Bulletin S.R.B.E./K.B.V.E., 142 (2006): 140-155

Some *Pediculaster* (Acari: Siteroptidae) species from Belgium and Kenya

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Summary

The four new species from the RISBN collection are chosen on account of their stigmatal shapes. These vary from one-chambered (*P. microsaniae* Martin, 1978), incompletely divided two-chambered (*P. collinellulalis* n. sp.), completely divided two-chambered (*P. helomyzalis* n. sp.) and three-chambered (*P. kilimanjarensis* n. sp.).

Keywords: Taxonomy, Acari, Siteroptidae, *Pediculaster microsaniae* Martin, 1978, *P. collinellulalis* n. sp., *P. helomyzalis n. sp.*, *P. kilimanjarensis* n. sp., Diptera, Belgium, Tanzania.

Résumé

Les quatre nouvelles espèces de la collection de RISBN sont choisies à cause de la forme de leurs stigmates. Ceux-ci sonr formés soit d'une seule chambre (*P. microsaniae* Martin, 1978), soit de deux chambres, incomplètement divisés (*P. collinellulalis* n. sp.), soit de deux chambres complètement divisées (*P. helomyzalis* n. sp.) Ou encore de trois chambres (*P. kilimanjarensis* n. sp.).

Introduction

This is the second article on *Pediculaster* species from the mite collection of the Royal Institute of Natural Sciences of Belgium (RISNB) some years ago.

Materials and Methods

Microscope slides from the RISBN collection were used for the description of the following new species:

1. ***Pediculaster microsaniae* Martin, 1978** from *Microsania stigmaticalis* Lett. (Diptera: Platypezidae).

a. Coll. L. Nef. Date: 6-V-1960. Loc: Bokrijk (Limbourg), Belgium. I.G. 21971, Faure 60573 (T. 134), 1 slide (drawn in this manuscript).
b. Coll. A. Collart. Date: 10-VII-1952. Loc. Manderfeld (Liège), Belgium. Series 52.721a, 4 slides.
c. Coll. A. Collart. Date: 20-IX-1951. Loc.: Manderfeld (Liège), Belgium. Series 51.920, 1 slide.
d. Coll. R. Tollet. Date 31-VII-1952. Loc.: Herzogel Hugel Htes Fagnes. Belgium. Series 52.805, 1 slide.

2. ***Pediculaster collinellulalis*** sp. n. from *Collinellula lutosa* (Dipt.) Coll. H. Collart. Loc. Visé, near Liège, Belgium. Date: 06-IX-1934. Series: 111241 k (T 12). 1 slide. Holotype.

3. ***Pediculaster helomyzalis*** sp. n.
a. from *Helomyza serrata* Linn. (Dipt.?) Coll. ? Loc.: ? Date: 1-VIII-1940. n.1. Series R 51 (T 215). 1 slide.

b. From *Leptura* sp. (Order: ?) No. 261. Coll. ?. Loc.: La Heid des Gattes (Aywaille) Liège, Belgium. Series 8.643 δ (T29). 1 slide.

4. ***Pediculaster kilimanjarensis*** sp. n. from *Sphyracephala munroi* Curr. (Order: ?.) Coll. A. Collart. Loc. Kilimanjaro, Tanganyika. Date: ? Series 63821 (T 189/90-93). 5 slides. (T 191 is the Holotype).

All slides deposited in the collections of the RISBN, Brussels, Belgium.

The mites were studied and drawn using an OLYMPUS CH2 phase-contrast light micros-

cope with a LEITZ WETZLAR drawing tube, under 100x oil immersion objective. The drawings, first traced in ink, were scanned into Corel Photo Paint-10 software, edited and annotated. Body parts and idiosomal setae were measured in µm from images captured through a NIKON phase contrast microscope fitted with a PANASONIC DIGITAL VIDEO CAMERA (Model WV CP 410/G), utilizing Simple PCI software. The different body parts were measured as described in CAMERIK& UECKERMANN, 1995, except opisthosomal width taken across apodemes 3 as described in CAMERIK, 1996. Setal notation, abbreviations and terminology of structures are based on LINDQUIST 1986.

Like species were compared using photocopied figures from the original publications.

Terms used in this manuscript to describe shapes of pharyngeal pumps, solenidia and some setae are borrowed from, STEARN, 1978. Conventional terms are used do describe setal ornamentation. These terms are compiled in the list below.

Conventional terms used for the ornamentation of setae:

Barbed – flat setae with barbs on one side
Pilose – round setae with barbs all around its surface
Smooth – setae without ornamentation

Terms in this manuscript describing shapes of different pharyngeal pumps, some solenidia and setae, are borrowed from STEARN, 1978.

Alate – winged, with a thin, broad margin
Angust – narrow, usually used in association with symmetric figures.
Clavate – club-shaped, gradually thickening upwards from a tapering base
Conical – a true cone
Conoidal – resembling a conical figure
Cylindrical – true cylindrical figure
Elliptic – form of an ellipse, oval
Elliptical – oval, acute at each end, with sides curved equally from the middle (length: breadth = 2:1 to 3:2)
Ensiform – sword-shaped, lorate, quite straight, with the point acute
Oblong – elliptical, obtuse at each end; the sides almost parallel (length: breadth = 2:1 to 3:2)
Obovate – form of an egg on its point
Obtuse – blunt, terminating gradually in a rounded end
Ovate – like an egg
Semi-spatulate – half a chemist's spatula
Spatulate – oblong with the lower end very much attenuated, so that the whole resembles a chemist's spatula
Transverse – greater in breadth than in height. Usually used in association with symmetric figures.
Trapeziform –h aving four edges, those which are opposite not being parallel
Triangular – shaped like a triangle

Description of the species

Exoskeleton strongly sclerotized, punctate, yellow to light brown in colour. Chaetotaxy and solenidiotaxy complete, as described in Table 1 of CAMERIK & COETZEE, 1997 (except for solenidia φ on legs II and III, which were mistakenly printed as *u* in the publication).

Pediculaster microsaniae Martin, 1978
(Figs 1- 11)

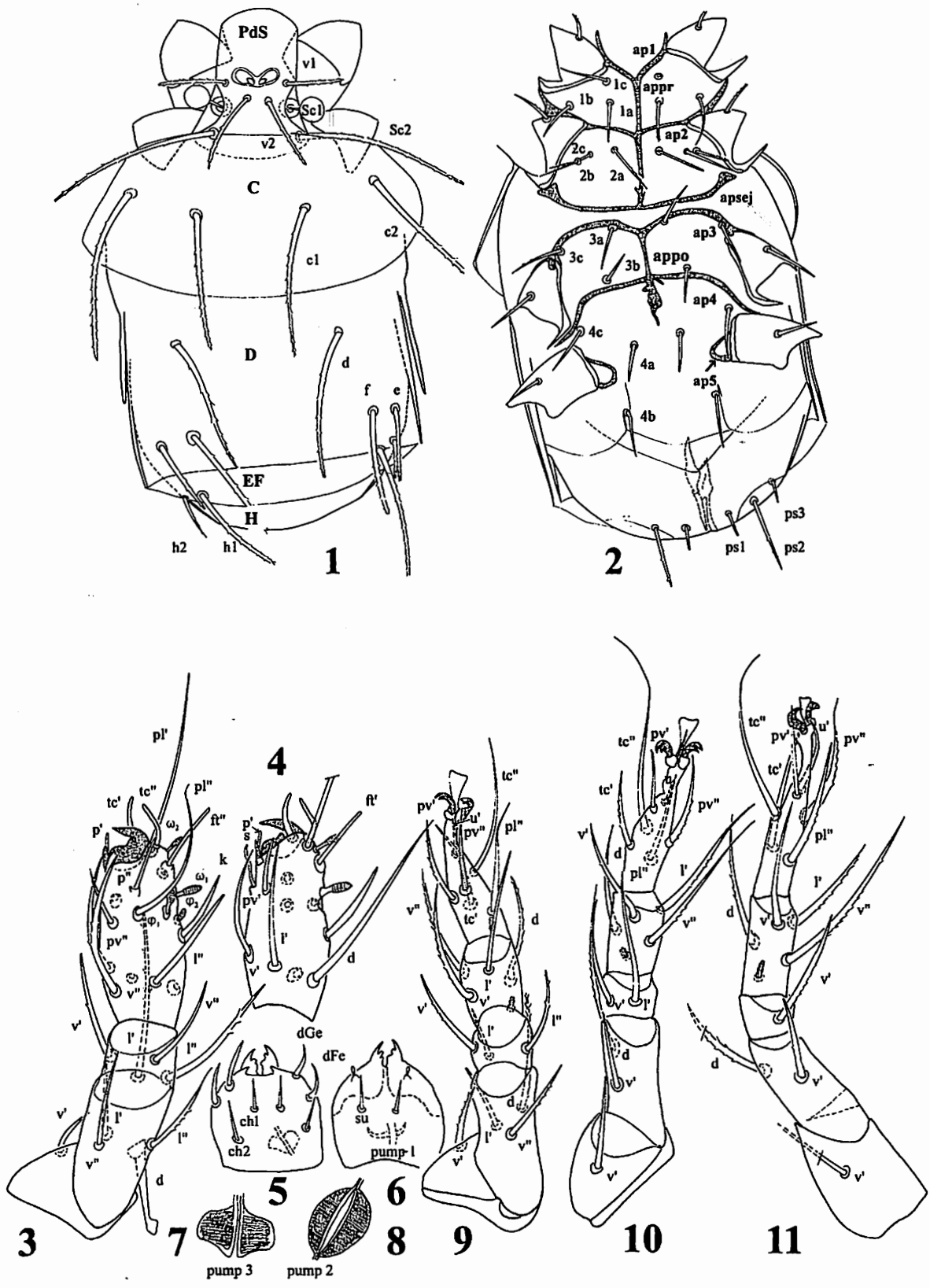
Measurements (µm) in Table 1.

Gnathosomal capsule (Gn): dorsal cheliceral setae $ch_{1,2}$ smooth, ch_1 medio-anterior of and shorter than ch_2. Femoral setae *dFe* shorter than genual *dGe*; subcapitular setae *su* reaching to base of solenidion, accessory setigenal setae (*ass*) not seen. Pharyngeal pump system: Pumps 1-3 striated, situated under coxisternae II, III. Depending on the angle under which it is viewed, pump 1 in some specimens is rectangular, transverse-anguste, in other obovate. Pump 2 oblong, pump 3 trapezoid.

Idiosomal dorsum: Prodorsal shield (PdS) anteriorly arched, posteriorly trapezoid. Stigmata single-chambered, between setae v_1 and anterior of slightly shorter setae v_2. All dorsal setae pilose. Scapulars Sc_1 capitate, in circular bothridia; Sc_2 long. Setae c_1 shorter than c_2; *d* longer than setae c_1; *e* about half the size of *f*; h_1 about three times longer than h_2. No cupulae seen.

Idiosomal venter: Coxisternal setal distribution 3-3-3-3. Coxisternae: CX I, II medially fused and apodemes (ap) 1-2 are continuous with the prosternal apodeme (appr), which extends to and fuses with the sejugal apodeme (apsej). Ap 3-4 are continuous with the poststernal apodeme (appo), which does not fuse with the rudimentary structure of ap 5 at the base of trochanter IV. Pseudoanal setae $ps_{1,3}$ short and smooth, *ps2* longest and slightly barbed.

Legs: Setae smooth, pilose or barbed. Chaetotaxy and solenidiotaxy complete. Sub terminal claw I robust and fitting into a



Figs 1-11. *P. microsaniae,* Martin, 1978. 1: idiosomal dorsum; 2: idiosomal venter; 3: leg I, antaxial view; 4: leg I, tibiotarsus, paraxial view; 5: gnathosomal dorsum, pharyngeal pump 1; 6: gnathosomal venter, pharyngeal pump 1; 7: pharyngeal pump 2; 8: pharyngeal pump 3; 9: leg II, antaxial view; 10: leg III, antaxial view; 11: leg IV antaxial view.

Table 1. Measurements (μm) of *Pediculaster microsaniae*, Martin, 1978, phoretic females. (n = 4). Key: AV: average; SD: standart deviation; L: length; W: width; ?: not measured.

TYPE	Holotype	Paratype 1	Paratype 2	Paratype 3	AV.	SD.
BODY L. (NO GN)	193.5	188.6	243.0	220.0	211.3	25.3
GNATHOSOMA (L)	25.3	27.3	?	?	26.3	1.4
GNATHOSOMA (W)	20.5	26.0	?	?	23.3	3.9
STIGMA (L)	8.8	7.3	7.8	7.4	7.8	0.7
STIGMA (W)	6.1	4.3	5.0	5.5	5.2	0.8
PROSOMA (L)	57.4	44.3	58.4	53.0	53.3	6.4
PROSOMA (W)	47.5	37.6	56.1	45.5	46.7	7.6
OPISTHPSOMA (L)	137.8	144.1	154.9	168.9	151.4	13.6
OPISTHPSOMA (W)	76.0	60.2	79.1	78.2	73.4	8.9
LEG I	103.4	86.6	96.7	99.6	96.6	7.2
LEG II	102.0	102.4	95.0	102.1	100.4	3.6
LEG III	103.0	82.9	97.0	96.0	94.7	8.5
LEG IV	145.3	114.9	139.3	137.3	134.2	13.3
DORSAL SETAE						
v1	25.9	23.3	27.7	26.9	26.0	1.9
v2	3.6	27.0	29.4	35.2	23.8	13.9
Sc1	16.8	22.5	15.6	19.1	18.5	3.0
Sc2	75.3	62.1	75.6	78.6	72.9	7.4
c1	63.5	47.0	?	54.4	55.0	8.3
c2	74.6	72.2	72.0	65.6	71.1	3.9
d	63.7	55.1	53.8	62.1	58.7	5.0
e	31.9	30.0	28.7	28.4	29.8	1.6
f	52.7	43.7	49.9	45.2	47.9	4.2
h1	56.4	50.9	53.3	57.2	54.5	2.9
h2	17.1	?	15.2	15.6	16.0	1.0
VENTRAL SETAE						
1a	15.7	?	16.7	13.4	15.3	1.7
1b	21.7	?	13.8	15.7	17.1	4.1
1c	20.4	?	14.6	14.5	16.5	3.4
2a	22.4	?	19.1	20.3	20.6	1.7
2b	20.9	?	?	22.2	21.6	0.9
2c	16.6	?	?	16.2	16.4	0.3
3a	17.1	17.4	18.7	17.9	17.8	0.7
3b	17.3	16.7	17.5	16.0	16.9	0.7
3c	18.6	17.6	16.3	16.2	17.2	1.1
4a	10.6	16.8	16.6	16.2	15.1	3.0
4b	18.1	21.3	20.0	20.3	19.9	1.3
4c	18.5	19.0	17.2	17.3	18.0	0.9
ps1	11.2	8.6	9.6	10.6	10.0	1.1
ps2	33.0	25.6	26.6	16.2	25.4	6.9
ps3	10.9	8.1	7.4	14.1	10.1	3.1

"counterpiece" made up of setae *u'-u"*; claws II and III with pad, claws IV simple. Empodia fan-shaped.

Legs I: Tibiotarsus with eupathidia *tc'*, *tc"* about three-quarters the size of *ft'*, *ft"*; *p'* one third of *p"*. Solenidion ω_1 conical, slightly longer than ω_2; φ_1 conical, stouter and longer than cylindrical φ_2. Setae *pv'* as long as *pv"*; smooth *v'* shorter and thinner than barbed *v"*; *l'* longer than *l"*; *pl'* longer than *pl"*; *d* long and smooth, seta *k* close to solenidia φ_{1-2}. Genu: Laterals barbed, *l'* longest, verticals smooth or barbed, *v'* longer than *v"*. Femoral setae smooth or barbed, seta *d* terminally obtuse, barbed *l"* slightly longer than *l'*. Seta *v'* on trochanter short and smooth.

Legs II: Trochanteral *v'* barbed. Femoral *d* pilose, much longer than smooth *l'*, and slightly barbed *v"*. Genual setae *l'* shortest, followed by *l"*, *v'* longest. Tibial setae about equally long, *l'* smooth, barbed *d* close to φ and slightly shorter than barbed verticals. Tarsus with "padded" claws, ω short, cone-shaped. Except for *pv'* all

tarsal setae smooth, *u'* shortest; *tc"* reaching beyond empodium.

Legs III: Trochanteral *v'* long with a few barbs. Femoral *v'* smooth and shorter than barbed *d*. Genu with smooth *l'* longer than *v'*. Tibial *d* shortest, smooth, associated with solenidion *φ*. Verticals *v'*, *v"* and lateral *l'* barbed and about the same length. Except for *tc'* and *pv"* all tarsal setae smooth: tectals *tc'* much shorter than whipped *tc"*; *pl"* about the same length as *pv"*; *pv'* shorter than *pv"*. Unguinal *u'* shortest. Claws padded.

Legs IV: trochanteral *v'* long and smooth; femoral *v'* slightly barbed and shorter than barbed seta *d*. Genu carrying barbed seta *v'*. Barbed tibial *d* close to *φ* and as long as smooth *v'*; barbed *v"* longer than *v'*. Tarsal seta *u'* slender and about as long as smooth seta *pv'*; p*l"*, *pv"* equally long, both barbed; smooth tectals, *tc'* shorter than whipped *tc"*. Simple terminal claws.

Discussion

The species, originally described by Martin in 1978 and collected in New Zealand from *Microsania tonoiri* Collart 1950 (Diptera: Platypezidae) was also found on *M. stigmaticalis* Lett. from Belgium. A specimen from Belgium has been drawn for this publication especially for the complete set of leg setae. Furthermore, some morphological characters have been compared with several similar *Pediculaster* species in order to distinguish between these (Table 2). Note that the same mite genus is collected from the same fly genus in countries far apart. This suggests that the mite has a very narrow host-preference. According to a revised classification of Athias-Binche's (1994) categories of eco-ethological relationships in phoresy (Camerik, unpublished PhD thesis) these mites and their hosts would fall within the category "stenoxenous".

Normal females, males and larvae are unknown.

Table 2. Comparison of morphological characteristics of phoretic females of *P. microsaniae, P. demetorum, P. morelliae, P. queenslandicus, P. australis, P. horricomus, P. hispanicus.*
Key: ≈ - about as long as; <- shorter than;<<- much shorter than; > - longer than; ? - not known

CHARACTERISTIC	***P. microsaniae* Martin, 1978**	***P. demetorum* Mahunka, 1981**
HOSTS	*Microsania tonnoiri*, N. Zealand *Microsania stigmaticalis*, Belgium	?
STIGMA	single-chambered	single-chambered
PRODORSAL SHIELD (PdS)	bell-shaped	bell-shaped
ANTERIOR EDGE (PdS)	arched	arched
v1. v2	*v1<<v2*	*v1 ≈v2*
PUMP 1	in gnathosoma; rectangular, transverse, angust	?
PUMP 2	oblong	oblong, striated
PUMP 3	trapezoid	obovate, striated (?)
IDIOSOMA Dorsal *c1, c2*	*c1<<c2; e<f; h1 ≈ 3h2*	*c1<c2; e≈¾f; h1 ≈ 3.2h2*
LEG I Claw	subterminal	terminal
ω1, ω2	*ω1 > ω2* ; both conical	*ω1 > ω2* ; both cylindrical
φ1, φ2	conical *φ1> φ2*, cylindrical	conical *φ1> φ2*, cylindrical
CHARACTERISTIC	***P. morelliae* Rack, 1975**	***P. queenslandicus* Rack, 1980**
HOSTS	*Morellia hortensia*, Australia *Imitomyia, Norrbomia marginatis,* *Aphodius* sp. South Africa	*Stomoxys calcitrans*, Australia
STIGMA	single-chambered	single-chambered
PRODORSAL SHIELD (PdS)	bell-shaped	bell-shaped
ANTERIOR EDGE (PdS)	arched	straight
v1. v2	*v1 ≈v2*	*v1<<v2*
PUMP 1	?	below gnathosoma, transfer anguste
PUMP 2	?	elleptic
PUMP 3	?	alate, with rounded tips
IDIOSOMA Dorsal *c1, c2*	*c1 ≈c2;e ≈f; h1 ≈4h2*	*c1<<c2; e≈½f; h1 ≈4h2*
LEG I Claw	terminal	subterminal
ω1, ω2	*ω1 > ω2*; both conical	*ω1 > ω2*; both cylindrical
φ1, φ2	*φ1> φ2*, both conical	conical *φ1 ≈φ2*, cylindrical

CHARACTERISTIC	*P. australis* Camerik & Coetzee, 1997	*P. horricomus* Savulkina, 1978
HOSTS	*Norrbomia marginatis* (Diptera: Sphaeroceridae) and muscid fly, S. Africa	ex: *Clethrionomys glareolus nest*
STIGMA	single-chambered	single-chambered
PRODORSAL SHIELD (PdS)	bell-shaped	bell-shaped
ANTERIOR EDGE (PdS)	straight	slightly arched
v1. v2	*v1≈v2*	*v1>v2*
PUMP 1	below gnathosoma, transfer anguste	?
PUMP 2	angulato-ovate, with rounded angles	?
PUMP 3	alate, with sharp tips	?
IDIOSOMA Dorsal *c1, c2*	*c1<<c2; e≈½f;, h1≈4h2*	*c1<c2; e≈½f; h1≈4h2*
LEG I Claw	subterminal	subterminal
ω1, ω2	*ω1 > ω2*; both cylindrical	?
φ1, φ2	*φ1< φ2*, both conical	?

CHARACTERISTIC	*P. hispanicus* Samsinak, 1984
HOSTS	ex: *Limosa plumosula* (Diptera: Sphaeroceridae)
STIGMA	single-chambered
PRODORSAL SHIELD (PdS)	bell-shaped
ANTERIOR EDGE (PdS)	slightly arched
v1. v2	*v1≈v2*
PUMP 1	?
PUMP 2	?
PUMP 3	?
IDIOSOMA Dorsal *c1, c2*	*c1<c2; e≈0.8 f; h1≈6.5h2*
LEG I Claw	terminal
ω1, ω2	?
φ1, φ2	?

P. collinellulalis sp. n.
(Figs 12-20)

Measurements (μm) in Table 3.

Gnathosomal capsule (Gn): dorsal cheliceral setae smooth, ch_2 slightly shorter than and medio-posterior of ch_1. Femoral (*dFe*) shorter than genual (*dGe*) setae; subcapitular (*su*) reaching to base of solenidion; accessory setigenous structure (ass) drawn in interrupted line as it was not seen in the specimen.

Pharyngeal pump system: pumps 1 and 2 clearly striated, no striation of pump 3. Pump 1 transverse-angust, with tapering ends. Pump 2 obovate, pump 3 alate.

Idiosomal dorsum: Prodorsal shield (PdS) anterior rectangular, posterior trapezoid. Stigmata incompletely divided into two-chambers, anterior of setae v_2; verticals v_1 shorter than v_2. All dorsal setae pilose, except for short h_2. Scapulars Sc_1 capitate in circular bothridia, long-stemmed; Sc_2 long. Setae c_1 longer than c_2 and *d*; *e* about three-quarter of the length of *f*; h_1 about four times the size of h_2. No cupula noticed.

Idiosomal venter: all setae smooth. Coxisternal setal distribution 3-3-3-3. Pseudoanal setae smooth, ps_2 longer than ps_1 and ps_3. Prosternal apodeme (appr) not fused with apsej, ap 5 rudimentary structures at the base of trochanter IV.

Legs: Setae smooth, barbed or pilose. Chaetotaxy and solenidiotaxy complete; empodia fan-shaped, about as long as height of claws.

Legs I: Tibiotarsus with eupathidia *ft'*, *ft"* about 1.8 times *tc'*, *tc"*; *p'*, *p"* about the same length. Solenidion ω_1 long, cylindrical; short, conical ω_2 terminally on tibiotarsus (TiTa). Conical solenidion φ_1 longer and more robust than conical φ_2. Setae *pv"* as long as *pv'*; smooth *v"* about 1.4 times barbed *v'*; *l'* slightly longer than *l"*; *d* longer than *pl'* and *pl"*; *k* proximal of φ_2. Genu: Laterals pilose at distal end, *l'* longer than *l"*; barbed *v'* as long as smooth *v2*. Femoral *d* distally spatulate; smooth *l"* shorter than barbed *l'*, *v"* longest. Trochanter: *v'* smooth and short.

Legs II: Trochanteral *v'* smooth and short. Femoral *d* pilose, stout and much longer than smooth *l'*; *v'* shortest. Genual laterals smooth, *l'* longer than *l"* and shorter than barbed *v'*. Tibial

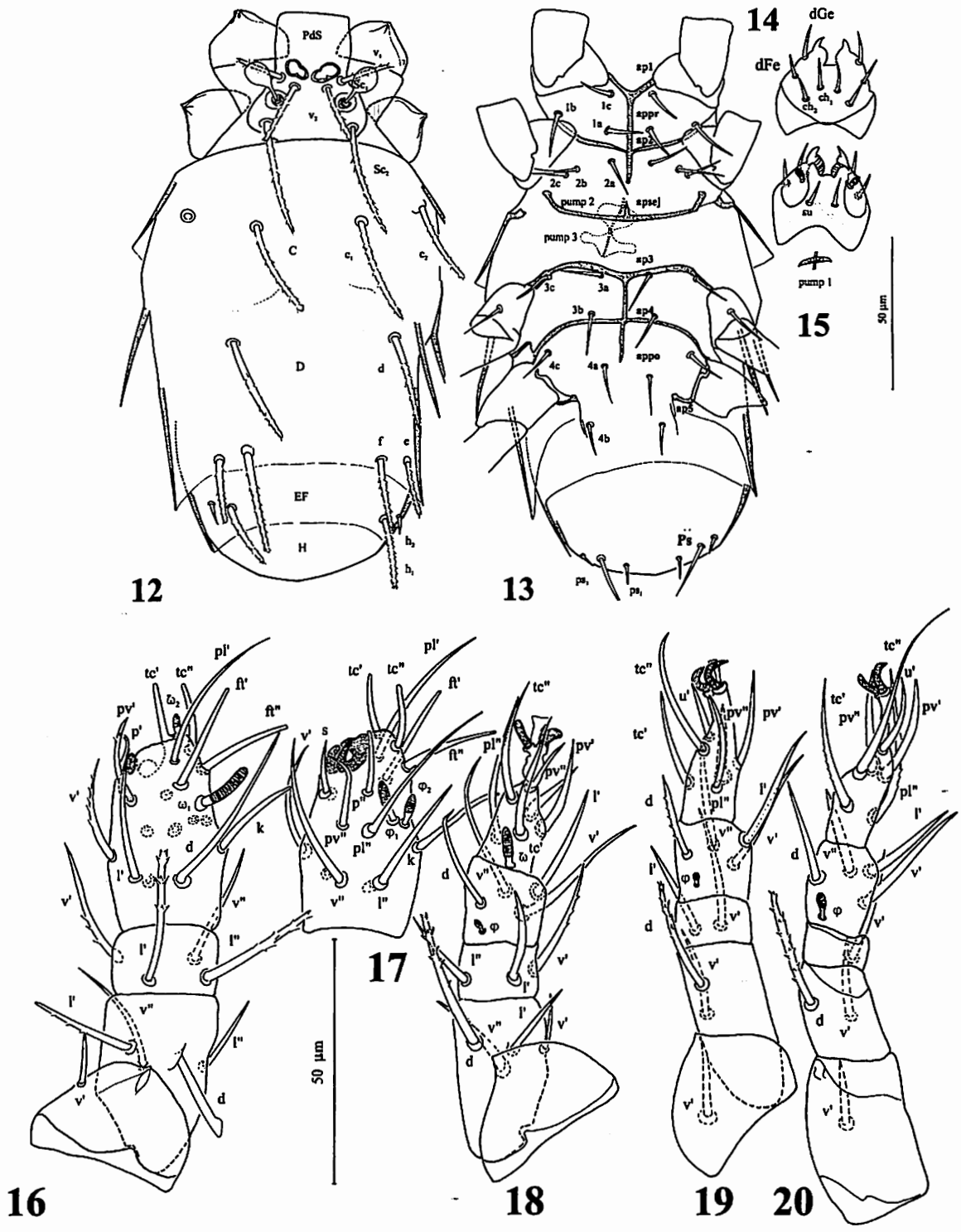
Table 3 : Measurements (µm) of *Pediculaster collinellulalis* n. sp.; phoretic females (n = 4).
Locality: Visé, near Liège, Belgium Host: Collinellula lutosa (Dipt.)
Key: AV. - average; SD. - standard deviation; L - length; W - width; ? - not measured

TYPE	Holotype	Paratype 1	Paratype 2	Paratype 3	AV.	SD.
IDIOSOMA	224.8	222.2	212.5	220.9	220.1	5.3
GNATHOSOMA (L)	25.7	25.7	25.5	27.5	26.1	0.9
(W)	5.3	5.3	6.7	?	5.8	0.8
STIGMA (L)	11.4	11.2	11.0	12.4	11.5	0.6
(W)	7.1	6.3	6.6	7.0	6.8	0.4
PROSOMA (L)	55.9	53.1	55.5	61.5	56.5	3.6
PROSOMA (W)	47.5	45.9	46.7	50.0	47.5	1.8
OPISTHPSOMA (L)	169.0	169.0	157.0	160.5	163.9	6.1
OPISTHPSOMA (W)	84.3	75.1	93.0	88.1	85.1	7.6
LEG I	92.5	94.5	98.5	99.4	96.2	3.3
LEG II	90.9	89.2	83.5	94.2	89.5	4.5
LEG III	81.3	85.3	88.6	106.5	90.4	11.1
LEG IV	118.6	118.7	116.4	126.1	120.0	4.2
DORSAL SETAE						
v1	20.0	20.8	20.9	23.2	21.2	1.4
v2	26.3	27.6	27.9	31.2	28.3	2.1
Sc1	15.0	15.4	18.7	18.7	17.0	2.0
Sc2	?	51.6	51.8	53.8	52.4	1.2
c1	43.5	35.7	43.6	44.4	41.8	4.1
c2	37.8	48.7	56.9	?	47.8	9.6
d	40.6	?	42.3	58.5	47.1	9.9
e	25.8	?	26.0	31.6	27.8	3.3
f	32.2	39.2	49.8	51.8	43.3	9.2
h1	35.5	?	43.9	47.2	42.2	6.0
h2	9.6	7.3	7.5	13.0	9.4	2.6
VENTRAL SETAE						
1a	?	13.9	11.9	12.0	12.6	1.1
1b	13.2	12.0	12.4	15.3	13.2	1.5
1c	13.3	15.5	12.3	11.2	13.1	1.8
2a	12.6	13.1	12.0	15.3	13.3	1.4
2b	13.4	19.2	18.5	18.5	17.4	2.7
2c	10.9	12.2	11.7	15.3	12.5	1.9
3a	12.1	15.2	12.6	15.3	13.8	1.7
3b	12.2	11.1	14.3	15.1	13.2	1.8
3c	15.4	15.2	15.7	23.1	17.4	3.8
4a	12.2	11.7	12.3	14.4	12.7	1.2
4b	15.2	15.1	19.1	19.1	17.1	2.3
4c	9.8	13.1	14.0	17.0	13.5	3.0
ps1	9.5	8.8	7.7	8.6	8.7	0.7
ps2	22.7	22.6	22.0	27.2	23.6	2.4
ps3	5.1	6.9	9.3	8.1	7.4	1.8

setae smooth, shortest *d* close to short, conical *φ*; *l'* shorter than verticals, *v"* longer than *v'*. Tarsal *ω* conical, much longer than tibial *φ*. All tarsal setae smooth, *pl"* longest, *tc'* as long as *tc"*; *u'* shortest.

Legs III: Trochanteral *v'* long, stout. Femoral *v'* smooth, shorter than pilose *d*. Genual setae smooth, *l'* and shorter than *v'*. Tibial *d* shortest, barbed and close to clavate solenidion *φ*. Verticals smooth, *v '* longer than *v"*; *l'* longer than *v"* and as long as v'. All tarsal setae smooth, *tc'* as long as *pl"*, *shorter* than *tc"*; *pv'* longer than ensiform *pv"*, *u'* shortest.

Legs IV: trochanteral *v'* Ensiform, smooth; smooth femoral *v'* shorter than pilose *d*. Genu carrying long, smooth seta *v'*. Tibia setae smooth, *d* close to solenidion and about as long as *l'*; *v'* longer than ensiform *v"*; *φ* clavate, larger than *φ* of leg III. Except for barbed *pl"* and *tc'*, all



Figs 12-20. *P. collinellulalis* n.sp. 12: idiosomal dorsum; 13: idiosomal venter; 14: gnathosomal dorsum; 15: gnathosomal venter, pharyngeal pump 1; 16: leg I, dorsal view; 17: leg I, tibiotarsus, ventral view; 18: leg II, dorsal view; 19: leg III, dorsal view; 20: leg IV, dorsal view.

tarsal setae smooth, *u'* shortest; *tc"* longest and reaching beyond terminal claw; *pv'* about as long as *pv"*.

Discussion

P. collinellulalis sp. n. closely resembles *P. fusarii* Smiley & Moser, 1976; *P. trombidiphilus,* Rack & Grandjean 1979; *P. moravicus* Samšiňak, 1984 and *P. muscarius,* Martin, 1978 but can be separated from these through the characteristics compiled in Table 4 below. Normal females, males and larvae not known.

Etymology: The species is named after its host *Collinellula lutosa* (Dipt.).

Table 4. Comparison of morphological characteristics of phoretic females of *P. collinellulalis, P. fusarii, P. trombidiphilus, P. muscarius, P. moravicus*

Key: ≈ -about as long as; <- shorter than;<<- much shorter than; > - longer than;>> - much longer than; ? - unknown

SPECIES		***P. colinellulalis* sp. n.**	***P. fusarii* Smiley & Moser, 1976**
HOSTS		ex *Collinellula lutosa* (Dipt.) Belgium	host unknown
CHARACTERISTICS			
STIGMATA		not touching, partly divided	touching, undivided
PRODORSAL SHIELD (PdS)		anterior rectangular, posterior trapezoid	bell-shaped
ANTERIOR EDGE (PdS)		straight	undulate
PUMP 1		transverse anguste, with tapering ends	?
PUMP 2		obovate, striated	?
PUMP 3		alate, not striated	?
IDIOSOMA	Dorsal	*c1>c2; e≈0.64f; h1 ≈ 4.5 h2*	*c1<c2; e≈0.3 f; h1≈11.7 h2*
IDIOSOMA	Ventral	*1a≈1b≈1c*	*1a≈1b≈1c*
		2a<2b>2c	*2a<2b>2c*
		3a≈3b<3c	*3a≈3c>3b*
LEG I	Claw	Subterminal	Subterminal
ω1,2		cylindrical ω1>> ω2, conical	conical ω1> ω2, conical
φ1 > φ2		φ1> φ2, both conical	φ1≈ φ2, both conical
LEG II TARSUS, TIBIA ω, φ		conical ω>>φ, clavate	*ω ≈ φ*
SPECIES		***P. trombidiphilus* Rack& V.-Grandjean, 1979**	***P. muscarius* Martin, 1978**
HOSTS		ex *Camerotrombidium* sp. Rwanda	ex *Musca domestica* L.
CHARACTERISTICS			
STIGMATA		touching, undivivded	not touching, divided
PRODORSAL SHIELD (PdS)		bell-shaped	anterior rectangular, posterior bell-shaped
ANTERIOR EDGE (PdS)		undulate	straight
PUMP 1		transverse anguste, with tapering ends	transverse anguste, with rounded ends
PUMP 2		elliptic, striated	oblong
PUMP 3		alate, partly striated	triangular with rounded corners,
IDIOSOMA	Dorsal	*c1<c2; e≈0.66f; h1≈4.5 h2*	*c1≈0.5c2; e≈0.6 f; h1≈3 h2*
IDIOSOMA	Ventral	*1a≈1b≈1c*	*1a≈1b>1c*
		2a<<2b>>2c	*2a<<2b>>2c*
		3a≈3b<3c	*3a≈3b≈3c*
LEG I	Claw	Subterminal	Subterminal
ω1,2		conical ω1> ω2, cylindrical	cylindrical ω1> ω2, conical
φ1 > φ2		conical φ1≈ φ2, cylindrical	*φ1 > φ2, both conical*
LEG II TARSUS, TIBIA ω, φ		?	?
SPECIES		***P. moravicus* Samšinák, 1984**	
HOSTS		*Leptocera (Opacifrona) coxata* Stenhammer, 1854	
CHARACTERISTICS		*Limosina ochripes* (Meigen, 1830)	
STIGMATA		touching, partly divided	
PRODORSAL SHIELD (PdS)		trapezoid	
ANTERIOR EDGE (PdS)		straight	
PUMP 1		?	
PUMP 2		?	
PUMP 3		?	
IDIOSOMA	Dorsal	*c1 ≈ 0.8 c2; e≈0.8 f; h1 ≈4h2*	
IDIOSOMA	Ventral	*1a≈ 1c>1b*	
		2a≈2b≈2c	
		3a≈3b≈3c	
LEG I	Claw	Subterminal	
ω1,2		*ω1>> ω2*, both cylindrical	
φ1 > φ2		*φ1* conical shorter than cylindrical *φ2*	
LEG II TARSUS, TIBIA ω, φ		*ω>φ*	

Table 5. Measurements (μm) of *Pediculaster helomyzalis*; phoretic females (n = 2)
Locality: ? Host: *Helomyza serrata* Linn. (Dipt.)
Key: AV. - average; SD. - standard deviation; L - length; W - width

TYPE	Holotype	Paratype 1	AV.	SD.
IDIOSOMA (L)	217.6	259.6	238.6	29.7
GNATHOSOMA (L)	36.6	31.0	33.8	4.0
(W)	43.1	41.6	42.4	1.1
STIGMA (L)	12.3	11.8	12.1	0.4
(W)	6.6	4.3	5.5	1.6
PROSOMA (L)	89.7	78.3	84.0	8.1
PROSOMA (W)	70.5	74.4	72.5	2.8
OPISTHPSOMA (L)	155.5	181.3	168.4	18.2
OPISTHPSOMA (W)	96.1	114.3	105.2	12.9
LEG I	107.3	123.0	115.2	11.1
LEG II	108.5	126.5	117.5	12.7
LEG III	111.3	152.0	131.7	28.8
LEG IV	162.5	202.8	182.7	28.5
DORSAL SETAE				
v1	34.2	32.8	33.5	1.0
v2	30.9	39.8	35.4	6.3
Sc1	24.1	25.4	24.8	0.9
Sc2	69.2	83.8	76.5	10.3
c1	55.5	61.6	58.6	4.3
c2	62.4	78.3	70.4	11.2
d	55.4	78.4	66.9	16.3
e	19.2	36.0	27.6	11.9
f	60.8	68.0	64.4	5.1
h1	50.2	55.1	52.7	3.5
h2	13.8	19.3	16.6	3.9
VENTRAL SETAE				
1a	19.7	19.4	19.6	0.2
1b	19.4	19.3	19.4	0.1
1c	20.8	18.6	19.7	1.6
2a	24.4	24.7	24.6	0.2
2b	26.6	23.0	24.8	2.5
2c	19.9	16.8	18.4	2.2
3a	20.5	19.6	20.1	0.6
3b	21.7	22.5	22.1	0.6
3c	24.7	23.1	23.9	1.1
4a	20.2	19.8	20.0	0.3
4b	32.2	31.7	32.0	0.4
4c	27.6	26.5	27.1	0.8
ps1	11.3	8.5	9.9	2.0
ps2	45.1	44.6	44.9	0.4
ps3	16.5	16.2	16.4	0.2

***P. helomyzalis* sp. n.**
(Figs 21-29)

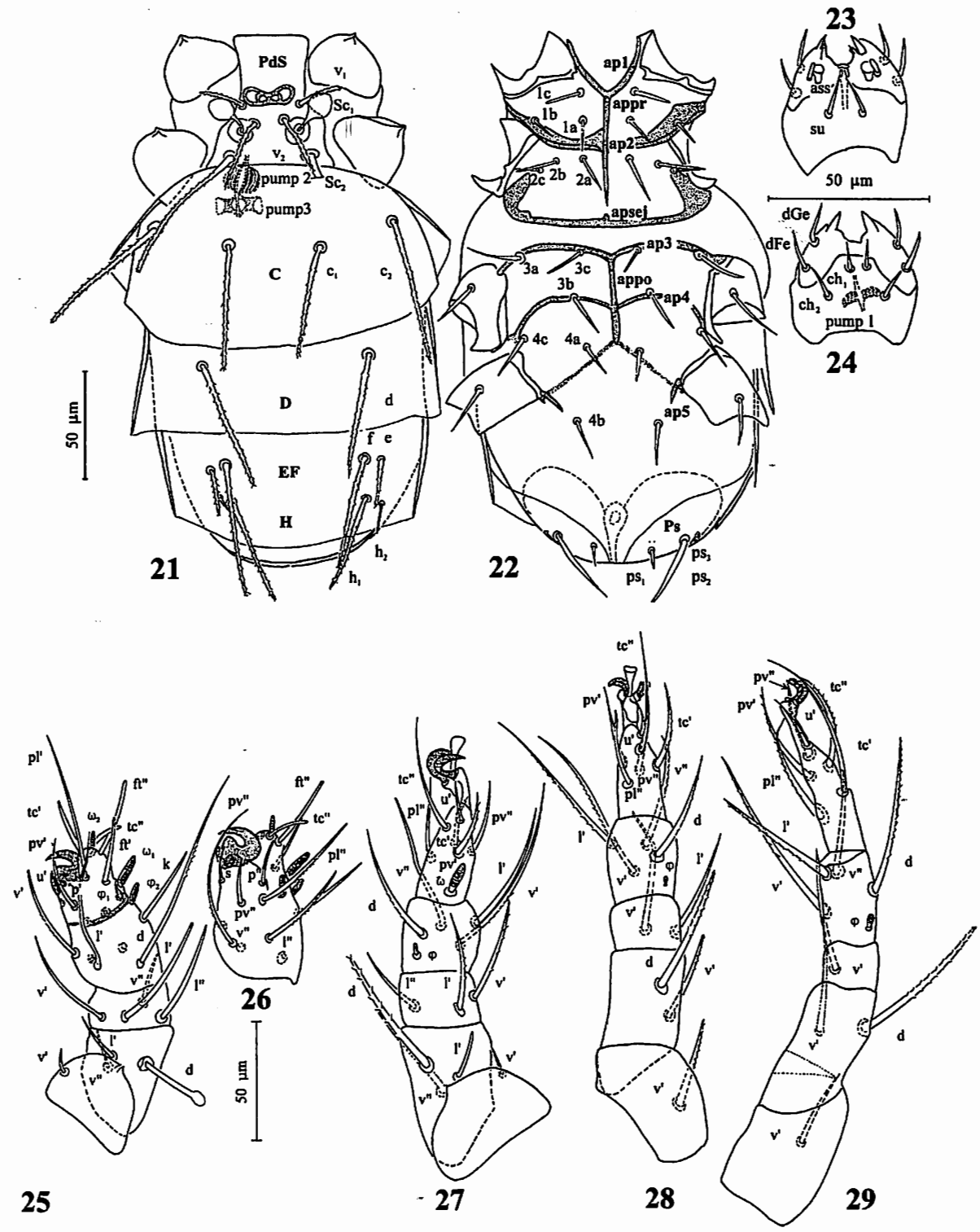
Measurements (μm) in Table 5.

Gnathosomal capsule (Gn): dorsal cheliceral setae $ch_{1,2}$ smooth, ch_1 shorter than and medio-anterior of ch_2. Femoral (*dFe*) slightly shorter than genual (*dGe*); subcapitular (*su*) reaching to middle of accessory setigenous structure (ass), ass close to solenidion.

Pharyngeal pump system: pumps 1 and 2 clearly striated no striation of pump 3. Pump 1 transverse-angust (with parallel edges). Pump 2 elliptic, pump 3 transverse-oblong.

Idiosomal dorsum: Prodorsal shield (PdS) anterior rectangular, posterior bell-shaped Stigmata completely divided into two-chambers. All dorsal setae pilose, except for short h_2. Vertical v_1 shorter than v_2. Scapulars Sc_1 capitate in circular bothridia; Sc_2 long, reaching past insertion of setae *c*; c_1 shorter than c_2; c_2 longer than *d*; *e* about 0.4 the size of *f*; h_1 about a third of h_2. No cupula seen.

Idiosomal venter: all setae smooth. Pseudoanal



Figs 21-29. *P. helomyzalis* n.sp. 21: idiosomal dorsum; 22: idiosomal venter; 23: gnathosomal venter; 24: gnathosomal dorsum, pharyngeal pump 1; 25: leg I, dorso-antaxial view; 26: leg I, tibiotarsus, ventro-paraxial view; 27: leg II, dorsal view; 28: leg III, dorsal view; 29: leg IV, dorso-paraxial view.

setae *ps2* long and stout, longest setae, ps_3 shortest. Prosternal apodeme (appr) not fused with apsej, ap 5 rudimentary structures at the base of trochanter IV.

Idiosomal venter: setae *1a, b*, c about the same length, *2a* as long as *2b, 2c* shortest.

Legs: Setae smooth, barbed or pilose. Chaetotaxy and solenidiotaxy complete; empodia fan-shaped, longer than height of the claws.

Legs I: Tibiotarsus with eupathidia *ft'*, *ft"* longer than *tc'*, *tc"*; *p'* shorter than *p"*. Solenidion ω_1 long, conical, ω_2 conical, short, terminally on tibiotarsus (TiTa). Cylindrical solenidion φ_1 longer than conical φ_2. Seta *pv'* longer than *pv"*, both smooth; barbed *v'* much shorter than barbed *v"*; smooth *l'* longer than barbed *l"*; medially barbed seta *d* longest, seta *k* proximal of φ_2. Genu: all setae smooth, *l'* as long as *l"*; vertical *v'* about twice as long as v". Femoral seta *d* terminally spatulate, *l'* longer than *v"*. Trochanter: seta *v'* smooth and short.

Legs II: Trochanteral *v'* short, thin and smooth. Femoral *d* pilose, stout and much longer than short and smooth *l'*; smooth *v"* shorter than *d*, longer than *l'*. Genual seta *l"* smooth, shorter than barbed *l'*, which in turn is shorter than barbed *v'*. Tibial *d* barbed, shortest seta, close to cylindrical φ; barbed *v'* longer than smooth *v"*; *l'* smooth and shorter than verticals. Tarsal ω long, conical. Except *pv'*, all tarsal setae smooth, *pv'* shorter than *pv"*; *tc"* longest, *u'* shortest.

Legs III: Trochanteral *v'* long and barbed. Femoral *v'* barbed, shorter than pilose *d*. Genual *l'* barbed and shorter than smooth *v'*. Tibial *d* shortest, barbed and associated with clavate φ. Barbed *v '* longer than barbed *v"*. Barbed *l'* as long as *v'*. Except *tc'*, all tarsal setae smooth. Tarsal *tc'* shorter than *tc"*. Primiventrals *pv'* and *pv"* of equal length. Seta *u'* shortest.

Legs IV: trochanteral *v'* long, smooth; smooth femoral *v'* shorter than pilose *d*. Genu carrying long, smooth seta *v'*. Tibia with barbed seta *d* close to clavate φ, shorter than barbed *v'*; *v'* longer than *v"*; *v"* shorter than *l'*. Tarsal seta *pl"* barbed, shorter than smooth *tc'*; tc' longer than barbed *tc"*. Barbed *pv'* little shorter than smooth *pv"*; *u'* shortest seta.

Discussion

P. helomyzalis sp. n. closely resembles *P. pseudomanicatus* Camerik 2001 and *P. malyi* Samšiòák, 1989, but can be separated from these through the characteristics compiled in Table 6 below. Normal females, males and larvae not known.

Etymology: The species is named after its host *Helomyzalis serrata* Linn. (Dipt.).

Table 6. Comparison of morphological characteristics of phoretic females of *P. helomyzalis*, *P. pseudomanicatus*, *P. malyi*
Key: ≈ - about as long as; > - longer than;>> - much longer than; ? - unknown.

SPECIES		*P. helomyzalis sp. n.*	*P. pseudomanicatus* Camerik, 2001	*P. malyi* Samšiňák1989
HOSTS		*Helomyza serrata* Linn. (Dipt.)	Lab culture of *Nigrospora* sp.(Fungi)	*Leptocera cilifera* (Rond.) Dipt.
CHARACTERISTICS				
STIGMTA		completely divided into two chambers	completely divided into two chambers	completely divided into two chambers
PRODORSAL SHIELD (PdS)		anterior rectangular, posterior bell-shaped	anterior rectangular, posterior bell-shaped	anterior rectangular, posterior bell-shaped
ANTERIOR EDGE (PdS)		straight	straight	arched
PUMP 1		transverse angulate	transverse angulate	?
PUMP 2		elliptic	rhomboid-elliptic	?
PUMP 3		transverse oblong	transverse allate	?
IDIOSOMA	Dorsal	*c1 ≈0.8 c2;e≈0.4f;h1 ≈3.2h2*	*c1 ≈0.6 c2;e 0.4 f; h1 ≈3.7h2;*	*c1 ≈0.9c2; e≈0.4 f;h1 ≈3.8h2*
IDIOSOMA	Ventral	*1a≈1c=1b*	*1a≈1c<1b*	*1a≈1c≈1b*
		2a>2b>2c	*2a≈2b>2c*	*2a>2b≈2c*
		3a<3b<3c	*3a≈3b≈3c*	*3a≈3b≈3c*
LEG I	Claw	subterminal	terminal	subterminal
ω1,2		cylindrical ω1 > ω2, conical	*ω1 ≈ ω2*, both conical	*ω1> ω2*, both cylindrical
φ1; φ2		*φ1 ≈ φ2*, both cylindrical	conical φ1 > φ2 conical	*?*
LEG II TARSUS ,TIBIA ω, φ		conical ω >> φ, conical	ω > φ, both conical	*ω > φ*, both conical (?)

P. kilimanjarensis sp. n.
(Figs 30-40)

Measurements (μm) in Table 7.

Gnathosomal capsule (Gn): dorsal cheliceral setae $ch_{1,2}$ smooth; ch_2 shorter than and medio-posterior of ch_1. Femoral (*dFe*) as long as genual (*dGe*) setae; subcapitular (*su*) reaching beyond solenidion and *ass*. Pharyngeal pump system: pump 1 not seen; pump 2 and 3 clearly striated. Pump 2 elliptical, pump 3 transverse allate.

Idiosomal dorsum: Prodorsal shield (PdS) anterior rectangular, distal edge straight. Stigmata completely divided into three chambers, latero-anterior of verticals; v_1 smooth and shorter than pilose v_2. All other dorsal setae pilose. Scapulars Sc_1 capitate, inserted in circular bothridia; Sc_2 little longer than *v2*. Seta c_1 as long as or slightly shorter than c_2; *f* about 1,6 seta *e*; h_1 about twice the size of h_2. No cupula noticed.

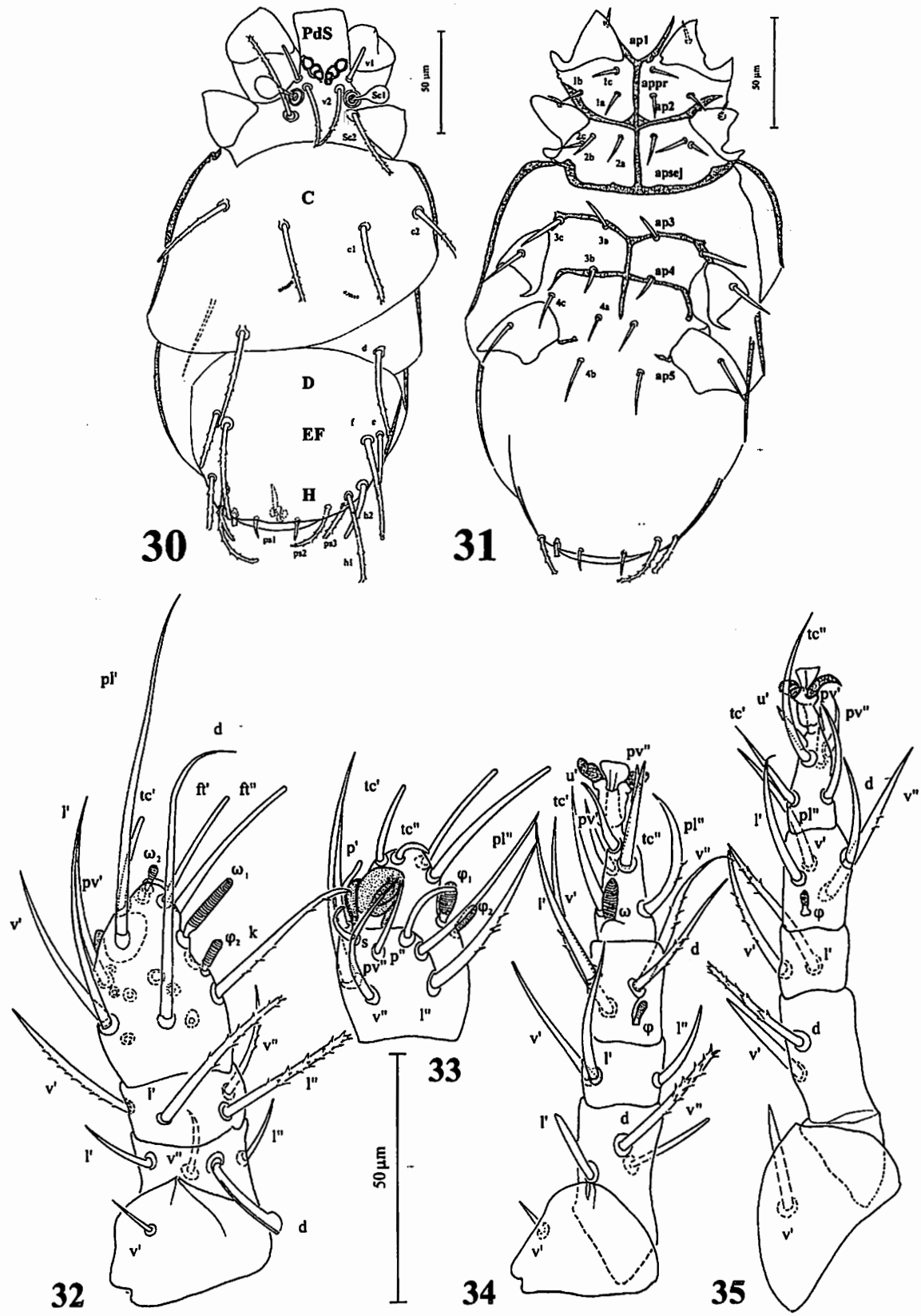
Table 7. Measurments (μm) of *Pediculaster kilimanjarensis*; phoretic females (n = 3)
Locality: Tanzania (Tanganyika); Host: *Sphyracephala munroi* E. Curr. (Dipt.)
Key: AV.- average; SD.- standard deviation; L - length; W - width; ? - not measured

TYPE	Holotype	Paratype 1	Paratype 2	AV.	SD.
IDIOSOMA (L)	179.4	241.8	236.6	219.3	34.6
STIGMA (L)	16.0	16.0	16.0	16.0	0.0
(W)	5.3	5.3	6.7	5.8	0.8
PROSOMA (L)	52.0	65.0	65.0	60.7	7.5
PROSOMA (W)	39.0	54.6	52.0	48.5	8.4
OPISTHPSOMA (L)	127.4	176.8	171.6	158.6	27.1
OPISTHPSOMA (W)	65.0	80.6	78.0	74.5	8.4
LEG I	82.5	78.0	83.2	81.2	2.8
LEG II	?	91.0	91.0	91.0	0.0
LEG III	97.1	104.0	93.6	98.2	5.3
LEG IV	106.4	140.4	124.8	123.9	17.0
DORSAL SETAE					
v1	20.0	23.9	20.0	21.3	2.3
v2	46.6	35.9	53.2	45.2	8.7
Sc1	20.0	23.9	22.6	22.2	2.0
Sc2	46.6	45.2	46.6	46.1	0.8
c1	42.6	39.9	37.2	39.9	2.7
c2	53.2	46.6	46.6	48.8	3.8
d	46.6	39.9	49.2	45.2	4.8
e	33.3	33.3	33.3	33.3	0.0
f	50.5	57.2	53.2	53.6	3.4
h1	59.9	54.5	55.9	56.8	2.8
h2	26.6	26.0	30.6	27.7	2.5
VENTRAL SETAE					
1a	13.3	10.6	9.3	11.1	2.0
1b	13.3	9.3	8.0	10.2	2.8
1c	13.3	10.6	9.3	11.1	2.0
2a	14.6	14.6	14.6	14.6	0.0
2b	13.3	10.6	13.3	12.4	1.6
2c	12.0	8.0	8.0	9.3	2.3
3a	?	10.6	13.3	12.0	1.9
3b	9.3	10.6	12.0	10.6	1.4
3c	?	20.0	18.6	19.3	1.0
4a	14.6	13.3	20.0	16.0	3.6
4b	20.0	22.6	12.0	18.2	5.5
4c	26.6	17.3	18.6	20.8	5.0
ps1	9.3	18.0	10.6	12.6	4.7
ps2	21.3	25.3	26.6	24.4	2.8
ps3	21.3	21.3	22.7	21.8	0.8

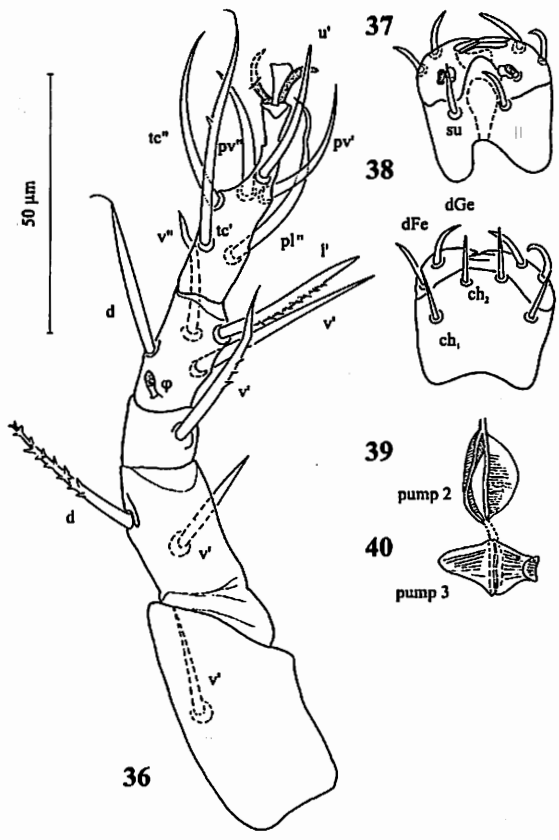
Idiosomal venter: Except for pilose setae $ps_{2,3}$ all setae smooth. It is not common in the genus that ps_3 is pilose. Pseudo anal setae *ps2* longer than ps_1 and ps_3. Prosternal apodeme (appr) fused with apsej, ap.5, small rudimentary structures at the base of trochanter IV.

Legs: Setae smooth, barbed or pilose. Chaetotaxy and solenidiotaxy complete; empodia fan-shaped, about as long as height of the claws.

Legs I: Claw subterminal. Tibiotarsus with eupathidia *ft'* shorter than *ft''*. Seta *tc'* half the size of *ft''*, *tc''* curved forward; *p'*, *p''* about equally long. Solenidion ω_1 very long, cylindrical; short, clavate ω_2 terminally on tibiotarsus (TiTa). Clavate φ_1 longer and more robust than clavate φ_2. Setae *pv'* much longer than *pv''*; ventrals smooth, *v'* longer then *v''*; smooth *l'* longer than barbed *l''*; *d* about as long as *pl'*, *k* barbed (unusual in the genus) and proximal of φ_2. Genu: Laterals pilose at distal end, *l'* as long as *l''*; *v'* longer than *v''*, both barbed. Femoral setae smooth; *d* robust, terminally semi-spatulate; *l'* slightly as long as *l''*, *v''*. Trochanter: *v'* smooth and short.



Figs 30-35. *P. kilimanjarensis* n.sp. 30: idiosoma, dorsal view; 31: idiosomal ventral view; 32: leg I, dorsal view; 33: leg I, tibiotarsus, ventral view; 34: leg II, dorsal view; 35: leg III, dorsal view.



Figs 36-40. *P. kilimanjarensis* n.sp. 36: leg IV, dorsal view; 37: gnathosomal venter; 38: gnathosomal dorsum; 39: pharyngeal pump 2; 40: pharyngeal pump 3.

Legs II: Claws with pads, robust. Trochanteral *v'* relatively short and smooth. Femoral *d* pilose, stout and much longer than ensiform *l'*, and smooth *v"*. Genual seta smooth, *l'* as long as *v'*, and longer than *l"*. Tibial *d* slightly pilose and shortest seta, close to clavate *φ*; smooth *l'* shorter than barbed *v'* and about as long as barbed *v"*. Tarsal *ω* robust, clavate. Seta *pl"* barbed and robust; *tc'* longer than *tc"* (unusual for the genus); primiventrals robust, *pv"* longer then *pv'*; u' about as long as *pv'*, usually seta *u* is the shortest.

Legs III: Trochanteral *v'* ensiform, robust. Femoral *v'* ensiform, robust shorter than pilose *d*. Genual *l'* terminally pilose and little longer than barbed *v'*. Tibial *d* smooth not close to solenidion *φ* (unusual for the genus). Smooth *v'* shorter than slightly barbed *v"*; *v"* longer than *l'*. All tarsal setae smooth. Tarsal *tc'* shorter than *tc"*. Primiventrals stout, equal in length; *u'* shortest seta.

Legs IV: trochanteral *v'* long, smooth; smooth, ensiform femoral *v'* shorter than pilose *d*. Genu carrying long, barbed seta *v'*. Tibia with smooth, long seta *d* close to *φ* and about as long as barbed *l'*; ventrals smooth, *v'* much longer than *v"*. Except for *tc'* with little barb, all tarsal setae smooth, *u'* as long as primiventrals; *tc"* shorter than *tc'*. One of the simple claws is partly broken.

Discussion

P. kilimanjarensis sp. n. with its three stigmatal chambers stands clearly apart from all other known *Pediculaster* species. Besides the three-chambered stigmata the species has several other characteristics aberrant for the genus: tarsal *tc'* longer than *tc"* of legs II (usually the last is the longest seta); u' of the same leg is about as long as *pv'* (normally *u'* is the shortest tarsal seta). Again, seta ps_3 is usually smooth and about the same size and shape as ps_1; in this species ps_3 is longer, stouter and pilose. Normal females, males and larvae are not known.

Etymology: The species is named after the locality of collection: the Kilimanjaro in Tanzania (former Tanganyka).

Acknowledgements

Dr. H. Dr. A. Fain of Royal Institute of Natural Sciences of Belgium in Brussels kindly lend me slide material from the Institute's collections and has most graciously received me during my stay. My gratitude to Dr. J. Harington who improved the English of this manuscript. The Research Committee of the University of the Witwatersrand provided the funding for travelling abroad.

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Bulletin S.R.B.E./K.B.V.E., 142 (2006) : 155-172

Coup d'œil sur la biodiversité des Braconidae (Hymenoptera, Ichneumonoidea) de Guyane française et reclassification de certaines espèces décrites par Brullé

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Abstract

Here, we present for the first time a preliminary check-list of Braconids' genera from French Guiana. Our collects, since 1993 to May 2001, have resulted in 4110 specimens belonging to at least 182 genera, 888 species (or morpho-species) and 22 subfamilies. Many of these genera are reported for the first time from this French over-seas territory. New repartition data are also given for several taxa. Five new combinations and one new synonymy are given : *Megacoeloides annulatus* (Brullé, 1846) for *Bracon annulatus*, *Cyanopterus punctum* (Brullé, 1846) for *Bracon punctum*, *Digonogastra striata* (Brullé, 1846) for *Bracon striatus*, *D. affinis* (Brullé, 1846) for *Bracon* affinis, *D. alternans* (Brullé, 1846) for *B. alternans*. *Megacoeloides clypeolus* (Szépligeti, 1904) is a new junior synonym of *M. annulatus* (Brullé, 1846).

Keywords: French Guiana, check-list, new combinations, new synonymy.

Résumé

Nous présentons ici, un bilan provisoire des spécimens d'Hyménoptères Braconidae récoltés lors de nos différentes missions et collaborations en Guyane française, de 1993 à 2001. Ces récoltes ont permis de rassembler en collection un total de 4110 spécimens. L'ensemble de ces spécimens révèlent la présence en Guyane Française d'au moins 22 sous-familles, 182 genres et 888 espèces (ou morpho-espèces) de Braconidae. La majorité des genres rapportés ici sont signalés pour la première fois de ce département Français d'Outre-Mer. De nouvelles données sur la répartition de plusieurs taxons sont fournies. Plusieurs nouvelles combinaisons sont reconnues : *Megacoeloides annulatus* (Brullé, 1846) pour *Bracon annulatus*, *Cyanopterus punctum* (Brullé, 1846) pour *Bracon punctum*, *Digonogastra striata* (Brullé, 1846) pour *Bracon striatus*, *D. affinis* (Brullé, 1846) pour *Bracon* affinis, *D. alternans* (Brullé, 1846) pour *B. alternans*. *Megacoeloides clypeolus* (Szépligeti, 1904) est reconnu comme synonyme récent de *M. annulatus*.