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Oribatid Mites of the Northern Mariana Islands, Micronesia I. Uracas and Maug Islands

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Abstract Among a number of oribatid species collected from the northern Mariana Islands thirty-two species are reported from the northernmost two islands, Uracas and Maug. They contain 8 unknown taxa which are described here as 7 new species and 1 new subspecies.

Key words: *Cosmochthonius concavus* sp. n., *Hoplophthiracarus marianus* sp. n., *Malaconothrus foliatus* sp. n., *Nippohermannia robusta* sp. n., *Eremaeozetes kurozumii* sp. n., *Oribatula acuminata mariana* subsp. n., *Peloribates uracasensis* sp. n., *Galumna valida* sp. n., oribatid mites, Uracas, Maug, the northern Mariana.

A good series of oribatid mite specimens were collected by Dr. Taiji Kurozumi of Natural History Museum and Institute, Chiba from the nine islands of the northern Mariana Islands. The report and the description of these mites will be published in several parts. The present paper deals with as the first part the species collected from the northernmost two islands, Uracas and Maug. Since none of oribatid mites has hitherto been reported from the Mariana Islands, all the oribatid species are recorded here for the first time from the district.

Data of the Sampling Sites

U-1: South coast of Uracas Island, alt. 50 m, *Pteris quadriaurita* – *Ipomoea pes-caprae* var. *brasiliensis*-community. June 6, 1992. T. Kurozumi.

M-1: Ridge of East Island of Maug Islands, alt. 120 m, *Hibiscus tiliaceus–Ficus tinctoria* — forest. June 2, 1992. T. Kurozumi.

M-2: Ridge of West Island of Maug Island, alt. 105 m, *Pandanus tectorius* — forest. June 5, 1992. T. Kurozumi.

Description of New Taxa

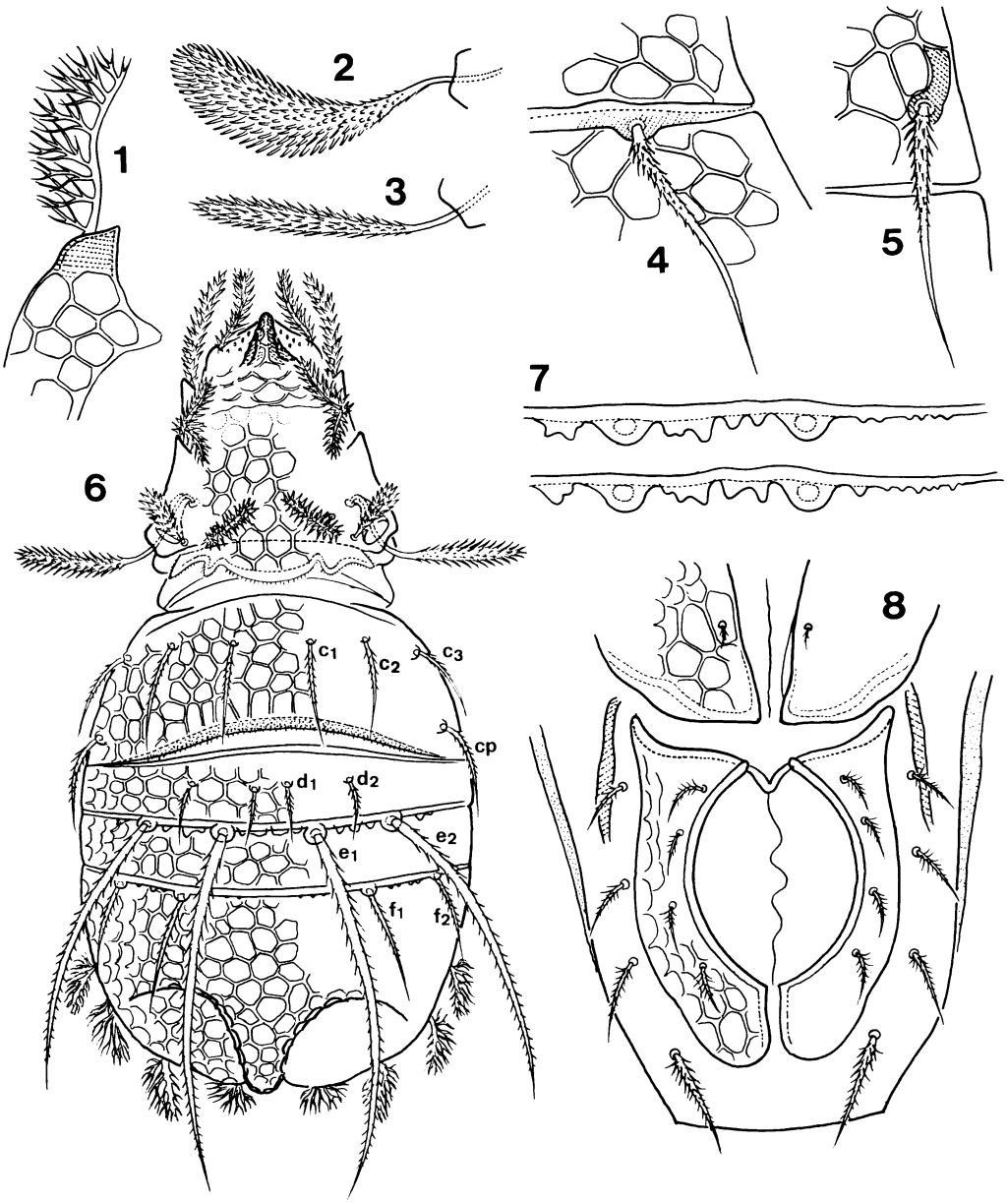
Cosmochthonius concavus sp. n.

(Figs. 1–8)

Measurement. Body length 270 μm, width 136 μm.

Prodorsum. Rostrum with an elevated median ridge. Posterior margin of prodorsum arched medially, with 2 projections on each side. Prodorsal setae *ro*, *le*, *in*, *exa* and *exp* brush-like, densely covered by strong spines; seta *exa* bifid, with a longer anterior branch and a shorter posterior one. Sensillus with a flat head swelling out dorsally appearing to be slender in dorsal view (Fig. 3), but very broad in anterior view (Fig. 2). Lateral margins of prodorsum on each side with two strong angulations, one behind seta *le* and the other behind seta *exa*. Dorsal surface foveolated on rostrum and distinctly reticulated on the most part of prodorsum.

Notogaster. A pair of large concavities on the posterior part of notogaster. Whole surface distinctly reticulated. Notogaster divided by 3 transverse grooves into 4 sections; the posterior edge of the first section with a narrow band minutely and densely barbed. Only two pairs of setae (e_1 and e_2) markedly longer and thicker than the other setae; setae c_1, c_2, c_3, *cp*, f_1 and f_2 medium long; setae d_1 and d_2 short; relative length to notogaster (RLN) of setae; c_1 23.2, c_2 and c_3 24.6, *cp* 27.5, d_1 and d_2 14.5, e_1 79.7, e_2 68.1, f_1 34.8, f_2 21.7; seta e_1 2.3× as long as seta f_1; seta e_2 3.1× as long as f_2. Mutual distance of setae (RLN): c_1–c_1 14.5, d_1–d_1 6.5, e_1–e_1 18.1. Setal length/mutual distance; c_1/c_1–c_1 1.6, d_1/d_1–d_1 2.2,



Figs. 1–8. *Cosmochthonius concavus* sp. n. 1: Lamellar seta and lateral angulation in lateral view (right side). 2–3: Sensilli in different aspects. 4: Notogastral seta f_1. 5: Notogastral seta f_2. 6: Dorsal side of body. 7: The second transverse suture with insertion pores for setae e_1 and e_2 (the right side). 8: Anogenital region.

e_1/e_1–e_1 4.4. Irregular tooth-like projections arranged along the middle transverse groove (Fig. 7). Only a few number of similar projections also found along the posterior transverse groove.

Anogenital region. Posterior margin of anogenital region angular on each side, forming a trapezoid frame. Genital and anal plates reticulated. Four pairs of anal setae and four pairs of adanal setae all barbed; adanal setae becoming gradually stronger posteriorly from ad_4 to ad_1. A short sclerotized ridge found outside seta ad_4 on each side.

Type series. Holotype and 2 paratypes: North coast of Uracas Island, 6-VI-1992. T. Kurozumi (U-1). The holotype (CBM-ZU-56) and 1

paratype (CBM-ZU-55) are deposited in Natural History Museum and Institute, Chiba and 1 paratype (NSMT-Ac 10465) in National Science Museum, Tokyo.

Remarks. *Cosmochthonius concavus* sp. n. is similar to *C. sublanatus* Mahunka, 1977 from Java in having only 2 pairs of conspicuously long setae on notogaster, but it is distinguishable from the latter by (1) the existence of a pair of large concavities in the posterior part of notogaster, (2) the prominent median ridge (elevation) on rostrum, (3) the notogastral setae d_1 and d_2 more slender and more sparsely barbed, and (4) the adanal setae ad_1 and ad_2 not so densely barbed.

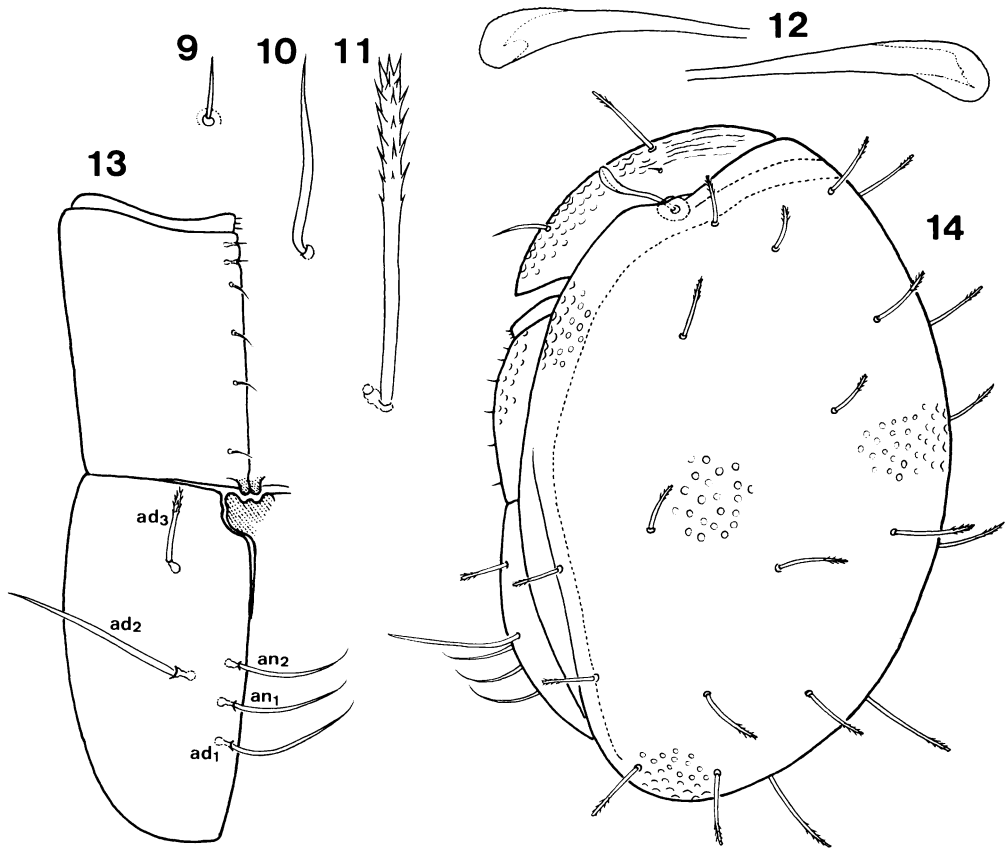
Hoplophthiracarus marianus sp. n.
(Figs. 9–14)

Measurement. Length of notogaster 420–520 μm, length of aspis 195–250 μm.

Aspis. Rostral setae glabrous, about 1.5× as long as their mutual distance. Interlamellar setae thick and strongly barbed on apical half, as long as or a little longer than their mutual distance. Lamellar setae very short, 1/5 as long as setae *in* and a little longer than half the distance between *le* and *in*. Sensillus rather short, club-shaped, with a rounded head without barbs.

Notogaster. Notogastral setae similar in shape to interlamellar setae, slightly bending. Their RLN (relative length to notogastaer): 9–14.

Anogenital region. Genital plate with 6 setae; posterior 4 setae inserted somewhat distant from the median margin of the plate, anterior 2 setae each in small indentation on the margin; 3 more minute setae on anterior appendage of genital plate. Anal plate with 5 setae. Setae ad_1, an_1, and an_2 glabrous and sim-



Figs. 9–14. *Hoplophthiracarus marianus* sp. n. 9: Lamellar seta. 10: Rostral seta. 11: Interlamellar seta. 12: Sensilli. 13: Anogenital region, 14: Lateral; view of body.

ilar in length; seta ad_2 the thickest and the longest, 1.3× as long as ad_1; seta ad_3 barbed apically, half as long as ad_2.

Type series. Holotype and 2 paratypes: Ridge of East Island of Maug Island. 2-VI-1992. T. Kurozumi (M-1).—5 paratypes: North coast of Uracas Island. 6-VI-1992. T. Kurozumi (U-1). The holotype (CBM-ZU- 57) and 3 paratype (CBM-ZU-58–60) are deposited in Natural History Museum and Institute, Chiba and 4 paratypes (NSMT-Ac 10466–10469) in National Science Museum, Tokyo.

Remarks. Hoplophthiracarus marianus sp. n. shows some resemblance to *H. pakistanensis* Hammer, 1977 from Pakistan, *H. dubius* Niedbała, 1982 from Brazil and *H. latior* Niedbała, 1982 from India in having club-shaped sensilli and lamellar setae far shorter than interlamellar setae, but the new species is distinguishable from these species by (1) the aspis without median elevation, (2) the thick and glabrous rostral setae, and (3) arrangement of genital setae.

Malaconothrus foliatus sp. n.
(Figs. 15–18)

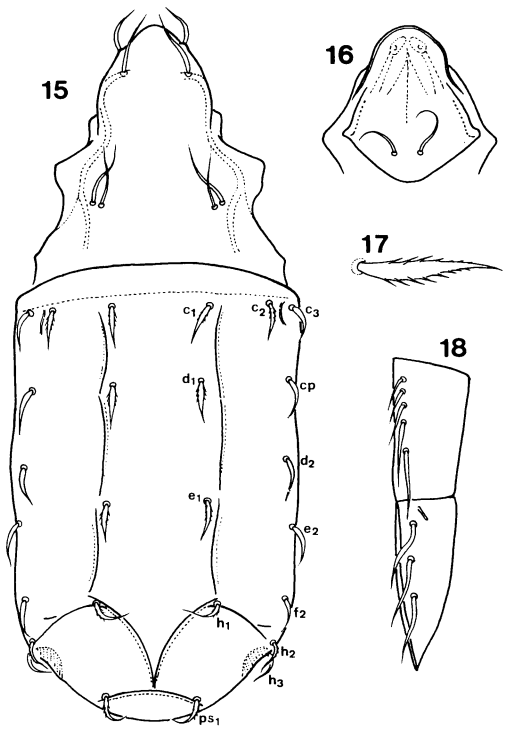
Measurement. Body length 396–418μm, width 167–188μm.

Prodorsum. Rostrum rounded and somewhat projecting in ventral view (Fig. 16). Rostral and lamellar setae thick. Interlamellar seta *in* and exobothridial seta *ex* long and almost equal in length, but seta *in* distinctly thinner than *ex*.

Notogaster. Notogaster with a pair of longitudinal dorsal ridges outside setal lines c_1–d_1–e_1, a pair of arched ridges and a short transverse ridge posteriorly; each arched ridge broken in the vicinity of seta h_1. These dorsal ridges complete in the holotype specimen, but often disappearing partly or completely.

Ventral side. Genital plate with 5 setae, the posterior 2 much longer than the others. Three adanal setae long and thick, located rather anteriorly on adanal plate. Anal setae not detected. On epimerata III–IV, sternal ridge short, reaching neither the anterior margin of *Ep. III*, nor the posterior margin of *Ep. IV*.

Type series. Holotype and 9 paratypes; Ridge of East Island of Maug Island, 2-VI-1992.



Figs. 15–18. *Malaconothrus foliatus* sp. n. 15: Dorsal view of body. 16: Camerostome in ventral view. 17: Notogastral seta d_1. 18: Anogenital region.

T. Kurozumi (M-1). The holotype (CBM-ZU-61) and 4 paratypes (CBM-ZU-62–65) are deposited in Natural History Museum and Institute, Chiba and 5 paratype (NSMT-Ac 10470–10471) in National Science Museum, Tokyo.

Remarks. In having dorsal ridges on notogaster and more or less dilated, short notogastral setae, *Malaconothrus ensifer* Mahunka, 1982 from Ethiopia, *M. crassisetosus.* Subias et Sarkar, 1982 from India and *M. varisetosus* Hammer, 1971 from Fiji Islands resembles *M. foliatus* sp. n. They are distinguishable, however, from the new species by the following points; *M. ensifer* by the development of additional ridges along the lateral margins of notogaster and the shorter barbed interlamellar setae, *M. crassisetosus* by the exobothridial setae extremely short, and *M. varisetosus* by the notogastral setae diverse in shape and length.

***Nippohermannia robusta* sp. n.**
(Figs. 19–22)

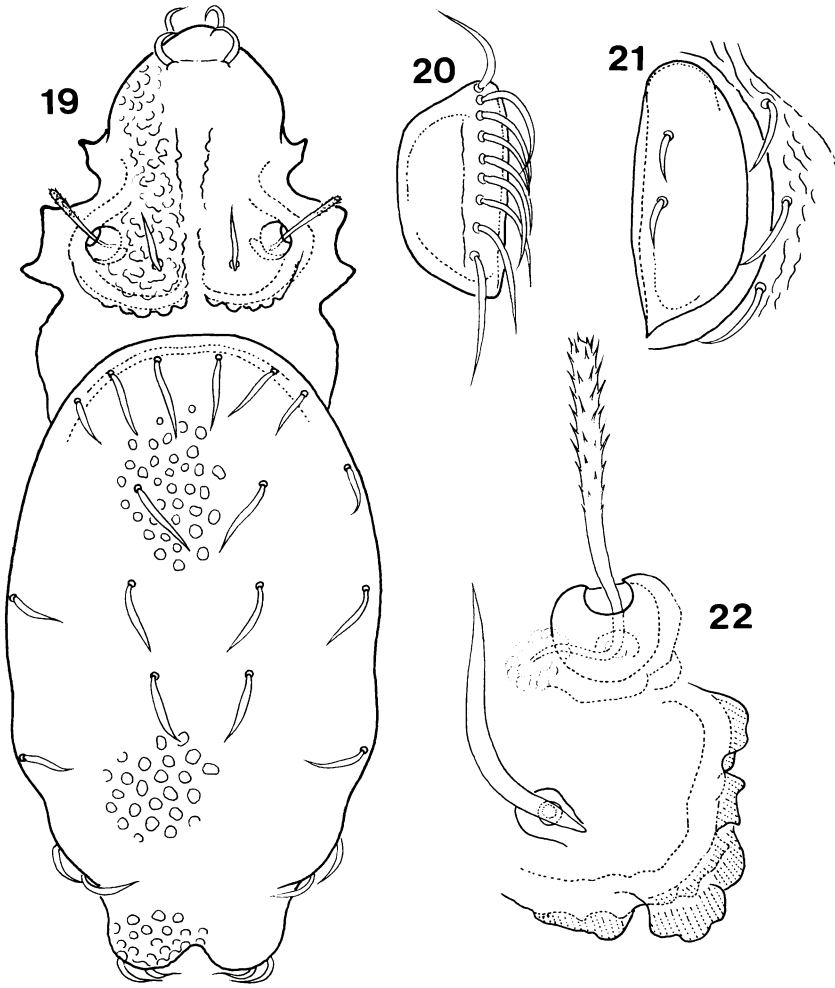
Measurement. Body length 760–825 μm, width 320–340 μm.

Prodorsum. Rostral and lamellar setae thick and curved inward and downward; setae *le* inserted on a weak transverse ridge. Interlamellar setae thick, as long as their mutual distance, each seta with a very short posterior extention at basal part. Exposed portion of sensillus almost straight, rod-like, distinctly barbed on distal half. Posterior protuberances of prodorsum inconspicuous, bearing irregular teeth (Fig. 22).

Notogaster. The posterior part bearing blunt tubercles or swellings, each with one or two setae; thirteen pairs of notogastral setae discernible, all weakly dilated, tip pointed. Notogastral surface sculptured with distinct foveolae somewhat irregular in shape and size.

Anogenital region. Genital plate with 9 long and strong bristles (Fig. 20). Two pairs of aggenital setae also long and strong, the anterior pair of setae more widely separated from each other than the posterior pair. Anal plate with 2 shorter setae. Adanal setae distinctly longer than anal setae (Fig. 21).

Type series. Holotype and 6 paratypes: Ridge of West Island of Maug Island, 2-VI-1992. T. Kurozumi (M-1). The holotype (CBM-ZU-66) and 3 paratypes (CBM-ZU-67–69) are



Figs. 19–22. *Nippohermannia robusta* sp. n. 19: Dorsal view of body. 20: Genital plate (right). 21: Anal and adanal area (left). 22: Sensillus, bothridium, interlamellar seta and posterior prodorsal crest (right side).

deposited in Natural History Museum and Institute, Chiba and 3 paratypes (NSMT-Ac 10472–10474) in National Science Museum, Tokyo.

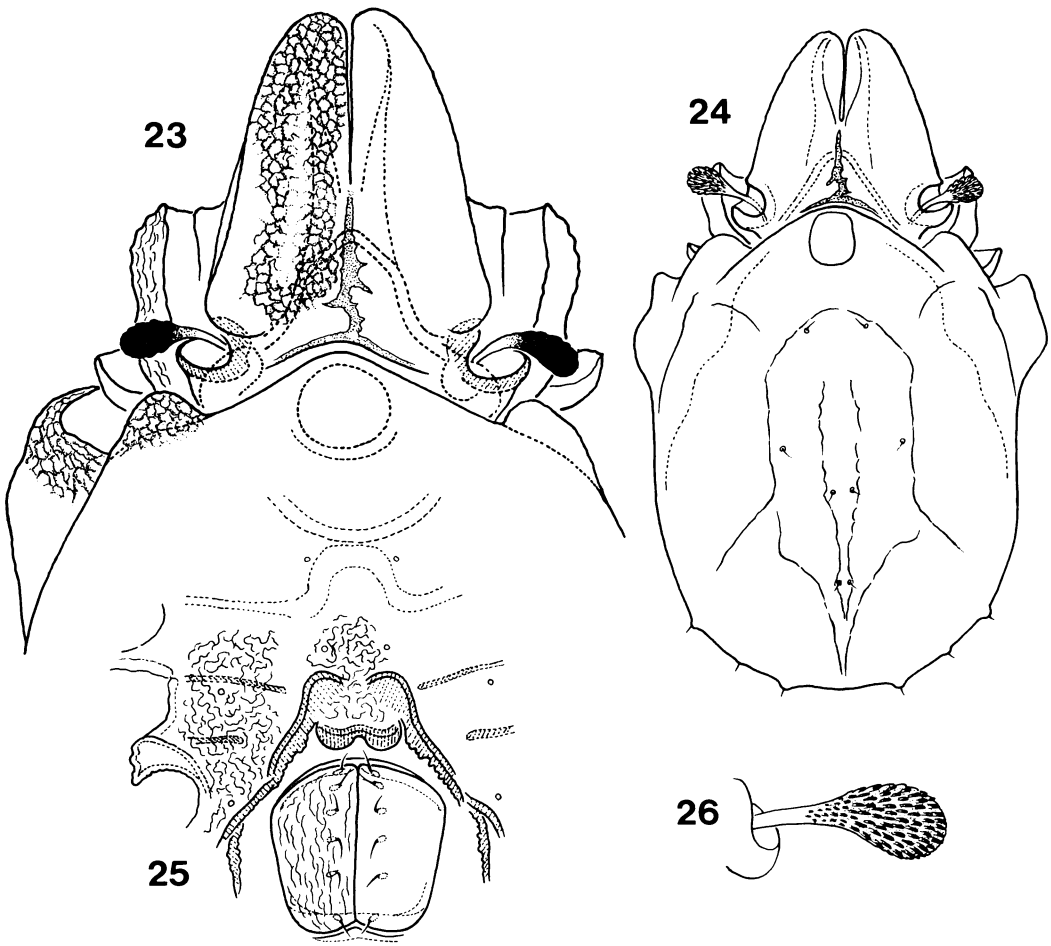
Remarks. Though its systematical position is not quite certain, the new species is included here in the genus *Nippohermannia*, because it has inconspicuous crest instead of prominent teeth on prodorsum of the other genera. *Nippohermania parallela* (Aoki, 1961) from Japan is easily separated from the new species by (1) more prominent prodorsal crest with about 4 teeth, (2) inconspicuous posterior tubercles of notogaster, (3) fine notogastral setae, and (4) the smaller body size (465–480×162–169μm).

***Eremaeozetes kurozumii* sp. n.**
(Figs. 23–26)

Measurement. Body length 332–345μm, width (excepting pteromorphae) 190–197μm.

Prodorsum. Lamellae close together, separated by a very narrow slit about half as long as lamellae. Lamellar surface rather finely reticulated. A longitudinal spine-like ridge with irregular posterior extention found in the middle part of interlamellar region, being connected to an arched transverse ridge. Sensillus with a thick peduncle and a dark-colored head beset with strong bards.

Notogaster. Median part of notogaster elevated in shape of an elongated hexagon with a long posterior extention (Fig. 24). Notogastral



Figs. 23–26. *Eremaeozetes kurozumii* sp. n. 23: Anterior half of body in dorsal view. 24: Dorsal view of body. 25: Epimeral and genital area. 26: Sensillus.

setae minute and difficult to observe, but 4 pairs of setae on the elevated "hexagon" and 3 pairs on posterior margin visible in high magnification; the latters inserted each on a small apophysis. Notogastral surface covered with fine and irregular network.

Ventral side. Interspace between genital and anal openings shorter than the length of genital opening, about 2/3 as long as the latter. Genital plate with 6 setae and anal plate with 2 setae. A pair of semicircular lobes connecting to each other found just in front of genital opening; paired complicated ridges with toothed inner margins surrounding these lobes and genital opening (Fig. 25).

Type series. Holotype and 3 paratypes: North coast of Uracas Island, 6-VI-1992. T. Kurozumi (U-1). The holotype (CBM-ZU-70) and 1 paratype (CBM-ZU-71) is deposited in Natural History Museum and Institute, Chiba and 2 paratypes (NSMT-Ac 10475–10476) in National Science Museum, Tokyo.

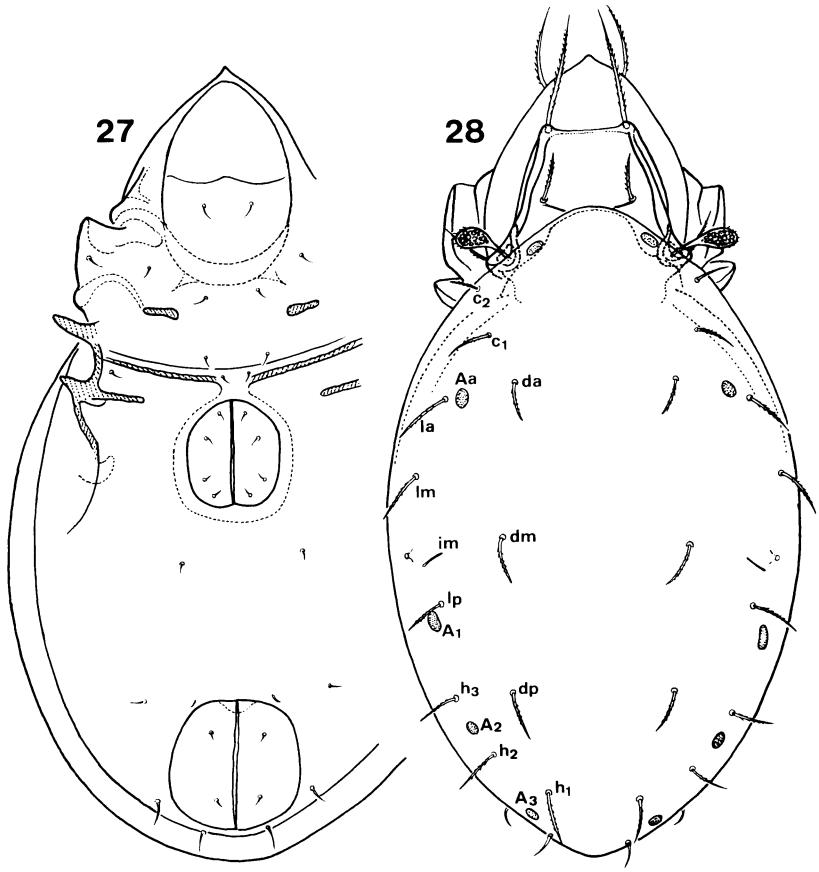
Remarks. Eremaeozetes kurozumii sp. n. resembles *E. costulatus* Mahunka, 1977 from Bali in having polygonal elevation on notogaster, but the new species differs from the latter in (1) the far smaller body size (487–505×284–299 μm in the Bali species), (2) the notogastral elevation not consisting of distinct ribs, and (3) the inconspicuous apophyses on the posterior margin of notogaster. The new species is named after Dr. Taiji Kurozumi who collected a lot of oribatids during his stay on the northern Mariana Islands for collection of land snails.

Oribatula acuminata mariana subsp. n.

(Figs. 27–28)

Measurement. Body length 349–372μm, width 180–226μm.

The specimens collected from Uracas Islands



Figs. 27–28. *Oribatula acuminata mariana* subsp. n. 27: Ventral view of body. 28: Dorsal view of body.

is very similar to *Oribatula acuminata* Wallwork, 1964 from Tchad in having elongate body and rostrum sharply pointed anteriorly, but it is somewhat different in the features mentioned below and is considered here as a new subspecies: (1) Humeral lobes are not developed (Humeral region on each side is produced into a definite lobe in the nominate subspecies). (2) Translamellar ridge is complete or incomplete, 5 among 10 specimens examined having complete translamellar ridge (always incomplete in the nominate subspecies). (3) A weak oblique ridge is found between interlamellar seta and anterior margin of notogaster. (4) Notogastral seta *lm* is located far closer to *la* than to *lp*.

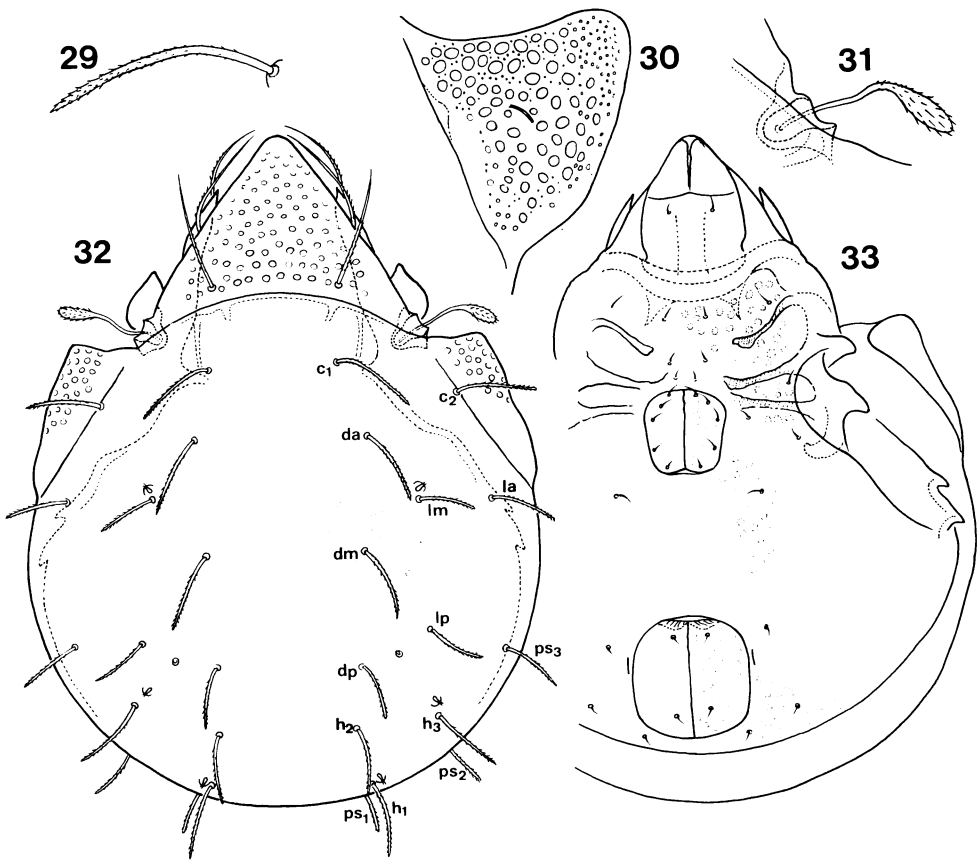
Type series. Holotype and 12 paratypes: North coast of Uracas Islands, 6-VI-1992. T. Kurozumi (U-1). The holotype (CBM-ZU-72) and 6 paratypes (CBM-ZU-73–75) are deposited in Natural History Museum and Institute, Chiba and 6 paratypes (NSMT-Ac 10477–10478) in National Science Museum, Tokyo.

Peloribates uracasensis sp. n.

(Figs. 29–33)

Measurement. Body length 362–398 μm, width 288–319 μm.

Prodorsum. Rostrum well projecting. Rostral seta inserted under a sharply pointed tip of tutorium. Setae *ro* and *le* distinctly barbed unilaterally. Interlamellar setae barbed, nearly as long as their mutual distance. Relative length of prodorsal setae: $le \geqq in > ro$. Sensillus bearing an elongate oval head beset with short spines (Fig. 31). Prodorsal surface covered with rounded foveolae, not becoming smaller toward rostral tip.



Figs. 29–33. *Peloribates uracasensis* sp. n. 29: Notogastral seta c_1. 30: Pteromorpha (right). 31: Sensillus and bothridium. 32: Dorsal view of body. 33: Ventral view of body.

Notogaster. Nearly circular in outline in dorsal view. Pteromorpha bearing rounded foveolae as on prodorsum. Fourteen pairs of notogastral setae short, stiff, blunt at tip, only weakly bending, densely barbed almost throughout their length. RLN (relative length of setae to notogaster) of notogastral setae: 9.0–16.5; setae c_1 or c_2 the longest and ps_1 the shortest. Mutual distnace of median series of setae *da–da* always the longest, distinctly longer than c_1–c_1 and a little longer than *dm–dm*; distance *dm–dm*, *dp–dp*, h_2–h_2 and h_1–h_1 shorter than *da–da* and longer than c_1–c_1, but their relative length variable: sometimes *dm–dm* > h_2–h_2 > *dp–dp*, sometimes *dp–dp* > h_2–h_2 > *dm–dm*, *etc.* Four pairs of sacculi; *Sa* located close and anterolateral to seta *lm*, S_1 between setae *lp* and *dp* (usually a little closer to *lp* than to *dp*), S_2 close and anterior or medioanterior to h_3, and S_3 close and lateral to h_1. Notogastral surface (except on pteromorphae) seemingly smooth, but with very faint sculpture of rounded foveolae.

Ventral side. Genital plate finely punctured, with 5 setae along outer margin. Anal plate bearing 2 setae widely separated. Mutual distance of adanal setae ad_2–ad_2 far longer than ad_1–ad_1. Adanal fissure *iad* close and parallel to lateral margin of anal opening. Indistinct foveolae found on epimeral region, anal plates and ventral plate.

Type series. Holotype and 18 paratypes: North coast of Uracas Island, 6-VI-1992. T. Kurozumi (U-1). The holotype (CBM-ZU-76) and 9 paratypes (CBM-ZU-77–80) are deposited in Natural History Museum and Institute, Chiba and 9 paratypes (NSMT-Ac 10479–10481) in National Science Museum, Tokyo.

Remarks. *Peloribates uracasensis* sp. n. is very similar to *P.rangiroaensis* Hammer, 1972 from Tahiti in having short clavate sensilli and short, stiff and barbed notogastral setae. The new species is, however, different from the Tahitian species in (1) Prodorsal foveolae not becoming smaller anteriorly, (2) mutual distnace of notogastral setae *da–da* always longer than c_1–c_1 and *dm–dm*, (3) adanal setae ad_2 widely separated from each other, (4) anal plate with foveolation, (5) interlamellar setae inserted not so close to dorsosejugal suture, and (6) very faint sculpture of foveolae on notogaster.

Galumna valida sp. n.

(Figs. 34–37)

Measurement. Body length 705–760 μm, width 600–630 μm.

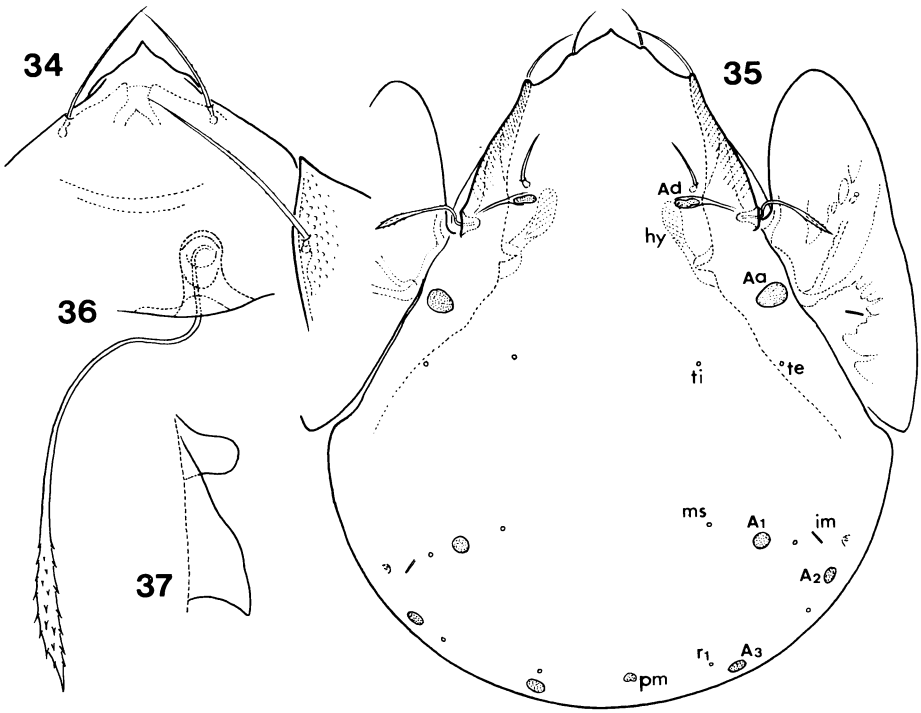
Prodorsum. Rostrum sharply pointed at tip. Prodorsal setae thin and very slightly barbed; ratio in length of these setae—*in* : *ro* : *le* = 1.9 : 1.7 : 2.4; mutual distance of setae in 3.8 × as long as *in*. Lamellar carina *L* strongly developed, its anterior edge prominent in dorsal view; area between carinae *L* and *S* dark-colored and finely granulated. Sensillus thin, sigmoid in basal part, bearing a slender spindle-shaped head with weak barbation (Fig. 36).

Notogaster. Notogaster a little wider than long. Dorsosejugal suture incomplete, disappearing between areae porosae *Ad*. Area porosa *Aa* oval; A_1–A_3 rounded, about half as large as *Aa*. Median pore heart-shaped, located between areae porosae A_3. Mutual distance of setae *ms–ms* slightly longer than that of *ti–ti*.

Anogenital region. Genital opening a little wider than long. Of 6 genital setae g_5 and g_6 inserted close to anterior margin of genital plate. Mutual distance of aggenital setae as long as genital opening. Mutual distnace ad_3–ad_3 slightly longer the ad_2–ad_2.

Type series. Holotype and 2 paratypes: Ridge of East Island of Maug Island, 2-VI-1992. T. Kurozumi (M-1). The holotype (CBM-ZU-81) and 1 paratype(CBM-ZU-82) are deposited in Natural History Museum and Institute, Chiba and 1 paratype (NSMT-Ac 10482) in National Science Museum, Tokyo.

Remarks. *Galumna tricuspidata* Engelbrecht, 1969 from South Afrika is simllar to the new species in having "tricuspidate" rostrum, sensilli with a slightly incrassate head and median pore on the posterior part of notogaster, but the African species is different from the new species in (1) the distinct dorsosejugal suture, (2) the rostrum foveolated, and (3) the larger body size (1098 = 750 μm).



Figs. 34–37. *Galumna valida* sp. n. 34: Rostrum on a flattened specimen. 35: Dorsal view of body. 36: Sensillus and bothridium. 37: Pedotectum III and discidium.

List of Species Collected

Family Ctenacaridae

1. *Ctenacarus araneola* (Grandjean, 1932)
2 exs.(M-2). Known distr.: N. Africa, Europe, S. America and Japan.

Family Hypochthoniidae

2. *Eohypochthonius crassisetiger* Aoki, 1959
1 ex.(M-1). Known distr.: Japan, Korea and China.

Family Cosmochthoniidae

3. *Cosmochthonius concavus* sp. n.
3 exs.(U-1).

Family Phthiracaridae

4. *Hoplophthiracarus marianus* sp. n.
5 exs.(U-1), 3 exs. (M-1).

5. *Atropacarus (Hoplophorella) cucullatus* (Ewing, 1909)
1 ex.(U-1). Known distr.: North America and Japan.

Family Oribotritiidae

6. *Austrotritia unicarinata* Aoki, 1980 (Fig. 41)
1 ex.(M-1), 1 ex.(M-2). Known distr.: Bonin Islands(Japan)

Family Euphthiracaridae

7. *Rhysotritia ardua* (C. L. Koch, 1841)
2 exs.(M-1). Known distr.: Holarctic Region and Polynesia.

Family Nothridae

8. *Nothrus* sp.
1 ex. (M-1), 1 ex. (M-2).

Family Allonothridae

9. *Allonothrus schuilingi* Hammen, 1953 (Fig. 42)
39 exs.(M-1), 1 ex.(M-2). Known distr.: New Guinea and Japan.

Family Malaconothridae

10. *Malaconothrus foliatus* sp. n.
10 exs.(M-1), 1 ex.(M-2).

Family Nanhermanniidae

11. *Nippohermannia robusta* sp. n.
8 exs.(M-1).

Family Hermanniellidae

12. *Hermanniella aristosa* Aoki, 1965
28 exs.(M-1), 1ex.(M-2). Known distr.: Japan.

13. *Hermanniella diversisetosa* Hammer, 1966 (Fig. 38)
4 exs. (M-1). Known distr.: New Zealand.

By the very characteristic diverse shape of setae on the posterior part of notogaster this large species of the genus *Hermanniella* is readily identified with *H. diversisetosa* Hammer, 1966 from New Zealand. The specimens from the northern Mariana differs, however, in minor features from the New Zealand form. In the Mariana form the body size (780–820 μm) is smaller compared to the New Zealand one (940 μm). The 4th median pair of setae are short and thick, but not so distinctly clavate as in the New Zealand form.

Family Liodidae

14. *Liodes bataviensis* (Sellnick, 1925) (Fig. 39)
30 exs.(M-1). Known distr.: S. Polynesia.

Family Eremaeozetidae

15. *Eremaeozetes kurozumii* sp. n.
4 exs. (U-1).

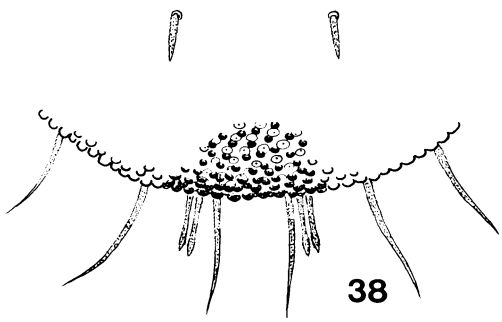


Fig. 38. *Hermanniella diversisetosa* Hammer. Posterior part of norogaster with setae of diverse shapes.

Family Damaeolidae

16. *Fosseremus quadripertitus* Grandjean, 1965
2 exs. (M-1). Known distr.: Europe, N. America and Asia.

Family Basilobelbidae

17. *Basilobelba insularis* Mahunka, 1985 (Figs. 45–46)
9 exs. (M-1), 1 ex. (M-2). Known distr.: S. Africa.

Family Carabodidae

18. *Gibbicepheus frondosus* (Aoki, 1959)
31 exs.(M-1), 1 ex.(M-2). Known distr.: Japan.

Family Cymbaeremaeidae

19. *Scapheremaeus fisheri* Aoki, 1966 (Figs. 43–44)
13 exs. (U-1). Known distr.: Midway Island.

The species was originally described based on a single specimen collected from the nest of the bird *Diomedea immutabilis* E. Meseth in Midway Island. The measurement taken on specimens of Uracas Island: Body length 377–437 μm, width 196–234 μm.

Family Xylobatidae

20. *Xylobates* sp.
26 exs. (M-1), 1 ex. (M-2).

Family Oribatulidae

21. *Oribatula acuminata mariana* subsp. n.
13 exs.(U-1).

Family Haplozetidae

22. *Peloribates uracasensis* sp. n.
23 exs. (U-1).

23. *Incabates* sp.
1 ex. (U-1).

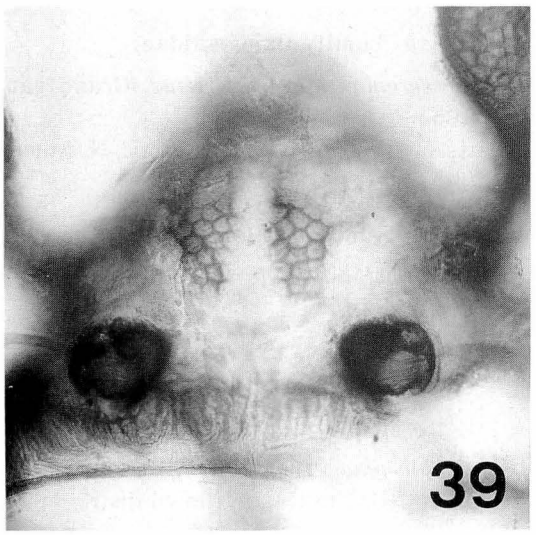
Family Scheloribatidae

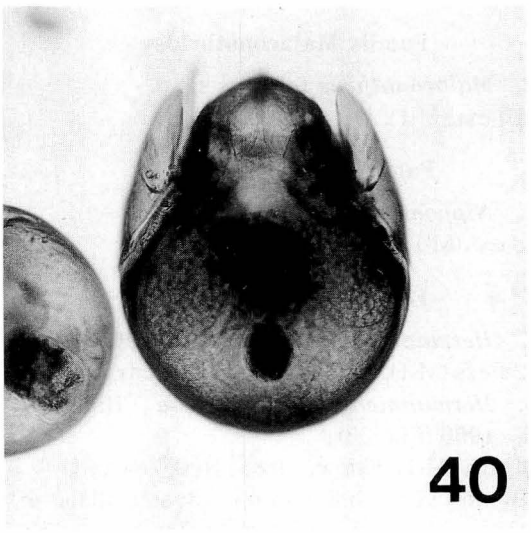
24. *Scheloribates* sp. M1.
31 exs.(M-1), 12 exs. (M-2).

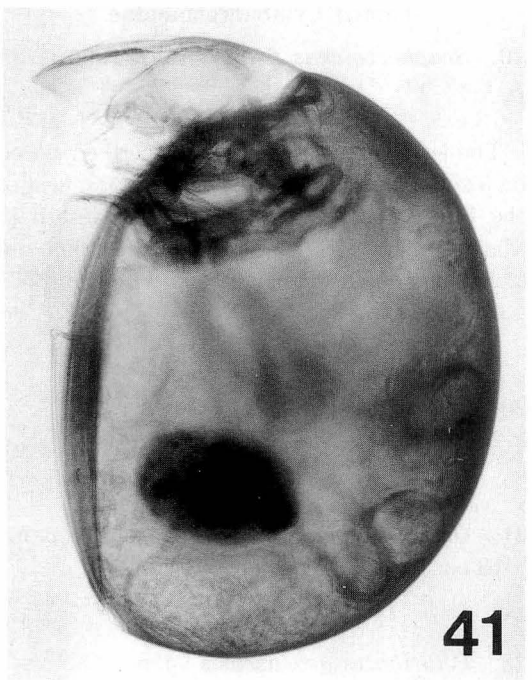
25. *Scheloribates* sp. M2.
10 exs. (U-1), 7 exs. (M-1), 3 exs. (M-2).

26. *Ischeloribates* sp.
10 exs. (U-1).

These 3 species of the family Scheloribatidae







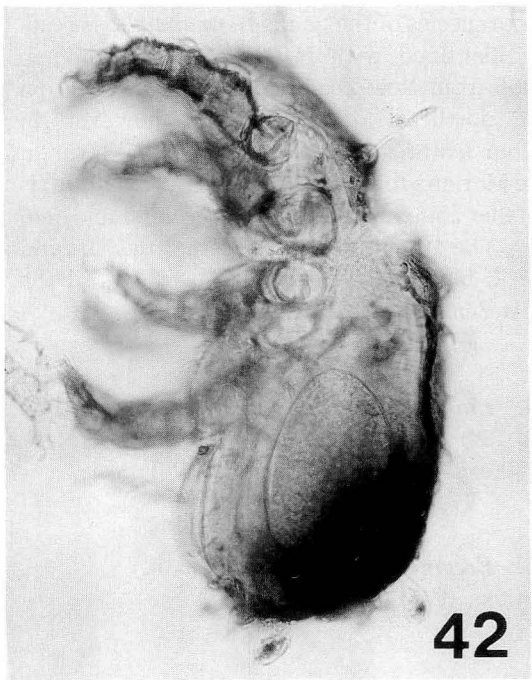


Fig. 39. *Liodes bataviensis* (Sellnick). Prodorsum. **Fig. 40.** *Pergalumna mauritii* Mahunka. **Fig. 41.** *Austrotritia unicarinata* Aoki. **Fig. 42.** *Allonothrus schuilingi* Hammen.

are under study by Mr. H. Katsumata of Naha Plant Protection Station, Japan.

Family Oripodidae

27. *Oripoda* sp.

1 ex. (M-2).

Family Oribatellidae

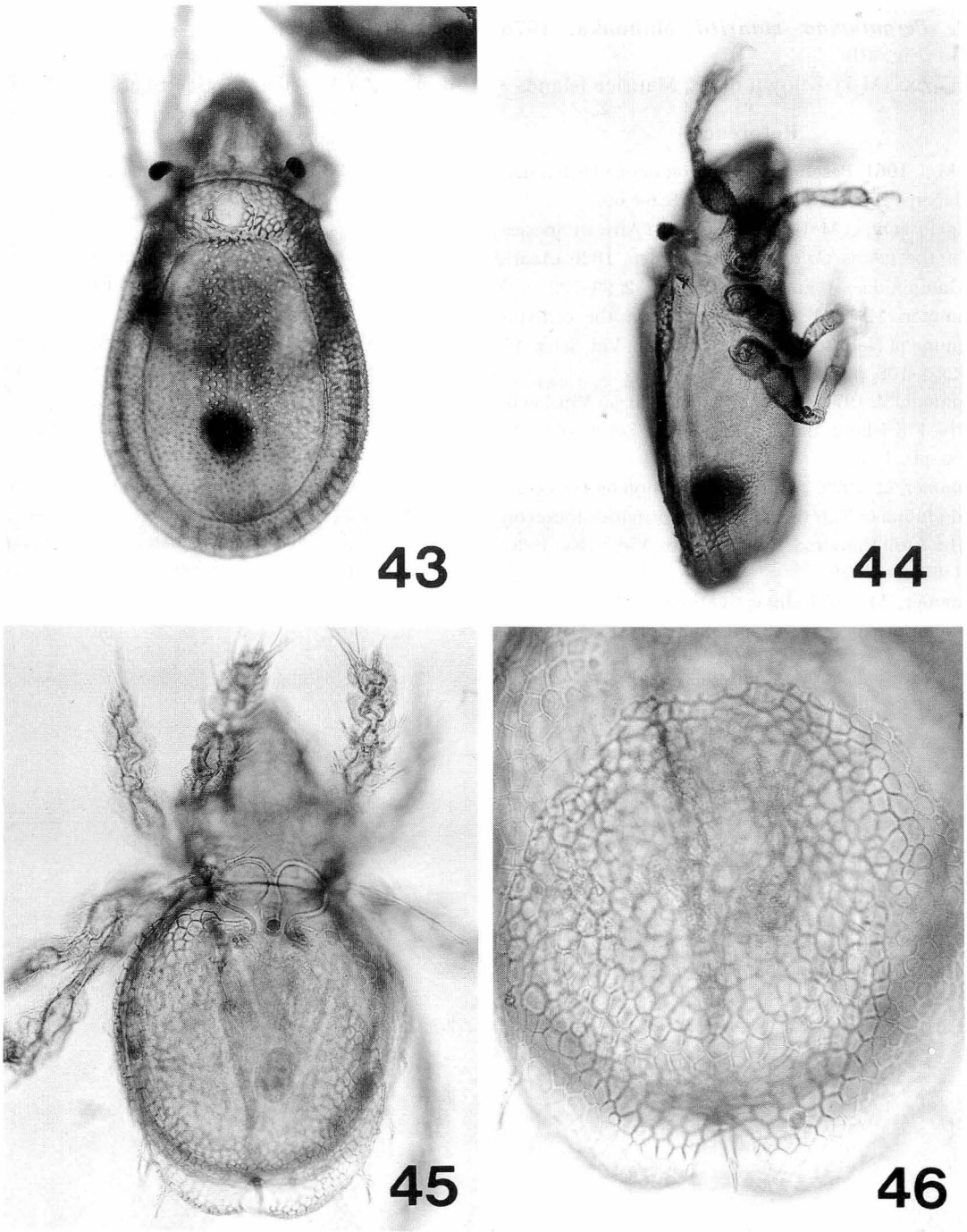
28. *Lamellobates palustris* Hammer, 1958

1 ex. (U-1). Known distr; Argentine, New Zealand, Thailand and Japan.

Family Galumnidae

29. *Galumna flabellifera* Hammer, 1958

5 exs. (M-1), 1 ex.(M-2). Known distr.: Argen-



Figs. 43–44 *Scapheremaeus fisheri* Aoki. **Figs. 45–46.** *Basilobelba insularis* Mahunka. 46: Posterior part of notogaster with nymphal exuviae.

tine, Bolivia, Maurice Is., Laysan Is., Egypt and Japan.

30. *Galumna valida* sp. n.

3 exs. (M-1)

31. *Pergalumna altera* (Oudemans, 1915)

35 exs.(U-1). Known distr.: Europe, S. Africa and Japan.

32. *Pergalumna mauritii* Mahunka, 1978
(Fig. 40)

17 exs.(M-1). Known distr.; Maurice Island.

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