_1$  in 1st row 0.9, 2nd row 0.5, 3rd row 0.8 and 4th row 1.3. Temporal organs oval in tergal view, 1.2 times as long as shortest distance apart; small aperture at posterior margin. Head cuticle glabrous.

**Antennae.**-Segment 4 with four subclavate-subcylindrical annulate blunt setae; their relative lengths:  $p=100$ ,  $p'=34$ ,  $p''=18$ ,  $r$  about 16. Neither  $p'''$  nor  $u$ . Tergal seta  $p$  1.8 times as long as tergal branch  $t$ . The latter fusiform, 2.3 times as long as its greatest diameter and 1.1 times as long as sternal branch  $s$  which is 1.6 times as long as its greatest diameter; anterodistal

corner of  $s$  truncate. Seta  $q$  somewhat clavate, annulate, blunt, about 1.2 times as long as  $s$ . Relative lengths of flagella (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=8$ ;  $F_2=35$ ,  $bs_2=5$ ;  $F_3=88$ ,  $bs_3=7$ . The  $F_1$  4.6 times as long as  $t$ ,  $F_2$  and  $F_3$  1.8 and 4.4 times as long as  $s$  respectively. Distal calyces subhemispherical, on  $F_2$  and  $F_3$  very small; distal part of flagella axis fusiform. Globulus  $g$  1.3 times as long as wide; 10 bracts and capsule subspherical; width of  $g$  0.9 of the greatest diameter of  $t$ . Antennae glabrous.

**Trunk.**-Setae of collum segment simple, somewhat clavate, annulate, blunt. Sublateral ones 1.7 times as long as submedian ones; sternite process very small pointed; appendages proportionally large, almost cylindrical with subhemispherical caps; process and basal segment of appendages with distinct almost erect pubescence.

Tergites II and III weakly divided transversally, II between the groups of setae (two groups of setae, 6+6) and III more posteriorly (two groups of setae, 8+4). Setae on tergites thin, (sub)cylindrical, annulate, blunt, not decreasing in length posteriorly; 4+4 setae on tergite I, 6+6 on II-V, 4+2 on VI. Submedian posterior setae on VI 0.8 of their distance apart and 0.8 of the length of pygidial setae  $a_1$ . Tergites glabrous.

Relative lengths of bothriotricha:  $T_1=100$ ,  $T_2=119$ ,  $T_3=110$ ,  $T_4=85$ ,  $T_5=159$ ; setae with thin, simple, straight axes, the proximal half of  $T_3$  and  $T_5$  thickest. Pubescence hairs on  $T_3$  and on proximal 1/4 of the others short oblique, on distal 2/3 of  $T_1-T_4$  much longer, branched and arranged in whorls.

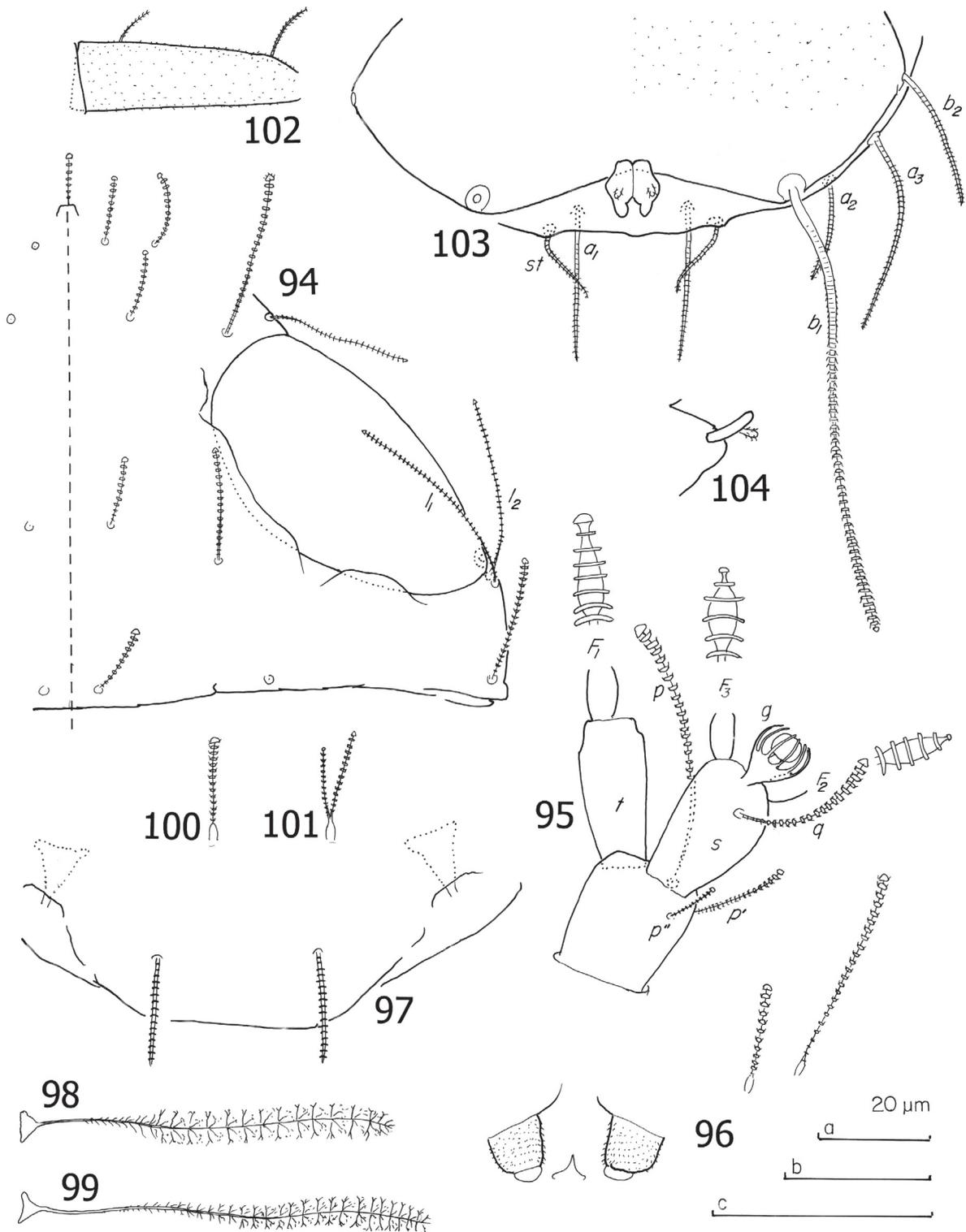
**Legs.**-Setae on coxa and trochanter of legs 1-8 and seta on coxa of leg 9 simple, somewhat clavate, annulate, blunt; seta on trochanter of leg 9 furcate, branches cylindrical, annulate, secondary branch somewhat thinner and shorter than primary branch. Tarsus of leg 9 tapering, 3.2 times as long as its greatest diameter. Setae subcylindrical, densely annulate, proximal seta 0.2 of the length of tarsus and 0.7 of the length of distal seta; the latter thicker than proximal seta. Cuticle of tarsus with minute pubescence.

**Pygidium.** **Tergum.**-Posterior margin between  $st$  almost straight. Relative lengths of setae:  $a_1=10$ ,  $a_2=64$ ,  $a_3=129$ ,  $st=57$ ; setae tapering, pointed, striate;  $a_1$  almost straight,  $a_2$  and  $a_3$  curved inwards,  $st$  somewhat S-shaped and pointing inwards. Distance  $a_1-a_1$  0.7 of the length of  $a_1$ ; distance  $a_1-a_2$  1.8 times as long as distance  $a_2-a_3$ ; distance  $st-st$  1.9 times as long as  $st$  and 1.5 times as long as distance  $a_1-a_1$ . Cuticle glabrous.

**Sternum.**-Posterior margin between  $b_1$  with a broad indentation. Relative lengths of setae ( $a_1=100$ ):  $b_1=293$ ,  $b_2$  about 98. The  $b_1$  cylindrical, striate, distally annulate;  $b_2$  tapering, striate, somewhat pointing outwards. The  $b_1$  1.5 times as long as their distance apart;  $b_2$  about 0.9 of distance  $b_1-b_2$ . Anal plate glabrous, as long as broad, narrowest anteriorly, with convex lateral margins and two distal and two sternal appendages; distal ones projecting backwards, short and thick, cylindrical, blunt, somewhat pointing inwards, length 1/4 of the length of the plate; sternal appendages of the same length but thinner and with short oblique pubescence.

**Etymology.**-A latinization of Tasmania.

**Distribution in Tasmania.** Known from a single locality on north-east Tasmania.



Figs. 94–104. *Nesopauropus tasmaniensis* sp. nov., holotype: 94, head, median and right part, tergal view; 95, right antenna, sternal view; 96, collum segment, median and left part, sternal view; 97, tergite VI, posterior part; 98,  $T_1$ ; 99,  $T_3$ ; 100, seta on coxa of 9th pair of legs; 101, seta on trochanter of 9th pair of legs; 102, tarsus of 9th pair of legs; 103, pygidium, posterior part, sternal tergal view; 104, anal plate, lateral view. Scale line a for figures 98, 99; b for figures 100–102; c for figures 94–97, 103, 104.

***Stylopaupoides* Remy**

Type species: *Stylopaupoides tiegsi* (Remy, 1949): 54–56, Fig. 1 a–e.

The genus has its main distribution in the Southern Hemisphere, has twenty-two species and two only have been reported to the north of the equator, in the Ivory Coast and Guinea. A provisional list of species with distributions is given below.

Species	Localities	References
1. <i>S. tiegsi</i> (Remy)	Australia (eastern) New Zealand	Remy 1949 Remy 1952b, 1956a, 1956b
2. <i>S. novaehollandiae</i>	Australia (eastern)	Harrison 1914
3. <i>S. bornemisszai</i> Remy	Australia (western)	Remy 1957, Postle <i>et al.</i> 1991
4. <i>S. ringueleti</i> Remy	Argentina Chile Tasmania	Remy 1962 Scheller 1968 New record
5. <i>S. rounsevelli</i> sp.nov.	Tasmania	New record
6. <i>S. lambda</i> Remy	New Zealand	Remy 1956b
7. <i>S. subantarcticus</i> Scheller	Crozet Islands	Scheller 1974
8. <i>S. infidus</i> (Remy)	New Zealand	Remy 1956a
9. <i>S. duplex</i> (Remy)	New Zealand	Remy 1956a
10. <i>S. erectus</i> sp.nov.	Tasmania	New record
11. <i>S. hetaeros</i> sp.nov.	Tasmania	New record
12. <i>S. scissus</i> sp.nov.	Tasmania	New record
13. <i>S. bilobatus</i> Scheller	New Caledonia	Scheller 1993
14. <i>S. hirtus</i> (Remy)	New Zealand	Remy 1952b, 1956a
15. <i>S. quadripartitus</i> sp.nov.	Tasmania	New record
16. <i>S. delamarei</i> (Remy)	Ivory Coast Guinea	Remy 1948 Remy 1959a
17. <i>S. vadoni</i> (Remy)	Madagascar	Remy 1956c, Remy & Bello 1960
18. <i>S. eximius</i> sp. nov.	Tasmania	New record
19. <i>S. incisus</i> Remy & Bello	Madagascar	Remy & Bello 1960
20. <i>S. furcillatus</i> (Remy)	New Zealand New Caledonia	Remy 1952b Scheller 1993
21. <i>S. dytanekes</i> Scheller	Brazil	Scheller 2000
22. <i>S. salazarae</i> Scheller	Argentina	Scheller <i>et al.</i> 2004

***Stylopaupoides ringueleti* Remy, 1962**

*Material Examined.* 38 specimens. Loc. 2, in moss on ground, 2 ad. 9 (female), 1 subad. 8 (female), 21.iv.1989 (HM). Loc. 14, leaf litter, 19 ad. 9 (9 male, 10 female), 2 subad. 8 (male, female), 1 juv. 6, 2 juv. 5, xii.1988 (MN). Loc. 15, litter, 10 ad. 9 (6 male, 4 female), 22.xii.1988 (MN). Loc. 19, leaf litter, 1 ad. 9 (female), 20.vi.1989 (PG).

*Taxonomic remarks.* The differences between the type material from southern Argentina and Chile and the Tasmanian populations are inconsiderable. In the latter the antennal globulus seems to be less spherical, the *st* less clavate and the *T*<sub>3</sub> have more erect pubescence and longer branches than has been reported by Remy, but in all important characters, they are alike.

*Distribution in Tasmania.* Known from the northern half of the State only.

*General distribution.* Previously known from southern Argentina (Remy 1962) and southern Chile (Scheller 1968).

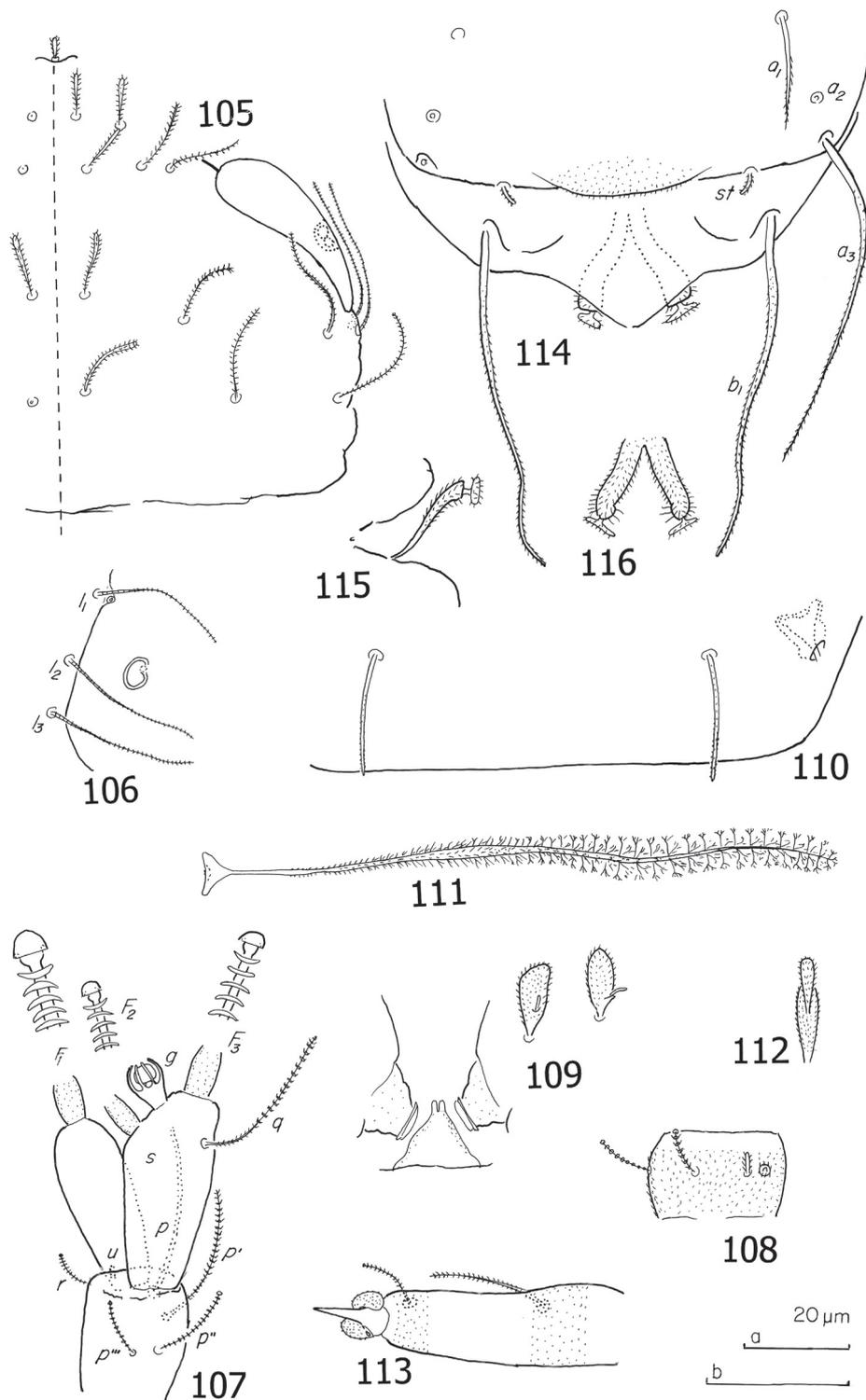
***Stylopaupoides erectus* sp.nov.**

(Figs.105–116)

*Material Examined. Holotype.* Ad. 9 (female), Savage River Pipeline Road, Loc.1, (41°18.5'S, 145°16.3'E), litter, 21.iv.1989 (PG).

*Paratypes.* Same data as holotype, 5 ad. 9 (female), 2 juv. 5.

*Other material.* 160 specimens. Loc. 1, in moss on *Nothofagus*, 3 ad. 9 (female), 1 juv. 6, 1.iv.1989 (JD), and in moss on ground, 4 ad. 9 (female), 2 subad 8 (male, female), 21.iv.1989 (HM), and in litter 2 ad. 9 (female), 21.iv.1989 (JD,HM), and in moss on log, 1 ad. 9 (female),



Figs. 105–116. *Stylopaupoides erectus* sp.nov., holotype 105–115, paratype 116: 105, head, median and right part, tergal view; 106, temporal organ, posterior part with pistil, lateral view; 107, left antenna, tergal view; 108, 3rd antennal segment, tergal view; 109, collum segment, median and left part, sternal view; 110, tergite VI, posterior part; 111,  $T_3$ ; 112, seta on coxa of 9th pair of legs; 113, tarsus of 9th pair of legs; 114, pygidium, tergal view; 115, anal plate, lateral view; 116, anal plate, sternal view. Scale line a for figures 105, 106, 110–113; b for figures 107–109, 114–116.

21.iv.1989 (JD, HM), and in moss on ground, 1 ad. 9 (female), 21. iv.1989 (JD). Loc. 2, in moss on ground, 1 ad. 9 (female), 1 juv. 6, and in leaf litter, 1 ad. 9 (female), 1 juv. 5, 21.iv.1989 (JD). Loc. 4, in moss on ground, 3 ad. 9 (2 male, 1 sex?), 1 subad. 8 (female), 1 juv. 6, 17. xi.1989 (RC, HM), and in moss on log, 23 ad. 9 (female), 16 subad. 8 (female), 8 juv. 6, 3 juv. 5, 1 juv. 3, 18.xi.1989 (RC, HM), and in moss on myrtle, 1 ad. 9 (female), 1 juv. 6, 18.xi.1989 (HM), and in moss on ground, 1 ad. 9 (female), 18.xi.1989 (HM). Loc. 5, in moss on log, 1 subad. 8 (female), 29.xi.1989 (RC), and PKD, 1 juv. 3, 25.xi.1989 (HM). Loc. 6, soil core, 5 ad. 9 (4 male, 1 female), 1 subad. 8 (female), 1 juv. 6, 11.xi.1989 (RC). Loc. 7, in moss on log, 2 subad. 8 (female), 2 juv. 6, 17.v.1989 (HM), and in moss on ground, 1 ad. 9 (female), 12.v.1989 (PG), and without site description and date, 2 ad. 9 (female), 1 subad. 8 (female), 4 juv. 6, 1 juv. 5. Loc. 11, in leaf litter, 1 ad. 9 (female), and in moss on base of myrtle trunk, 2 ad. 9 (female), 2 juv. 6, and in moss on fallen logs, 15 ad. 9 (female), 6 subad. 8 (female), 5 juv. 6, 1 juv. 3, 21.iii.1989 (PG, JD). Loc. 17, in non-myrtle litter, 9 ad. 9 (female), 3 subad. 8 (female), 7 juv. 6, 5 juv. 5, 4 juv. 3, 8.iii.1989 (PG). Loc. 18, leaf litter, 1 ad. 9 (female), xii.1987 (MN).

**Diagnosis.** *Stylopauropoides erectus* belongs to a group of species in the genus having V-shaped anal plates with short-stalked appendages distally, among them *S. bornemisszai* Remy from west Australia (Remy 1957) but is well distinguished from it by the shape of the posterior setae of tergite VI and the distal appendages of the anal plate (cylindrical and similar to a drawing pin respectively in *S. erectus*, clavate and irregularly ovoid in *S. bornemisszai*). There are also distinct similarities with *S. ringueleti* from south Argentina and Chile (Remy 1962, Scheller 1968) diverging by the shape of the bothriotracha  $T_3$  and the *st* (distal half of  $T_3$  densely provided with branched pubescence hairs in *S. erectus*, sparsely provided with thin branches with short pubescence in *S. ringueleti*; *st* cylindrical, not clavate). A third similar species is *S. subantarcticus* Scheller from the Crozet Islands (Scheller 1974) but the shape of the antennal globulus is a good separating character (with short thick stalk, not long conical) as is also the shape of the  $T_3$  (proximal half weakly thickened, not thick clavate). *S. erectus* has some characters not often met with in the genus. The  $F_2$  are longer than the  $F_3$ , a character shared with *S. subantarcticus*, and the posterodistal corner of the sternal antennal branch is more truncate than the anterodistal one, also occurring in *S. infidus* Remy from New Zealand (Remy 1956a). The new species is distinguished from *S. infidus* by the shape of the posterior part of the pygidial tergum (with broad rounded bulge in *S. erectus*, with median indentation in *S. infidus*), by the proportion *st-st/st* (9–12, not about 4) and by the shape of the distal part of the pygidial setae  $b_1$  (distal part undulated, not evenly curved). There are also similarities in direction *S. tiegsi* Remy from mainland Australia and New Zealand (Remy 1949, 1956a) but in that species the antennal flagella  $F_3$  are as long as or longer than the  $F_2$ , the *st* proportionately longer and the distal part of the pygidial setae  $b_1$  is straight, not undulated.

**Description.** Length.-(0.70-)0.73(-0.98) mm.

**Head.**-Submedian setae on the tergal side of median length, subclavate, with somewhat uneven pubescence, lateral setae fairly long, cylindrical, with short pubescence. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=(8-)$ 11(-12); 2nd row:  $a_1=(11-)$ 12,  $a_2=(14-)$ 15,  $a_3=(14-)$ 16; 3rd row:  $a_1=(11-)$ 14,  $a_2=(15-)$ 18; 4th row:  $a_1=(13-)$ 18,  $a_2=(19-)$ 22,  $a_3=(20-)$ 27,

$a_4=16(-22)$ ; lateral group setae:  $l_1=(24-)$ 31,  $l_2=(26-)$ 33,  $l_3=(27-)$ 32. The ratio  $a_1/a_1-a_1$  in 1st row 1.0, 2nd row 0.8, 3rd row (1.1-)1.2(-1.3) and 4th row (1.2-)1.5. Length of temporal organs 0.7(-0.8) of their shortest distance apart; in a depression of the cuticle in posterior half of the organ anterior of  $l_1$  and  $l_2$  a clavate curved vesicle almost 0.2 of the length of temporal organ. Head cuticle glabrous.

**Antennae.**-Segment 3 with three setae and rudiment of globular organ. Segment 4 with five cylindrical annulate blunt setae; their relative lengths:  $p=100$ ,  $p'=(53-)$ 64(-75),  $p''=(48-)$ 52(-57),  $p'''=32(-40)$ ,  $u=(8-)$ 9. Tergal seta  $p$  (0.8-)1.0(-1.1) times as long as tergal branch  $t$ . The latter fusiform, (2.4-)2.9(-3.1) times as long as its greatest diameter and (almost) as long as sternal branch  $s$ , that branch (1.9-)2.2(-2.3) times as long as its greatest diameter; posterodistal corner of  $s$  much more truncate than anterodistal one. Seta  $q$  cylindrical, annulate, blunt, (0.8-)0.9 of the length of  $s$ . Relative lengths of flagella (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=(8-)$ 9(-10);  $F_2=(76-)$ 87(-89),  $bs_2=8(-10)$ ;  $F_3=(47-)$ 52(-53),  $bs_3=(7-)$ 8(-9). The  $F_1$  (2.9-)3.3(-3.6) times as long as  $t$ ,  $F_2$  and  $F_3$  (2.4-)2.8 and (1.5-)1.7(-1.9) times as long as  $s$  respectively. Distal calyces hemispherical, largest on  $F_1$ ; distal part of flagella axes not widened. Globulus  $g$  (1.4-)1.6 times as long as wide; at least 10 bracts, capsule bottom flattened; width of  $g$  0.6(-0.7) of the greatest diameter of  $t$ . Antennae with faint pubescence.

**Trunk.**-Setae of collum segment furcate; primary branch folioform with distinct oblique pubescence, secondary branch rudimentary, cylindrical, glabrous. Sublateral setae as long as (-somewhat longer than) submedian ones; sternite process triangular, anterior part narrow and with distinct incision; appendages subconical, caps flat with collar; process with faint lateral pubescence, appendages almost glabrous. Setae on anterior tergites thin, cylindrical, annulate, blunt, more posteriorly increasing in length and with short pubescence; 4+4 setae on tergite I, 6+6 on II-V, 4+2 on VI. Submedian posterior setae on VI 0.4 of their distance apart and (as long as-)1.2 times as long as pygidial setae  $a_1$ .

Relative lengths of bothriotracha:  $T_1=100$ ,  $T_2=(101-)$ 107 and 114(-120),  $T_3=106-114$ ,  $T_4=(117-)$ 122(-142),  $T_5=(132-)$ 150(-187); axes thin, simple, straight, those in  $T_3$  moderately thickened. Pubescence hairs on  $T_3$  and on proximal 1/4 of the others short, oblique, on distal 2/3 of  $T_1-T_4$  much longer, branched distally and arranged in whorls.

**Legs.**-Setae on coxa and trochanter of leg 9 furcate, clavate, with oblique short pubescence, secondary branch protruding from the middle of the primary one and reaching 0.5-0.7 of the length of primary branch, these setae more anteriorly with rudimentary glabrous secondary branches. Tarsus of leg 9 (2.6-) 2.9 times as long as its greatest diameter. Proximal seta tapering, in distal part annulate, pointed; distal seta cylindrical annulate blunt. Proximal seta (0.4-)0.5 of the length of tarsus and (1.5-)1.9 times as long as distal seta. Cuticle of tarsus with minute pubescence.

**Pygidium.** Tergum.-Posterior margin between *st* with low rounded bulge. Relative lengths of setae:  $a_1=100$ ,  $a_2=(200-)$ 215(-242),  $a_3=(195-)$ 235(-246), *st*=(12-)15(-18), setae curved inwards, thin, tapering;  $a_1$ ,  $a_2$  and  $a_3$  pointed, *st* blunt and also pointing inwards; all setae with short, oblique

pubescence. Distance  $a_1-a_1$  (2.1-)2.3 times as long as  $a_1$ ; distance  $a_1-a_2$  2.0(-2.5) times as long as distance  $a_2-a_3$ ; distance  $st-st$  (9.1-)11.3(-12.8) times as long as  $st$  and 0.7(-0.8) of distance  $a_1-a_1$ . Cuticle with distinct pubescence between  $st$ .

**Sternum.**-Posterior margin above and behind  $b_1$  with a large and broad triangular lobe. Relative lengths of setae ( $a_1=100$ ):  $b_1=(225-245(-275))$ ; setae thin, shortly pubescent, tapering, undulated distally, (1.1-)1.2(-1.4) times as long as their distance apart. Anal plate almost upright, V-shaped, branches somewhat S-shaped, slender, somewhat increasing in width distally, each branch with a distal appendage in the shape of the head of a thread-nail; plate and appendages with very distinct almost erect pubescence, longest on distal part of the branches.

**Stage juv.** 5. Pygidial setae  $d_2$  thin, their length somewhat more than 0.1 of their distance apart;  $d_1$  absent.

**Etymology.**-From Latin *erectus* = steep, upright (anal plate).

**Distribution in Tasmania.** Like the preceding species the known range is restricted to northern Tasmania but its frequency in moss and litter samples may indicate a wider distribution.

### *Stylopaupoides rounsevelli* sp.nov.

(Figs.117-127)

**Material Examined.** *Holotype.* Ad.9 (female), Bruny Island, Mount Mangana, Loc. 12, (43°22.1'S, 147°17.0'E), litter, 4.iv.1989 (PG).

*Paratypes.* Same data as holotype, 2 ad. 9 (male, female). Cradle Mountain Loc. 4, (41°35.4'S, 145°55.9'E), in moss on ground, 4 ad. 9 (female), 17.xi.1989 (RC).

*Other material.* 84 specimens. Loc. 1, *Fungi* sample, 1 ad. 9 (female), 1 juv. 6, 21.iv.1989 (JD, HM). Loc. 5, soil core, 1 ad. 9 (female), 29.xi.1989 (PG). Loc. 6, in moss on log, 4 ad. 9 (female), 1 juv. 6, 11.vi.1990 (ATW), and in litter, 3 ad. 9 (female), 1 subad. 8 (female), 29.xi.1989 (HM), and in pitfall trap, 2 ad. 9 (female), 24-29.xi.1989 (RC), and suction, 1 ad. 9 (female), 28.xi.1989 (RC). Loc. 7, soil cores, 1 ad. 9 (female), 1 juv. 5, 12.v.1989 (HM, JD). Loc. 9, soil core, 1 ad. 9 (male), 20.x.1989 (RC). Loc. 12, in litter, 2 ad. 9 (female), 4.iv.1989 (PG), and in leaf litter, 1 ad. 9 (female), 1 subad. 8 (male), 1 juv. 6, 4.iv.1989 (JD, PG), and in moss, 16 ad. 9 (4 male, 12 female), 6 subad. 8 (2 male, 4 female), 6 juv. 6, 6 juv. 5, 5 juv. 3 (JD). Loc. 13, in litter, 11 ad. 9 (4 male, 7 female), 7 subad. 8 (2 male, 5 female), 3 juv. 6, 27.ii.1989 (SS). Loc. 16, in litter, 2 ad. 9 (male, female), 20.xii.1988 (PG). Loc. 17, soil core, 1 juv. 6, 5.vi.1989 (PG).

**Diagnosis.** *S. rounsevelli* is a well defined species reason of the posterior vesicle of the temporal organs, the thin setae and the anal plate with distally thickened branches and appendages similar to nail-heads. It may be related to the preceding species, *S. erectus*, but is distinguished from that species by the following characters: antennal flagellae  $F_2$  and  $F_3$  subequal in length in *rounsevelli*,  $F_2$  1.4-1.7 times as long as  $F_3$  in *erectus*; the vesicle of the temporal organs straight and attached to the cuticle very near the posterior margin anterior of  $l_1$  and  $l_2$ , not curved and situated near the middle of the temporal organ; the posterior margin of the pygidial sternum with low bulge between the  $b_1$ , not a large triangular one; the  $st$  thin and pointed, not cylindrical and blunt; the branches of the anal plate straight and with a short but marked distal swelling, not somewhat curved and subclavate. There is evidence to consider

*S. rounsevelli* related to *S. bornemisszai* Remy from Western Australia (Remy 1957), but the differences are several, the shape of the tergal head setae, the shape of the  $st$  and the branches of the anal plate and their appendages.

**Description.** *Length.*-(0.50-)0.60(-0.84) mm.

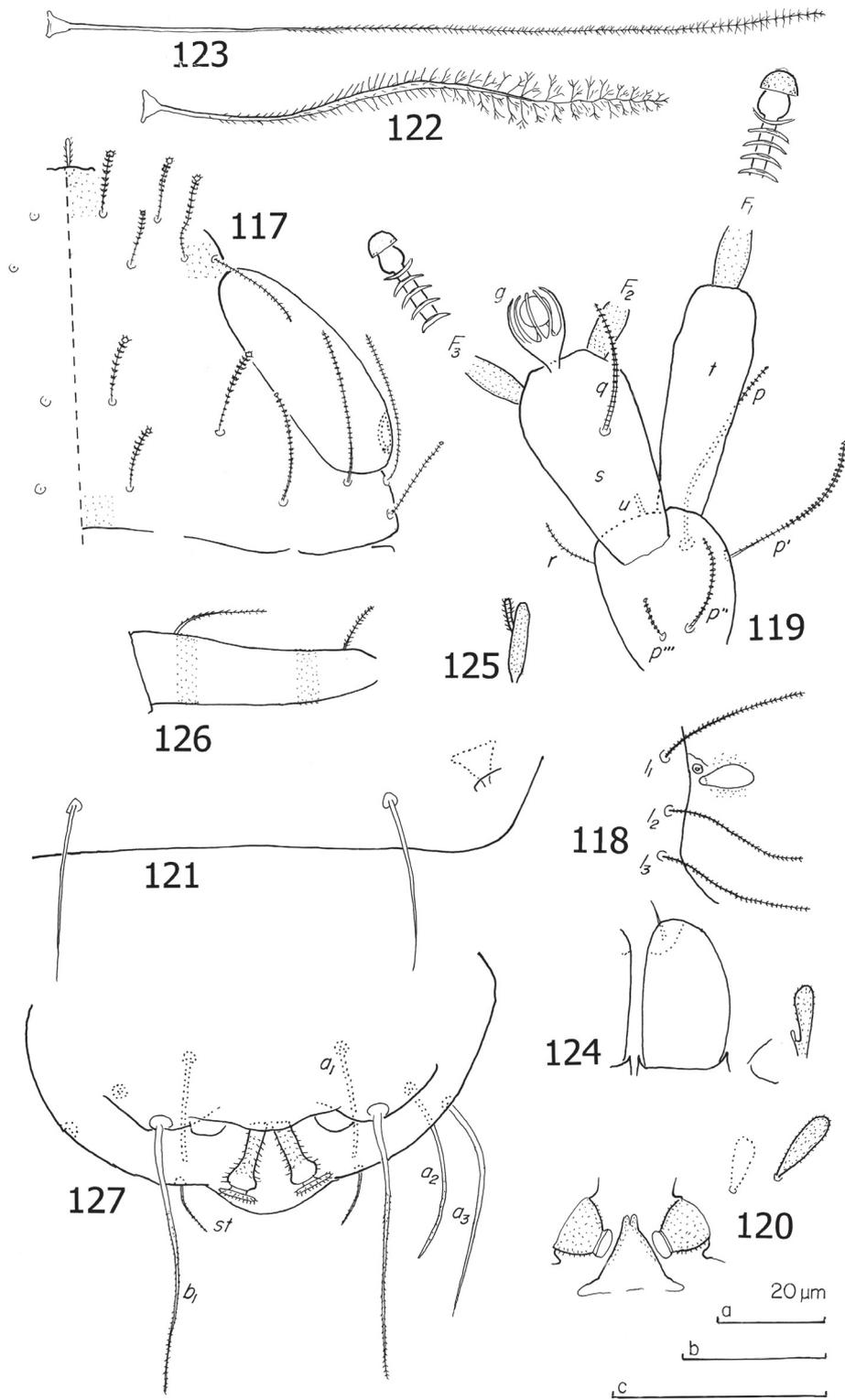
**Head.**-Tergal setae annulate, submedian ones of median length, subcylindrical, blunt, sublateral and lateral ones fairly long, cylindrical. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=(9-10(-11))$ ; 2nd row:  $a_1=(9-11(-12))$ ,  $a_2=13(-14)$ ,  $a_3=(13-17)$ ; 3rd row:  $a_1=(9-10)$ ,  $a_2=10(-13)$ ; 4th row:  $a_1=10(-12)$ ,  $a_2=17(-18)$ ,  $a_3=23(-27)$ ,  $a_4=11(-13)$ ; lateral group setae:  $l_1=24(-29)$ ,  $l_2=22(-27)$ ,  $l_3=24(-27)$ . The ratio  $a/a_1-a_1$  in 1st row 1.0(-1.1), 2nd row 0.5(-0.7), 3rd row 1.0(-1.2) and 4th row 0.8(-0.9). Length of temporal organs (0.8-)0.9 of their shortest distance apart; near posterior margin on a level with  $l_1$  an aperture in the cuticle and in a depression anterior of  $l_1$  and  $l_2$  an exterior clavate straight vesicle; length of vesicle 0.2 of the length of temporal organ. Head cuticle and temporal organs faintly pubescent.

**Antennae.**-Segment 4 with six cylindrical annulate setae; their relative lengths:  $p=100$ ,  $p'=(74-85(-86))$ ,  $p''=(50-51(-57))$ ,  $p'''=(18-20(-29))$ ,  $r=(26-31(-33))$ ,  $u=(6-8)$ . Tergal seta  $p$  (0.8-)0.9(-1.0) of the length of tergal branch  $t$ . The latter fusiform, (2.5-)2.8 times as long as its greatest diameter and about as long as sternal branch, that branch 1.8(-2.2) times as long as its greatest diameter; distal corners of  $s$  equally truncate. Seta  $q$  cylindrical, annulate, pointed, 0.6(-0.7) of the length of  $s$ . Relative lengths of flagella (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=(9-10)$ ;  $F_2=(77-79(-81))$ ,  $bs_2=9(-11)$ ;  $F_3=(78-79(-82))$ ,  $bs_3=10(-12)$ . The  $F_1$  3.0(-3.5) times as long as  $t$ ,  $F_2$  and  $F_3$  (2.2-)2.5 and (2.3-)2.5 times as long as  $s$  respectively. Distal calyces hemispherical with subglobular swelling of the flagellum axis between it and the most distal lamella, calyces largest on  $F_1$ ; subdistal part of flagella axes not widened. Globulus  $g$  1.4(-1.5) times as long as wide; about 10 bracts, capsule bottom convex; width of  $g$  0.7 of the greatest diameter of  $t$ . Antennal branches glabrous, but the basal segments of flagella with delicate pubescence.

**Trunk.**-Setae of collum segment furcate; primary branch folioform with short almost erect pubescence, secondary branch rudimentary, cylindrical, glabrous. Sublateral setae (1.2-)1.3 times as long as submedian ones; sternite process triangular, anterior part narrow and with distinct incision; appendages subconical, caps rather flat and thick; process and appendages with short pubescence.

Setae on tergites thin, cylindrical, annulate, blunt, more posteriorly increasing in length, tapering and with short pubescence; 4+4 setae on tergite I, 6+6 on II-V, 4+2 on VI. Submedian posterior setae on VI (0.5-)0.6 of their distance apart and 1.7(-1.8) times as long as pygidial setae  $a_1$ .

Relative lengths of bothriotricha:  $T_1=100$ ,  $T_2=(82-95(-97))$ ,  $T_3=(84-98(-105))$ ,  $T_4=(85-102(-114))$ ,  $T_5=(147-175(-180))$ , axes thin, simple, straight, those in proximal 2/3 of  $T_3$  moderately thickened. Pubescence hairs on  $T_5$  and on proximal 1/3 of  $T_1$ ,  $T_2$  and  $T_4$  and on proximal half of  $T_3$  simple, oblique-erect, increasing in length outwards, on distal 1/3 of  $T_1-T_4$  much longer, branched distally and arranged in whorls.



Figs. 117–127. *Stylopauropoides rounsevelli* sp.nov., holotype: 117, head, median and right part, tergal view; 118, temporal organ, posterior part with pistil, lateral view; 119, right antenna, sternal view; 120, collum segment, median and left part, sternal view; 121, tergite VI, posterior part; 122, T<sub>3</sub>; 123, T<sub>5</sub>; 124, genital papillae and seta on coxa of 2nd pair of legs, anterior view; 125, seta on coxa of 9th pair of legs; 126, tarsus of 9th pair of legs; 127, pygidium, sternal view. Scale line a for figures 122–126; b for figures 117, 118, 120, 121, 127; c for figure 119.

Genital papillae subcylindrical with outer lateral part convex, 1.7(-1.8) times as long as their greatest diameter; distal seta 0.4 of the length of the organ.

*Legs.*-Setae on coxa and trochanter of leg 9 furcate, clavate, with oblique short pubescence, secondary branch protruding from the middle of the primary one and reaching 0.4-0.6 of the length of primary branch. These setae are more anteriorly with rudimentary glabrous secondary branches. Tarsus of leg 9 (3.3-)3.5(-3.7) times as long as its greatest diameter. Setae tapering, proximal one pointed and with very short oblique pubescence; distal seta subcylindrical and with longer pubescence. Proximal seta 0.4(-0.5) of the length of tarsus and 1.8(-2.5) times as long as distal seta. Cuticle of tarsus with minute pubescence.

*Pygidium. Tergum.*-Posterior margin between *st* with rounded bulge. Relative lengths of setae:  $a_1=100$ ,  $a_2=(165-167(-188))$ ,  $a_3=(193-200(-223))$ ,  $st=(47-53(-55))$ ; setae thin, tapering, pointed, curved inwards, *st* also pointing inwards. Distance  $a_1-a_1$  1.4(-2.0) times as long as  $a_1$ ; distance  $a_1-a_2$  (1.7-)2.0 times as long as distance  $a_2-a_3$ ; distance *st-st* 3.0(-3.5) times as long as *st* and (0.8-)1.1 times as long as distance  $a_1-a_1$ . Cuticle glabrous.

*Sternum.*-Posterior margin above  $b_1$  with a rounded lobe. Relative lengths of setae ( $a_1=100$ ):  $b_1=(164-190(-198))$ ; setae very thin, tapering, with short pubescence only distally, 1.3(-1.4) times as long as their distance apart. Anal plate V-shaped, branches slender, cylindrical but with distal swelling, each branch with a distal appendage in the shape of the head of a thread-nail; plate and appendages with very distinct almost erect pubescence, longest on distal part of the branches, distal swelling glabrous on sternal side.

*Etymology.*-Dedicated to David Rounsevell who initiated the National Rainforest Conservation Program.

*Distribution in Tasmania.* Seems to be very widespread in Tasmanian rainforests.

### *Stylopaupoides quadripartitus* sp.nov.

(Figs.128-141)

*Material Examined. Holotype.* Ad. 9 (female), Savage River Pipeline Road, Loc. 1, (41°18.5'S, 145°16.3'E), litter, 21.iv.1989 (PG).

*Paratypes.* Same data as holotype, 1 ad. 9 (female), 1 subad. 8 (female). Sandspit River, Loc. 8, (42°42.1'S, 147°51.5'E), in leaf litter, 3 ad. 9 (2 male, 1 female), 22.v.1989 (PG).

*Other material.* 60 specimens. Loc. 1, in moss on ground, 1 ad. 9 (female), 21.iv.1989 (HM). Loc. 3, soil core, 1 ad. 9 (female), 9.iii.1989 (PG). Loc. 4, in moss on ground, 1 ad. 9 (female), 17.xi.1989 (RC), and in litter, 1 juv. 5, 18.xi.1989 (HM), and in soil core, 2 ad. 9 (male), 2 subad. 8 (female), 3-8.xi.1989 (PG). Loc. 6, suction, 1 juv. 6, 28.xi.1989 (RC). Loc. 7, tree fern crown, 4 ad. 9 (female), 1 juv. 5, 17.v.1989 (HM), and in leaf litter, 1 ad. 9 (female), 12.v.1989 (PG). Loc. 8, in soil core, 1 ad. 9 (female), 22.v.1989 (PG). Loc. 9, in soil core, 1 ad. 9 (female), 20.x.1989 (RC), and in litter, 1 ad. 9 (female), 18.xi.1988 (PG). Loc. 11, in moss on fallen log, 2 ad. 9 (male, female), 1 subad. 8 (female), 1 juv. 6, 21.iii.1989 (JD). Loc. 12, litter, 12 ad. 9 (4 male, 8 female), 3 subad. 8 (1 male, 2 female), 9.iv.1989 (PG). Loc. 13, litter, 14 ad. 9 (6 male, 8 female), 4 subad. 8 (1 male, 3 female), 27.ii.1989 (SS). Loc. 17, in non-myrtle litter, 1 ad. 9 (male), 8.iii.1989 (PG). Loc. 19, leaf litter, 2 ad. 9 (female), 1 subad. 8 (male), 1 juv. 6, 20.vi.1989 (PG).

*Diagnosis.* *Stylopaupoides quadripartitus* is a long-legged species which is clearly distinguished from its congeners by the shape of its two-part anal plate: each half divided into two pointed branches, one lateral and the other posterior. It may be closest to *S. hirtus* (Remy) from New Zealand (Remy 1952b, 1956a) but, in that species, the posterior branches are cut squarely and have short cylindrical appendages and the pygidial setae  $a_1$  do not reach more than 0.4-0.5 of the length of the  $a_2$ , not 0.7-0.9.

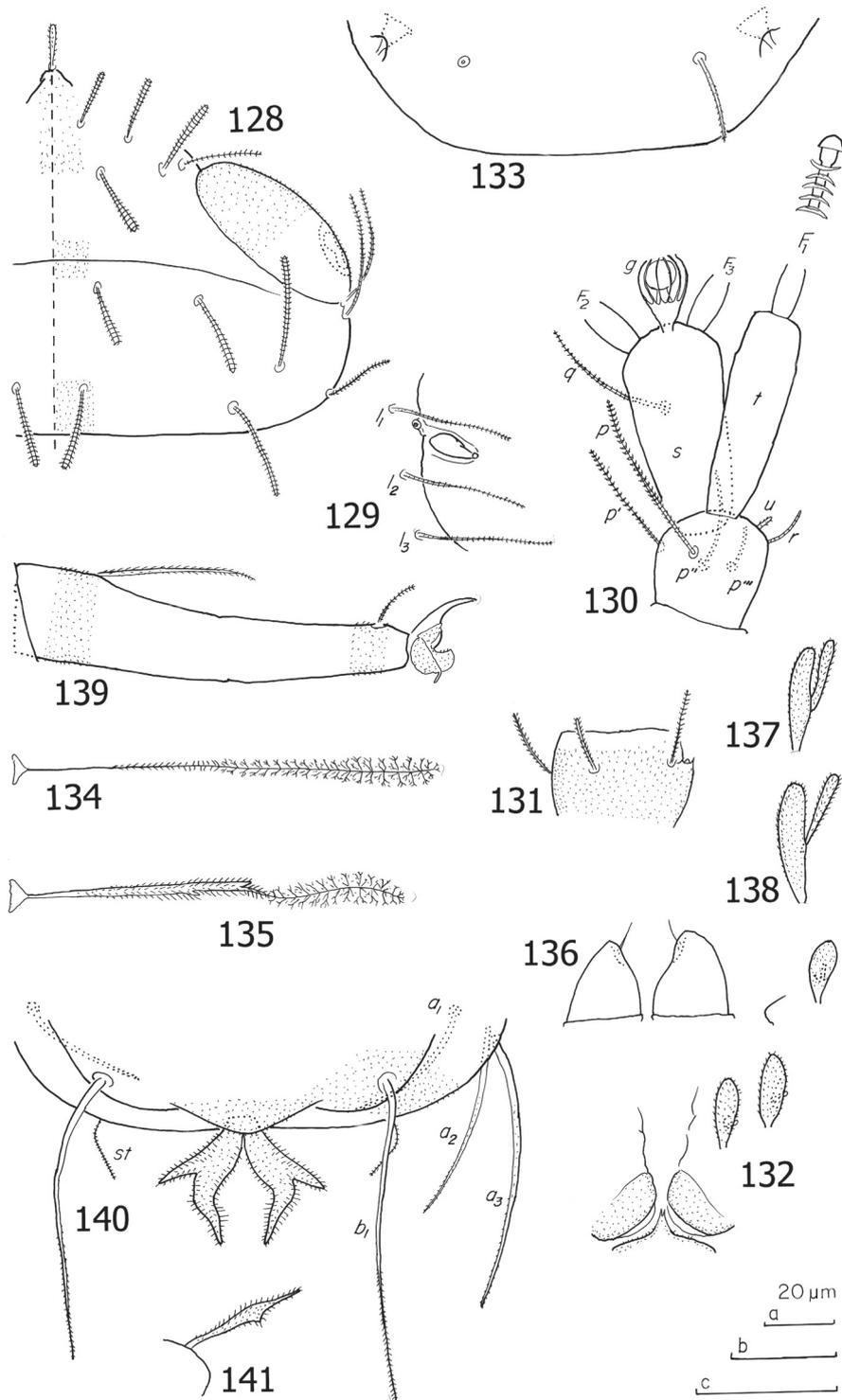
*Description. Length.*-(0.74-)1.25(-1.28) mm.

*Head.*-Submedian setae on the tergal side of medium length, somewhat clavate, striate; sublateral and lateral setae fairly long, cylindrical, densely striate. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=(10-11)$ ; 2nd row:  $a_1=12(-14)$ ,  $a_2=14(-15)$ ,  $a_3=15(-16)$ ; 3rd row:  $a_1=11(-13)$ ,  $a_2=(12-14)$ ; 4th row:  $a_1=14(-15)$ ,  $a_2=a_3=(18-19)$ ,  $a_4=13(-14)$ ; lateral group setae:  $l_1=26(-27)$ ,  $l_2=(19-24)$ ,  $l_3=(26-29)$ . The ratio  $a_1/a_1-a_1$  in 1st row 1.0(-1.2), 2nd row 0.6(-0.7), 3rd row 0.7(-1.0) and 4th row 1.1(-1.3). Temporal organs in tergal view ovoid, their length 0.7(-0.8) of their shortest distance apart. Just outside the posterior margin on a level with  $l_1$ , a small aperture in the cuticle and inside the posterior margin, in a depression, a clavate somewhat curved exterior vesicle. The latter almost 0.2 of the length of temporal organ and attached to it with its narrow anterior end. Head cuticle with indistinct transverse suture between 2nd and 3rd rows of setae; head cuticle with delicate granules, temporal organs with short erect pubescence.

*Antennae.*-Segment 4 with six subcylindrical annulate-striate setae; their relative lengths:  $p=100$ ,  $p'=(67-72(-79))$ ,  $p''=(44-56)$ ,  $p'''=(21-28)$ ,  $r=28(-35)$ ,  $u=(9-10)$ . Tergal seta  $p$  (0.8-)0.9(-1.1) times as long as tergal branch  $t$ . The latter fusiform, (2.9-)3.2(-3.4) times as long as its greatest diameter and as long as (-1.1) times as long as sternal branch  $s$ , that branch (2.1-)2.2(-2.3) times as long as its greatest diameter; posterodistal and anterodistal corners equally truncate. Seta  $q$  subcylindrical, tapering, annulate-striate, pointed, 0.7(-0.9) times the length of  $s$ . Relative lengths of flagella (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=(6-8(-9))$ ;  $F_2=(71-74(-83))$ ,  $bs_2=(9-10(-11))$ ;  $F_3=79(-87)$ ,  $bs_3=(9-10(-11))$ . The  $F_1$  (2.6-)3.0 times as long as  $t$ ,  $F_2$  and  $F_3$  (1.9-)2.2(-2.5) and (2.2-)2.4(-2.7) times as long as  $s$  respectively. Distal calyces hemispherical; distal part of flagella axes widened only between calyx and the distal lamella. Globulus  $g$  (1.2-)1.5 times as long as wide; (12-)13(-14) bracts, capsule subspherical; width of  $g$  (0.7-)0.8 of the greatest diameter of  $t$ . Rudimentary globulus on posterotergal side of 3rd segment. Antennae glabrous.

*Trunk.*-Setae of collum segment furcate; primary branch folioform with short oblique pubescence, secondary branch rudimentary, cylindrical, glabrous. Sublateral setae as long as (-1.2 times as long as) submedian ones; sternite process short and broad, anterior part narrow and with very small incision; appendages low and wide with flat caps; process with short lateral pubescence, appendages with delicate pubescence.

Setae on anterior tergites as lateral setae on the head, tapering posteriorly and with short, oblique pubescence; setae



Figs. 128–141. *Stylopaupoides quadripartitus* sp.nov., holotype 128–135, 137–141; paratype 136: 128, head, median and right part, tergal view; 129, temporal organ, posterior part with pistil, lateral view; 130, right antenna, tergal view; 131, 3rd antennal segment, tergal view; 132, collum segment, median and left part, sternal view; 133, tergite VI, posterior part; 134,  $T_1$ ; 135,  $T_2$ ; 136, genital papillae and seta on coxa of 2nd pair of legs, anterior view; 137, seta on coxa of 9th pair of legs; 138, seta on trochanter of 9th pair of legs; 139, tarsus of 9th pair of legs; 140, pygidium, median and left part, sternal view; 141, anal plate, lateral view. Scale line a for figures 133–136; b for figures 128, 129, 132, 137–139; c for figures 130, 131, 140, 141.

on posterior tergites not longer than those on anterior tergites; 4+4 setae on tergite I, 6+6 on II-V, 4+2 on VI. Submedian posterior setae on VI 0.4(-0.5) of their distance apart and (1.1-)1.2(-1.4) times as long as pygidial setae  $a_1$ .

Relative lengths of bothriotracha:  $T_1=100$ ,  $T_2=(103-?)(-110)$ ,  $T_3=95(-108)$ ,  $T_4=116(-127)$ ,  $T_5=149$  and  $180(-196)$ ; axes simple, thin, straight except proximal half of  $T_3$  being moderately thickened. Pubescence hairs on  $T_5$  very short, on proximal halves of  $T_1$ - $T_4$  stronger, oblique, increasing in length outwards and on distal 1/3 long, ramose, whorled, most distally erect, for the rest directed obliquely downwards.

Genital papillae (paratype) short, conical, rounded distally, about as long as wide, glabrous; seta very thin, 0.4 of the length of the organ.

*Legs.*-Setae on coxa and trochanter of leg 9 furcate, densely pubescent, main branch leaf-shaped, broadest in the middle, secondary branch clavate, protruding from the middle of the primary one and reaching (0.6-)0.7 of the length of primary branch. These setae on more anterior legs with proportionately broader main branch and rudimentary glabrous secondary branch. Tarsus of leg 9 (4.4-)4.5(-4.7) times as long as its greatest diameter. Proximal seta tapering, pointed, with very short oblique pubescence; distal seta subcylindrical, annulate, blunt. Proximal seta 0.4 of the length of tarsus and (2.9-)3.0 times as long as distal seta. Cuticle of tarsus with short pubescence.

*Pygidium. Tergum.*-Posterior margin between *st* straight. Relative lengths of setae:  $a_1=100$ ,  $a_2=(112-?)140(-148)$ ,  $a_3=181(-188)$ ,  $st=(38-?)52$ ; setae curved inwards, tapering, pointed, very shortly pubescent;  $a_1$  and  $a_2$  pointing inwards. Distance  $a_1$ - $a_1$  (2.3-)2.7 times as long as  $a_1$ ; distance  $a_1$ - $a_2$  as long as (-1.4) times as long as distance  $a_2$ - $a_3$ ; distance  $st$ - $st$  (3.6-)4.0 times as long as  $st$  and (0.6-)0.7 of distance  $a_1$ - $a_1$ .

*Sternum.*-Posterior margin above  $b_1$  with a broad triangular lobe. Relative lengths of setae ( $a_1=100$ ):  $b_1=(204-?)214$  and  $236$ ; setae thin, shortly pubescent, tapering, 1.3 and 1.4(-1.5) times as long as their distance apart. Anal plate directed obliquely upwards, 1.3(-1.5) times as broad as long; divided longitudinally into two branches each in turn divided into two branches by a posterolateral incision; the secondary branches tapering, pointed, the posterior ones longest; lateral branches pointing outwards, posterior ones pointing inwards.

*Stage subad.* 8. Pygidial setae  $d_1$  and  $d_2$  thin pointed, the former 0.5 of their distance apart,  $d_2$  0.6 of distance  $d_1$ - $d_2$ .

*Etymology.*-From Latin *quadripartitus* = four-parted (anal plate).

*Distribution in Tasmania.* Probably one of the most widespread pauropods of the Tasmanian rainforests as it occurs in all major regions and has been collected at nine of the 12 main collecting sites and in three of the additional ones.

### *Stylopaupoides scissus* sp.nov.

(Figs.142-154)

*Material Examined. Holotype.* Ad. 9 (male), Savage River Pipeline Road, Loc. 1, (41°18.5'S, 145°16.3'E), litter, 21.iv.1989 (PG).

*Paratypes.* Same data as holotype, 1 ad. 9 (male), 1 juv. 6. Mount Michael, Loc. 6, (41°10.9'S, 148°00.4'E), in moss on log, 1 ad. 9 (male),

1 subad. 8 (female), 11.vi.1990 (ATW). Projection Bluff, Loc. 3, (146°43.5'S, 41°43.1'E), in soil cores, 13 ad. 9 (8 male, 5 female), 2 subad. 8 (female), 2 juv. 6, 2 juv. 5 (PG).

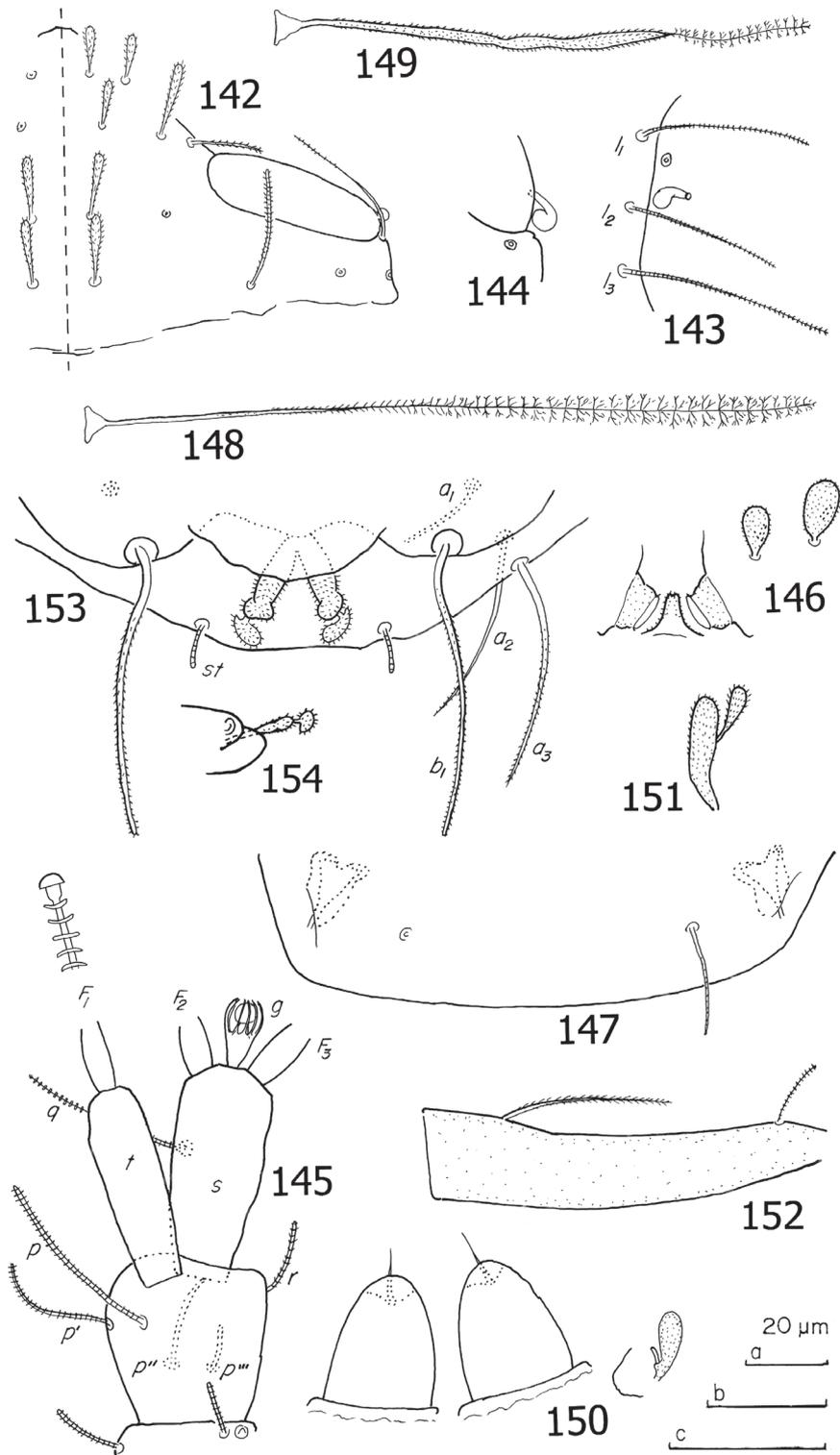
*Other material.* 172 specimens. Loc. 1, in moss on log, 1 ad. 9 (female), 1 juv. 6, 1 juv. 5, 21.iv.1989 (HM); *ibid.*, *Fungi* sample, 2 ad. 9 (female), 1 subad. 8 (female), 21.iv.1989 (JD). Loc. 2, in moss on dead log, 1 ad. 9 (male), 1 juv. 6, 1 juv. 3, 21.iv.1989 (JD); in moss on ground, 2 subad. 8 (female), 1 juv. 6, 21.iv.1989 (HM); in moss on rocks, 2 ad. 9 (female), 1 subad. 8 (male), 1 juv. 5, 21.iv.1989 (PG). Loc. 4, in moss on logs, 8 ad. 9 (4 male, 4 female), 6 subad. 8 (3 male, 2 female, 1 sex?), 3 juv. 6, 7 juv. 5, 9.xi.1989 (PG), in moss, 7 ad. 9 (2 male, 5 female), 5 subad. 8 (1 male, 4 female), 3 juv. 6, 1 juv. 5, 18.xi.1989 (HM). Loc. 5, in moss on log, 1 juv. 5, 29.xi.1989 (RC); PKD, 1 juv. 3, 25.xi.1989 (RC); in soil core, 1 juv. 6, 29.xi.1989 (HM). Loc. 6, pitfall trap, 1 juv. 3, 24-29.xi.1989 (RC). Loc. 7, in leaf litter, 1 juv. 6, 12.v.1989 (PG); *Fungi* sample, 1 ad. 9 (male), 12.v.1989 (DR). Loc. 8, hand collection, 1 ad. 9 (female), 22.v.1989 (HM). Loc. 9, in leaf litter, 4 ad. 9 (2 male, 2 female), 3 subad. 8 (2 male, 1 female), 1 juv. 6, 2 juv. 3, 18.xi.1988 (PG); in soil cores, 2 ad. (male, female), 1 subad. 8 (female), 20.x.1989 (RC). Loc. 10, in moss on log, 7 ad. 9 (2 male, 5 female), 3 subad. 8 (1 male, 2 female), 3 juv. 6, 1 juv. 5, 25.viii.1989 (HM); in lichen on trees, 2 ad. 9 (male, female), 1 subad. 8 (male), 1 juv. 6, 3 juv. 5, 25.viii.1989 (HM); in moss on ground, 1 ad. 9 (female), 25.viii.1989 (RC). Loc. 12, in moss on dead log, 11 ad. 9 (7 male, 3 female, 1 sex?), 5 subad. 8 (3 male, 1 female, 1 sex?), 6 juv. 6, 5 juv. 5, 2 juv. 3, 4-9.iv.1989 (JD,PG); in moss on tree, 2 ad. 9 (female), 4. iv.1989 (JD,PG,HM); in leaf litter, 4 ad. 9 (1 male, 3 female), 3 subad. 8 (male), 4 juv. 6, 2 juv. 5, 4.iv.1989 (PG), and 6 ad. 9 (2 male, 4 female), 1 subad. 8 (female), 2 juv. 5, 2 stad.?, 9.iv.1989 (PG); in moss, 15 ad. 9 (5 male, 10 female), 1 juv. 5, 3 juv. 3, 9.iv.1989 (JD).

*Diagnosis.* *Stylopaupoides scissus* appears related to *S. duplex* (Remy) from New Zealand (Remy 1956a). It is distinguished from that species by the long-stalked antennal globulus *g* (short-stalked in *duplex*), the shape of the  $T_3$  (in two parts, proximal 2/3 thickened and with dense oblique pubescence, distal 1/3 very thin with branched hairs arranged in whorls in *scissus*; axes thin, pubescence hairs short and thin in *duplex*) and the shape of the anal plate (branches subcylindrical with subapical constriction in *scissus*, thickest in distal half, rounded and without constriction in *duplex*; and the distal appendages of the anal plate (with subcentral stalk in *scissus*, anteroproximal in *duplex*).

*Description.* *Length.*-(0.76-)0.82(-1.03) mm.

*Head.*-The  $a_2$  and  $a_3$  of 4th row fairly long, other tergal setae of medium length, submedian and anterior setae clavate,  $a_3$  of 2nd row and posterolateral setae subcylindrical. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=(10-?)11(-12)$ ; 2nd row:  $a_1=9(-11)$ ,  $a_2=a_3=(14-?)16(-17)$ ; 3rd row:  $a_1=12(-14)$ ,  $a_2=? (13-16)$ ; 4th row:  $a_1=(13-?)14(-17)$ ,  $a_2=(24-?)25(-31)$ ,  $a_3=(18-?)25(-28)$ ,  $a_4=? (15-18)$ ; lateral group setae:  $l_1=(26-?)27(-30)$ ,  $l_2=(24-?)25(-31)$ ,  $l_3=(28-?)34$ . The ratio  $a_1/a_1$  in 1st row 0.8(-0.9), 2nd row 0.5(-0.7), 3rd row 0.8(-1.0) and 4th row 1.0(-1.3). Temporal organs in tergal view narrowly ovoid, their length 0.7(-0.8) of their shortest distance apart, posterolateral part with exterior, clavate, somewhat curved vesicle, length = 0.1 of the length of temporal organ. Head and temporal organs almost glabrous.

*Antennae.*-Segment 4 with six subcylindrical annulate-striate setae; their relative lengths:  $p=100$ ,  $p'=67(-84)$ ,  $p''=(42-?)43(-48)$ ,  $p'''=(20-?)25(-27)$ ,  $r=20(-22)$ ,  $u=(6-?)7$ . Tergal seta  $p$  (0.8-)0.9(-1.1) times as long as tergal branch  $t$ . The latter



Figs. 142–154. *Stylopaupoides scissus* sp.nov., holotype: 142, head, median and right part, tergal view; 143, temporal organ, posterior part with pistil, lateral view; 144, temporal organ, posterior part with pistil, tergal view; 145, right antenna, tergal view; 146, collum segment, submedian and left part, sternal view; 147, tergite VI, posterior part; 148,  $T_1$ ; 149,  $T_2$ ; 150, genital papillae and seta on coxa of 2nd pair of legs, anterior view; 151, seta on coxa of 9th pair of legs; 152, tarsus of 9th pair of legs; 153, pygidium, posterior part, sternal view; 154, anal plate, lateral view. Scale line a for figure 149; b for figures 145–148, 150–152; c for figures 142–144, 153, 154.

fusiform, (3.1-)3.4(-3.7) times as long as its greatest diameter and (0.9-)1.1 times as long as sternal branch *s*, that branch (2.1-)2.3(-2.5) times as long as its greatest diameter; posterodistal and anterodistal corners equally truncate. Seta *q* subcylindrical, annulate-striate, tapering distally, (0.7-)0.8 of the length of *s*. Relative lengths of flagella (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=(9-)-11(-12)$ ;  $F_2=(71-)-87$ ,  $bs_2=(7-)-9(-11)$ ;  $F_3=(76-)-84(-85)$ ,  $bs_3=(10-)-12$ . The  $F_1$  (2.3-)2.4(-2.7) times as long as *t*,  $F_2$  and  $F_3$  (2.0-)2.2(-3.0) and (2.0-)2.2(-2.9) times as long as *s* respectively. Distal calyces subhemispherical; distal part of flagella axes widened only between calyx and the distal lamella. Globulus *g* (1.7-)1.9 times as long as wide; 9 (-10) bracts, capsule spherical; width of *g* 0.6 of the greatest diameter of *t*. Rudimentary globulus on posterotergal side of 3rd segment. Antennae glabrous.

**Trunk.**-Setae of collum segment furcate; primary branch folioform with short almost erect pubescence, secondary branch rudimentary, cylindrical, glabrous. Sublateral setae 1.1(-1.3) times as long as submedian ones; sternite process rounded but with a small anteromedian incision; appendages low and wide with flat divided caps with collar; process and appendages with delicate pubescence.

Setae on most anterior and posterior tergites cylindrical, medial ones clavate; 4+4 setae on tergite I, 6+6 on II-V, 4+2 on VI. Submedian posterior setae on VI 0.4 of their distance apart and (1.3-)1.4(-1.7) times as long as pygidial setae  $a_1$ .

Relative lengths of bothriotricha:  $T_1=100$ ,  $T_2=(98-)-110(-112)$ ,  $T_3=(114-)-136$ ,  $T_4=(140-)-144(-155)$ ,  $T_5=(160-)-168(-210)$ , axes thin, simple, straight except  $T_3$  being moderately thickened in proximal 2/3. Pubescence hairs on  $T_5$  and on thickened part of  $T_3$  very short, on proximal halves of  $T_1$ ,  $T_2$  and  $T_4$  thicker, oblique, increasing in length outwards and on distal 1/3 of  $T_1$ - $T_4$  long, erect, ramose, whorled.

Genital papillae short, subcylindrical, rounded distally, 1.2(-1.3) times as long as wide, glabrous; seta very thin and short, 0.4 of the length of the organ.

**Legs.**-Setae on coxa and trochanter of leg 9 furcate, densely pubescent, main branch leaf-shaped, broadest in the middle, secondary branch clavate, protruding from the middle of the primary one and reaching 0.6(-0.7) of the length of primary branch; these setae more anteriorly with proportionately broader main branch and the secondary branch rudimentary and glabrous. Tarsus of leg 9 (3.7-)4.2(-4.4) times as long as its greatest diameter. Proximal seta tapering, pointed, with very short oblique pubescence; distal seta subcylindrical annulate blunt. Proximal seta 0.4(-0.5) of the length of tarsus and (2.1-)2.3(-2.5) times as long as distal seta. Cuticle of tarsus with minute pubescence.

**Pygidium. Tergum.**-Posterior margin between *st* straight. Relative lengths of setae:  $a_1=100$ ,  $a_2=(171-)-200(-231)$ ,  $a_3=(247-)-250(-308)$ ,  $st=(48-)-50(-64)$ . All but *st* curved inwards, tapering, pointed, very shortly pubescent;  $a_1$  and  $a_2$  pointing inwards; *st* cylindrical, blunt with short pubescence. Distance  $a_1$ - $a_1$  3.2(-3.7) times as long as  $a_1$ ; distance  $a_1$ - $a_2$  1.1(-1.4) times as long as distance  $a_2$ - $a_3$ ; distance *st*-*st* (2.7-)3.8(-3.9) times as long as *st* and 0.5 of distance  $a_1$ - $a_1$ .

**Sternum.**-Posterior margin between  $b_1$  with deep indentation and large posteromedian rounded lobe. Relative

lengths of setae ( $a_1=100$ ):  $b_1=(277-)-317(-320)$ ; setae thin, somewhat tapering, shortly pubescent in proximal half, striate distally, (as long as-)1.1 times as long as their distance apart. Anal plate directed somewhat upwards, somewhat broader than long and divided longitudinally into two branches separated by a V-shaped posteromedian incision; branches with subapical constriction; each branch with a distal stalked subhemispherical appendage; plate and appendages with very distinct almost erect pubescence.

**Etymology.**-From Latin *scissus* = forked, cloven (anal plate).

**Distribution in Tasmania.** This species is the most widely distributed of all the Tasmanian species. It was collected at 11 of the 12 main collecting sites.

### ***Stylopauropoides hetaeros* sp.nov.**

(Figs.155-168)

**Material Examined. Holotype.** Ad. 9 (female), Big Sassy Creek, Loc. 7, (42°08.5'S, 147°54.3'E), soil core, 12.v.1989 (PG,DR).

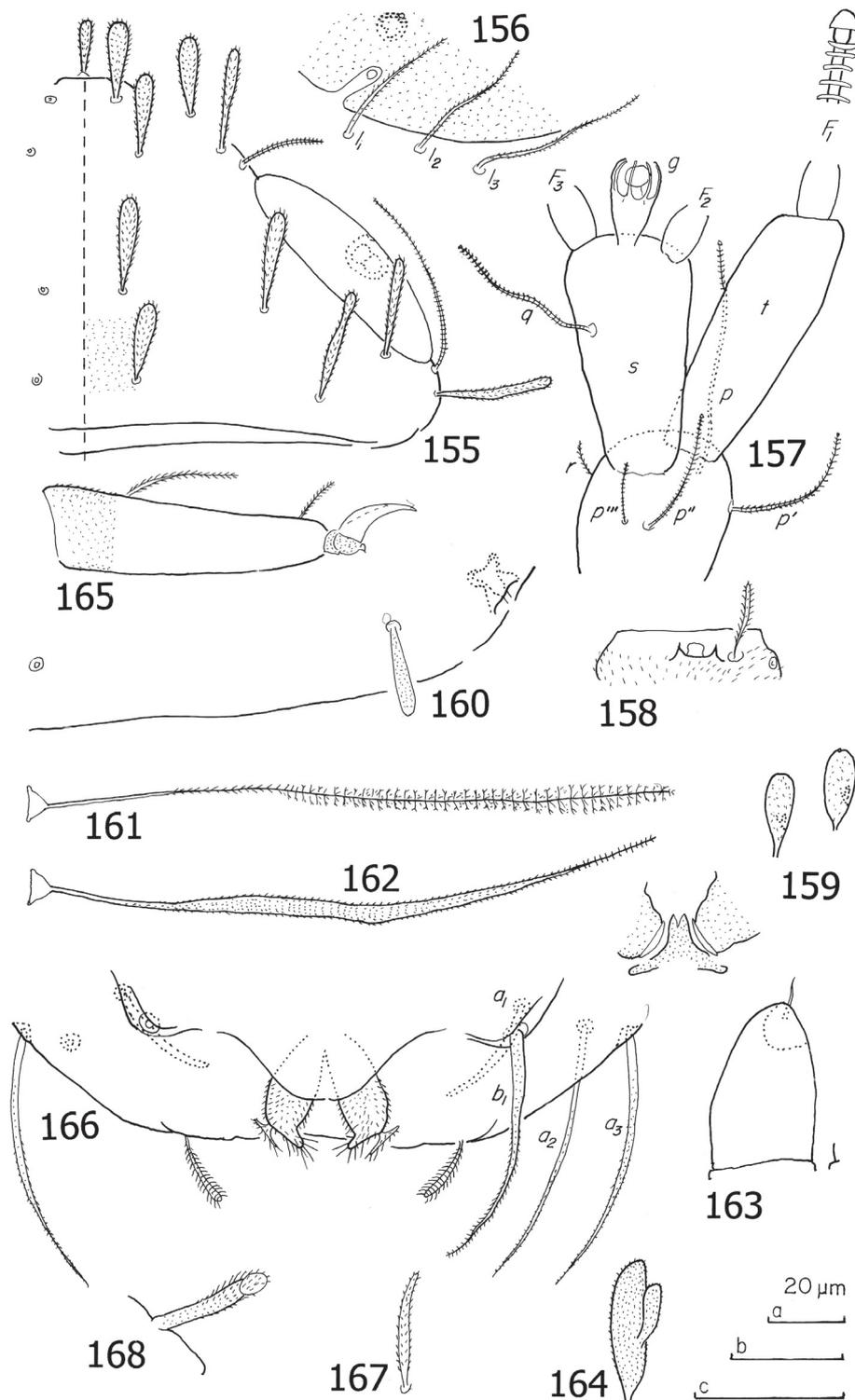
**Paratypes.** Mount Michael (41°10.9'S, 148°00.4'E), litter, 1 ad. 9 (male), 1 subad. 8 (female), 2 juv. 5, 4 juv. 3, 1 stad. ?, 29.xi.1989 (HM). Mount Victoria, Loc. 5, (41°20.4'S, 147°49.9'E), litter, 2 ad. 9 (female), 1 subad. 8 (male), 1 juv. 5, 29.xi.1989, (RC). Simons Road, Loc. 17, (41°21.5', 147°31.3'), non-myrtle litter, 1 ad. 9 (female), 8.iii.1989 (PG).

**Other material.** 30 specimens. Loc. 1, in moss on dead trunk, 2 ad. 9 (female), 31.iv.1989 (PG), and in moss on ground, 6 ad. 9 (3 male, 3 female), 2 subad. 8 (male, female), 21.iv.1989 (HM). Loc. 4, litter, 1 juv. 5, 18.xi.1989 (RC). Loc. 5, PKD, tree, 1 juv. 5, 25.xi.1989 (RC). Loc. 6, in moss on ground, 6 ad. 9 (2 male, 4 female), 11.vi.1990 (ATW), and in pitfall trap, 1 subad. 8 (female), 24-29.xi.1989 (RC), and in litter, 2 juv. 5, 4 juv. 3, 1 juv. stad.?, 29.xi.1989 (HM). Loc. 7, soil core, 1 juv. 6, 1 juv. 3, 8.iii.1989 (PG). Loc. 17, Vilt area, soil core, 1 juv. 5, 5.vi.1989 (PG).

**Diagnosis.** There are many similarities between *S. hetaeros* and *S. duplex* (Remy) from New Zealand (Remy 1956a) particularly in the shape of the setae of the tergal side of the head, the antennal branches, the setae of the pygidial tergum and the general shape of the anal plate. Good distinguishing characters are: the distal part of the branches of the anal plate (with distinct inner process in *haeteros*, evenly rounded in *duplex*); the appendages of the anal plate (in the shape of a nail-head, not clavate); the shape of the setae in the posterior row of tergite VI (clavate, not subcylindrical).

**Description. Length.**-(0.82-)1.03(-1.27) mm.

**Head.**-All tergal setae except for  $a_3$  of 2nd row clavate and densely pubescent with short oblique hairs, submedian setae distinctly clavate and sublateral ones weakly,  $a_3$  of 2nd row cylindrical striate; lateral group setae thin cylindrical striate. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=11(-13)$ ; 2nd row:  $a_1=11(-12)$ ,  $a_2=11(-13)$ ,  $a_3=10(-12)$ ; 3rd row:  $a_1=11(-12)$ ,  $a_2=(11-)-13(-14)$ ; 4th row:  $a_1=11(-13)$ ,  $a_2=(12-)-14(-15)$ ,  $a_3=(13-)-14(-15)$ ,  $a_4=(12-)-14(-16)$ ; lateral group setae:  $l_1=(22-)-26$ ,  $l_2=18(-22)$ ,  $l_3=23(-25)$ . The ratio  $a_1/a_1$ - $a_1$  in 1st row (1.1-)1.2(-1.4), 2nd row (0.7-)0.8, 3rd row 1.1(-1.2) and 4th row 0.8. Temporal organs in tergal view ovoid, their length (0.6-)0.7 of their shortest distance apart; in the middle, a probable interior



Figs. 155–168. *Stylopaupoides hetaerosr* sp.nov., holotype, 155–161, 164–168, paratype 162, 163: 155, head, median and right part, tergal view; 156, temporal organ, posterior part with pistil, lateral view; 157, left antenna, sternal view; 158, distal part of 3rd antennal segment, tergal view; 159, collum segment, median and left part, sternal view; 160, tergite VI, posterior part; 161,  $T_7$ ; 162,  $T_8$ ; 163, left genital papilla, anterior view; 164, seta on coxa of 9th pair of legs; 165, tarsus of 9th pair of legs; 166, pygidium, posterior part, sternal view; 167, pygidial seta  $a_j$ ; 168, anal plate, lateral view. Scale line a for figures 160–163, 165; b for figures 155, 156, 159, 164; c for figures 157, 158, 166–168.

vesicle opening outwards with a very small pore in the cuticula; length of vesicle almost 0.2 of the length of the temporal organ. Head cuticle with very dense and short pubescence.

**Antennae.**-Segment 4 with six cylindrical striate-annulate setae; their relative lengths:  $p=100$ ,  $p'=(64-)-67(-72)$ ,  $p''=(44-)-57(-59)$ ,  $p'''=(21-)-30$ ,  $r=17(-19)$ ,  $u=?$  (5-6). Tergal seta  $p$  (0.7-)-0.8(-0.9) of the length of tergal branch  $t$ . The latter fusiform, obliquely truncate distally, branch 2.7(-3.4) times as long as its greatest diameter and 0.9(-1.0) of the length of sternal branch  $s$ , that branch (1.5-)-1.6(-1.7) times as long as its greatest diameter; posterodistal and anterodistal corners equally truncate. Seta  $q$  cylindrical, annulate-striate, tapering, pointed, (0.6-)-0.7 of the length of  $s$ . Relative lengths of flagella (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=(8-)-9$ ;  $F_2=(87-)-94$ ,  $bs_2=(8-)-9$ ;  $F_3=(77-)-92$ ,  $bs_3=8$ . The  $F_1$  (2.3-)-2.6(-2.7) times as long as  $t$ ,  $F_2$  and  $F_3$  (1.8-)-2.6 and (1.9-)-2.5 times as long as  $s$  respectively. Distal calyces hemispherical; distal part of flagella axes widened only between calyx and the distal lamella. Globulus  $w$  with thick stalk, (1.7-)-2.2 times as long as wide; about nine bracts, capsule spherical; width of  $g$  (0.5-)-0.6 of the greatest diameter of  $t$ . Rudimentary globulus on posterotergal side of 3rd segment. Antennae with short pubescence.

**Trunk.**-Setae of collum segment furcate; primary branch folioform with almost erect short pubescence, secondary branch rudimentary, cylindrical, glabrous. Sublateral setae as long as (-1.1) times as long as submedian ones; sternite process with distinct anterior incision; appendages with flat caps; process and appendages with minute pubescence.

Setae on tergites as submedian setae on tergal side of head and of about the same length on all tergites; 4+4 setae on tergite I, 6+6 on II-V, 4+2 on VI. Submedian posterior setae on VI (0.2-)-0.3 of their distance apart and (1.2-)-1.6 times as long as pygidial setae  $a_1$ .

Relative lengths of bothriotricha:  $T_1=100$ ,  $T_2=(101-)-102(-105)$ ,  $T_3=?$ (81-138),  $T_4=(105-)-107(-135)$ ,  $T_5=(118-)-120(-172)$ ; all setae with simple straight axes, very thin in all but  $T_3$ , the latter distinctly thickened in the middle. Pubescence short and oblique on proximal 1/3 of  $T_1$  and  $T_2$ , proximal 4/5 of  $T_3$  and 9/10 of  $T_4$  and  $T_5$ ; pubescence long erect whorled and partly branched in distal 2/3 of  $T_1$  and  $T_2$ , short and erect in most distal part of  $T_4$  and  $T_5$ .

Genital papillae (paratype) short, subcylindrical, rounded distally, 1.5 times as wide as long, glabrous; seta thin, 0.2 of the length of the organ.

**Legs.**-Setae on coxa and trochanter of leg 9 furcate, densely pubescent, main branch leaf-shaped, broadest in the middle, secondary branch clavate, protruding from a point just below the middle of the primary one and reaching 0.5 of the length of primary branch; these setae more anteriorly, with rudimentary cylindrical glabrous secondary branch. Tarsus of leg 9 almost straight, tapering, (3.0-)-3.3(-3.7) times as long as its greatest diameter. Setae with oblique pubescence, proximal one tapering, pointed, distal seta subcylindrical annulate blunt. Proximal seta 0.4 of the length of tarsus and (2.1-)-2.2(-2.4) times as long as distal seta. Cuticle of tarsus with very short dense pubescence.

**Pygidium. Tergum.**-Posterior margin between  $st$  almost straight. Relative lengths of setae:  $a_1=100$ ,  $a_2=(233-)-237(-309)$ ,

$a_3=231(-292)$ ,  $st=65(-81)$ ; setae curved inwards;  $a_1$  tapering blunt,  $a_2$  and  $a_3$  tapering pointed,  $st$  subcylindrical blunt; pubescence very short in all but  $st$ , on the latter longer and whorled; all setae pointing inwards,  $a_1$  and  $st$  distinctly,  $a_2$  and  $a_3$  only a little,  $st$  thin, somewhat clavate, blunt. Distance  $a_1-a_1$  (3.1-)-3.3(-3.7) times as long as  $a_1$ ; distance  $a_1-a_2$  about twice as long as than distance  $a_2-a_3$ ; distance  $st-st$  (3.0-)-3.7 times as long as  $s$  and 0.7 of distance  $a_1-a_1$ .

**Sternum.**-Posterior margin with large median semicircular lobe below anal plate. Relative lengths of setae ( $a_1=100$ ):  $b_1=212(-357)$ ; similar to  $a_3$  of pygidial tergum, but thicker at base and with stronger pubescence, 0.7(-0.9) of their distance apart. Anal plate directed obliquely upwards, about as broad as long, divided longitudinally by a V-shaped incision into two broad fusiform branches, the latter cut squarely and a with distal short inner process directed obliquely inwards; each branch with a short-stalked distal appendage in the shape of a nail-head; pubescence short oblique, most distally and on the appendages longer, longest on the inner processes.

**Stage subad. 8.** Genital papillae rather well developed, ovoid, seta absent.

**Etymology.**-From Greek *hetaeros* = companion (to *S. duplex*).

**Distribution in Tasmania.** As are *S. ringueleti* and *S. erectus*, this species may be confined to the northern half of the State.

### *Stylopaupoides eximius* sp.nov.

(Figs.169-179)

**Material Examined. Holotype.** Ad. 9 (female), Savage River Pipeline Road, Loc. 1, (41°18.5'S, 145°16.3'E), in moss on log, 21.iv.1989 (JD,HM).

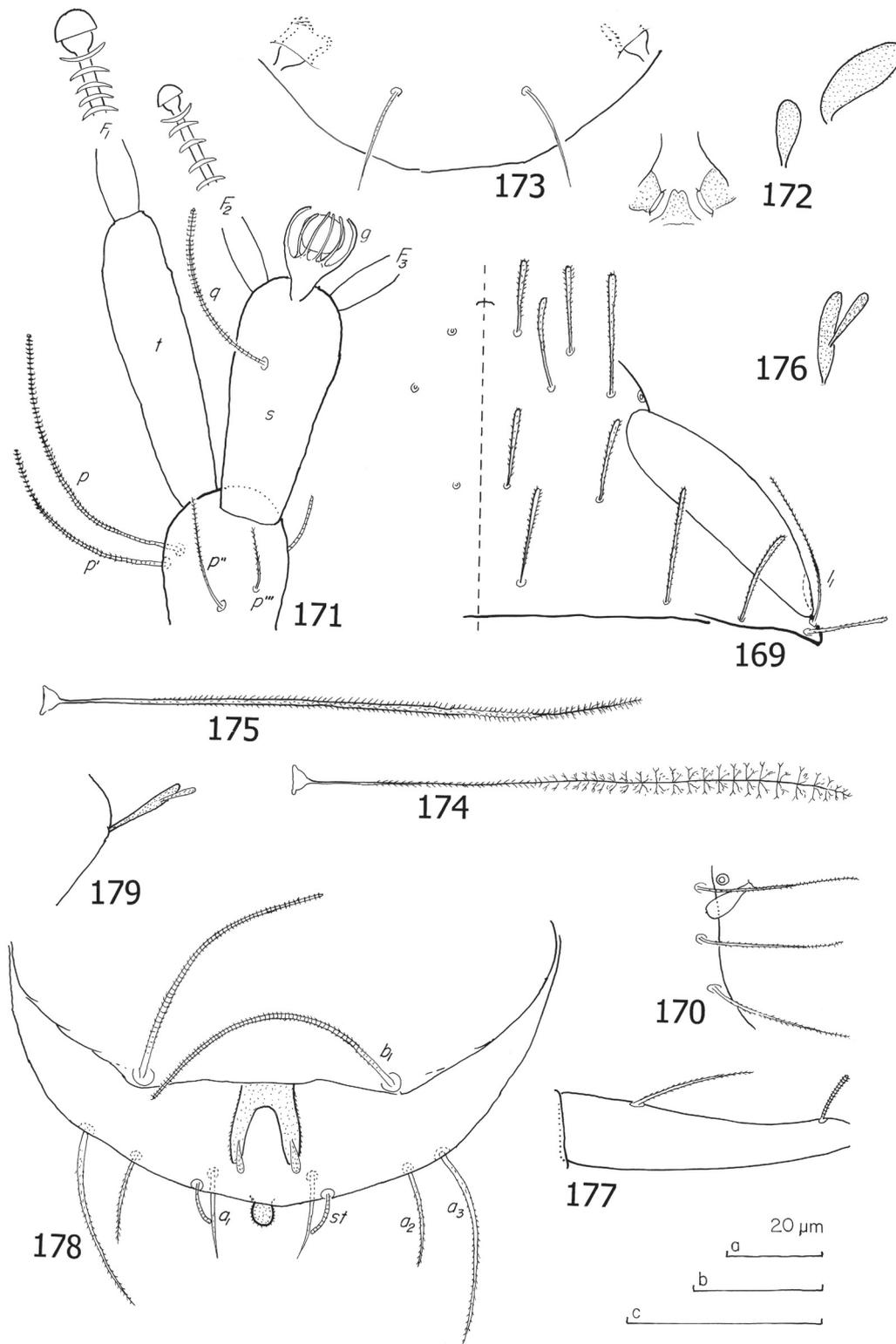
**Paratypes.** Hibbs Lagoon Loc. 13, (42°34'S, 145°19.5'E), litter, 4 ad. 9 (1 male, 3 female), 1 subad. 8 (female), 27.ii.1989 (SS).

**Other material.** 1 specimen. Loc. 1, in moss on ground, 1 ad. 9 (female), 21.iv.1989 (HM).

**Diagnosis.** *Stylopaupoides eximius* is a close relative of *S. vadoni* Remy from Madagascar (Remy 1956c; Remy & Bello 1960). They have great similarities in the antennae, the tergites and the pygidium, but can be distinguished by differences in the  $T_5$  (dense minute pubescence in *eximius*, sparse thorny in *vadoni*), the shape of the posteromedian lobe of the pygidial tergum (linguiform and longer than broad, not subrectangular and broader than long), the length of the pygidial setae  $a_1$ ,  $a_2$  and  $a_3$  ( $a_1$  and  $a_2$  about half of the length of  $a_3$ , not all subequal) and by the shape of the anal plate (branches broad and blunt, not narrow, tapering, pointed; appendages clavate, not lanceolate-subcylindrical).

**Description. Length.**-(0.60-)-0.82 mm.

**Head.**-Tergal setae of medium length or fairly long with dense short oblique pubescence, submedian ones somewhat clavate, sublateral and lateral ones cylindrical. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=(10-)-13$ ; 2nd row:  $a_1=(12-)-14$ ,  $a_2=(15-)-18$ ,  $a_3=?$ (17); 3rd row:  $a_1=(9-)-11$ ,  $a_2=(9-)-12$ ; 4th row:  $a_1=(12-)-14$ ,  $a_2=(15-)-16$ ,  $a_3=15(-19)$ ,  $a_4=(10-)-12$ ; lateral group setae:  $l_1=(20-)-23$ ,  $l_2=(18-)-20$ ,  $l_3=(17-)-20$ . The ratio  $a_1/a_1-a_1$  in 1st row 1.1(-1.3), 2nd row (0.6-)-0.7, 3rd row (1.0-)-1.5 and 4th



Figs. 169–179. *Stylopauropoides eximiusr* sp.nov., holotype: 169, head, median and right part, tergal view; 170, temporal organ, posterior part with pistil, lateral view; 171, left antenna, sternal view; 172, collum segment, median and left part, sternal view; 173, tergite VI, posterior part; 174,  $T_1$ ; 175,  $T_3$ ; 176, seta on trochanter of 9th pair of legs; 177, tarsus of 9th pair of legs; 178, pygidium, sternal view; 179, anal plate, lateral view. Scale line a for figures 174–177; b for figures 169, 170, 172, 173, 178, 179; c for figure 171.

row (1.1-)1.3. Temporal organs (0.9-) as long as their shortest distance apart. A small, exterior, clavate, straight, vesicle directed posteriorly and 0.2 of the length of temporal organ just inside the posterior margin on a level with  $l_1$ . Head cuticle with minute pubescence, temporal organs glabrous.

**Antennae.**-Segment 4 with five cylindrical striate-annulate setae; their relative lengths:  $p=100$ ,  $p'=69(-71)$ ,  $p''=37(-43)$ ,  $p'''=20(-23)$ ,  $r=22(-23)$ . Tergal seta  $p$  1.1 times as long as tergal branch  $t$ . The latter fusiform, (3.3-)4.0 times as long as its greatest diameter and (1.1-)1.2 times as long as sternal branch  $s$ , that branch being somewhat clavate, (2.1-)2.3 times as long as its greatest diameter; posterodistal and anterodistal corners equally truncate. Seta  $q$  cylindrical, annulate-striate, 1.1(-1.2) times as long as  $s$ . Relative lengths of flagella (basal segments included) and basal segments (one paratype only):  $F_1=100$ ,  $bs_1=11$ ;  $F_2=F_3=73$ ,  $bs_2=bs_3=12$ . The  $F_1$  2.9 times as long as  $t$ ,  $F_2$  and  $F_3$  2.4 times as long as  $s$ . Distal calyces subhemispherical; distal part of flagella axes widened only just below calyx. Globulus  $g$  1.3(-1.4) times as long as wide; (11-)about 13 bracts, capsule subspherical; width of  $g$  (0.9-) as long as greatest diameter of  $t$ . Antennae glabrous.

**Trunk.**-Setae of collum segment furcate; primary branch folioform with almost erect pubescence, secondary branch rudimentary, cylindrical, glabrous. Sublateral setae 1.5 times as long as submedian ones; sternite process blunt with small anterior incision; appendages with flat caps with distinct collar; process and appendages with short pubescence.

Setae on anterior tergites as submedian setae on the tergal side of head, on posterior tergites subcylindrical, tapering, pointed and with very short pubescence; posterior setae 1.5-2 times longer than anterior ones; 4+4 setae on tergite I, 6+6 on II-IV, 6+? on V, 4+2 on VI. Submedian posterior setae on VI (holotype only) 0.9 of their distance apart and 1.2(-1.3) times as long as pygidial setae  $a_1$ .

Relative lengths of bothriotricha (most of them broken or lost):  $T_1=100$ ,  $T_2=96(-99)$ ,  $T_3=(130)$ ,  $T_4=(130)$ ,  $T_5=(186)$ ; axes simple, thin, straight except in proximal 3/4 of  $T_3$ . Pubescent hairs simple oblique on  $T_4$  and  $T_5$ , the main part of  $T_3$  and on proximal halves of  $T_1$  and  $T_2$ , very short on  $T_4$  and  $T_5$ ; hairs long, erect, branched distally and whorled on distal halves of  $T_1$  and  $T_2$ , short erect and whorled on most distal part of  $T_3$ .

**Legs.**-Setae on coxa and trochanter of leg 9 furcate, densely but very shortly pubescent, main branch leaf-shaped, secondary branch clavate, protruding from the middle of the primary one and reaching (0.6-)0.7 of the length of primary branch; these setae on more anterior legs with rudimentary, cylindrical, glabrous, secondary branch. Tarsus of leg 9 slender, (3.8-)4.1 times as long as its greatest diameter. Proximal seta tapering, pointed, with short oblique pubescence; distal seta subcylindrical striate blunt. Proximal seta 0.4(-0.5) of the length of tarsus and 2.3(-2.9) times as long as distal seta. Cuticle of tarsus almost glabrous.

**Pygidium. Tergum.**-Posterior margin evenly rounded. Very small but distinct semicircular posterior lobe above  $st$ . Relative lengths of setae:  $a_1=100$ ,  $a_2=107-115$ ,  $a_3=(185-)207-223$ ,  $st=(46-)54(-58)$ ; setae all curved inwards;  $a_1$ ,  $a_2$  and  $a_3$  also tapering pointed and with short pubescence distally;  $a_2$  and  $a_3$  pointing outwards,  $st$  pointing inwards, cylindrical, blunt,

striate. Distance  $a_1-a_1$  (1.0-)1.1 and 1.2 times as long as  $a_1$ ; distance  $a_1-a_2$  (1.6-)1.9 times as long as distance  $a_2-a_3$ ; distance  $st-st$  (2.6-)2.7(-2.9) times as long as  $st$  and 1.3(-1.4) times as long as distance  $a_1-a_1$ .

**Sternum.**-Posterior margin between  $b_1$  almost straight. Relative lengths of setae ( $a_1=100$ ):  $b_1=(286-)321-346$ ; setae thin, tapering, striate, (1.1-)1.2 times as long as their distance apart. Anal plate directed obliquely upwards, somewhat longer than broad, consisting of two subcylindrical somewhat pointing outwards blunt branches separated by a deep U-shaped incision, length of branches 3/4 of the length of plate; from the sternal side of each branch, a clavate, posteriorly directed appendage 0.5 of the length of branch; plate and appendages with very short oblique pubescence.

**Etymology.**-From Latin *eximius* = exceptional (among the Tasmanian representatives of the genus).

**Distribution in Tasmania.** The small number of localities makes it impossible to determine the range accurately.

### Genus *Pauropus* Lubbock

Type species: *Pauropus huxleyi* Lubbock, 1867:182-185, pl. 10, figs.1-19.

### *Pauropus dolosus* Remy, 1956a

**Material Examined.** 44 specimens. Loc. 8, upstream site, soil core, 1 ad. 9 (female), 22.v.1989 (PG). Loc. 11, south track, suction, 1 ad. 9 (sex ?), 1 subad. 8 (female), 16.iii.1989 (PG), and in leaf litter, 3 ad. 9 (1 male, 2 female), 4 subad. 8 (1 male, 3 female), 2 juv. 6, 2 juv. 5, 21.iii.1989 (PG,JD), and in moss, base myrtle trunk, 1 ad. 9 (male), 2 subad. 8 (male, female), 21.iii.1989 (JD), and in moss on fallen log, 3 ad. 9 (1 male, 2 female), 5 subad. 8 (2 male, 3 female), 3 juv. 6, 1 juv. 5, 21.iii.1989 (JD), and PKD, 1 ad. 9 (female), 16.iv.1989 (PG,JD), and north track, in moss on dead log, 8 ad. 9 (4 male, 3 female, 1 (sex?)), 2 juv. 6, 3 juv. 3, 21.iii.1989 (JD). Loc. 12, litter, 1 ad. 9 (female), 9. iv.1989(PG).

**Distribution in Tasmania.** *Pauropus dolosus* has been collected at three sites only, all in south-eastern Tasmania.

**General distribution.** Known previously only from the holotype from New Zealand (Remy 1956a).

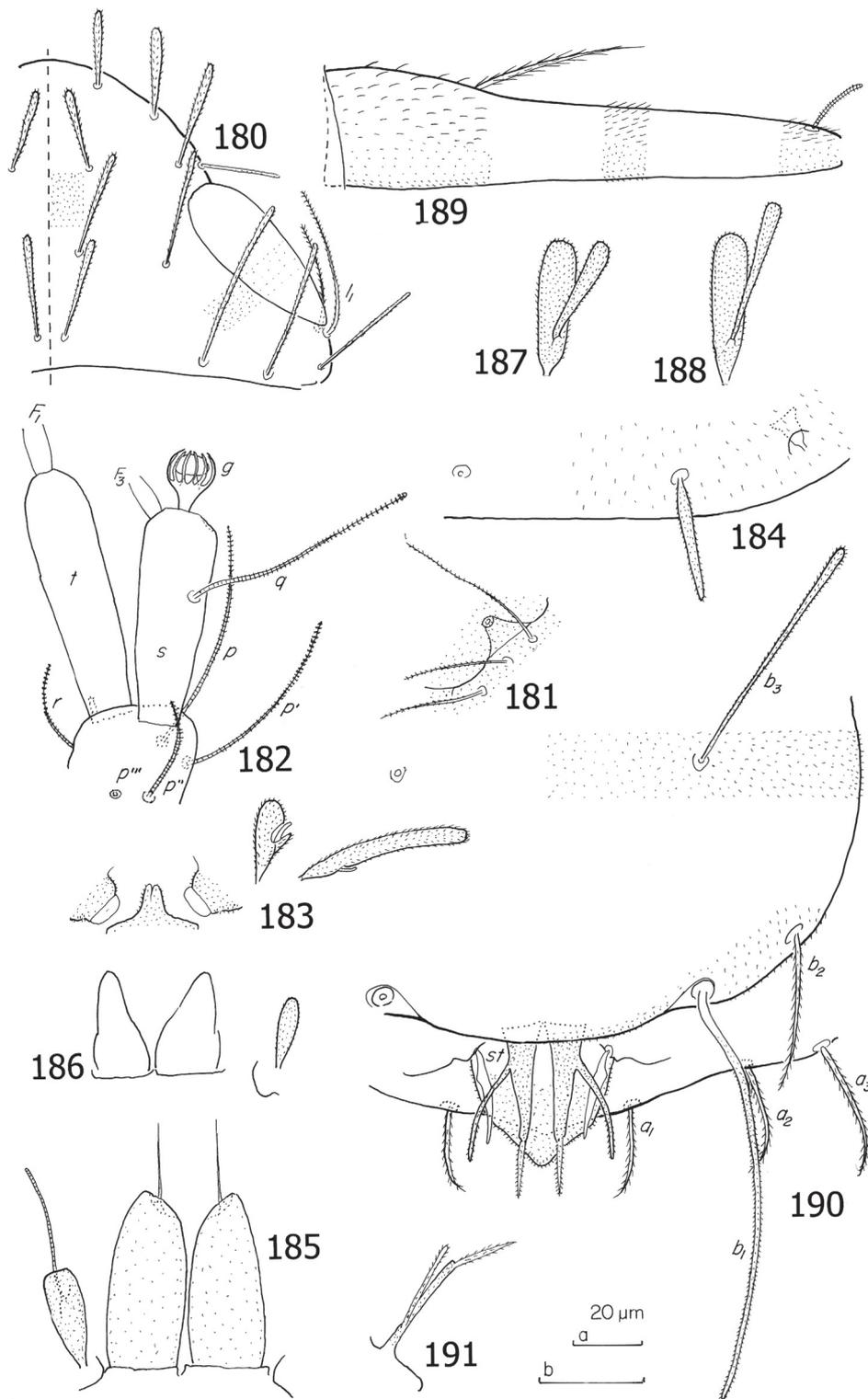
### *Pauropus vandiemeni* sp.nov.

(Figs.180-191)

**Material Examined. Holotype.** Ad. 9 (male), Bradshaw's Road, Mount Murchison, Loc 2, (41°49.9'S, 145°37.0'E), leaf litter, 21.iv.1989 (JD).

**Paratypes.** Same data as holotype, 1 ad. 9 (male). Bruny Island, Mount Mangana, Loc. 12, (43°22.1'S, 147°17.0'E), leaf litter, 5 ad. 9 (female), 1 subad. 8 (female), 2 juv. 6, 1 juv. 3, 4.iv.1989 (JD,PG).

**Other material.** 53 specimens. Loc. 1, in moss on ground, 1 ad. 9 (female), 1 juv. 3, 21.iv.1989 (HM), and in leaf litter, 2 ad. 9 (female), 21.iv.1989 (JD,HM), and suction sample from moss on ground, site 1, 1 ad. 9 (female) and site 2, 1 ad. 9 (female), 21.iv.1989 (PG). Loc. 6, hand collection, 2 ad. 9 (female), 28.xi.1989 (RC). Loc. 8, leaf litter, 1 ad. 9 (male), 2 juv. 3, 22.v.1989 (PG), and bridge site, soil core, 1 subad. 8 (male), 22.v.1989 (JD), and PKD from *Sassafras*, 1 ad. 9 (sex?), 2. vi.1989 (JD,PG). Loc. 9, leaf litter, 2 ad. 9 (male, female), 1 subad. 8 (female), 2 juv. 6, 3 juv. 5, 18.xi.1988 (PG). Loc. 10, in moss on ground/



Figs. 180–191. *Pauropus vandiemeni* sp.nov., holotype 180–185, 187–191, paratype 186: 180, head, median and right part, tergal view; 181, temporal organ, posterior part, lateral view; 182, right antenna, sternal view; 183, collum segment, median and left part, sternal view; 184, tergite VI, posteromedian part; 185, genital papillae and seta on coxa of 2nd pair of legs, anterior view; 186, genital papillae and seta of coxa of 2nd pair of legs in subad. 8; 187, seta on coxa of 9th pair of legs; 188, seta on trochanter of 9th pair of legs; 189, tarsus of 9th pair of legs; 190, pygidium, sternal view; 191, anal plate, lateral view. Scale line a for figures 180, 181, 183–191; b for figure 182.

rock, 6 ad. 9 (1 male, 5 female), 2 subad. 8 (female), 25.viii.1989 (RC). Loc. 12, in moss on dead log on ground, 4 ad. 9 (female), 4.iv.1989 (JD), and in litter, 4 ad. 9 (female), 1 subad. 8 (male), 4.iv.1989 (PG) and, 2 ad. 9 (male), 4.iv.1989 (PG), and suction, 4 ad. 9 (female), 9.iv.1989 (PG), and in moss, 2 ad. 9 (female), 9.iv.1989 (JD). Loc. 13, litter, 2 ad. 9 (male, female), 27.ii.1989 (SS). Loc. 17, non-myrtle litter, 1 ad. 9 (female), 2 subad. 8 (male, female), 1 juv. 6, 1 juv. 5, 8.iii.1989 (PG).

*Diagnosis.* *Pauropus vandiemeni* forms a group with *P. montanus* Scheller from New Caledonia (Scheller 1993), *P. wieheorum* Remy from Mauritius (Remy 1959b) and *P. difficilis* Remy from Pondichéry (Remy 1961) on the basis of the similar anal plates but they differ considerably in other features. The new species is distinguished from *P. montanus* by anteriorly-incised collum process (blunt in *montanus*), 6+4 setae on tergite V (not 6+6), lanceolate pubescent setae in the posterior row on tergite VI (not cylindrical glabrous), the tarsus of leg 9 with strong pubescence on the tergal side (not delicate), the pygidial tergum with large triangular posterior lobe (not a small one with posteromedian incision) and distinctly pubescent pygidial setae  $a_1$  and  $a_2$  (not glabrous). From *P. wieheorum* it is distinguished by the shape of the posterior lobe of the pygidial tergum (large and subtriangular in *vandiemeni*, low with posteromedian incision in *wieheorum*), the pygidial setae  $a_1$  (thin and pointed, not thick and blunt) and the *st* (inner margin evenly curved and outer with bulge, not inner margin with bulge and outer evenly curved). There are reliable characters to distinguish this species from *P. difficilis*: the length of the posterior setae on tergite VI in relation to their distance apart (0.6-0.7 in *vandiemeni*, 1.1 in *difficilis*), the pubescence on setae  $a_1$ ,  $a_2$  and  $a_3$  of the pygidial tergum (distinct from base to apex, compared to somewhat indistinct and present only distally) and the shape of the *st* (similar to a knife-blade compared to not clavate).

*Description.* Length.-(0.84-)0.93(-1.27) mm.

*Head.*-Tergal setae long, with dense short oblique pubescence, anterior and submedian ones somewhat clavate, sublateral and lateral ones cylindrical. Relative lengths of setae, 1st row:  $a_1=10$ ,  $a_2=(10-)$ 13; 2nd row:  $a_1=(10-)$ 13,  $a_2=(12-)$ 15,  $a_3=(9)$ 11; 3rd row:  $a_1=(12-)$ 14(-15),  $a_2=(15-)$ 18; 4th row:  $a_1=(12-)$ 13(-14),  $a_2=(19-)$ 22(-23),  $a_3=(17-)$ 20(-24),  $a_4=(15-)$ 16(-18); lateral group setae:  $l_1=(16-)$ 19(-20),  $l_2=(12-)$ 14,  $l_3$ =about 13(-18). The ratio  $a_1/a_1-a_1$  in 1st row (0.8-)0.9, 2nd row (0.8-)1.0, 3rd row 2.0(-2.2) and 4th row (2.2-)3.8. Temporal organs (0.7-)0.8 of their shortest distance apart. Just inside the posterior margin on a level with  $l_1$  a small exterior pore. Head cuticle with minute pubescence, temporal organs almost glabrous.

*Antennae.*-Segment 4 with 5 cylindrical striate-annulate setae; their relative lengths:  $p=100$ ,  $p'=(83-)$ 89(-95),  $p''=30$ (-44),  $r=(30-)$ 42(-44),  $u=(6-)$ 7;  $p'''$  as a rudimentary knob. Tergal seta  $p$  (0.7-)0.9 of the length of tergal branch  $t$ . The latter subcylindrical, 3.9(-7.2) times as long as its greatest diameter and 1.2(-1.4) times as long as sternal branch  $s$ , that branch slightly clavate, (3.2-)3.8 times as long as its greatest diameter; anterodistal corner somewhat more truncate than posterodistal one. Seta  $q$  cylindrical, striate-annulate, (as long as-)1.1 times as long as  $s$ . Relative lengths of flagella (basal segments

included) and basal segments (paratypes only):  $F_1=100$ ,  $bs_1=(6-7)$ ;  $F_2=(63-82)$ ,  $bs_2=(6)$ ;  $F_3=(68-86)$ ,  $bs_3=(6-7)$ . The  $F_1$  2.1-3.0 times as long as  $t$ ,  $F_2$  1.8-1.9 and  $F_3$  1.8-2.7 times as long as  $s$  respectively. Globulus  $g$  (1.3-)1.4(-1.5) times as long as wide, stalk thin; (11-)13 bracts, capsule with flattened bottom, subhemispherical; width of  $g$  (0.7-)0.8 of greatest diameter of  $t$ . Antennae very faintly pubescent.

*Trunk.*-Setae of collum segment furcate; primary branch folioform with oblique pubescence, secondary branch rudimentary, cylindrical, glabrous. Sublateral setae (1.8-)1.9(-2.0) times as long as submedian ones; sternite process blunt with small anterior incision; appendages low with flat caps; process and appendages with distinct pubescence.

Setae on tergite I as submedian setae on the tergal side of head, on II subcylindrical blunt, on III-V subcylindrical tapering, on VI even somewhat lanceolate, but blunt. Posterior setae about 1.5 times as long as anterior ones; 4+4 setae on tergite I, 6+6 on II-IV, 6+4 on V, 4+2 on VI. Submedian posterior setae on VI 0.6(-0.7) of their distance apart and 2.0(-2.3) times as long as pygidial setae  $a_1$ .

Relative lengths of bothriotricha (most broken or lost):  $T_1=100$ ,  $T_2=96$ (-99), the following paratypes only,  $T_3=(121-136)$ ,  $T_4=(113-172)$ ,  $T_5=(184-261)$ , setae with simple, straight axes increasing in thickness posteriorly,  $T_1$  very thin,  $T_5$  thickest. Pubescence delicate, distally mostly erect.

Genital papillae subcylindrical with somewhat granular cuticle, 2.5 times as long as their greatest width; distal seta straight thin and 0.5 of the length of papilla.

*Legs.*-Posterior legs very long, anterior ones proportionally shorter. Setae on coxa and trochanter of leg 9 with dense oblique pubescence, furcate, main branch leaf-shaped, secondary branch clavate and protruding from a point 1/4 from the base of the seta; secondary branch 0.8 of the length of the primary branch in coxal seta, 0.9 in the seta on trochanter; these setae more anteriorly with rudimentary, cylindrical, glabrous secondary branch. Coxal setae in leg 2 in males spatulate and very shortly pubescent and with a long thin cylindrical secondary branch (as long as-)1.3 times as long as primary branch. Tarsus of leg 9 strongly tapering, slender, 4.3(-5.3) times as long as its greatest diameter. Proximal seta tapering, pointed, with distinct oblique pubescence; distal seta cylindrical striate blunt. Proximal seta 0.3(-0.4) of the length of tarsus and 2.5(-3.0) times as long as distal seta. Cuticle of tarsus with oblique pubescence, strong and sparse on tergal side, short and denser on ventral side.

*Pygidium.* *Tergum.*-Posterior margin with low bulge between  $a_1$  and a large subtriangular densely pubescent lobe projecting backwards above *st*. Relative lengths of setae:  $a_1=100$ ,  $a_2=(111-)$ 122(-165),  $a_3=(144-)$ 150(-197),  $st=100$ (-111); setae all pointed,  $a_1$ ,  $a_2$  and  $a_3$  curved inwards, subcylindrical, tapering, with distinct oblique pubescence;  $a_2$  and  $a_3$  divergent, *st* knife-like, somewhat curved inwards, convergent, glabrous. Distance  $a_1-a_1$  (1.7-)1.9 times as long as  $a_1$ ; distance  $a_1-a_2$  (1.5-)1.6(-2.0) times as long as distance  $a_2-a_3$ ; distance *st-st* (1.1-)1.4 times as long as *st* and 0.7(-0.8) of distance  $a_1-a_1$ .

*Sternum.*-Posterior margin between  $b_1$  with low, very broad, rounded bulge. Relative lengths of setae ( $a_1=100$ ):  $b_1=(410-)$ 417(-511),  $b_2=(162-)$ 178(-183),  $b_3=(250-)$ 277(-289).

The  $b_1$  subcylindrical, blunt, very shortly pubescent;  $b_2$  subcylindrical, somewhat curved inwards, tapering, pointed, with distinct oblique pubescence;  $b_3$  somewhat clavate, straight, with short oblique pubescence. The  $b_1$  1.3(-1.5) times as long as their distance apart;  $b_2$  (1.4-)-1.5(-1.7) times as long as distance  $b_1$ - $b_2$ ;  $b_3$  0.7(-0.8) of distance  $b_3$ - $b_3$ .

Anal plate broadest anteriorly, directed steeply upwards, 1.7(-2.2) times as long as broad; with two lateral and two submedian branches; the former thin, cylindrical, blunt, pointing outwards, curved inwards; the latter thicker, straight, tapering, distally cut obliquely, separated by a V-shaped incision dividing the plate into two almost unconnected halves; submedian branches with distal, straight, thin pointed appendages the length being 0.5 of the length of plate. Plate and appendages with short oblique pubescence, strongest on distal halves of appendages.

*Stage subad.* 8. Genital papillae conical with blunt tip; seta absent; seta on coxa of leg 2 leaf-shaped, secondary branch rudimentary, cylindrical, blunt and glabrous.

*Etymology.*—Named after the original name for Tasmania, Van Diemen's land.

*Distribution in Tasmania.* *Pauropus vandiemeni* belongs to the group of widely distributed species. It occurs in all main regions of the State except Central Tasmania.

## Family Brachypauropodidae

### Genus *Borneopauropus* Scheller

Type species: *Borneopauropus penanorum* (Scheller, 1994), in: Scheller *et al.* 1994: 8-11, figs 31-42.

#### *Borneopauropus dignus* sp. nov.

(Figs. 192–206)

*Material Examined.* *Holotype.* Ad. 9 (male), Savage River Pipeline Road, site 2, Loc. 1, (41°18.5'S, 145°16.3'E), in litter, 21.iv.1989 (PG).

*Paratypes.* Sandspit River, Loc. 8, (42°42.1'S, 147°51.5'E), PKD from *Sassafras*, 1 ad. 9 (female), 2.vi.1989 (JD,PG). Bradshaw's Road, Mount Murchison, Loc. 2, (41°49.9'S, 145°37.0'E), site 2, in leaf litter, 3 ad. 9 (2 male, 1 female), 1 subad. 8 (female), 21.iv.1989 (JD).

*Other material.* 55 specimens. Loc. 1, site 1, in moss on ground, 1 ad. 9 (female), 21.iv.1989 (HM), and in leaf litter, 2 ad. 9 (male), 21.iv.1989 (JD,HM), and site 2, in moss on log, 4 ad. 9 (female), 1 subad. 8 (female), 21.iv.1989 (JD,HM), and in moss on *Nothofagus*, 6 ad. 9 (2 male, 4 female), 1 juv. 5, 21.iv.1989 (JD), and on moss on ground, 1 ad. 9 (female), 21.iv.1989 (PG). Loc. 2, site 1, in moss on ground, 1 juv. 5, 21.iv.1989 (HM), and in leaf litter, 4 ad. (2 male, 2 female), 1 subad. 8 (male), 21.iv.1989 (PG). Loc. 6, in moss on log, 1 juv. 5, and in moss on tree trunk, 3 ad. 9 (1 male, 2 female), 1 subad. 8 (female), 4 juv. 5, 11.vi.1990 (ATW). Loc.7, site 2, in leaf litter, 6 ad. 9 (female), 10 juv. 5, 12.v.1989 (PG). Loc. 8, in leaf litter, 1 ad. 9 (male), 1 subad. 8 (male), 22.v.1989 (PG) and suction sample, 1 ad. 9 (female), 2.vi.1989 (JD). Loc. 13, litter, 2 ad. 9 (male, female), 1 subad. 8 (female), 1 juv. 5, 27.ii.1989 (SS). Loc. 17, soil core, 1 ad. 9 (male), 5.vi.1989 (PG).

*Diagnosis.* The genus has three species, *B. penanorum* (Scheller) and *B. prolatus* (Scheller), both from Sabah (in Scheller *et al.* 1994 and Scheller, 2001 respectively), and *B. curtipes* Scheller from Indonesia (Scheller 2009). The

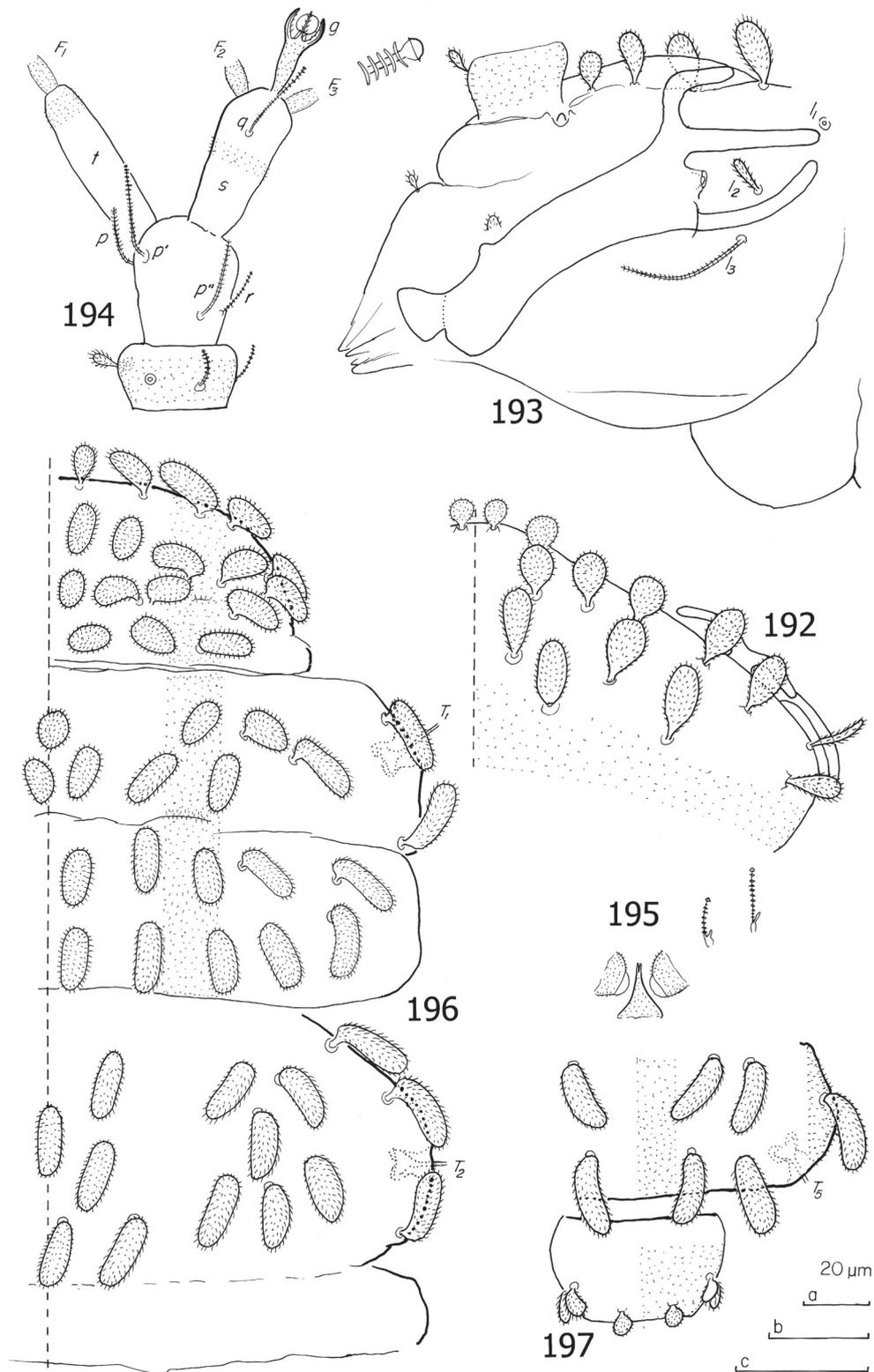
Tasmanian species is well delineated from them all in having the tergites II-IV transversely divided (II, IV, V in *penanorum*, II, IV in *prolatus*, II-V in *curtipes*). It can also be distinguished from them by other good characters. There are three long uplifted posterior extensions of the temporal organs (in *penanorum* and *prolatus* two, one large and one very small), the process of the collum segment is very narrow (broader and rounded in *penanorum* and *prolatus*, broad and with distinct anterior incision in *curtipes*), the posterior end of the anal plate is cut squarely (triangular in *penanorum* and *curtipes*, cylindrical and blunt in *prolatus*), and the appendages of the anal plate have distinct distal swelling (distally cylindrical in the other species).

*Description.* *Length.* (0.58-)-0.68(-0.85) mm.

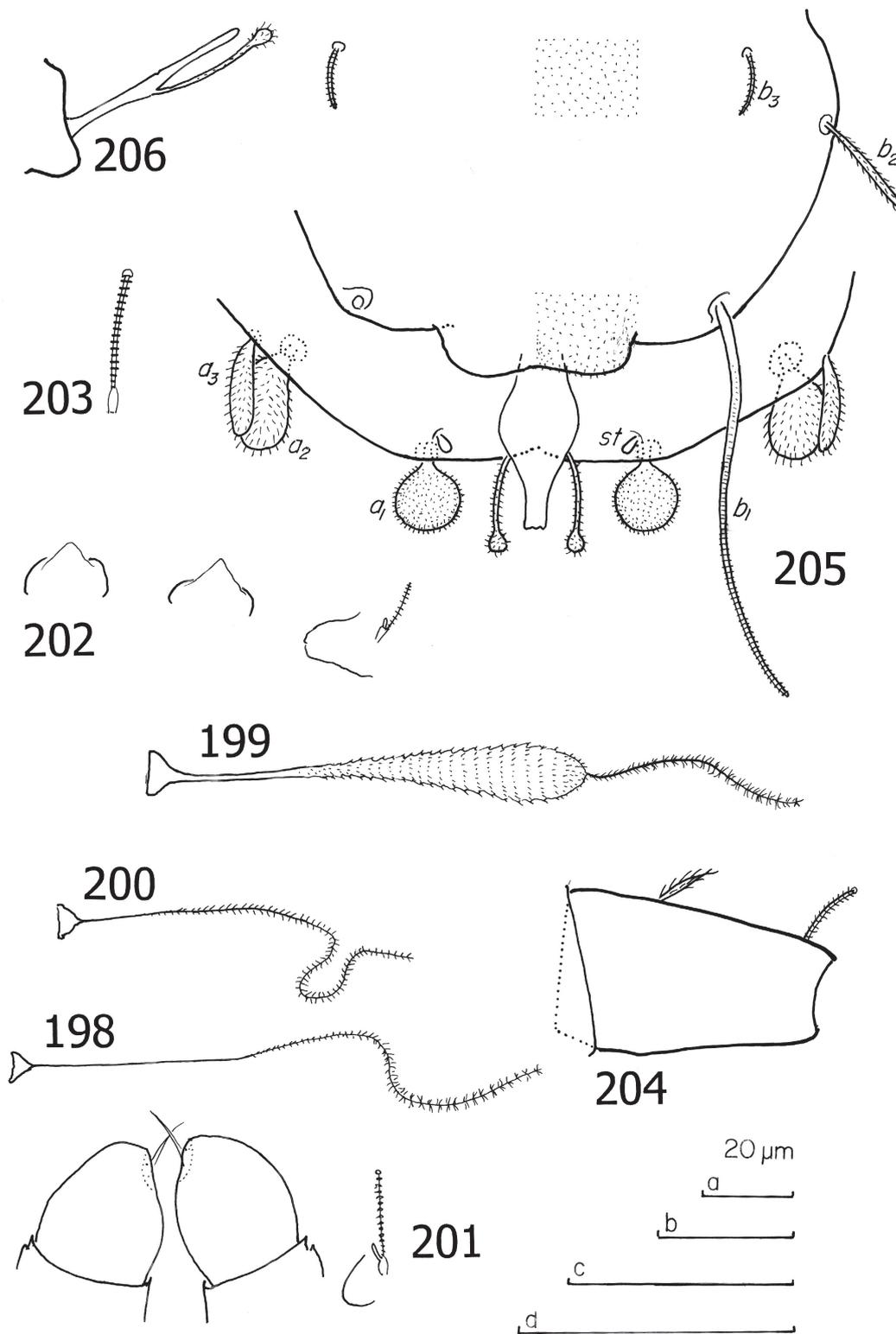
*Head.* Tergal and lateral sides with 28 setae arranged as in Figs. 192. and 193; transversal rows difficult to interpret. Relative lengths of the five submedian setae: 10, 13, 16, 20, 21; lateral group:  $l_1$  large bladder-shaped, relative length = 18;  $l_2$  subclavate = (12-)-18,  $l_3$  subcylindrical striate-annulate tapering pointed = 52. All tergal and lateral setae except  $l_2$  and  $l_3$  bladder-shaped with distinct and proportionally sparse oblique pubescence. Temporal organs complicated (fig. 193), longish, running along from mouth to posterior part of head; anterior end with short uplifted lobe close to the mouth; posterior part twice furcate ending in three narrow tubes with subcircular diameter, the upper tube shortest and curved posteriorly, the median one straight, the sternal one curved upwards; between the latter two a low cupulate organ with a short inner conical structure; on the tergal side of the longish median part a small protuberance from which a wart-like pubescent process protrudes from the head cuticle. Tergal side of head sparsely granular, temporal organs glabrous.

*Antennae.* Segment 3 with a rudimentary globulus and four setae, one clavate, distinctly pubescent and 3 subcylindrical annulate setae. Segment 4 with 5 setae, all thin cylindrical annulate; relative lengths of them:  $p=100$ ,  $p'=(118-)-150(-168)$ ,  $p''=(100-)-130$ ,  $p'''=(37-)-69$ ,  $r=50$ . Tergal seta  $p$  0.4(-0.5) of the length of tergal branch  $t$ . The latter subcylindrical, (3.1-)-3.6 times as long as wide, (as long as)-1.1 times as long as sternal branch  $s$ . The latter thickest in distal third and with anterodistal corner somewhat more truncated than posterodistal one; (1.8-)-2.3 times as long as its greatest diameter and its seta  $q$  cylindrical annulate, 0.6(-0.7) of the length of  $s$ . Relative lengths of flagella (basal segments included) and basal segments:  $F_1=100$ ,  $bs_1=7(-8)$ ;  $F_2=81(-92)$ ,  $bs_2=(6-)-7(-8)$ ;  $F_3=79(-88)$ ,  $bs_3=6(-8)$ . The  $F_1$  (3.3-)-3.4(-3.6) times as long as  $t$ ,  $F_2$  and  $F_3$  (2.6-)-3.0(-3.2) and (2.6-)-2.9(-3.0) times as long as  $s$  respectively. Distal calyces low, helmet-shaped, glabrous. Globulus  $g$  with slender stalk, (2.1-)-2.2(-2.4) times as long as its greatest diameter, the latter (0.8-)-0.9(-1.0) of the greatest diameter of  $t$ . Antennae with  $g$  and  $bs_1$ - $bs_3$  with short pubescence.

*Trunk.* Setae of collum segment furcate, primary branch cylindrical, blunt, annulate; secondary branch rudimentarily glabrous; sublateral seta 1.1(-1.3) times as long as submedian one. Sternite process very narrow in anterior half and with apical incision; appendages with low caps; process and appendages shortly pubescent.



Figs. 192–197. *Borneopauropus dignus* sp. nov., holotype 192, 194–197, paratype 193: 192, head, median and right part, tergal view; 193, head with temporal organ, lateral view; 194, left antenna, sternal view; 195, collum segment, median and left part, sternal view; 196, tergites I–III; 197, tergite VI, median and right part, and pygidium, tergal view. Scale line a for figures 196, 197; b for figure 195; c for figures 192–194.



Figs. 198–206. *Borneopauropus dignus*, Scheller sp.nov., holotype 198–200, 203–206, paratypes 201, 202: 198,  $T_1$ ; 199,  $T_3$ ; 200,  $T_5$ ; 201, genital papillae and seta on coxa of 2nd pair of legs, anterior view; 202, genital papillae and seta on coxa of 2nd pair of legs in subad. 8, anterior view; 203, seta on coxa of 9th pair of legs; 204, tarsus of 9th pair of legs; 205, pygidium, sternal view; 206, anal plate, lateral view. Scale line a for figures 198, 200, 202; b for figures 199, 201; c for figures 203, 204; d: for figures 205, 206.

Tergites I, V, VI entire, II, III, IV transversely divided weakly in two. Number of setae on tergites (if two groups of values, they are anterior and posterior groups respectively): I (29-)31(-37), II 17(-24)+20, III (23-)26(-27)+(18-)24, IV (21-)28+(14-)17(-28), V 34(-40), VI 6+4. Setae bladder-shaped with distinct oblique-erect pubescence, stalk inserted unsymmetrically. Cuticle of tergites pubescent.

Relative lengths of bothriotracha:  $T_1=100$ ,  $T_2=98(-105)$ ,  $T_3=(78-)81(-82)$ ,  $T_4=(99-)110$ ,  $T_5=(88-)89(-92)$ , axes simple, most proximally glabrous; proximal half of  $T_3$  strongly clavate, distal half very thin; other bothriotracha with thin and curved axes; pubescence short oblique on proximal halves, erect distally; clavate part of  $T_3$  with pubescence arranged in sparse whorls.

Genital papillae, 1.2 times as long as their greatest diameter, widest near the middle, glabrous; seta almost 0.5 of the length of papilla.

*Legs.* All legs 5-segmented. Setae on coxa and trochanter of leg 9 similar, simple, cylindrical, densely annulate, blunt, without traces of secondary branches. More anteriorly these setae of the same shape, but with short cylindrical glabrous rudiments of secondary branches. Tarsus of leg 9 short, tapering, 1.8(-2.7) times as long as its greatest diameter. Proximal seta tapering, pointed, with a few oblique pubescence hairs on tergal side; distal seta cylindrical, striate, blunt; the former 0.2(-0.3) of the length of tarsus and (0.9-) as long as the latter. Cuticle of tarsus with delicate pubescence.

*Pygidium. Tergum.* Hind margin with a shallow incision between  $a_1$ . Relative lengths of setae:  $a_1=10$ ,  $a_2=12(-15)$ ,  $a_3=13(-18)$ ,  $st=2(-4)$ . All but  $st$  bladder-shaped,  $st$  very short, (cylindrical-)clavate, straight, pointing inwards;  $a_1$  straight, subspherical, in tergal view broadly spatulate, with very dense short erect pubescence;  $a_2$  and  $a_3$  somewhat curved inwards, ovoid, with sparse but distinct oblique pubescence, these setae very similar to those on the tergites. Distance  $a_1-a_1$  (2.0-)2.7 times as long as  $a_1$ , distance  $a_1-a_2$  considerably longer than distance  $a_2-a_3$ ; distance  $st-st$  (7.2-)9.3 times as long as  $st$  and 0.9(-1.0) times as long as distance  $a_1-a_1$ .

*Sternum.* Posterior margin between  $b_1$  rounded and with broad lobe below anal plate; lobe with rounded posterolateral corners and shallow median indentation. Relative lengths of setae (pygidial  $a_1=10$ ):  $b_1=(43-)50(-62)$ ,  $b_2=13(-15)$ ,  $b_3=9(-10)$ . The  $b_1$  subcylindrical, tapering, striate, blunt,  $b_2$  and  $b_3$  cylindrical, the former tapering distally and with distinct oblique pubescence, the latter striate blunt. The  $b_1$  1.1(-1.2) times as long as distance  $b_1-b_1$ ,  $b_2$  0.5(-0.7) of distance  $b_1-b_2$  and  $b_3$  0.2 of distance  $b_3-b_3$ . Anal plate twice as long as its greatest width, widening from its base, lateral margins convex, broadest about at the middle; distal part narrow with parallel lateral margins and cut squarely at the end; two thin cylindrical appendages with globular distal enlargements protrude backwards from the middle of the sternal side, length of appendages 0.6(-0.7) of the length of plate.

*Stage subad.* 8. Genital papillae weakly developed and in the shape of small blunt cones from a low rounded base.

*Stage juv.* 5. The number of setae on the tergites I 13-14, II 20, III 20, IV 8(6+2) or 16(8+8) indicating an additional moult in this stage.

*Etymology.* From Latin *dignus* = worth.

*Distribution in Tasmania.* The species is widely distributed along both the western and eastern regions of the island.

#### Notes on collecting methods and sites

Pauropods depend upon sustained conditions of moisture and humidity in their living space and are normally true soil dwellers adapted to a uniform type of environment. However, in humid climates, they sometimes, at least temporarily, inhabit lower litter layers and can be found under moss and under bark of rotting wood. By using different collecting techniques in Tasmanian rainforest and by careful handling of the material, it has appeared that pauropods are unexpectedly abundant in moss and are probably living in the contact zone between the moss and underlying soil or log. They were also found in habitats not previously considered to be inhabited by pauropods such as on tree trunks (Greenslade, 2008). The record of both adults and juveniles of *Stylopaupoides quadripartitus* sp. nov. in the crown of a tree fern indicates that reproduction was occurring in this habitat.

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#### References

- Coy, R., Greenslade, P., and Rounsevell, D. (1993). A survey of invertebrates in Tasmanian rainforest. *Tasmanian National Rainforest Conservation Programme Report No. 9*. (Parks and Wildlife Service, Tasmania, and Department of Arts, Sport, the Environment and Territories, Canberra).
- Greenslade, P. 2008. Distribution patterns and diversity of invertebrates of temperate rainforests in Tasmania with a focus on Pauropoda. *Memoirs of Museum Victoria* **65**: 153–164.
- Harrison, L. 1914. On some *Pauropoda* from New South Wales. *Proceedings of the Linnean Society of New South Wales* **39**: 615–634.
- Hansen, H. J. 1902. On the genera and species of the order Pauropoda. *Videnskabelige Meddelelser dansk naturhistorisk Forening i Kjøbenhavn* 1901: 323–424.
- Lubbock, J. 1867. On *Pauropus*, a new type of centipede. *Transactions of the Linnean Society of London* **26**: 181–190.
- Postle, A. C., Majer, J. D., and Bell, D.T. 1991. A survey of selected soil and litter invertebrate species from the northern jarrah (*Eucalyptus marginata*) forest of Western Australia, with particular reference to soil-type, stratum, seasonality and the conservation of forest fauna. Pp. 193–203 in: Lunney, D. (ed.), Conservation of Australia's Forest Fauna. *Royal Zoological Society of New South Wales*.
- Remy, P. A. 1931. Un nouveau type de Pauropode: *Decapauropus cuenoti*, nov. gen., nov. sp. *Archives de Zoologie expérimentale et générale* **71**: 67–83.
- Remy, P. A. 1941. Contribution à la faune des Myriapodes de France. *Bulletin de la Société Zoologique de France* **66**: 351–373.

- Remy, P. A. 1948. Pauropodes de la Côte d'Ivoire, Afrique Occidentale Française. *Mémoires du Muséum National d'Histoire Naturelle Paris*, (n.s.) **27**: 115–152.
- Remy, P.A. 1949. Sur quelques pauropodes d'Australie. *Memoirs of the National Museum, Melbourne* **16**: 51–58.
- Remy, P. A. 1952a. Diagnoses de nouveaux Pauropodes marocains. *Bulletin de la Société naturelle et physique du Maroc* **30**: 149–158.
- Remy, P. A. 1952b. Pauropodes de Nouvelle-Zélande. *Records of the Canterbury Museum* **6**: 167–179.
- Remy, P. A. 1956a. New Zealand Pauropoda in the Canterbury Museum. *Record of the Canterbury Museum* **7**: 13–28.
- Remy, P. A. 1956b. Sur quelques Pauropodes de Nouvelle-Zélande. *Bulletin du Muséum National d'Histoire Naturelle Paris* (2) **28**: 213–217.
- Remy, P. A. 1956c. Pauropodes de Madagascar. *Mémoires de l'Institut Scientifique Madagascar* (A) **10**: 101–220.
- Remy, P. A. 1957. Pauropodes d'Australie Occidentale. *Bulletin de la Société Entomologique de France* **62**: 136–144.
- Remy, P. A. 1959a. Pauropodes des monts Nimba (Guinée). *Bulletin de l'Institut Française d'Afrique Noire* (A) **21**: 1009–1020.
- Remy, P. A. 1959b. Pauropodes de l'Île Maurice. *The Mauritius Institute Bulletin*. **5**: 149–194.
- Remy, P. A. 1961. Pauropodes de la région de Pondichéry (Inde). *Mémoires de la Société Nationale des Sciences Naturelles et Mathématiques de Cherbourg* (5) **9**: 1–24.
- Remy, P. A. 1962. Pauropodes Sud-Américains. *Biologie de l'Amérique Australe* **1**: 49–61.
- Remy, P. A. & Bello, J. 1960. Pauropodes du massif de l'Ankaratra (Madagascar). *Mémoires de l'Institut Scientifique Madagascar* (A) **14**: 71–93.
- Scheller, U. 1968. Chilean and Argentinian Pauropoda. *Biologie de l'Amérique Australe* **4**: 275–306.
- Scheller, U. 1970. The Pauropoda of Ceylon. *Entomologica Scandinavica Supplementum* **1**: 5–97.
- Scheller, U. 1974. Two Pauropodidae species (Myriapoda, Pauropoda) from the Subantarctic Crozet Islands. *Entomologica Scandinavica* **5**: 59–65.
- Scheller, U. 1982. Pauropoda (Myriapoda) from the Seychelles. *Entomologica Scandinavica* **13**: 245–265.
- Scheller, U. 1985. On the classification of the family Brachypauropodidae (Myriapoda; Pauropoda). *Bijdragen tot de Dierkunde* **55**: 202–208.
- Scheller, U. 1988. The Pauropoda (Myriapoda) of the Savannah River Plant, Aiken, South Carolina. *A Publication of the Savannah River Plant National Environmental Research Park Program SRO-NERPP* **17**: 1–99.
- Scheller, U. 1990. Pauropoda. Chapter 27. In: *Soil Biology Guide* (ed. D. Dindal.) pp 861–890. (John Wiley and Sons, New York.)
- Scheller, U. 1993. Pauropoda (Myriapoda) from New Caledonia. In: 'Zoologia Neocaledonica 3' (eds. L. Matile, J. Najt & S. Tillier.) *Mémoires du Muséum Nationale d'Histoire Naturelle* **157**: 27–71.
- Scheller, U. 1994. Pauropoda of a secondary forest near the Tarumã Mirim River, Amazonas, Brazil (Myriapoda, Pauropoda, Pauropodidae). *Amazoniana* **13**: 65–129.
- Scheller, U. 2000. The taxonomic composition and affinities of the Brazilian Pauropoda with description of three new species from Central Amazonia (Myriapoda, Pauropoda: Pauropodidae). *Amazoniana* **15**(3/4): 169–182.
- Scheller, U. 2001. Pauropoda (Myriapoda) from Sabah (East Malaysia) (Pauropoda and Symphyla of the Geneva Museum XI). *Revue suisse de Zoologie* **108**: 949–986.
- Scheller, U. 2009. Records of Pauropoda (Pauropodidae, Brachypauropodidae, Eurypauropodidae) from Indonesia and the Philippines with descriptions of a new genus and 26 new species. *International Journal of Myriapodology* **2**: 69–148.
- Scheller, U., Bedano, J.C. & Salazar Martinez, A. 2004. New records of Pauropoda (Myriapoda) from Argentina with descriptions of six new species. *Studies on Neotropical Fauna and Environment* **39**(2): 167–183.
- Scheller, U., Brinck, P. and Enckell, P. H. (1994). First record of Pauropoda (Myriapoda) on Borneo. *Stobaeana* **1**: 1–14.
- Silvestri, Ph. (1902). Ordo Pauropoda. In: "Acari, Myriapoda et Scorpiones hucusque in Italia reperta" (ed. Berlese, A.), 10.