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The *Trimalaconothrus* species from South Africa (Acari: Oribatida: Malaconothridae)

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Abstract — Five new species of the genus *Trimalaconothrus, T. binodulus, T. duoaculeus, T. obesus, T. punctus* and *T. rectus*, from South Africa are described. A key to species of the family Malaconothridae (*Malaconothrus* and *Trimalaconothrus*) of South Africa is given.

Key words — Acari, Oribatida, Malaconothridae, *Trimalaconothrus*, new species, South Africa.

Introduction

Weigmann (1997) published a detailed report on morphology and phylogeny of the central European representatives of Malaconothroidea. As far as the family Malaconothridae is concerned, this study was, however, restricted to the genera *Malaconothrus* Berlese 1904 and *Trimalaconothrus* Berlese 1916, as these are the only Malaconothridae occurring in the Palearctic Region. The two genera are separated by monodactyle legs in *Malaconothrus* and tridactyle legs in *Trimalaconothrus*, which is regarded as plesiomorphous in adults.

Two more genera belong to this family, namely *Fossonothrus* Hammer 1962 and *Zeanothrus* Hammer 1966, both genera are similar to *Trimalaconothrus* in having tridactyle tarsi. The most important differences between *Fossonothrus* and *Trimalaconothrus* are the indentation of the median part of the notogaster (forming a cavity which separates the two longitudinal dorsal ridges), the lateral displacement of notogastral setae c_1 (thus $(c_1\text{-}c_1) > (d_1\text{-}d_1)$), and the convex shape of the medial part of the posterior border of epimera IV. *Fossonothrus* presently comprises three species viz. *F. latus* Hammer 1962 from the Andes mountains, *F. novaezealandicus* Hammer 1966 from New Zealand and *F. wallworki* Stary & Block 1995 from South Georgia in the sub-Antarctic. Only one species belongs to the genus *Zeanothrus*, namely *Z. elegans* Hammer 1966, described from New Zealand. Hammer (1966) distinguished this genus from *Trimalaconothrus* by the arched projection ("anterior border projects as a broad tongue" Hammer 1966 p. 21) of the anterior border of the notogaster and the degree of separation between the left and right epimera (coxisterni).

This is the second report of the family Malaconothridae from South Africa, and first record of the genus *Trimalaconothrus* from South Africa. Representatives of this genus are not widely distributed and occur mainly but not exclusively, in moist to wet habitats, as well as being completely aquatic.

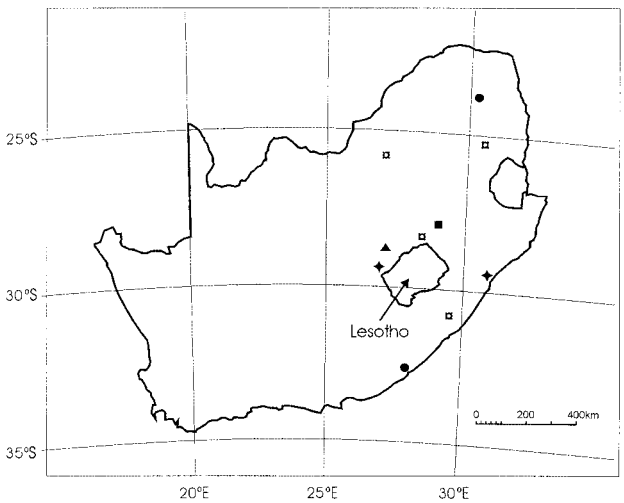


Fig. 1. Map of localities of *Trimalaconothrus* in South Africa. Triangle: *Trimalaconothrus binodulus* sp. nov. Circles: *T. duoaculeus* sp. nov. Solid square: *T. obesus* sp. nov. Open squares: *T. punctus* sp. nov. Diamonds: *T. rectus* sp. nov.

Trimalaconothrus binodulus sp. nov.
(Figs. 2−8)

Measurements (μm). Body length 572−600 (av. 584), width 326−340 (av. 333).

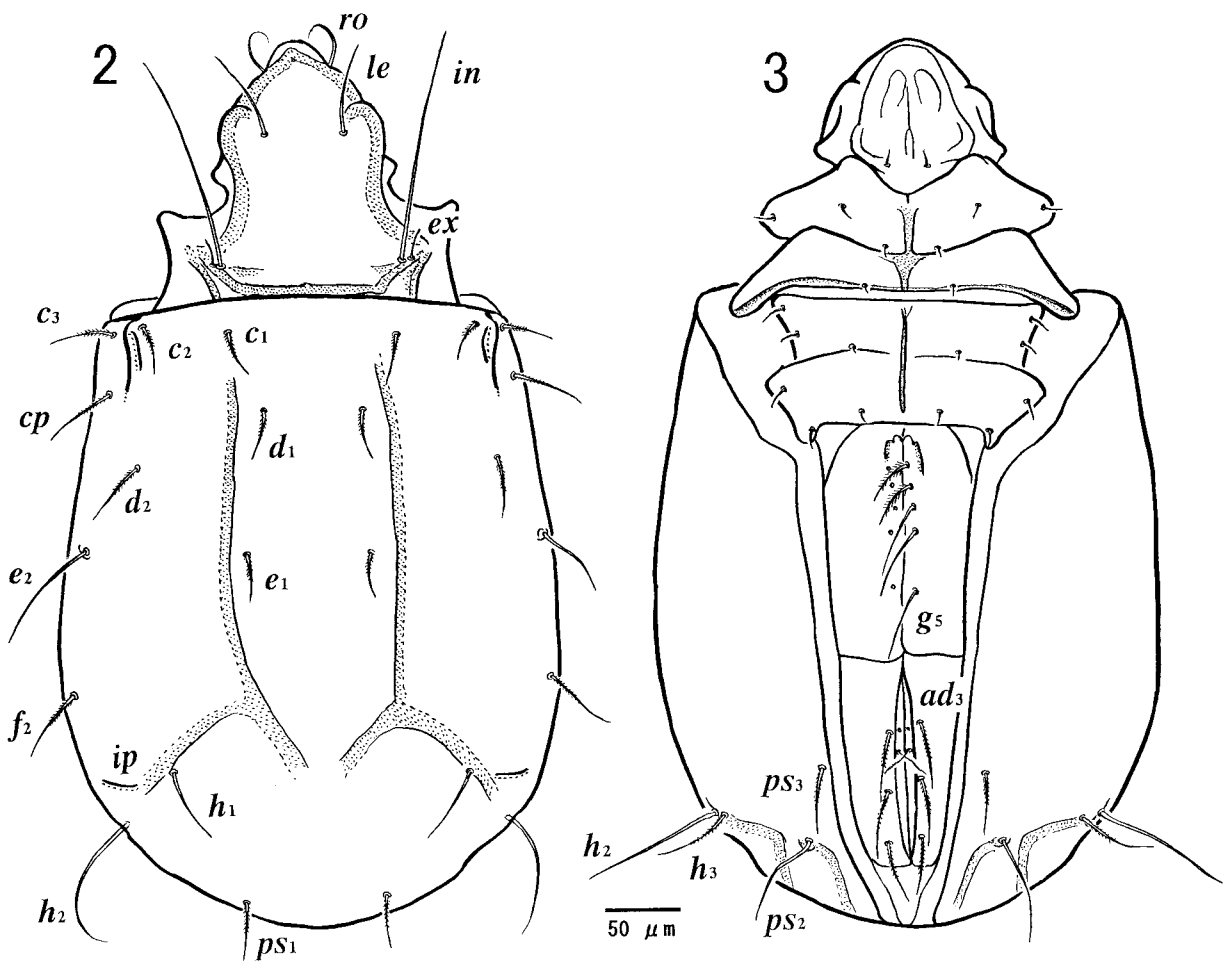
Color. Yellowish brown.

Prodorsum. Rostrum rounded. Pedotectum I well

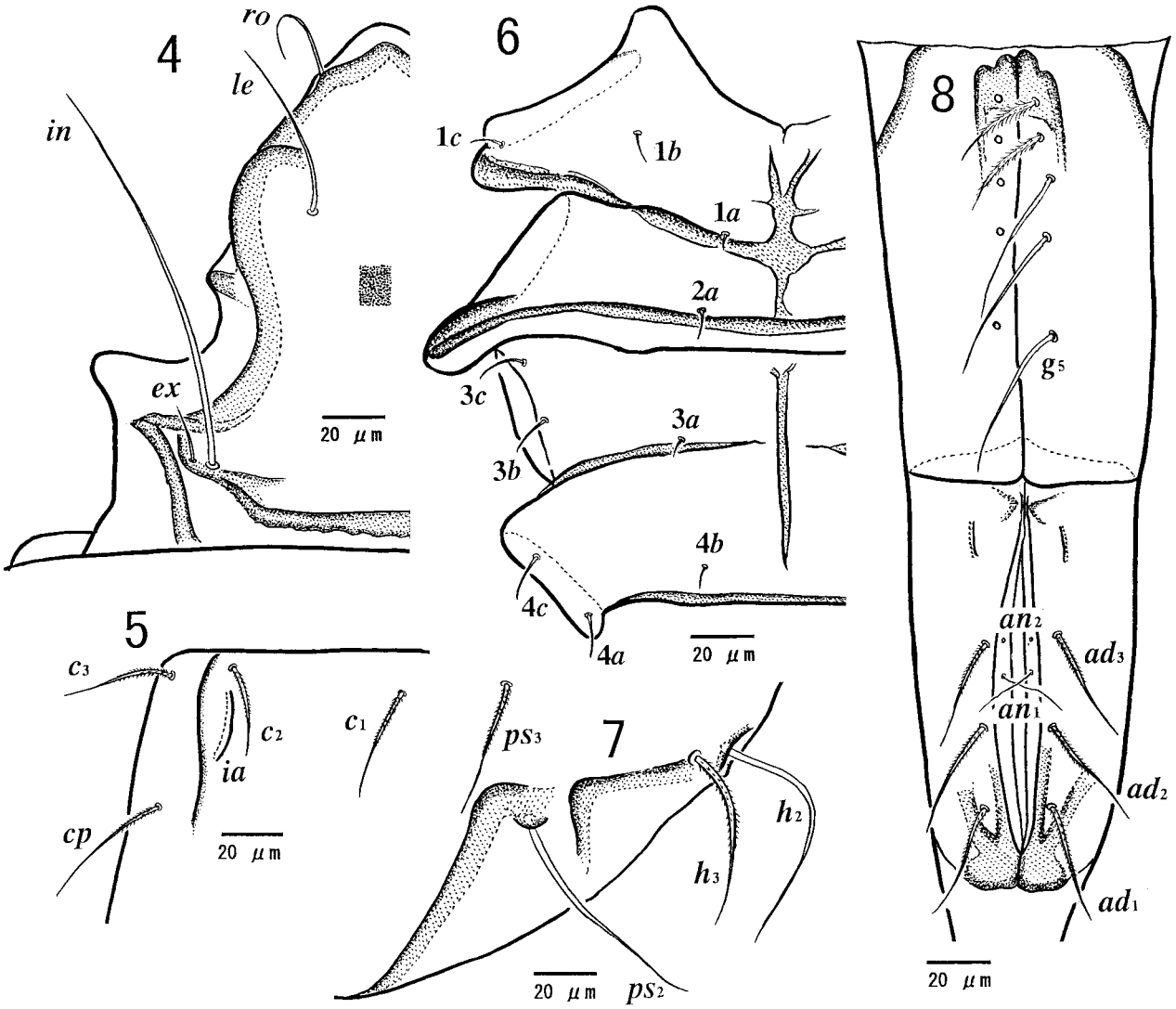
Table 1. Localities of *Trimalaconothrus* in South Africa.

No.[1]	Distribution[2]	Locus[3]	Collecting date	Collector	Habitat
Trimalaconothrus binodulus sp. nov.					
3795	Korannabberg, FS	2827 Cc	11 Sep 1993	C. de Vries	Sediment in natural rock pools on mountain.
3797	Korannabberg, FS	2827 Cc	11 Sep 1993	C. de Vries	Sediment in natural aquaria (#4) on mountain.
3798	Korannabberg, FS	2827 Cc	11 Sep 1993	C. de Vries	Sediment in natural aquaria (#5) on mountain.
3799	Korannabberg, FS	2827 Cc	11 Sep 1993	C. de Vries	Sediment in natural aquaria (#35) on mountain.
Trimalaconothrus duoaculeus sp. nov.					
3661	Letsitele, LP	2330 Cd	24 Oct 1989	C.J. Cilliers	In dam on *Salvinia molesta*.
3662	Cintsa, EC	3228 Ca	1 Dec 1989	C.M. Engelbrecht	Decomposed plant debris.
Trimalaconothrus obesus sp. nov.					
1889	Verkykerskop, FS	2729 Cd	20 Jan 1982	J.P. Eksteen	In moss at natural fountain.
1890	Verkykerskop, FS	2729 Cd	20 Jan 1982	J.P. Eksteen	In moss at natural fountain.
Trimalaconothrus punctus sp. nov.					
869	Rustenburg, NW	2527 Cb	21 Apr 1962	A.J. Els	Soil under indigenous shrub.
1985	Kokstad, KZN	3029 Db	2 Oct 1982	C.M. Engelbrecht	Moist soil under indigenous bush.
2892	Sabie, MP	2530 Bb	31 Jul 1982	R. Earl	Moist soil in dense indigenous forest.
2900	Golden Gate, FS	2828 Bc	12 Nov 1982	C.M. Engelbrecht	Moist soil with plant debris.
3463	Golden Gate, FS	2828 Da	18 Mrt 1986	C.M. Engelbrecht	Moist soil with plant debris.
Trimalaconothrus rectus sp. nov.					
1634	Ladybrand, FS	2927 Ab	30 Sep 1981	C.M. Engelbrecht	Moist moss near stream under shady trees.
1636	Ladybrand, FS	2927 Ab	30 Sep 1981	C.M. Engelbrecht	Organic-rich soil with indigenous plants.
1638	Ladybrand, FS	2927 Ab	30 Sep 1981	C.M. Engelbrecht	Organic-rich soil with dry Pine debris.
1933	Ballitoville, KZN	2931 Ca	2 Sep 1982	C.M. Engelbrecht	Moist organic-rich soil in indigenous forest.

[1] Bottle number of specimens in National Museum, Bloemfontein.
[2] EC=Eastern Cape; FS=Free State; KZN=Kwazulu-Natal; LP=Limpopo Province; MP=Mpumalanga Province; NW=North West Province.
[3] First four digits represent south latitude and nast longitude of the locality (e.g. 2827 means 28 south and 27 east). Each 1° square is divided into 4 blocks, and indicated A, B, C and D. Each of these blocks are divided into 4 blocks again and indicated a, b, c and d.



Figs. 2–3. *Trimalaconothrus binodulus* sp. nov. (holotype)— 2. Dorsal view; 3. Ventral view.

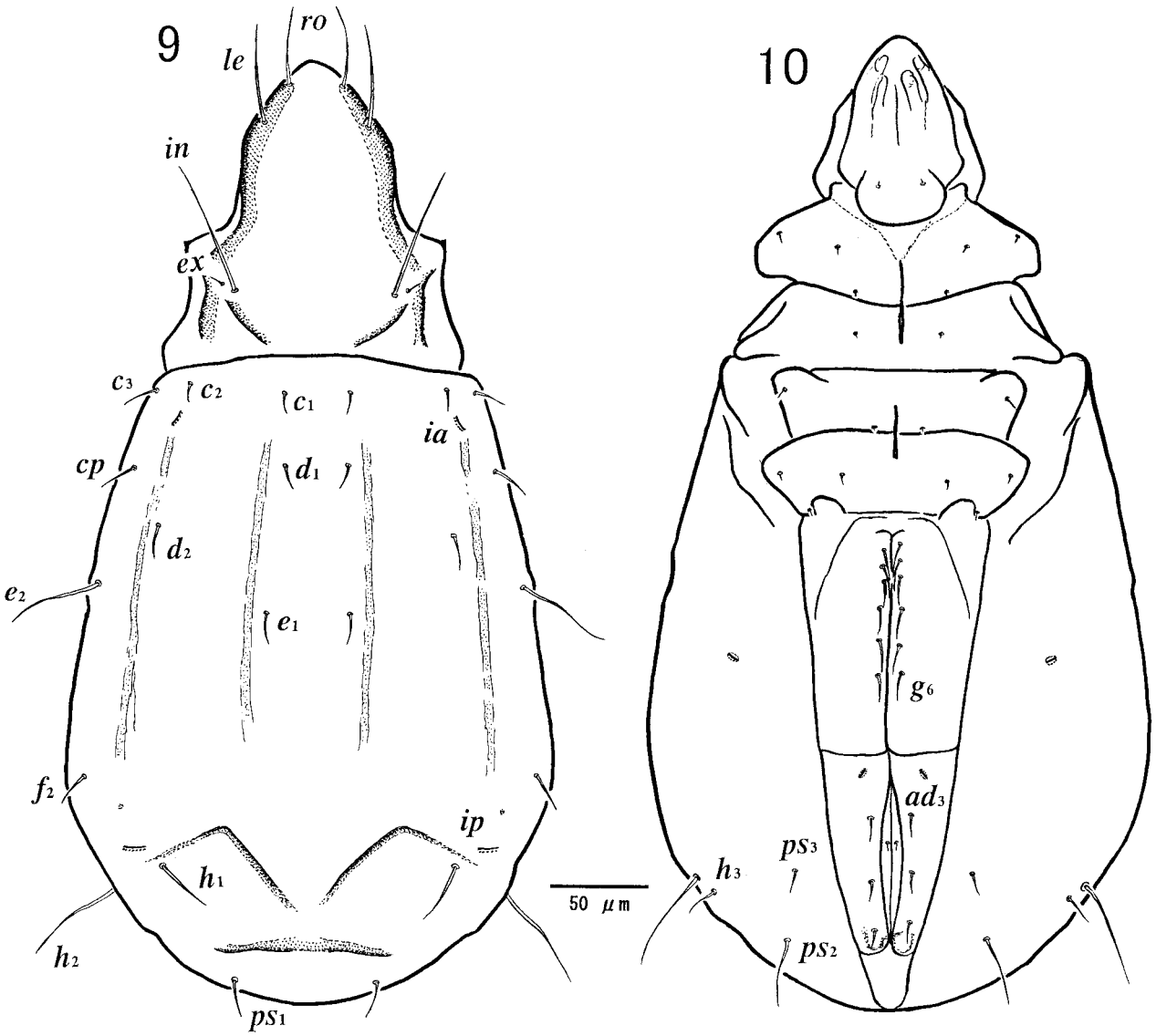


Figs. 4–8. *Trimalaconothrus binodulus* sp. nov. (holotype)— 4. Prodorsum; 5. Antero-lateral view of notogaster; 6. Epimerata I-IV; 7. Postero-lateral part of notogaster (ventral view); 8. Genital and anal plates

marked, pointed. Lamellar ridge S-shaped and very conspicuous; anteriorly broadened and curved, projecting over lateral margin of prodorsum; the posterior part thickened behind interlamellar (*in*) and exobothridial setae (*ex*). Transverse ridge present between interlamellar setae. All prodorsal setae smooth and thin; rostral seta (*ro*) curled; lamellar seta (le) of medium length; interlamellar setae very long reaching anterior rostral margin; exobothridial seta very short; relative length and mutual distances between setae as follows: $in > le > ro > ex$; $ro \fallingdotseq (ro\text{-}ro)$; $le > (le\text{-}le)$; $in > (in\text{-}in)$; $ex < (ex\text{-}ex)$. Integument of prodorsum minutely punctate.

Notogaster. Anterior margin of notogaster slightly convex. Lateral side of notogaster gently swollen. Notogastral setae c_1, c_2, c_3, *cp*, d_1, d_2, e_1, f_2, h_3, ps_1 and ps_3 very weakly barbed, short; the remaining setae e_2, h_1, h_2 and ps_2 smooth, thin, and longer than barbed setae. Relative lengths and mutual distances of notogastral setae as follows: $h_2 > e_2 > ps_2 > h_1 > h_3 > f_2 > cp = ps_3 > d_2 = c_3 = ps_1 > c_1 = c_2 = d_1 = e_1$; $(h_1\text{-}h_1) > (c_1\text{-}c_1) > (e_1\text{-}e_1) > (d_1\text{-}d_1)$; $(h_1\text{-}h_1) = 1.8 \times (c_1\text{-}c_1)$; $(c_1\text{-}c_2) = 2.7 \times (c_2\text{-}c_3)$. Parallel ridges running laterally of setae d_1 and e_1, bifurcating posteriorly, ending posterolaterally a little beyond seta h_1 and posteromedially, not touching each other; short longitudinal ridge present laterally of seta c_2 and lyriffisure *ia*. Integument of notogaster finely punctate.

Ventral side. Anogenital chaetotaxy 5-0-2-3. Anal plate with two setae; an_2 minute, hardly visible, situated at the same level of ad_3; an_1 very conspicuous and long, situated at mid-level between ad_2 and ad_3. Adanal plate with three barbed setae. Genital plate with 5 long setae; anterior two setae finely barbed and shorter than other genital setae, posterior three setae smooth and long. Relative lengths and mutual distances of genital setae as follows: $g_5 = g_4 > g_3 = g_2 > g_1$; $(g_5\text{-}g_4) > (g_4\text{-}g_3) \geqq (g_3\text{-}g_2) = (g_2\text{-}g_1)$; $(g_5\text{-}g_4) = 2.3 \times (g_2\text{-}g_1)$. Epimera IV fused in the posterior 1/5. Setal formula of epimera: 3-1-3-3. All epimeral setae smooth and short,



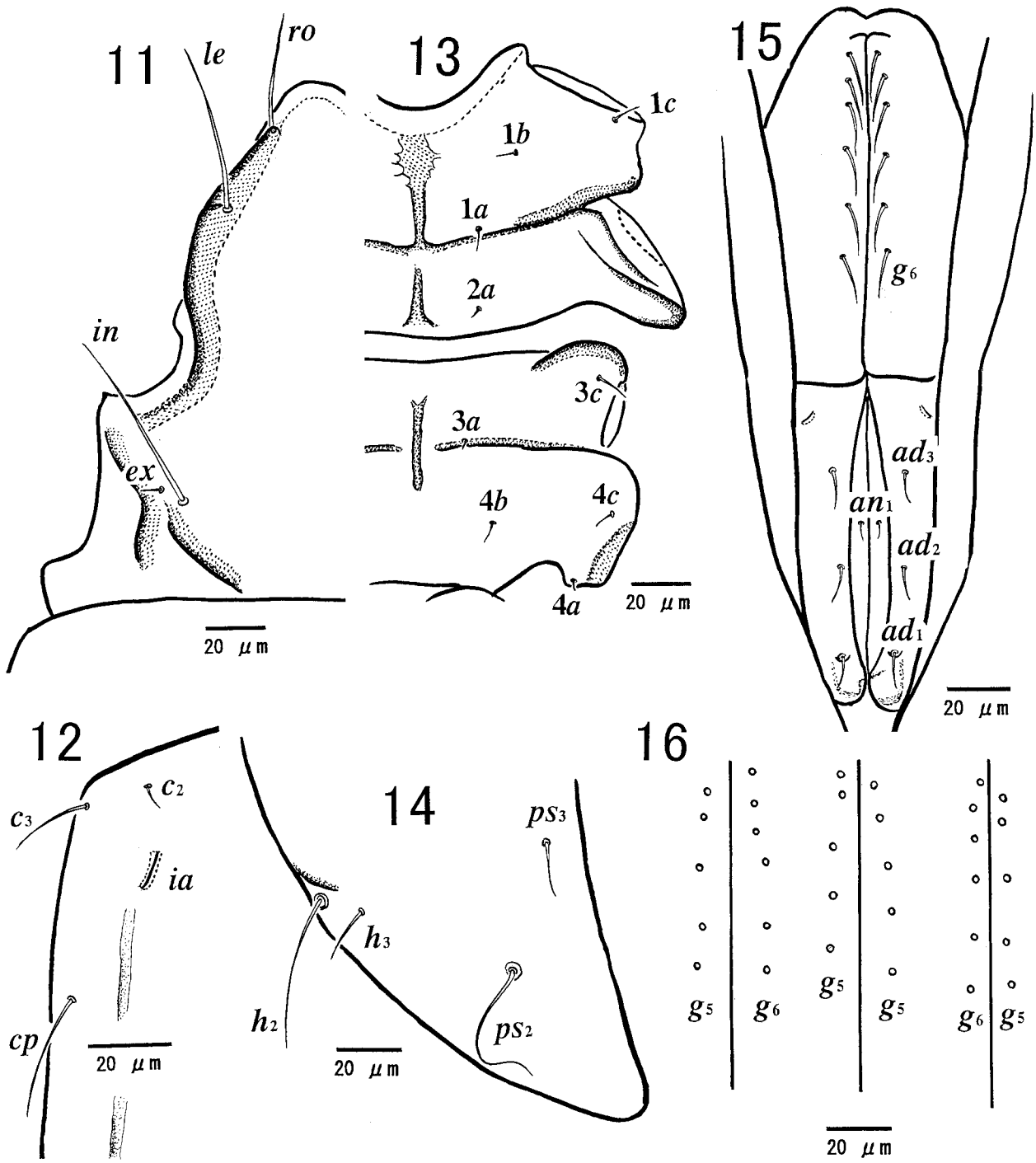
Figs. 9–10. *Trimalaconothrus duoaculeus* sp. nov. (holotype) — 9. Dorsal view; 10. Ventral view.

although variable in length; 3*b*, 3*c*, 4*a* and 4*c* longest, 1*b*, 1*c*, 2*a* and 4*b* moderately long and the remainder 1*a* and 3*a* minute. Two pairs of hook-like ridges present postero-ventrally on notogaster; lateral ridge extended from h_3, running medially towards ps_2 but sharply bent posteriorly at point lateral to ps_2, medial ridge extended from ps_2, running medially towards posterior end of anal plate and then bent posteriorly. Integument of epimera minutely punctate.

Material examined. Holotype and 21 paratypes from St. 3795-1. Rock pools with vegetation on mountain. Korannaberg, Free State. 28º53′S, 27º15′E. 11-IX-1993. C. de Vries. The holotype (NMB 3795.1.1) and 10 paratypes (NMB 3795.1.2) will be deposited in the Acarology collection of the National Museum Bloemfontein, South Africa, and 11 paratypes (NSMT-Ac 11740-11750) in the collection of the National Science Museum, Tokyo.

Remarks. Five *Trimalaconothrus* species, *T. aquatilis* Fain, Lambrechts & Wauthy 1990 from Bergium, *T. brevisetiger* Yamamoto & Aoki 1998 from China *T. heterotrichus* Wallwork 1973 from Cameroon, *T. magnilamellatus* Yamamoto 1997 from Japan and *T. nipponicus* Yamamoto & Aoki 1971 from Japan have partly barbed notogastral setae, i.e. some setae barbed and some smooth. The present species is similar to *T. aquatilis* in having a marked pedotectum I, but it differs from the latter in several respects namely (1) rostral and lamellar setae smooth, (2) interlamellar seta very long, (3) S-shaped lamellar ridge present, (4) some dorsal ridges present, (5) notogaster almost U-shaped, (6) 5 pairs of genital setae, two anterior pairs barbed, three posterior pairs smooth, and (7) all adanal setae barbed.

Etymology. The specific name "*binodulus*" refers to the short antero-lateral ridges of the notogaster.



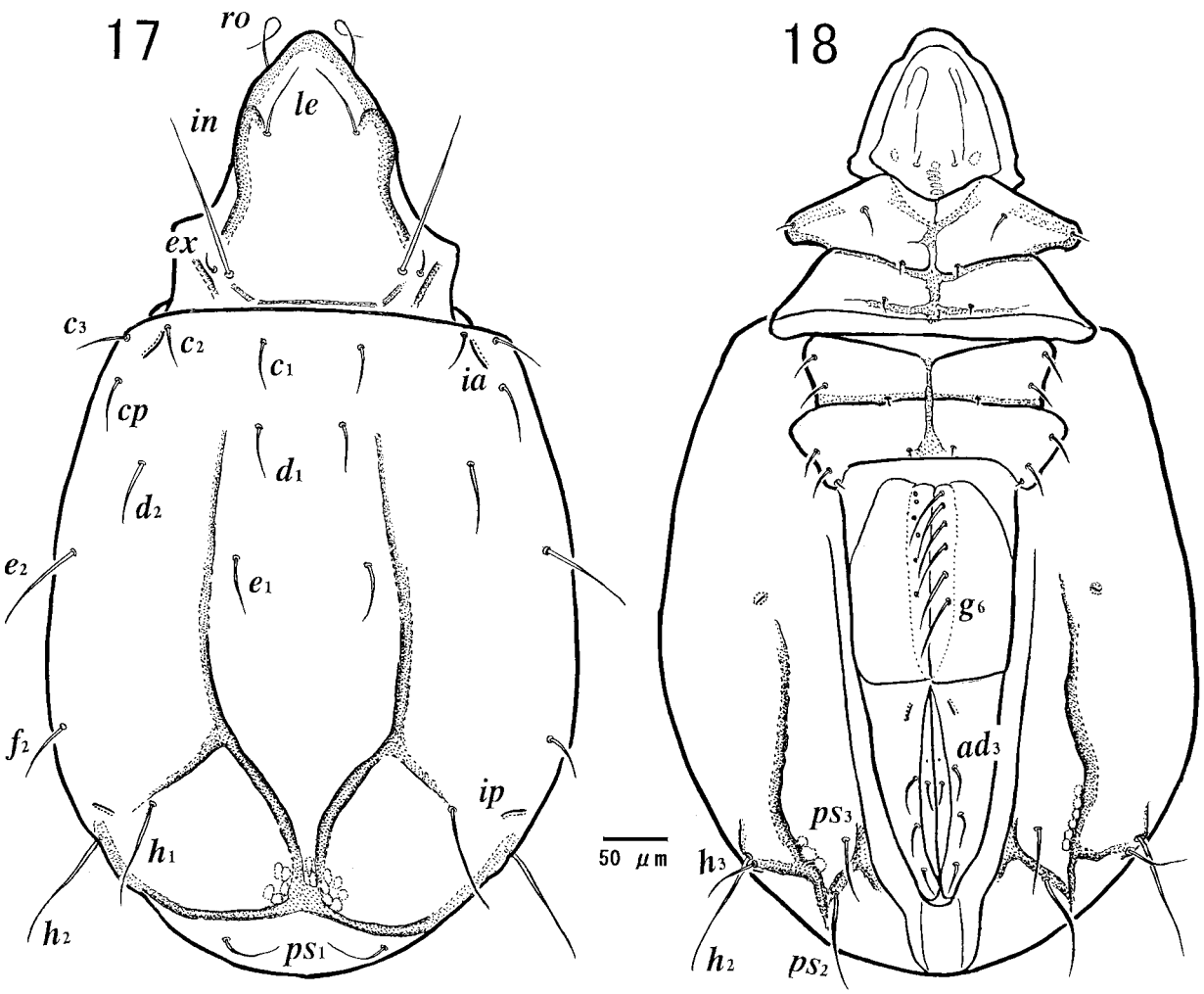
Figs. 11–16. *Trimalaconothrus duoaculeus* sp. nov. (holotype) — 11. Prodorsum; 12. Antero-lateral part of notogaster; 13. Epimerata I-IV; 14. Postero-lateral part of notogaster (ventral view); 15. Genital and anal plates; 16. Variations in the arrangement of genital setae (the longitudinal lines indicate the median slit of genital aperture).

Trimalaconothrus duoaculeus sp. nov.
(Figs. 9–16)

Measurements (μm). Body length 488-506 (av. 496), width 254-262 (av. 258).

Color. Yellowish brown.

Prodorsum. Rostrum narrow and rounded. Pedotectum I conspicuous, strongly projecting and sharply pointed. Lamellar ridge inconspicuous, long, anteriorly reaching base of rostral seta; the posterior part thickened behind interlamellar and exobothridial setae; two distinct ridges present posterior to *in* and *ex*, the lateral one located longitudinally, the medial one oblique. All prodorsal setae



Figs. 17–18. *Trimalaconothrus obesus* sp. nov. (holotype) — 17. Dorsal view; 18. Ventral view.

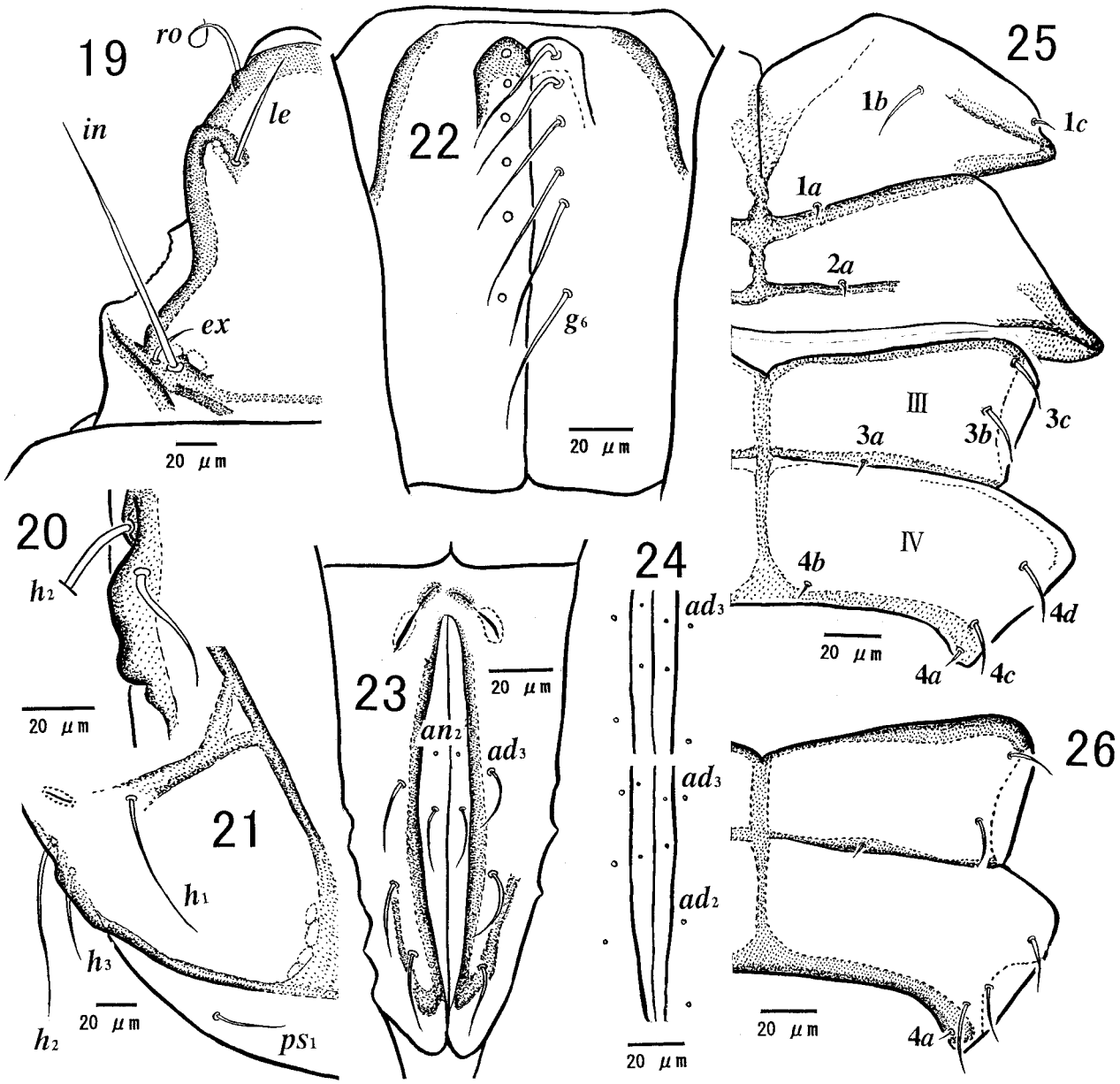
smooth and thin; lamellar seta situated near prodorsal margin; exobothridial seta very short; relative lengths and mutual distances between setae as follows: $in > le > ro > ex$; $ro > (ro\text{-}ro)$; $le = (le\text{-}le)$; $in < (in\text{-}in)$; $ex < (ex\text{-}ex)$. Integument of prodorsum minutely punctate.

Notogaster. Postero-lateral side gently swollen. All notogastral setae smooth and thin. Relative lengths and mutual distances of setae as follows: $h_2 > e_2 > ps_2 > h_1 > c_3 = cp = d_2 = f_2 = ps_1 > c_1 = c_2 = d_1 = e_1 = ps_3 = h_3$; $(h_1\text{-}h_1) > (e_1\text{-}e_1) > (c_1\text{-}c_1) = (d_1\text{-}d_1)$; $(h_1\text{-}h_1) = 4.4 \times (c_1\text{-}c_1)$. Two pairs of faint, parallel longitudinal ridges present on notogaster; inverted W-shaped ridge present on posterior part of notogaster; straight transverse ridge situated posteriorly on notogaster just in front of setae ps_1, where notogaster shows a deep concavity. Integument of notogaster finely punctate.

Ventral side. Anogenital chaetotaxy 5/6-0-1-3. Anal plate provided with one minute seta, situated at a level a little posterior to ad_3. Adanal plate with three short setae. Mutual distances of adanal setaeas $(ad_3\text{-}ad_2) > (ad_2\text{-}ad_1)$. Genital plate with 5-6 short setae as long as adanal setae. Epimera II, III and IV partly fused: epimera II fused in the anterior 1/4; epimera III in the anterior 1/3 and epimera IV in the posterior 2/3. Setal formula of epimera: 3-1-2-3. All epimeral setae short, smooth, thin and variable in length; 3*c* moderately long, 1*a*, 1*b*, 1*c*, 4*b*, 4*c* short and the remaining setae 2*a*, 3*a* and 4*a* minute, 3*b* absent. Integument of epimera minutely punctate.

Material examined. Holotype and 11 paratypes from St. 3661. On *Salvinia molesta*. Letsitele, Limpopo Province. 23°53′S, 30°23′E. 24-X-1989. C. J. Cilliers. The holotype (NMB 3661.3.1) and 5 paratypes (NMB 3661.3.2) will be deposited in the Acarology collection of the National Museum Bloemfontein, South Africa, and 6 paratypes (NSMT-Ac 11751-11756) in the collection of the National Science Museum, Tokyo.

Remarks. The present species is very similar to *Trimalaconothrus scimitarum* Tarras-Wahlberg 1985 from Kenya, in having sharply pointed pedotectum I, oblique ridge posterior to interlamellar seta and short notogastral setae (*c* and *d* series), but it is distinguished from *T. scimitarum* by (1) small body size, (2) longer lamellar ridge, (3) short notogastral setae h_1 and ps_2, (setae h_1 and ps_1



Figs. 19–26. *Trimalaconothrus obesus* sp. nov. (holotype)— 19.Prodorsum; 20. Seta h_3 (ventral view); 21. Postero-lateral part of notogaster (dorsal view); 22. Genital plate; 23. Anal plate; 24. Variation of anal and adanal setae; 25. Epimerata I-IV; 26. Variation of epimerata IV.

approximately $2 \times d_1$ in *T. duoaculeus* sp. nov.; setae h_1 and ps_2 approximately $5 \times d_1$ in *T. scimitarum*), (4) notogastral seta d_2 inserted more laterally, (5) two pairs of parallel ridges present longitudinally on notogaster, (6) inverted W-shaped ridge in posterior part of notogaster, (7) straight transverse ridge present anterior to setae ps_1, and (8) integument of notogaster finely punctate.

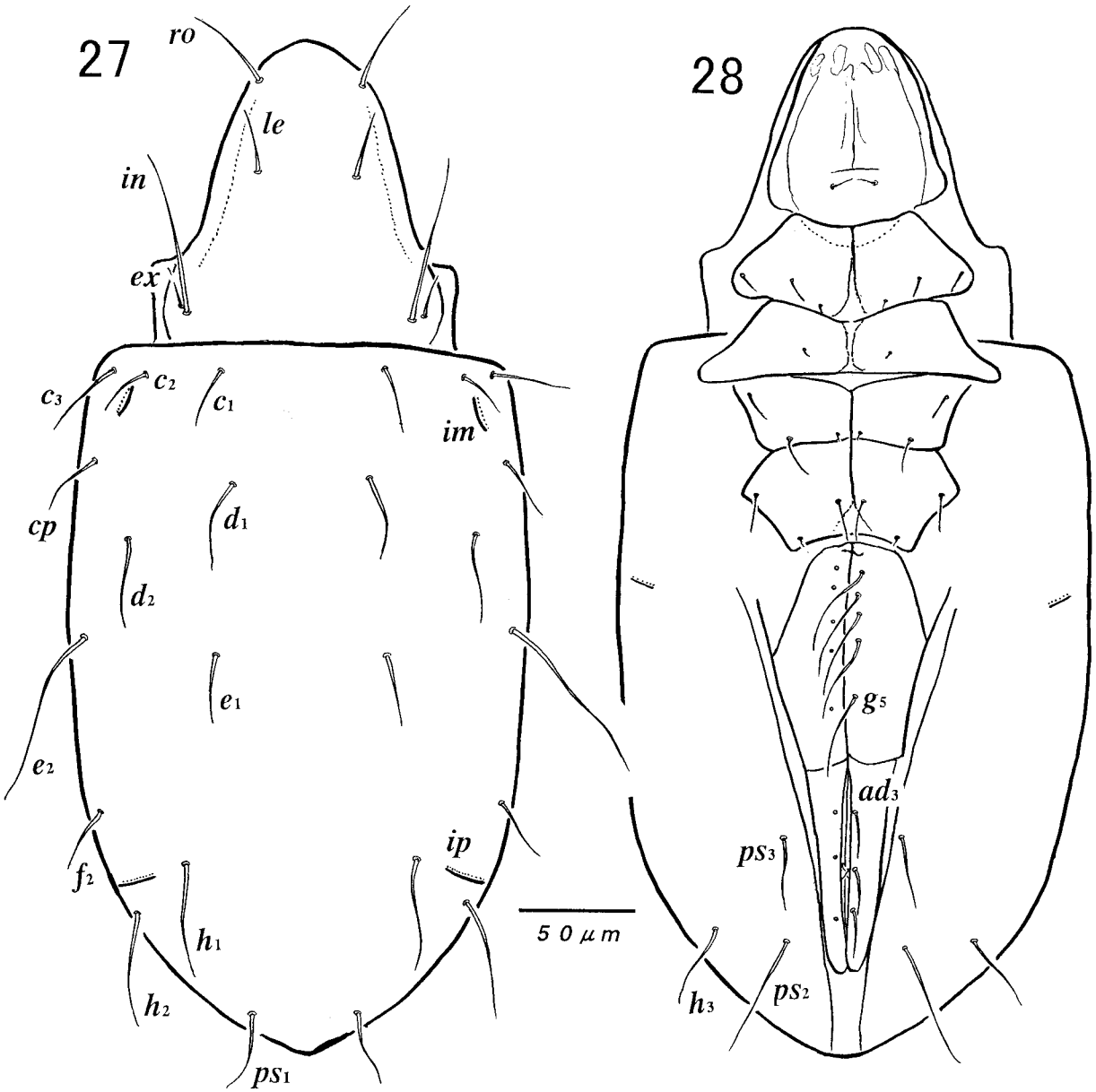
Etymology. The specific name "*duoaculeus*" refers to the sharply pointed pedotectum I.

Trimalaconothrus obesus sp. nov.
(Figs. 17–26)

Measurements (μm). Body length 656-708 (av. 687), width 384-416 (av.395).

Color. Yellowish brown.

Prodorsum. Rostrum narrow and rounded anteriorly. Pedotectum I obtuse. Lamellar ridge conspicuously S-shaped; the anterior end sharply curved medially; the posterior part thickened behind interlamellar and exobothridial setae, forming an acute angle laterally of exobothridial seta;

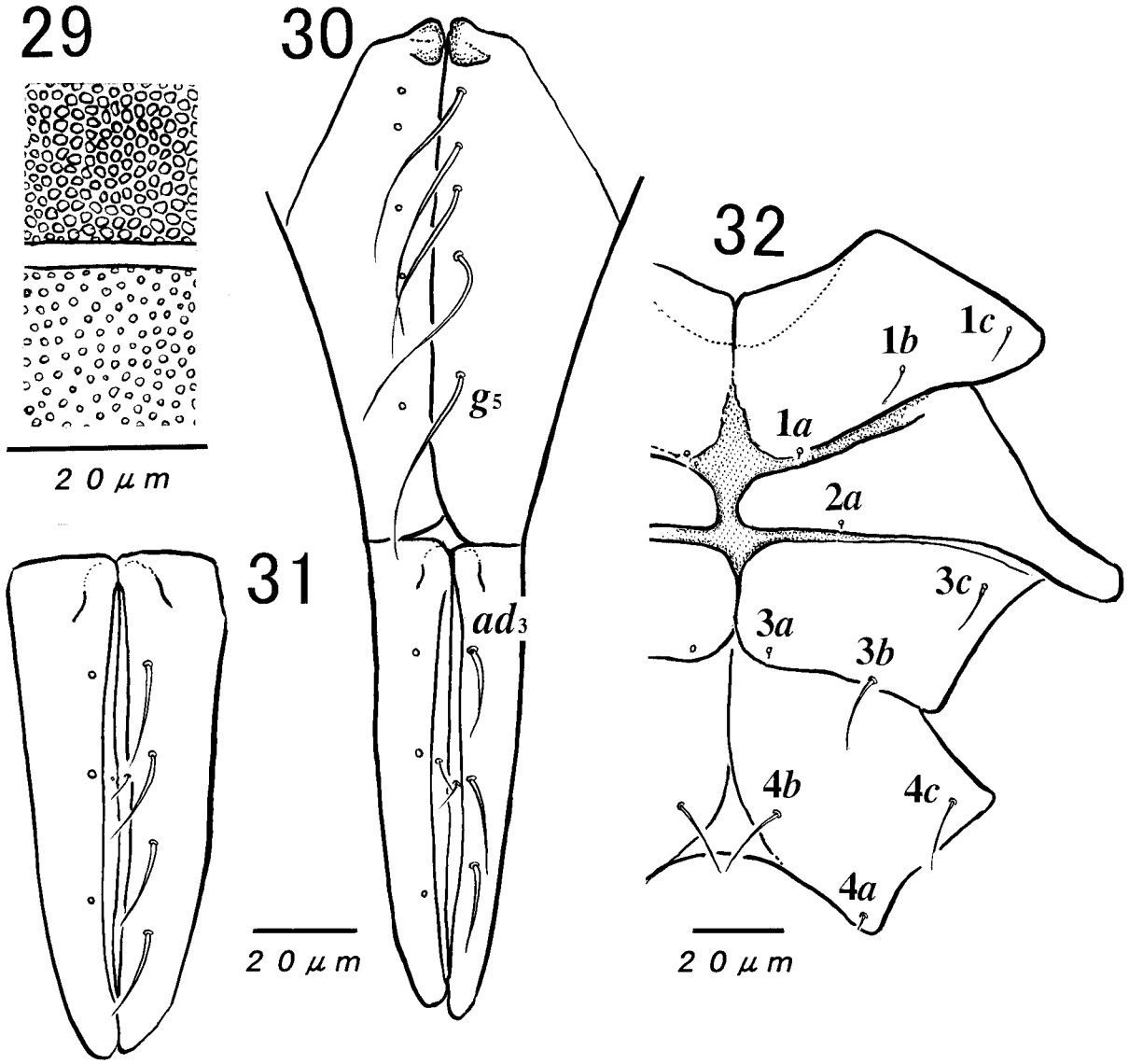


Figs. 27–28. *Trimalaconothrus punctus* sp. nov. (holotype) — 20. Dorsal view; 21. Ventral view.

interlamellar ridge present on posterior part of prodorsum. All prodorsal setae smooth and thin; rostral seta curled; lamellar seta short; interlamellar seta long but not reaching the anterior end of the prodorsum; exobothridial seta very short; relative length and mutual distances between setae as follows: $in > ro > le > ex$; $ro > (ro\text{-}ro)$; $le < (le\text{-}le)$; $in = (in\text{-}in)$; $ex < (ex\text{-}ex)$. Integument of prodorsum densely covered with minute granules.

Notogaster. Lateral side of notogaster gently swollen. All notogastral setae smooth and thin. Relative lengths and mutual distances of notogastral setae as follows: $h_3 \geqq h_2 > h_1 \geqq e_2 > cp = d_2 = e_1 = f_2 > c_1 = c_2 = c_3 = d_1$; $(h_1\text{-}h_1) > (c_1\text{-}c_1) = (e_1\text{-}e_1) > (d_1\text{-}d_1)$; $(h_1\text{-}h_1) = 3.2 \times (c_1\text{-}c_1)$. Parallel ridges running laterally of setae d_1 and e_1, bifurcating posteriorly, partly extending posterolaterally towards seta h_1, partly extending posteromedially and uniting to form a V-shaped ridge; transverse ridge present near the posterior end of notogaster just in front of setae ps_1, where notogaster shows a deep concavity. Some light spots sometimes present at posterior part of V-shaped ridge. Integument of notogaster densely covered with minute granules.

Ventral side. Anogenital chaetotaxy 6-0-2-3. Anal plate with two setae; an_2 minute, hardly visible, situated at a level a little posterior or anterior to ad_3; an_1 very conspicuous, as long as ad_3, situated at the same level or a little posterior to ad_3. Adanal plate with three setae. Genital plate with 6 long setae; one paratype specimen with 7 setae. In all epimera left and right side fully separated. Some paratypes



Figs. 29–32. *Trimalaconothrus punctus* sp. nov. (holotype) — 29. Integument of prodorsum (above) and notogaster (below); 30. Genital and anal plates; 31. Variation of adanal setae; 32. Epimerata I-IV.

having 4 setae on epimera IV. Setal formula of epimera: 3-1-3-3/4. All epimeral setae smooth, thin and variable in length; 1*b*, 3*b*, 4*c* and 4*d* (when present) longest, 1*c* and 3*c* moderately long and the remainder (1*a*, 2*a*, 3*a*, 4*a* and 4*b*) minute. Integument of epimera covered by small, dense granules.

Material examined. Holotype and 13 paratypes from St. 1889-1. Moss under overhanging cliff on southern rock face. Verkykerskop, Free State. 28°53′S, 29°16′E. 20-I-1982. J. Eksteen. The holotype (NMB 1889.1.1) and 6 paratypes (NMB 1889.1.2) will be deposited in the Acarology collection of the National Museum Bloemfontein, South Africa, and 7 paratypes (NSMT-Ac 11757-11763) in the collection of the National Science Museum, Tokyo.

Remarks. The present species is similar to *Trimalaconothrus australis* Hammer 1958 from Argentina and Bolivia, but is distinguished from the latter by (1) small body size, (2) narrow rostrum, (3) short lamellar seta, and (4) 6 pairs of genital setae.

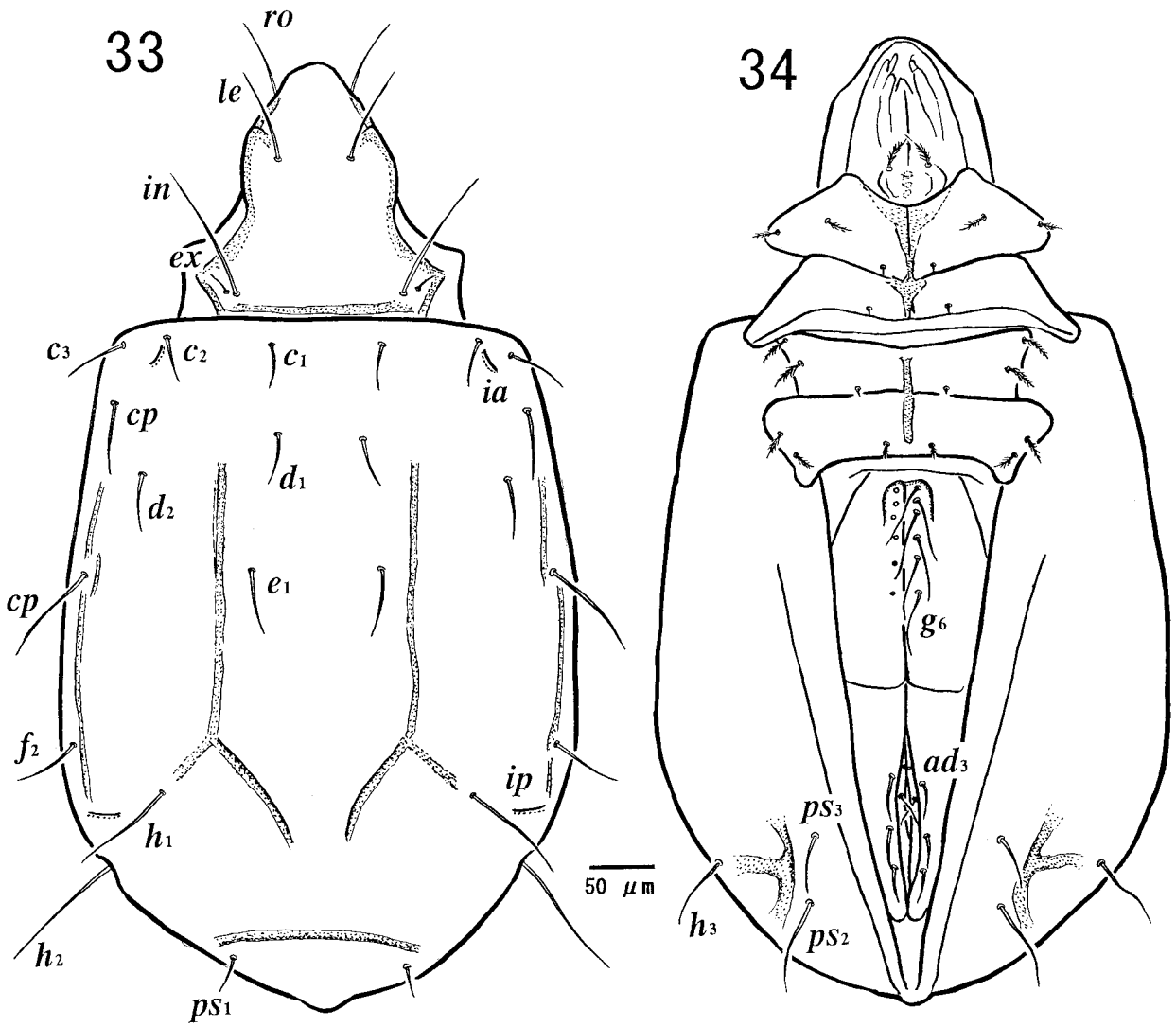
Etymology. The specific name "*obesus*" refers to the shape of notogaster.

Trimalaconothrus punctus sp. nov.
(Figs. 27–32)

Measurements (μm). Body length 424-448 (av. 436), width 208-232 (av. 219).

Color. Yellowish brown.

Prodorsum. Rostrum broadly rounded. Pedotectum I obtuse. Lamellar ridge inconspicuous. All prodorsal setae thin and smooth. Relative lengths and mutual distances of



Figs. 33–34. *Trimalaconothrus rectus* sp. nov. (holotype) — 26. Dorsal view; 27. Ventral view.

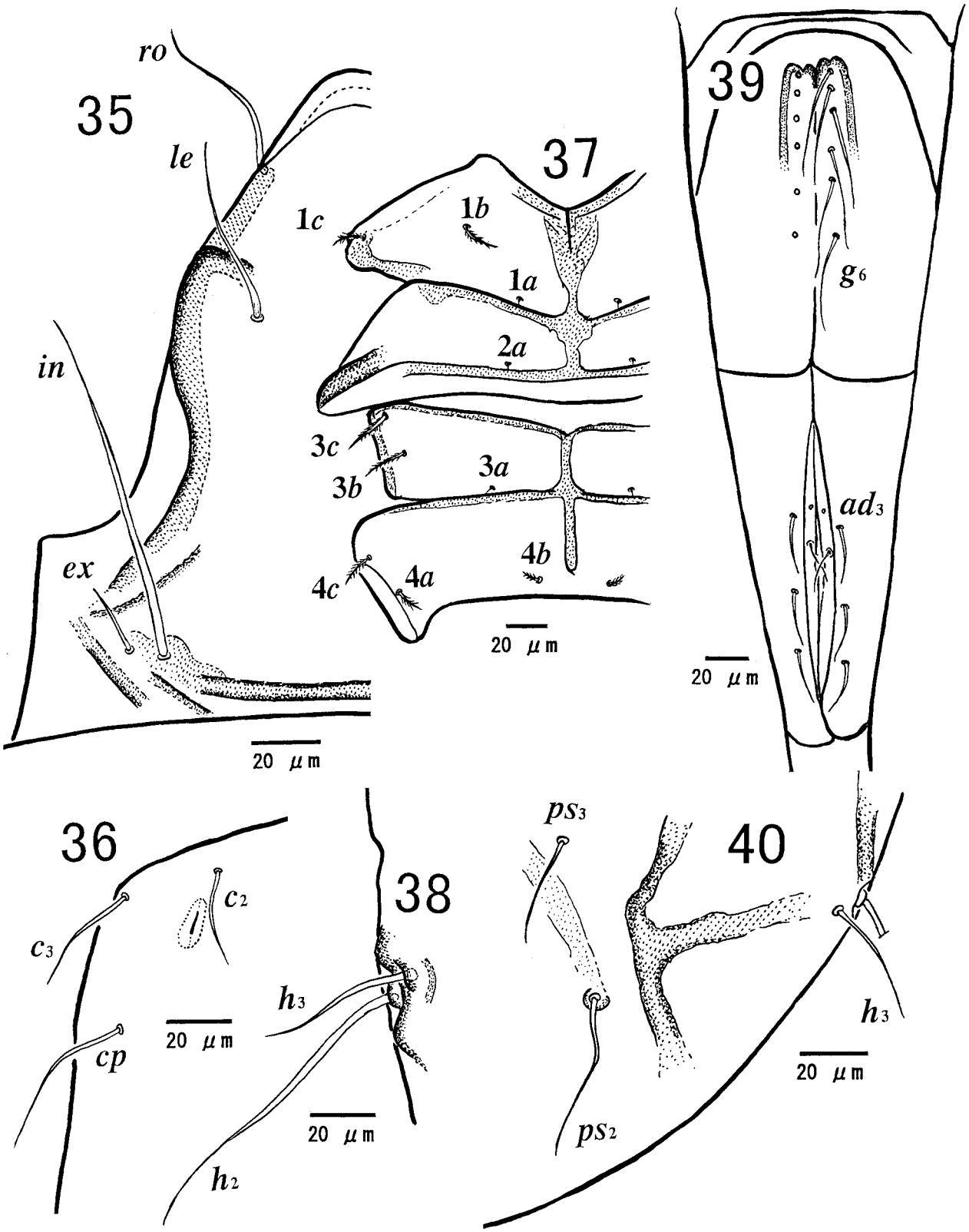
prodorsal setae as follows: $in > ro > le > ex$; $2.5 \times le \fallingdotseq in$; $ro \fallingdotseq (ro\text{-}ro)$; $le < (le\text{-}le)$; $in < (in\text{-}in)$; $ex < (ex\text{-}ex)$. Integument of prodorsum with dense punctation.

Notogaster. Shield-shaped; anterior margin of notogaster almost straight; lateral margins parallel in anterior half, converging in posterior half; posterior end not smoothly rounded, but pointed. Notogastral ridges absent. All notogastral setae thin and smooth. Relative mutual distances of notogastral setae as follows: $(h_1\text{-}h_1) > (c_1\text{-}c_1) \fallingdotseq (e_1\text{-}e_1) > (d_1\text{-}d_1)$; $2.1 \times (c_2\text{-}c_3) \fallingdotseq (c_1\text{-}c_2)$. Relative lengths of notogastral setae as follows: $e_2 > ps_2 > h_1 \fallingdotseq h_2 > c_3 \fallingdotseq d_1 \fallingdotseq d_2 \fallingdotseq h_3 > e_1 \fallingdotseq ps_1 \fallingdotseq ps_3 > c_1 \fallingdotseq cp \fallingdotseq f_2 > c_2$. Lyrifissure *ip* long and situated close to notogastral margin. Integument of notogaster with dense punctation but sparser than those on prodorsum.

Ventral side. Anogenital chaetotaxy 5-0-1-3. Genital plate with 5 thin, smooth and long setae; setal distances generally as follows: $(g_1\text{-}g_2)=(g_2\text{-}g_3) < (g_3\text{-}g_4) < (g_4\text{-}g_5)$. Anal plate with one short seta, situated at the level of ad_2. Adanal plate with 3 setae. Setal formula of epimerata: 3-1-3-3; all epimeral setae smooth, thin and variable in length; 3*b*, 4*b* and 4*c* longest, 1*b*, 1*c* and 3*c* moderately long and the remaining setae 1*a*, 2*a*, 3*a* and 4*a* minute; 1*b* situated further posterior than usual.

Material examined. Holotype from St. 2892. Moist soil in dense indigenous forest. Sabie, Mpumalanga. 25°07′S, 30°48′E. 31-VII-1982. R. Earlé. One paratype from St. 2900, moist soil with plant debris. Golden Gate National Park, Free State. 12. XI. 1982. C. M. Engelbrecht. The holotype (NMB 3892.1.1) will be deposited in the Acarology collection of the National Museum Bloemfontein, South Africa, and one paratype (NSMT-Ac 11764) in the collection of the National Science Museum, Tokyo.

Remarks. This species corresponds with *Trimalaconothrus joonsooi* Choi 1986 from Korea in the shape of the



Figs. 35–40. *Trimalaconothrus rectus* sp. nov. (holotype) —35. Prodorsum; 36. Antero-lateral view of notogaster; 37. Epimerata I-IV; 38. Setae h_2 and h_3 (ventral view); 39. Genital and anal plates; 40. Postero-lateral part of notogaster (ventral view).

body and the integument of the prodorsum and notogaster. However, it differs from *T. joonsooi* by the distinct difference in size between the lamellar seta and rostral seta; notogastral seta (except e_2) and adanal setae much shorter in *T. punctus* sp. nov. than *T. joonsooi*; notogaster without chitinized rim along the posterolateral border and with pointed posterior end in *T. punctus* sp. nov..

Etymology. The specific name "*punctus*" is derived from the structure of the integument of the prodorsum and notogaster.

Trimalaconothrus rectus sp. nov.
(Figs. 33–40)

Measurements (μm). Body length 672-700 (av. 687), width 368-384 (av. 376).

Color. Yellowish brown.

Prodorsum. Rostrum narrow and rounded. Pedotectum I obtuse. Lamellar ridge S-shaped; the posterior part thickened behind interlamellar and exobothridial setae; forming an acute angle laterally of exobothridial seta; interlamellar ridge present posteriorly on prodorsum. All prodorsal setae smooth and thin; exobothridial seta very short; relative length and mutual distances between setae as follows: $in > le > ro > ex$; $ro \geqq (ro\text{-}ro)$; $le > (le\text{-}le)$; $in < (in\text{-}in)$; $ex < (ex\text{-}ex)$. Integument of prodorsum minutely punctate.

Notogaster. Lateral side of notogaster gently swollen. All notogastral setae smooth and thin. Relative lengths and mutual distances of notogastral setae as follows: $h_2 > h_1 = e_2 > ps_2 > cp = e_1 = f_2 > c_3 = d_2 = dr_3 > c_1 = c_2 = d_1 = h_3 > ps_1$; $(h_1\text{-}h_1) > (e_1\text{-}e_1) > (c_1\text{-}c_1) > (dr_1\text{-}d_1)$; $(h_1\text{-}h_1) = 2.8 \times (c_1\text{-}c_1)$. Notogaster provided with parallel ridges running laterally of setae d_1, e_1 bifurcating posteriorly, partly extending posterolaterally almost reaching seta h_1, partly extending medio-posteriorly; transverse ridge present near the posterior end of notogaster just in front of setae ps_1 where notogaster shows a deep concavity. Integument of notogaster finely punctate. Cerotegument with small widely spaced granules.

Ventral side. Anogenital chaetotaxy 6-0-2-3. Anal plate provided with two setae; an_2 minute, hardly visible, situated at a level a little anterior to ad_3; an_1 conspicuous, as long as ad_3, situated at a level posterior to ad_3. Adanal plate with three moderately long setae. Genital plate with 6 long setae. Relative mutual distances between genital setae as follows: $(g_6\text{-}g_5) \fallingdotseq (g_5\text{-}g_4) \fallingdotseq (g_4\text{-}g_3) > (g_3\text{-}g_2) \fallingdotseq (g_2\text{-}g_1)$. Epimera IV fused in the posterior 1/5. Setal formula of epimera: 3-1-3-3. All epimeral setae very finely barbed and variable in length; 1*b*, 3*b*, 3*c*, 4*a* and 4*c* moderately long, 1*c* and 4*b* short and the remainder (1*a*, 2*a* and 3*a*) minute. Integument of epimera minutely punctate.

Material examined. Holotype and 4 paratypes from St. 1634. Moist moss near stream, under shady trees. Ladybrand, Free State. 29°20′S, 27°27′E. 30-IX-1981. C. M. Engelbrecht. The holotype (NMB 1634.1.1) and two paratypes (MNMB 1634.1.2) will be deposited in the Acarology collection of the National Museum Bloemfontein, South Africa, and two paratypes (NSMT-Ac 11765-11766) in the collection of the National Science Museum, Tokyo.

Remarks. This species is unique in the genus *Trimalaconothrus* (79 species described to date) in having smooth notogastral setae and barbed epimeral setae.

Etymology. The specific name "*rectus*" refers to the straight ridges on the notogaster.

Key to species of the family Malaconothridae in South Africa.

1 (10) Legs monodactyle 2
2 (9) Parallel longitudinal and inverted W-shaped ridges present on notogaster 3
3 (4) Rostrum square, rostral seta barbed ..... *Malaconothrus stigmatus* Yamamoto & Coetzee 2004
4 (3) Rostrum rounded 5
5 (6) Translamella present ..... *Malaconothrus indifferens* Hammer 1966
6 (5) Translamella absent 7
7 (8) Four pairs of genital setae present ..... *Malaconothrus longidorsus* Yamamoto & Coetzee 2004
8 (7) Five pairs of genital setae present ..... *Malaconothrus engelbrechti* Yamamoto & Coetzee 2004
9 (2) No parallel longitudinal and inverted W-shaped ridges on notogaster ..... *Malaconothrus minimus* Yamamoto & Coetzee 2004
10 (1) Legs tridactyle 11
11 (12) Notogaster shield-shaped, *i.e*. notogaster tapering posteriorly ..... *Trimalaconothrus punctus* sp. nov.
12 (11) Notogaster barrel-shaped, *i.e*. notogaster widening posteriorly 13
13 (18) Lamellar ridge S-shaped 14
14 (15) Some notogastral setae finely barbed ..... *Trimalaconothrus binodulus* sp. nov.
15 (14) All notogastral setae smooth and thin 16
16 (17) Epimeral setae barbed ..... *Trimalaconothrus rectus* sp. nov.
17 (16) Epimeral setae smooth ..... *Trimalaconothrus obesus* sp. nov.
18 (13) Lamellar ridge not S-shaped ..... *Trimalaconothrus duoaculeus* sp. nov.

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