ECHINOFEMUR, A NEW GENUS OF PTEROLICHID FEATHER MITES FROM NEW WORLD PARROTS [1]

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TAXONOMY ABSTRACT : *Echinofemur*, a new genus of feather mites (Pterolichoidea, Pterolichidae) is established. The type species, *Pterolichus (P.) venustissimus* Trouessart, 1899 is redescribed and illustrated.

TAXONOMIE RÉSUMÉ : *Echinofemur*, genre nouveau d'Acariens plumicoles (Pterolichoidea : Pterolichidae) est établi. L'espèce type *Pterolichus (P.) venustissimus* Trouessart, 1899 est redécrite et figurée.

The New World genus *Aralichus* Gaud as currently defined (GAUD, 1966) is composed of a cluster of supraspecific taxa. To begin the dismemberment of *Aralichus* (s.l.), a distinctive group of species will be the basis for *Echinofemur*, a new genus of feather mites.

The mites occur on the ventral surfaces of medium-sized feathers on the dorsal wing near the body (PÉREZ and ATYEO, 1984). Extensive collections can be made from field collected birds by examining individual feathers under a dissecting microscope ; however, they are rarely collected from museum study skins as the occupied microhabitat is not readily accessible for our museum collecting technique (see ATYEO and BRAASCH, 1966 for details).

Chaetotactic signatures in the descriptive section follow ATYEO and GAUD (1966).

PTEROLICHIDAE, PTEROLICHINAE

Echinofemur, new genus

■ *Diagnosis.* Pterolichine mites with parallel-sided idiosomata ; epimerites I parallel, weakly connected at posterior terminations ; legs I-IV subequal ; legs I, II widely separated from legs III, IV ; legs III distant from legs IV ; legs IV not extending beyond idiosomal terminus ; dorsal idiosoma with large prodorsal, hysterosomal shields ; 2 long internal vertical setae ; scapular setae small to minute, approximately equidistant ; some idiosomal setae leaflike ; humeral setae expanded basally ; subhumeral setae seti-

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form, small ; 1 pair dorsal hysterosomal setae absent (*d 3* or *d 4*) ; femora, genua, tibiae I, II with ventral excrescences ; femora III, IV with dorsal spines ; solenidion ω I on tarsus II longer than homolog on tarsus I ; solenidion φ I longer than φ II. Males with idiosoma extended posteriorly as two triangular lobes separated by shallow cleft ; setae *l 1, l 3, l 4, l 5, pai* expanded ; genital organ small, without supporting apodemes, positioned between legs III, IV ; adanal discs with sclerotized corolla bearing dentations. Female with distinct pygidial region ; setae *l 1, l 4, pai* leaflike ; pregenital apodeme between posterior terminations of epimerites II ; supranal concavity as figured ; spermpore terminal.

Type-species : *Pterolichus (P.) venustissimus* Trouessart, 1899.

■ *Etymology : Echinus* (L. hedgehog, sea-urchin) + *femur* (L. thigh, femur) to call attention to the spiny condition of femora III and IV ; masculine.

Each New World parrot species may have four species of the *Aralichus-Protolichus* Trouessart complex, but only species of *Echinofemur*, n. g., are distinctive under a dissecting microscope ; the hysterosomata are narrow and parallel-sided, and the idiosomata posterior to legs II are elongated. Under higher magnification, all taxa of the complex have some setae bifurcated and/or leaflike, especially the internal postanals, but only *Echinofemur* is characterized in part by having at least setae *l 1, l 4*, and *pai* modified as leaves with serrated margins.

Echinofemur species are very homogeneous (probably a reflection of adaptations to a restricted microhabitat on the secondary coverts). The ventral excrescences on the anterior legs are similar to those of some *Aralichus* species, but in *Aralichus*, there is a wide range of development of these structures ; in some species they are absent, in some the excrescences are moderately developed, and in other species the excrescences are formed as in Figure 1. The shortened femora of legs III and IV, each with a series of dorsal spines, has no counterpart in *Aralichus*.

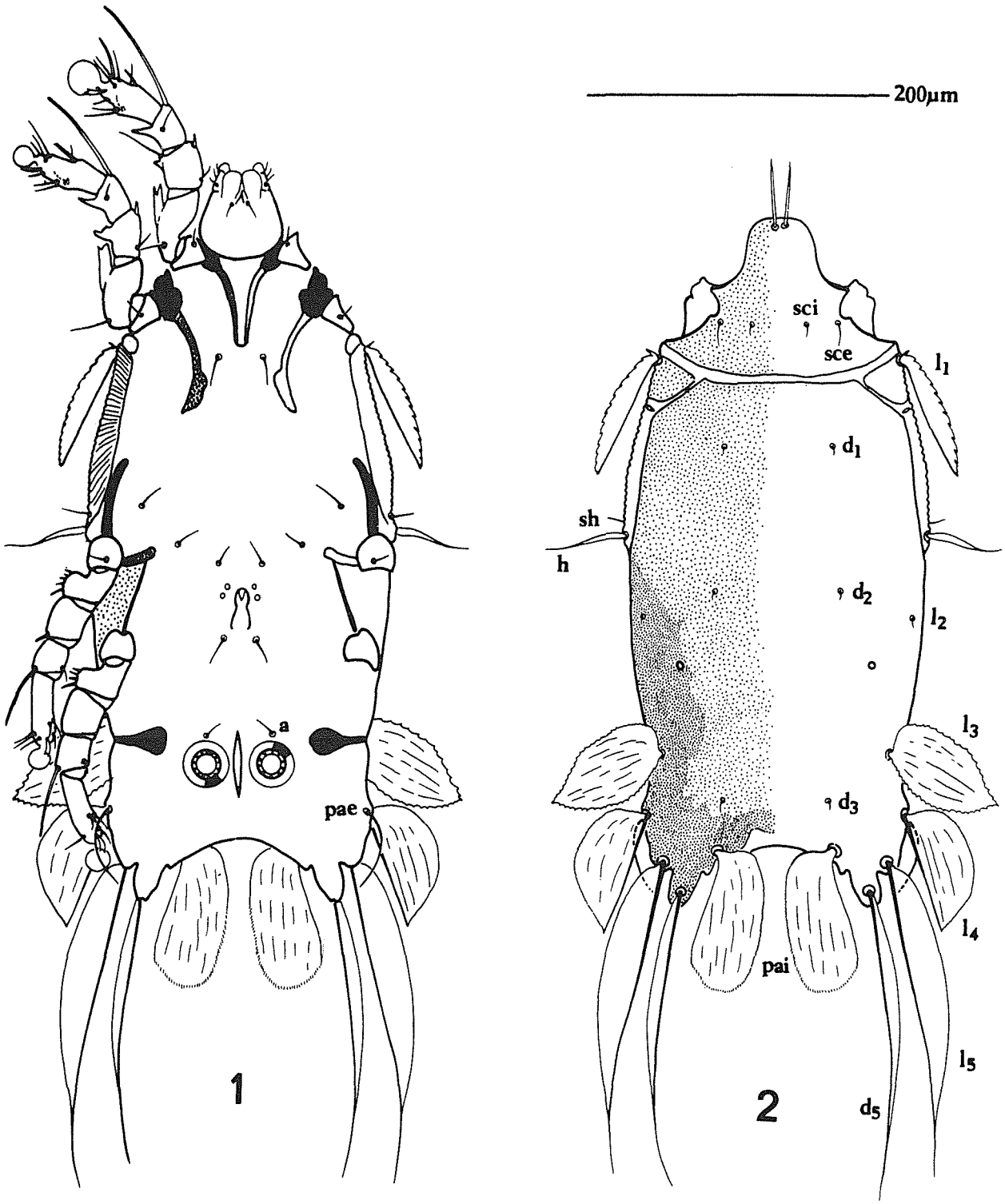
In comparing *Echinofemur* to other taxa of the *Aralichus-Protolichus* complex, *Protolichus* males have characteristic ventral apodemes originating at or near the terminus and extending anteriorly to the genital region (paragenital apodemes). The males of *Aralichus* and *Echinofemur* lack these sclerotizations. In general the females of the *Aralichus-Protolichus* complex have the pregenital apodeme (the sclerite immediately anterior to the oviporus) distant from the terminations of the epimerites of legs II, and the posterior margin of the idiosoma rounded. *Echinofemur* females have the pregenital apodeme between the terminations of epimerites II and the idiosomal terminus is distinctive (Fig. 3).

Except for field collected specimens from *Aratinga canicularis* (L.) and *A. nana* (Vigors), information on host-parasite associations for *Echinofemur* species is limited. There are one to four museum collected specimens from each of the following hosts : *Aratinga cactorum* (Kuhl), *A. pertinax* (L.), *A. jandaya* (Gmelin), *Ara severa* (L.), *Brotogeris versicolurus* (Müller), *B. jugularis* (Müller), *B. jugularis* (Müller), and *Anodorhynchus hyacinthinus* (Latham). Most of these collections represent new species, but because many specimens are incomplete (i.e., damaged) or represented by one sex, formal naming of the taxa will be undertaken when additional material has been collected.

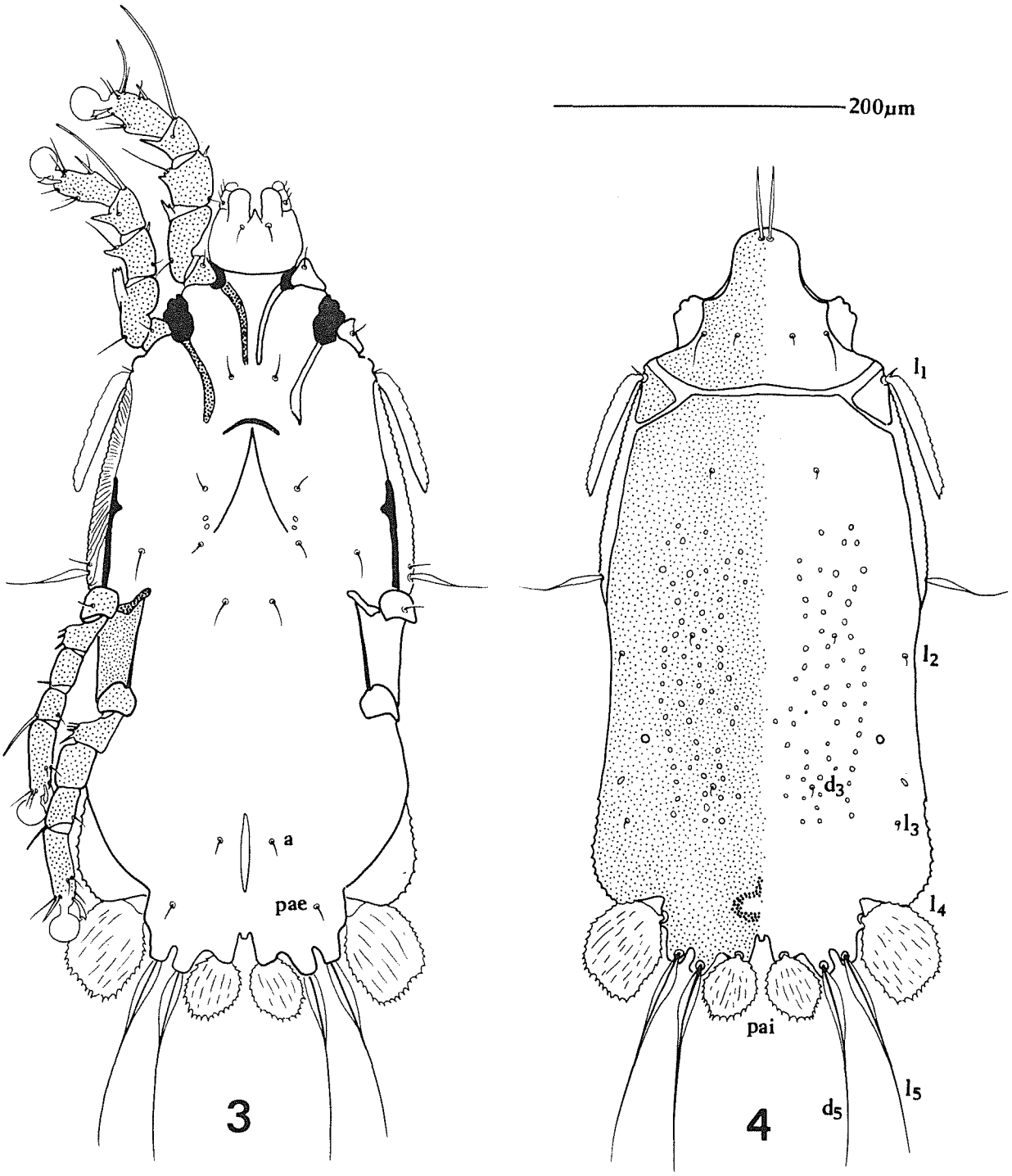
Echinofemur venustissimus (Trouessart), new combination.

Pterolichus (P.) venustissimus, TROUESSART, 1899*a* : 292 ; 1899*b* : 9.
Pterolichus (Eupterolichus) venustissimus, CANESTRINI and KRAMER, 1899 : 38.
Pterolichus venustissimus, FAVETTE and TROUESSART, 1904 : 124 ; RADFORD, 1958 : 136.
Protolichus venustissimus, DUBININ, 1956 : 304.

To facilitate descriptions of new species in the future, a brief redescription of this species will be given. Special attention will be to measurements of structures known to differ between *E. venustissimus* and new species in the study collection.



FIGS. 1, 2 : *Echinofemur venustissimus* Trouessart, male ; dorsal (2) and ventral (1) aspects. Setae : *a*, anals ; *d 1-5, l 1-5*, dorsal and lateral hysterosomals ; *h*, humerals ; *pae, pai*, external and internal postanals ; *sce, sci*, external and internal scapulars ; *sh*, subhumerals.



FIGS. 3, 4 : *Echinofemur venustissimus* Trouessart, female ; dorsal (4) and ventral (3) aspects. Setae : *a*, anals ; *d 3-5, l 1-5*, dorsal and lateral hysterosomals ; *pae, pai*, external and internal postanals.

Two dimensional measurements are given as length × width at the widest part of a structure.

Male. Length, including gnathosoma and lobes, 370 μm ; width, 154 μm. Dorsal hysterosoma sclerotized except for sejugal furrow ; prodorsal shield with scapular setae minute ; setae *pai* quadrate with rounded apices. Venter as figured. Setal measurements : *sce* : *sce*, 61 μm ; *l 1*, 65 × 14 μm ; *l 3*, 61 × 39 μm ; *l 4*, 73 × 29 μm ; *l 5*, 24 μm in width ; *pai*, 74 × 37 μm.

Female. Length, including gnathosoma, 432 μm; width, 162 μm. Dorsal idiosoma similar to male from gnathosoma to level of opisthonotal gland. Setae *d 3, l 3* at approximately same level, distant from terminus. Venter as figured. Setal measurements : *sce* : *sce*, 67 μm ; *l 1*, 63 × 7 μm ; *l 4*, 51 × 41 μm ; *pai*, 39 × 29 μm.

Type data. From *Aratinga canicularis* (L.) (Psittacidae) : lectotype female, paralectotype female, Tehuantepec, Mexico, no other data. The types are in the TROUESSART Collection, slide no. 35C3.

Other material examined. From *Aratinga canicularis* : 17 males, 11 females, Puerto Vallarta, Jalisco, Mexico, June 18, 1983, T. M. PÉREZ, W. T. ATYEO (TMP bird no. 46) ; 9 larval exuviae, 8 nymphal exuviae, 2 females, same data except December 12, 1981 (TMP bird no. 24). From *Aratinga nana astec* (Souancé) : 6 males, 8 females, 2 larvae, 6 protonymphs, 6 tritonymphs, Comalcalco, Tabasco, Mexico, April 23, 1981, T. M. PÉREZ, W. T. ATYEO (TMP bird no. 1).

Remarks. Sexual dimorphism is apparent in the adults, however, in the developmental series from larva through tritonymph, there are differences between stadia but no apparent differences attributable to dimorphism. The ventral excrescences on legs I and II are small spines in the larvae and become larger with each molt. The spines on the posterior trochanters increase in size and number ; in the larva there may be a small spine on trochanter III ; in the protonymph, one large and usually one small spine on III and one spine on IV ; and in the tritonymph, the numbers are as in the adults, that is, four to six spines of various lengths on trochanters III and IV. Setae *l 1* are excellent indicators of developmental stage ; in the larva they are small and setiform ; in the protonymph, basally branched with the longest branch slightly expanded ; and in the tritonymph they are leaflike, but only about 50 % of the adult length. Finally, setae *l 3* are bifurcated in the immature stadia whereas in the males they are large and leaflike and in the females, minute and setiform.

In general, setae become larger with each stadium ; in *Echinofemur* there are notable exceptions, the external scapular setae, and as mentioned above, and setae *l 3* of the female. To give examples in the developmental series, we will use a few setae for illustrative purposes ; measurements are in micrometers.

Setae	*L*	*PN*	*TN*	♀	♂
vi	17.6	25.6	28.0	44.0	36.8
sce	24.0	22.4	16.0	12.0	16.0
l 1	8.0	15.2	36.8	67.2	84.0
h	22.4	27.4	33.3	44.8	44.0
l 3	18.4	23.2	29.6	6.4	62.4

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