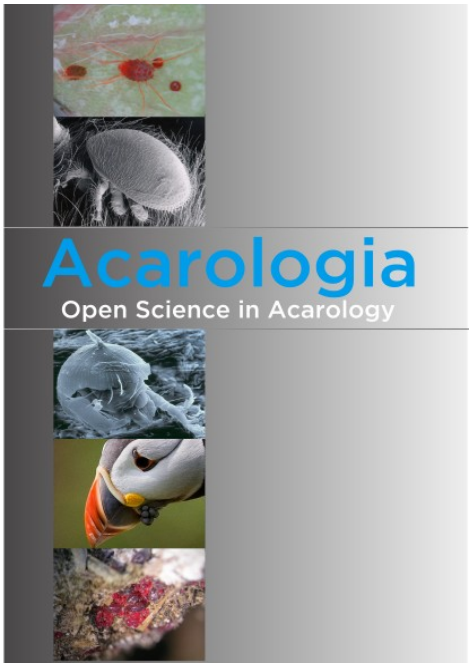

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EUTEGAEIDAE, A NEW FAMILY OF ORIBATID MITES, WITH A DESCRIPTION OF A NEW SPECIES FROM NEW ZEALAND (ACARINA : ORIBATEI) [1]

BY

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Some time ago Dr. Ray FORSTER, Director of the Otago Museum at Dunedin, New Zealand, sent me a few oribatid mites for identification. Among these was a mite which resembled *Eutegaeus bostocki* Michael, 1908, and yet was diagnostically different. As I investigated and compared the characteristics of the species of this genus, preparatory to the description of this new species, it became apparent that the genus *Eutegaeus* was so distinctly different from any of the genera with which it is normally classified, that it needed more detailed study. As a result of further scrutiny, I consider that these features of the genus are of higher taxonomic rank than currently assumed, and that the genus should be redesignated within a new family, as indicated below.

BALOGH (1961) lists *Eutegaeus* in company with *Cercocepheus* Trägårdh, 1931, *Odontocepheus* Berlese, 1913, *Carabodes* C. L. Koch, 1836, and other genera in the family Carabodidae Willmann, 1931. In some superficial respects *Eutegaeus* does resemble these carabodids and some cepheids. It is my opinion, however, that because of the distinctively prominent humeral processes, the broad, cusped lamellae, the expanded and projecting pseudostigmata, and the five major pairs of dorsal hysterosomal setae, *Eutegaeus* Berlese, 1916, should be placed in a new and separate family and designated as the type. Accordingly, I propose the following taxonomic arrangement.

1. This investigation was supported by Research Grant G-14333 from the National Science Foundation.

Superfamily Carabodoidea Woolley, 1956.

Family **Eutegaeidae,** *n. fam.*

Type genus : *Eutegaeus* Berlese, 1916, p. 62.

Diagnosis : Carabodoid mites with prominent humeral processes at least half as long as prodorsum located at shoulders of hysterosoma ; broad, plate-like lamellae with prominent cups ; a thin translamella ; pseudostigmata large, projected laterally, spiralled internally ; pseudostigmatic organs clavate ; usually with six pairs of genital setae ; monodactylous tarsi.

Discussion : In the typological concept of taxonomy employed here with the removal of the genus *Eutagaeus* from the family Carabodidae and its placement in a new family, it is necessary to re-examine the characters previously considered to be generic for *Eutegaeus* and the several other genera of Carabodidae. Such a re-evaluation correspondingly necessitates the alteration of the status of characters previously considered to be specific, some of which are now assessed as having generic significance. Other comparative changes will also be involved and these changes will be elucidated below.

In none of the genera except *Eutegaeus* within the presently constituted family Carabodidae does one find the long, humeral processes, broad cusped lamellae, and five major pairs of dorsal hysterosomal setae. Aside from the humeral processes, which are most distinctive, some of the characters of the new family, Eutegaeidae, may occur singly in other genera outside the family, but not in the particular combination which characterizes this new family.

In the light of this proposed major change of taxonomic status a study of the characters of the different species in the genus *Eutegaeus* reveals that some features considered previously to be specific, correspondingly become generic, which results in the elevation of the species to generic rank. I am of the opinion that the distal configurations of the lamellar cups are generic in character and accompany certain other features of the prodorsum in the generic makeup. If these same features and relative sizes are considered as of only specific rank and the species are lumped together in the single genus *Eutegaeus*, incongruities of the species become too pronounced. I, therefore, am assuming that four genera exist in the new family, as described below, even though each of genera is monotypical within the proposed scheme.

Genus *Eutegaeus* Berlese, 1916, p. 62.

Type : *Eutegaeus bostocki* Michael 1908, p. 136.

(Fig. 1).

Diagnosis : Distal tips of lamellar cusps deeply incised, lamellar hairs inserted between large dents of cusps ; interlamellar hairs shorter than width of lamellae,

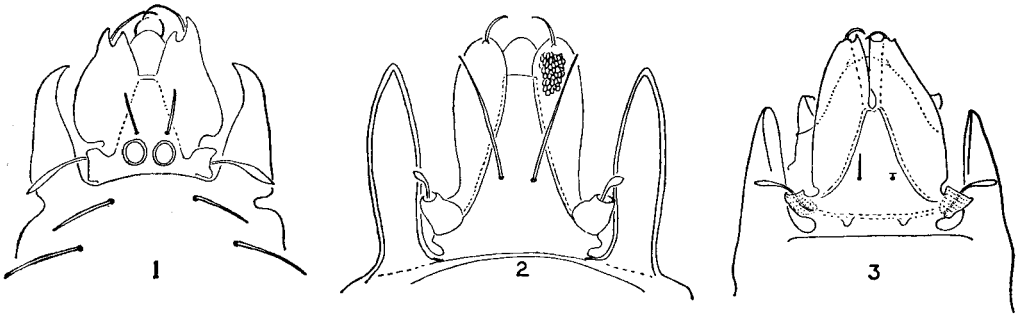
rod-like, inserted anterior to two large, circular concavities in surface of prodorsum ; posterior margin of hysterosoma with two prominent conical tubercles, each with a short hair inserted in its distal tip.

Genus **Pareutegaeus,** *n. gen.*

Type : *Eutegaeus similis* Trägårdh, 1931, p. 575, *nov. comb.*

(Fig. 2).

Diagnosis : Distal tips of lamellar cups broadly rounded (" without incision " according to TRÄGÅRDH), surface of lamellae with net-like sculpturing ; lamellar hairs inserted in dorsal surface near tip, decurved ; interlamellar hairs nearly as long as lamellae, erect ; minute rudimentary tubercles on posterior margin of hysterosoma.



Genus *Neoeutegaeus* Hammer, 1962, p. 75.

Type : *Eutegaeus silvicola* Hammer, 1962, p. 75.

(Fig. 3).

HAMMER (1962) suggested that *E. silvicola* might represent a new genus, distinctly different from *Eutegaeus.* Since she proposed the name, I have included this genus without designating it as new.

Diagnosis : Distal tips of lamellar cusps truncate but with a short, median spine ; lamellar hairs inserted in short anterior apophyses ; interlamellar hairs shorter than width of lamellae ; two broad scales near posterior margin of prodorsum ; posterior margin of hysterosoma with " two small thickenings " according to HAMMER.

Genus **Neseutegaeus,** *n. gen.*

Diagnosis : Distal tips of each lamellar cusp with prominent, incurved tooth ; lamellar hairs inserted in dorsal surface of lamellae, a diagonal carina extending

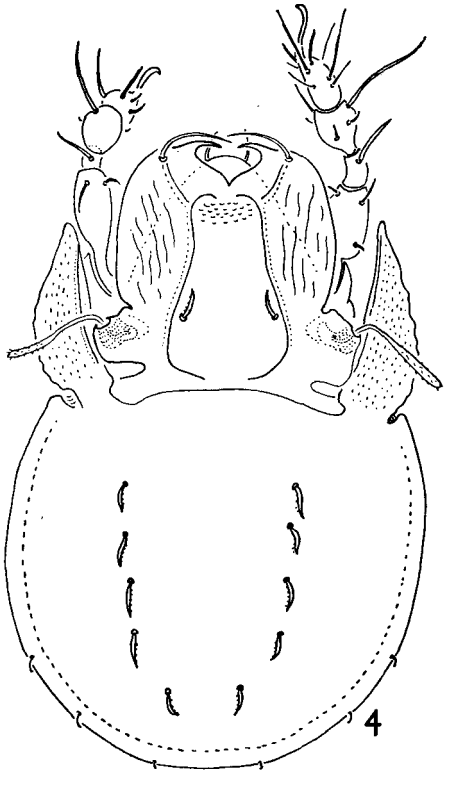
from insertion of lamellar hair to base of translamella ; interlamellar hairs shorter than width of lamella, slightly setose ; without tubercles or sclerotized areas on posterior margin of hysterosoma, but with three pairs of simple hairs (Fig. 4).

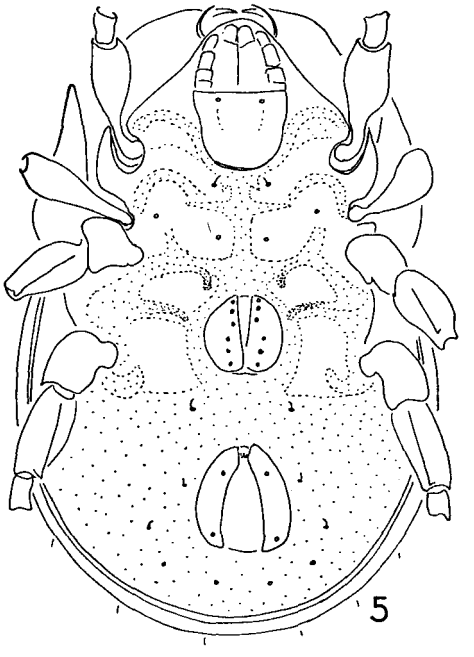
The generic name is formed from the Greek stem, *nesos*, and refers to the islands of New Zealand, the collection locality of the species.

Neseutegaeus spinatus, *n. sp.*

(Figs. 4, 5).

Diagnosis : Lamellae broad, anteriorly with a terminal incurved spine, surface of lamellae corrugated, wrinkled, with diagonal carina extending from insertion of lamellar hair to base of translamella.





Description : Yellow-brown in color ; propodosoma squarish in outline as viewed at level of lamellae, rostrum rounded anteriorly, rostral hairs inserted laterally, obscured in view from above because of large lamellae ; lamellae nearly half as broad as width of prodorsum, extended from level of interlamellar hairs and pseudostigmata to slightly beyond rostrum, each lamella ending in an incurved, ter-

minal spine, surface wrinkled longitudinally, inner margins sclerotized ; translemella less sclerotized ; lamellar hairs inserted in tips of lamellae, incurved, slightly setose ; interlamellar hairs half as long as lamellar hairs, inserted near medial sclerotized margins of lamellae at level of pseudostigmata ; surface of prodorsum with small depressions, most pronounced posterior to translamellae ; pseudostigmata open from anterior margins of robust, prominent lateral projections at bases of lamellae ; pseudostigmatic organs narrowly clavate, recurved, finely setose, extending beyond lateral margins of humeral processes.

Hysterosoma nearly round in outline, surface smooth, with a cerotegument in some specimens ; with a prominent, curved, blade-like humeral process at each antero-lateral corner, process with longitudinal carina near medial margin, roughened surface ; dorsum of hysterosoma with five pairs of lanceolate setae in two slightly curved longitudinal rows, four posterior fine setae as in figure 4.

Camerostome rectangular, with large mentum extended over half its length ; apodemata and ventral setae as seen in figure 5 ; genital aperture rounded, about its length anterior to trapezoidal anal aperture, genital opening between legs IV ; each genital cover with 6 setae nearest medial edge of cover ; aggenital setae small, widely separated, farther apart than width of genital aperture ; anal aperture trapezoidal, each anal cover with two setae ; adanal setae small, as in figure 5, ada : 3 at level of a : 1, ada : 2 more widely separated and at level of posterolateral corner of anal aperture, ada : 1 more medial in position and behind anal aperture ; an additional pair of adanal setae ada : 0 posterior to aperture, as in figure 5.

Legs robust, femora III, IV with a ventral keel ; all tarsi with a single claw ; details of legs I as in figure 4.

Length 330 μ, hysterosoma 204 μ ; width 216 μ.

Ten specimens of this species were collected in different parts of New Zealand. The type and one paratype were collected at Alex Knob, Waiho, New Zealand, 1500 ft., 25 Jan. 1954 by J. T. SALMON ; two specimens were taken at Lake Ianthe, Westland, N. Z., 27 Jan. 1954 by J. T. SALMON — one is questionable because of excessive debris and cerotegument attached, but appears to be this species ; and three specimens were collected at Mcgraths Creek, Arthur's Pass, N. Z., 3 January 1958, by E. W. DAWSON. The type and duplicates are in the Otago Museum, Dunedin, New Zealand.

Discussion : As I attempted to equate the various structural features of the species described in the genus *Eutegaeus* and to compare these species with others in the family Carabodiade, it became evident that *Eutegaeus* was too different a genus to remain in Carabodidae. The broad lamellae and the distinctive humeral processes set the genus apart from all the other genera of that family. In *Cercocepheus* Trägårdh, 1931, in which the prodorsum most closely resembles the structures of *Eutegaeus*, the lamellae, the pseudostigmata and the five pairs of major dorsal setae are comparable, but the specialized pelopoid chelicerae and the lack of humeral processes are too distinctively different to allow familial relationships

with *Eutegaeus*. As one compared other genera in the family Carabodidae with *Eutegaeus*, the differences become more and more apparent and similarities less and less pronounced.

It could be assumed that all of the new genera and four species described above are really within the single genus *Eutegaeus*, and that the differences in lamellae, prodorsal sculpturing, hysterosomal hairs and protuberances, are strictly specific in significance. If so, that would mean an abnormally wide variation in lamellae, hysterosomal structures and size within a single genus, and would contrast paradoxically with some characters of established genera in other families.

It seems to me that if the great differential in sizes of the species, *Eutegaeus bostocki* (900 μ × 630 μ), *Pareutegaeus similis* (1000 μ × 735 μ) is compared to the sizes of *Neoeutegaeus silvicola* (310 μ × ?) and *Neseutegaeus spinatus n. sp.* (330 μ × 216 μ), at least two genera would be logical based on size alone, other structural features being relatively equal. With the several differences exhibited by these species in the structures of lamellar cusps, the arrangement of the lamellar and interlamellar hairs, the numbers and positions of the hysterosomal setae and the presence or absence of tubercles on the hysterosoma, it appears to me that these species represent different genera in a new family. Surely the incised lamellae (as in *Oribatella*, for example) would be of generic significance, as would also the protuberances of the hysterosoma, and scales or concave depressions of the propodosoma. Lengths of lamellar and interlamellar hairs and pseudostigmatic organ might be either generic or specific ; the humeral processes and the pseudostigmata are probably more representative of familial characters than any of the other structures. The curved spines of the lamellae in *Neseutegaeus spinatus n. sp.* resemble those of *Ommatocepheus* Berlese, 1913, and constitute one of the superficial resemblances mentioned earlier. The incised lamellar cusps of *Eutegaeus bostocki* are similar to some species of *Oribatella* Banks, 1895. It is the combination of the several characters, however, that make *Eutegaeus* representative of what I consider to be a valid and distinctively new family. I anticipate that although the genera in the new family Eutegaeidae are currently monotypical, additional species will be found.

A Key to the Genera and Species of Eutegaeidae, *n. fam.*

Broad, plate-like lamellae, with prominent cusps ; humeral processes half as long as prodorsum ; a thin translamella ; pseudostigmata large, projected laterally, spiralled internally ; pseudostigmatic organs clavate ; usually with six pairs of genital setae ; claws monodactylous..... Family Eutegaeidae, *n. fam.* 1

1. Distal tips of lamellar cusps incised or with at least one tooth ; interlamellar hairs shorter than width of lamellae..... 2

1a. Distal tips of lamellar cusps rounded ; interlamellar hairs nearly as long as lamella. *Pareutegaeus similis* Trägårdh, 1931, p. 575, (Figure 2).

2. Lamellar cusp with a single tooth ; prodorsum without concavities, either smooth or with two small, pointed scales medial to pseudostigmata..... 3

2a. Lamellar cusps with two teeth on incised distal margin ; prodorsum with two circular concavities posterior to interlamellar hairs..... *Eutegaeus bostocki* Michael, 1908, p. 136, (Figure 1).

3. Cuspal tooth short, medial, directed anteriorly ; lamellar hairs inserted on apophyses at distal tips of lamellae.... *Neoeutegaeus silvicola* Hammer, 1962, p. 75, (Figure 3).

3a. Cuspal tooth long, medial, incurved ; lamellar hairs inserted on dorsal surface of lamellae near distal tip..... *Neseutegaeus spinatus, n. sp.*, (Figures 4, 5).

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