

STUDIES ON ORIBATEI (Acarina) FROM THE SOUTH  
PACIFIC.<sup>1</sup> II. EUTEGAEUS PAPUENSIS N. SP. FROM  
NEW GUINEA WITH A NOTE ON THE GENUS<sup>2</sup>

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*Abstract*: *Eutegaeus papuensis* n. sp., *Neoeutegaeus* n. gen., and *N. silvicola* n. comb. are reported upon here. A key to species of *Eutegaeus* and illustrations are included.

The genus *Eutegaeus* included 3 species recorded from New Zealand, Juan Fernandez Is. and Argentina. *Eutegaeus papuensis* n. sp. and the 3 known species—*E. bostocki*, *E. similis* and *E. pulcher*—differ from each other in the following combination of characters: the shape of lamellar tips, the sensillae, the interlamellar setae, the blade-like projections of the notogaster and the location of the adanal fissures. The name "*Neoeutegaeus*" previously suggested by Hammer (1962) is here proposed as a new genus with *?Eutegaeus silvicola* as the type species.

*Eutegaeus papuensis* Aoki, n. sp. Figs. 1-11.

MATERIAL EXAMINED: Holotype (BISHOP 3644), Mt Giluwe, 4200 m, 29.V.1961, from moss collected in Berlese funnel, J. L. & M. K. Gressitt; 11 paratypes, same data.

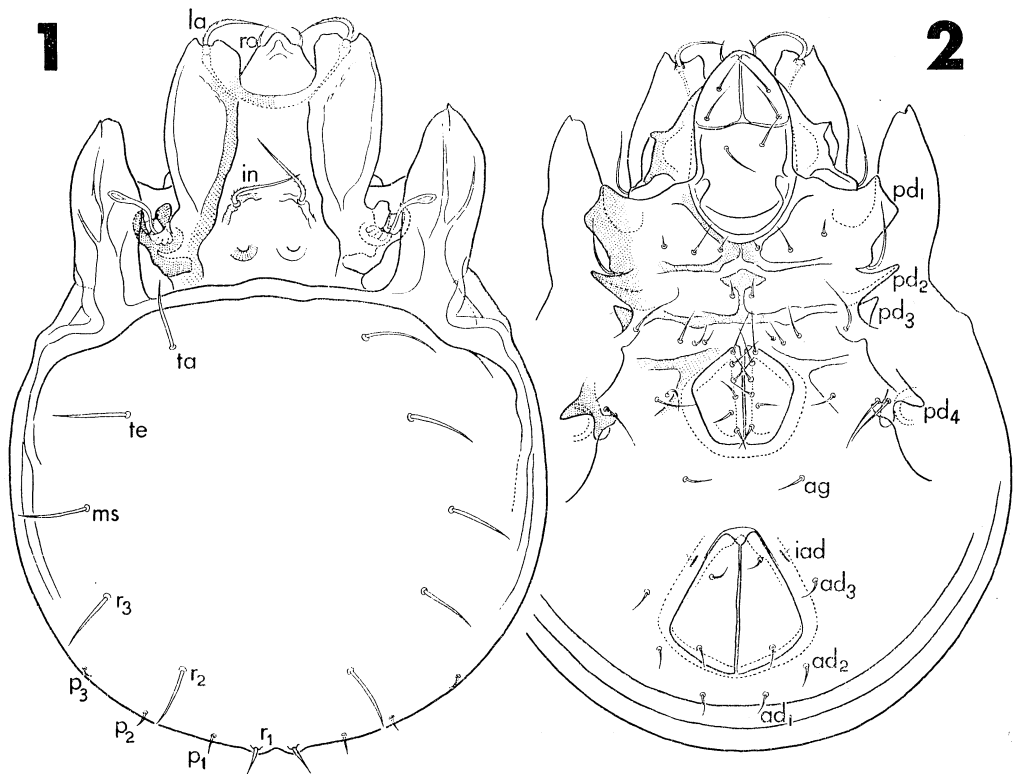
*Length*: 796 (826) 857  $\mu$ ; width: 551 (592) 632  $\mu$ .

*Prodorsum*: Conical in shape. Lamellae broad, constricted proximally just anterior to bothridium, connected by a slightly curved translamella. Cusps of lamellae just reaching tip of rostrum, having a shallow indentation on anterior margin; thus 2 small projections at tip of cusps; anterior one narrower than inner one and more or less pointed, while the inner one broadly rounded, sometimes, however, with a tiny spine; shape of cusps showing some individual variation (fig 3). Lamellar seta situated at bottom of cusp, thick and roughened on proximal 1/2, actually on a small apophyse under lamellar cusp strongly curved inward, but never touching nor crossing the opposed one. Interspace between both lamellar cusps wider than width of cusps, so that rostrum well visible in dorsal aspect. Rostrum

1. Polynesia (except Hawaiian Islands), Melanesia, Micronesia, and New Guinea are included here in "South Pacific", excluding Java, Borneo, Celebes and other islands in the vicinity of South Asia.
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rounded in ventral view, but possesses a small apophyse for rostral seta on each side. Rostral setae far shorter and thinner than lamellar setae, curved inward and slightly roughened. Interlamellar setae (fig 7) as long and thick as lamellar setae, situated on a pair of indistinct arched ridges; a pair of dark, half-doughnut-shaped thickenings located on medioposterior portion of prodorsum. Bothridium located near bottom of narrow space between lamella and notogastral projection, with most of it exposed and well visible from above, and only a small part of the outer margin covered by the notogastral projection; it has an opening anteriorly but dorsal as well as ventral walls of bothridium greatly removed to form deep excavations, of which upper one is far larger than ventral one; in hollow of bothridium a partition of thin plate just beneath pedicel of sensillus. Posterior bothridial lobe with 2 rounded angles. Sensillus directed anteriorly, then dorsolaterally; it has a club-shaped head with distal marginal portion roughly barbed. No special surface structure on prodorsum, but only a few wrinkles along a groove starting from insertion of lamellar seta and crossing lamellar obliquely.

*Notogaster*; Broader than long. Ratio (width : length) of notogaster 1.10 to 1.13. Nine pairs of notogastral setae (*te* lacking); *ta*, *ti*, *ms*, *r*<sub>2</sub> and *r*<sub>3</sub> rather long, thick and distinctly barbed (fig 8); *r*<sub>1</sub> smooth, far shorter than above-mentioned setae, located a little anterior to a pair of small rounded projections on posterior margin of notogaster; *p*<sub>1</sub>, *p*<sub>2</sub> and *p*<sub>3</sub> tiny

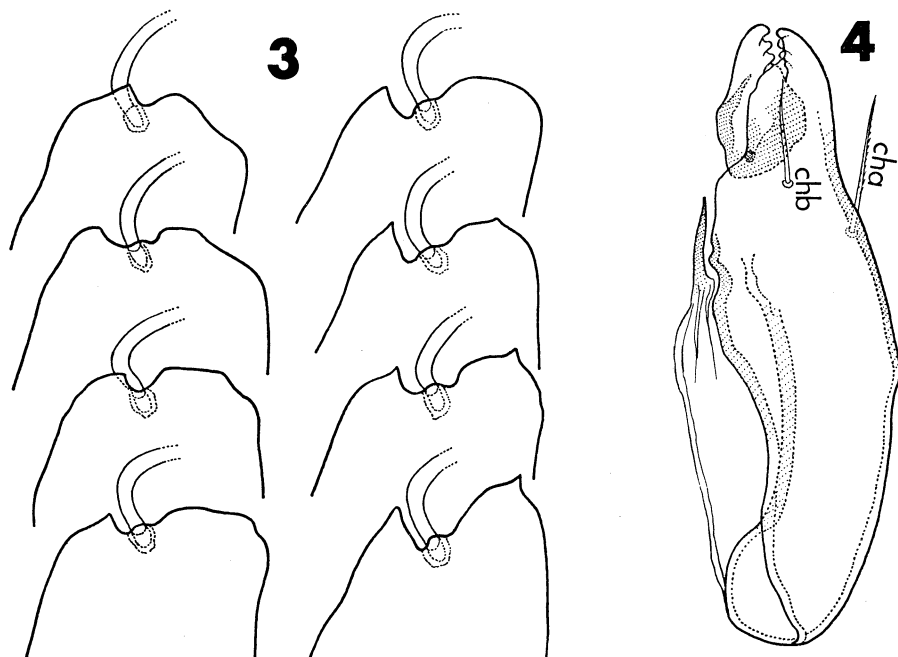


Figs. 1-2. *Eutegaeus papuensis* n. sp. 1, dorsal view; 2, ventral view.

and inserted on ventrally curved portion of notogaster. A pair of large blade-like projections on anterior margin of notogaster nearly as broad as lamellae; their tips just reaching level of translamella or a little shorter; a strong inwardly-curved ridge found at proximal part of this projection producing a triangular, flat humeral space. Anterior margin of notogaster dark-colored, strongly sclerotized and very slightly convex.

**Anogenital region:** Anal aperture diamond-shaped, longer than broad and widest at posterior portion. Genital aperture pentagonal, as long as broad. Distance between anal and genital aperture slightly longer than  $1/2$  length of anal plates. Anterior margin of each anal plate strongly projected, forming a triangular interspace between them. Insertions for anal setae ( $an_1$  and  $an_2$ ) arranged often rather asymmetrically; distance  $an_1-an_2$  ( $\mu$ ) on left and right side show following measurements in 5 specimens: (9.1-12.4), (10.2-10.8), (10.3-8.7), (10.3-8.3) and (11.1-10.3). Adanal fissures ( $iad$ ) aligned parallel to lateral margin of anal plates, located nearly in level of  $an_2$ . Three pairs of adanal setae and 1 pair of aggenital setae almost as long and thick as anal setae. Six pairs of setae on genital plates (one of 12 specimens examined showed an asymmetrical arrangement of genital setae, namely 6 setae on left plate and 7 on right plate); becoming progressively longer from  $g_1$  to  $g_6$ ; in most cases distance  $g_2-g_2$  widest among those of the 6 opposed pairs.

**Epimeral region:** Epimeral ridge I, II and SJ rather distinct, while epimeral ridge III and IV obscure. Sternal ridge appears only between epimeral ridge II and SJ, strongly widened anteriorly forming a diamond shape; sternal ridge connected posteriorly with epi-



Figs. 3-4. *Eutegaeus papuensis* n. sp. 3, variation of the anterior part of lamellar cusps (left side); 4, chelicerae.

meral ridge III, but not anteriorly with epimeral ridge II. Setal formula of epimerata (4-1-4-3); epimeral setae differing from each other in length: *1d*, *3d*, *4b* and *4c* longest and *3a* shortest; *4b* and *4c* situated very close together (exception—*4b* moved inward and very close to *4a* as figured on left side of fig 2).

*Pedotecta*: 4 pairs observed; *pd 1* largest, having anterior, lateral and posterior projections; posterior projection rounded and bearing a long setae; *pd 2* pointed, bill-shaped, slightly bent anteriorly, projecting laterad in the same extent as *pd 1*; *pd 3* smallest, triangular in shape, situated just behind *pd 2*, directed anterolaterad; *pd 4* short, bill-shaped, directed posterolaterad.

*Legs*: Each leg with 1 strong claw. Femora and trochantera of leg III and leg IV each provided with a well-developed thin, plate-like projection ("leg fin"). Furthermore, femora IV and trochantera IV each bearing a strong tooth on proximal and distal end, respectively; these teeth observed in some aspects as more blunt or rounded projections (fig 11). Formula of entire setae on segments (tarsus-tibia-genu-femur) of each leg: I (22-6-4-4), II(19-5-4-4), III(14-4-2-3) and IV(12-4-2-2). Formula of solenidia: I(2-2-1-0), II (2-1-1-0), III (0-1-1-0) and IV (0-1-0-0). Tarsus I:  $\omega_1$  straight, crossing curved  $\omega_2$ ;  $\omega_1$  distinctly longer and thicker than  $\omega_2$ ;  $\epsilon$ , *ft''* and *pl'* smooth, while remaining setae slightly roughened; famulus  $\epsilon$  situated very close to  $\omega_1$ , just outside the latter; *ft''* short, mostly elbowed softly at its rather proximal portion; *ft'* far longer than *ft''*; *pl'* possessing a specialized form, *i. e.* short and thickened like a thorn. Tarsus II:  $\omega_1$  and  $\omega_2$  straight, almost equal in length;  $\omega_1$  situated anterior to  $\omega_2$ ; *pv'* short and thickened but far larger than *pl'* on tarsus I. Tarsus III: *pv''* short and thickened, but with a rather fine tip, longer than *pl'* of tarsus I and shorter than *pv'* of tarsus II. Tarsus IV: *pv'* and *pv''* distinctly shorter than remaining setae but not widely differing from latter. Tibia I:  $\varphi_1$  whip-like, conspicuously long, nearly as long as tibia I+tarsus I;  $\varphi_1$  situated anterior to  $\varphi_2$ , far shorter than the latter; *v'* short and thickened. Tibia II: *v'* shortened, longer than that on tibia I and slightly shorter than *pv'* on tibia II;  $\varphi$  whip-like, about 5/8 as long as  $\varphi_1$  on tibia I. Tibia III:  $\varphi$  as 1/2 as long as  $\varphi$  on tibia II. Tibia IV:  $\varphi$  a little shorter than  $\varphi$  on tibia III. Genu I:  $\sigma$  as long as length of genu+tibia; *l'* longer than *l''*. Genu II:  $\sigma$  about as long as length of tibia. Femur I: *d* the longest and thickest setae on segment, about as long as genu I and rough in structure; only *bv''* located on ventral side; *v'' A* lacking. Femur II: *d* with rather normal appearance, not so thick as *d* on femur I.

*Mouth part*: Chelicerae (fig 4) rather slender, highest a little behind 1/2 way along its length; *cha* and *chb* almost equal in length, slightly roughened, directed forward; *chb* distant from tip of chelicera, 1/3 as long as total length of chelicera. Palpal segments progressively increasing in length from tarsus to femur. Setal formula of pedipalps: (8-3-1-2).

Up until now the following 3 species were included in the genus *Eutegaeus* Berlese, 1916:

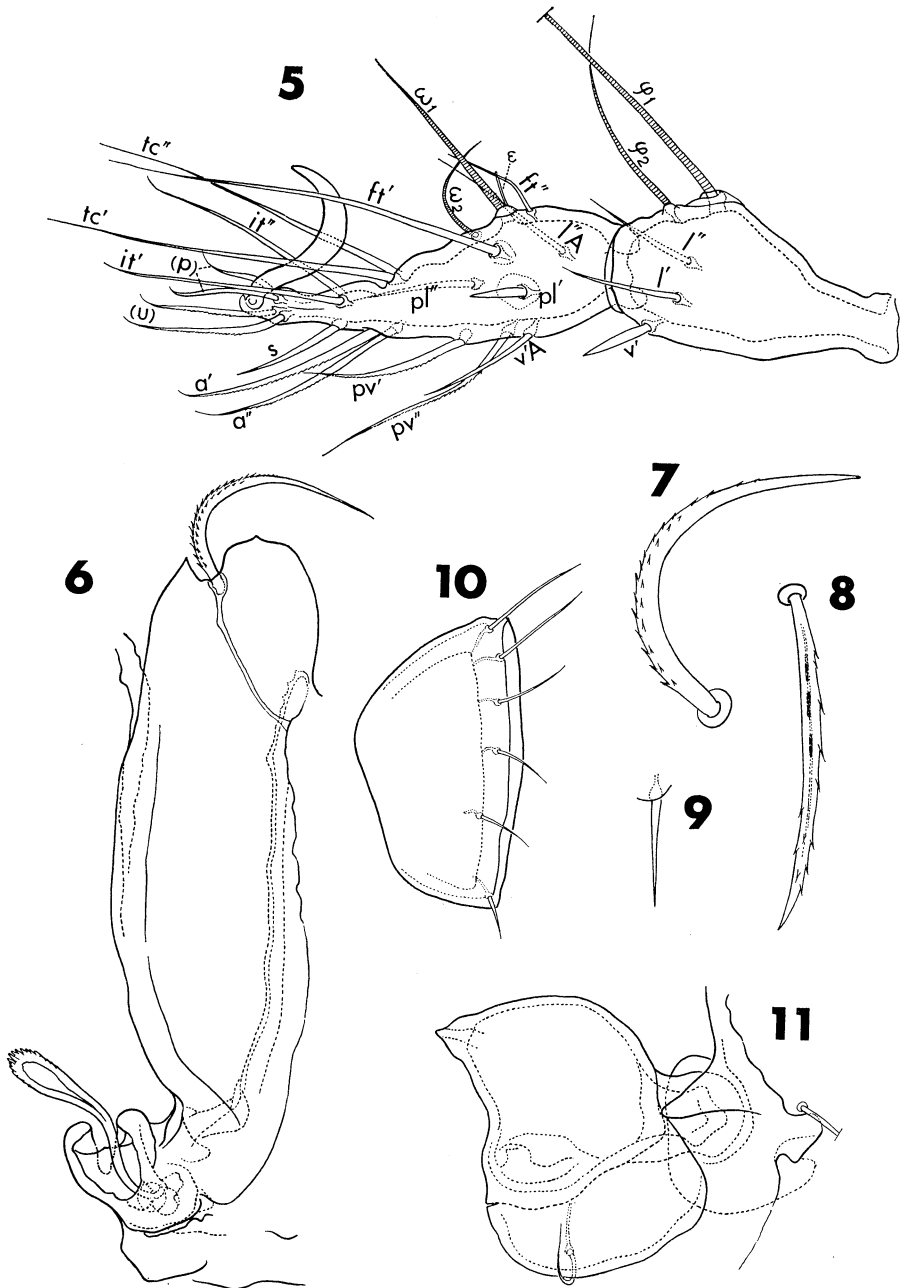
1) *Eutegaeus bostocki* (Michael)

*Oribata Bostocki* Mic., 1908, p. 136, pl. 17, figs. 1-3.

*Eutegaeus Bostocki*: Berlese, 1916, p. 62.—Trägårdh, 1931, p. 575.

Distribution: New Zealand.

2) *Eutegaeus similis* Trägårdh



Figs. 5-11. *Eutegaus papuensis* n. sp. 5, tibia I and tarsus I (paraxial); 6, lamella, bothridium and sensillus (left side); 7, interlamellar seta (left side); 8, notogastral seta (*ms*); 9, notogastral seta (*r*<sub>1</sub>); 10, genital plate (right side); 11, trochanter IV.

*Eutegaeus similis* Trgdh., 1931, p. 575, figs. 42-44.

Distribution: Juan Fernandez Is.

3) *Eutegaeus pulcher* Balogh et Csiszár

*Eutegaeus pulcher* Bal. & Csi., 1963, p. 472, figs. 15-16.

Distribution: S. Argentina.

The type species, *E. bostocki*, was so carefully described by Michael that the characteristic features of the lamellar cusps, the notogastral projections and sensillae are still sufficient to distinguish it from the later described species. Michael, however, did not mention the setal arrangement on the anogenital nor the epimeral region. The second species, *E. similis*, was described by Trägårdh having referred to the differences from *E. bostocki* and also to the setae on the anogenital region. Trägårdh mentioned: "Genital and anal aperture of the same shape as in *E. Bostocki* but considerably larger, the plates with two pairs of small hairs, placed as fig 44 shows." His figure actually shows 2 pairs of anal setae and also 2(!) pairs of genital setae. But the number of genital setae may be questionable as the occurrence of only 2 pairs of genital setae is very rare in Oribatei. The species described later have more than 5 pairs of genital setae. Trägårdh's suggestion (by his description and figure) of 4 pairs of adanal setae is also doubtful. There is the likelihood that the foremost pair in his drawing was not setae but adanal fissures (*iad*) or else that the number of setae behind the anal aperture was miscounted. He stated also: "The pseudostigmatic organs have slender peduncles and oval heads,..." But, the organ (sensillus) in his figure (fig 43, p. 576) seems to have a rather fusiform head with a pointed tip, rather than an "oval head." The third species, *E. pulcher*, described by Balogh & Csiszár is easily distinguishable from any other species by its filiform sensillae. Although they neither described nor figured the notogastral setae  $p_3$  or the adanal fissures it is almost certain that these will be found by a re-examination of the species.

KEY TO SPECIES OF THE GENUS EUTEGAEUS

1. Sensillus filiform, without a thickened head. Interlamellar setae very short and baciliform. Notogastral setae ( $ta$ ,  $te$ ,  $ms$ ,  $r_3$  and  $r_2$ ) long and strongly curved. Excavation at tip of lamellae shallow. Measurement:  $837 \times 567 \mu$ .....**E. pulcher**  
Sensillus more or less thickened distally. Interlamellar setae longer than their mutual distance. Notogastral setae ( $ta$ ,  $te$ ,  $ms$ ,  $r_3$  and  $r_2$ ) slightly curved. A pair of small rounded projections present at posterior end of notogaster..... 2
2. Lamellae broadly rounded at tips. Interlamellar setae straight and very long, reaching insertions of lamellar setae. Measurement:  $1000 \times 735 \mu$ .....**E. similis**  
Lamellae with an excavation at tips. Interlamellar setae not reaching insertions of lamellar setae.....3
3. Interspace between lamellae far narrower than width of each lamella. Excavation of lamellar tips deep and narrow. Interlamellar setae directed forward, slightly curved. Sensillus with a fusiform tip pointed at end. Posterior part of prodorsum shows a pair of almost circular rings. Notogastral setae ( $ta$ ,  $te$ ,  $ms$ ,  $r_3$  and  $r_2$ ) each reaching beyond insertion of successive setae ..... **E. bostocki**  
Interspace between lamellae wide, almost as wide as widest part of a lamella. Excavation of lamellar tips not so deep, often very shallow and small. Interlamellar setae strongly curved at proximal portions. Sensillus with an oval head round-

ed and barbed at tip. Posterior part of prodorsum with a pair of anterior arch-  
ed ridges and a pair of posterior semi-circular rings separating each other. Noto-  
gastral setae ( $ta$ ,  $te$ ,  $ms$ ,  $r_3$  and  $r_2$ ) each not reaching insertion of successive seta

..... **E. papuensis**

Hammer (1962) described another species, *?Eutegaeus silvicola*, from Chile (the ?-mark was put by herself). In the beginning of the description (p. 75) she mentioned as follows: "In its generic characters this genus agrees in many things with *Eutegaeus similis* Trgdh., but some important characters are so different, that they perhaps justify setting a new genus, in which case I should suggest the name of *Neoeutegaeus*. The differences will appear from the following." (followed by the description of *?E. silvicola*). Judging from the description, however, the generic name *Neoeutegaeus* in her paper is not available at present, but should be treated as a *nomen nudum* and also a conditional name [cf. International Code of Zoological Nomenclature: Article 13(b) and Article 15]. Meanwhile, Dr M. Hammer kindly sent me 2 specimens of *?Eutegaeus silvicola* for a comparative study with the species of *Eutegaeus* mentioned here. Having examined Hammer's species I confirmed the characteristic features which were mentioned by Hammer and which also may separate the species from the genus *Eutegaeus*. It is now necessary to erect a new genus for it. Although it is possible to erect a new name, I prefer to esteem Hammer's suggestion of "*Neoeutegaeus*."

#### Genus *Neoeutegaeus* Aoki, n. gen.

Body small, its length less than 0.5 mm. Lamellar cusps long, extending beyond anterior margin of rostrum, very close to and almost touching each other. Rostral setae tiny, concealed below lamellae. A pair of small scales (such as condyles of the genus *Tetracondyla*, the family Otocephelidae) situated on posterior portion of prodorsum. Pteromorphae somewhat extended backwards beyond anterior margin of notogaster. On either side of genital aperture are 2 projections opposed to each other. There are only 2 pairs of adanal setae. Adanal fissures *iad* located fairly distant from margin of anal aperture and in level anterior to insertions of anterior anal setae ( $an_2$ ). Anal plate broadly rounded anteriorly. Genital plate bears typically 6 setae (exception: 7; fig 12, right side), some of them situated far distant from inner margin and rather close to outer

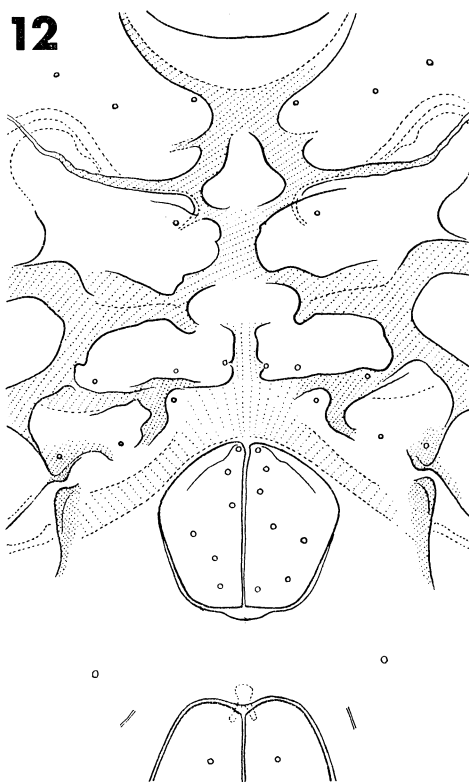


Fig. 12. *Neoeutegaeus silvicola* (Hammer).  
Epimeral and anogenital regions.

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margin. Epimeral ridges well-developed, connected to each other (some characters which were not mentioned by Hammer were added).

Type species: ?*Eutegaeus silvicola* Hammer, 1962.

*Neoeutegaeus* differs from *Eutegaeus* in the characters mentioned above and is easily distinguished above all by the length of lamellar cusps, the position of genital setae as well as adanal fissures, the number of adanal setae and also the body size. Hammer's species of *silvicola* is therefore to be referred as *Neoeutegaeus silvicola* (Hammer 1962) n. comb.

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