

# Ornate feather mites (Acari, Pterolichidae) from the Megapodiidae (Aves, Galliformes)

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(With 8 figures)

## A b s t r a c t

**Pereziella** gen. n. (Pterolichidae, Pterolichinae) and 2 new species of feather mites from the Megapodiidae are described, namely, **P. decorata** (type species) from **Eulipoa wallacei** (Gray) and **P. duplicata** from **Megapodius freycinet** Gaimard.

Keywords: Pterolichidae, Megapodiidae ectoparasites, **Pereziella**, feather mites.

The megapodes, or mound builders, "a group of queer Australian and Malayan fowl, are the only animals above the reptiles in the evolutionary scale that do not depend on their own body heat to incubate their eggs or young. They are typical gallinaceous birds . . ." (Austin and Singer 1961). The feather mites associated with the 12 species of megapodes (as arranged by Morony et al. 1975 or Mayr 1938) are specific to these birds, but are included in a major complex of taxa restricted to the Galliformes. A new genus and 2 new species from the megapodes will be described herein.

## M e t h o d s a n d N o m e n c l a t u r e

Signatures for idiosomal setae follow the Grandjean system as modified by Griffiths et al. (1990). Measurements, in micrometres, are the mean  $\pm$  standard error (when  $N > 10$ ), followed in parentheses by observed limits and number of observations. Total length is measured from the palp apices to the insertions of setae h3, width is measured at the level of setae c2, and the longest branch of male setae ps1 is considered the length. The scanning electron micrographs were taken with a Philips 505 using dehydrated specimens collected from museum study skins of megapodes. Descriptions are limited to morphometrics as the illustrations and micrographs are self-explanatory.

Type repositories and accession numbers of bird and mite collections are abbreviated as: AMNH, American Museum of Natural History, New York; FMNH, Field Museum of Natural History, Chicago; NU, University of Nebraska, Lincoln; UMI, University of Michigan, Ann Arbor; UGA, University of Georgia, Athens; UNAM, Universidad Nacional Autónoma de México, Mexico City, and ZMH, Zoologisches Institut und Zoologisches Museum, Hamburg.

## D e s c r i p t i o n s

### Pterolichoidea, Pterolichidae, Pterolichinae

Trouessart described 7 species of **Pterolichus** Robin from the megapodes (Trouessart 1886, Trouessart and Neumann 1888), but essentially, the pterolichine fauna of these birds is unknown. The University of Georgia Museum has collections from 11 of the 12 species, so the host associations, although not complete, afford indications of host specificity. Each of the 2 new species of **Pereziella** is restricted to a single host species, 1 with **Magapodius freycinet** Gaimard, the other with **Eulipoa wallacei** (Gray). Available information about host - commensal associations confirms that the sharing of congeners by these 2 host species is common.

### **Pereziella** gen. n.

Type species: **Pereziella decorata** sp. n.

Diagnosis: Pterolichine mites with well-developed dorsal shields bearing ornamentation of irregular polygons. Gnathosoma subtriangular, wider than long; pseudorutellar processes expanded laterally, triangular. Prodorsal shield with lanceolate internal vertical setae, scapular setae widely spaced. Dorsal idiosoma with setae c2, cp spiculiform, with cp anterodorsal to minute c3; various terminal setae branched; cupulus ia large, im lateral to coxae IV. Epimerites I free with posterior terminations parallel.

Legs subequal; pretarsi dentate apically. Male with characteristically branched setae (Fig. 2); setae f2, ps2 arise on same tubercle, appear as 1 seta; setae g, 3a, 3b, in transverse row; setae 4a closer to coxae IV than meson; femora I, II with ventral crest. Female with 5 pairs small branched setae posteriorly; oviporus and associated structures between coxae II.

Relationships: **Pereziella** has character states similar to other taxa from the Megapodiidae, namely, epimerites I are free, the legs are subequal in length, tarsi I and II are shorter than the corresponding tibiae, and the dorsal shields are well developed. Males have setae 4a widely separated, and the adanal discs are weakly sclerotized and edentate. Females have the oviporus, well-developed pregenital sclerite, genital setae and genital discs anteriorly positioned between coxae II. The taxa most similar to **Pereziella** are **Pterolichus (Pseudalloptes) palmiger** Trouessart and 3 undescribed species. These species are also quadrate with bi- and trifurcate idiosomal setae, but of these, setae c2 are small and branched and setae cp are very large and bifurcate. The hosts of the **palmiger** group are in the megapodiid genera **Alectura** Latham, **Talegalla** Lesson and **Aepyodius** Oustalet.

Etymology: This genus is named for Dr. Tila M. Pérez, Universidad Nacional Autónoma de México, who has made major contributions on the biology of feather mites.

**Pereziella decorata** sp. n. (Figs 1-5, 7-8)

Description: Males: Length  $381 \pm 2$  (370-393, 14), width  $248 \pm 1$  (239-254, 14), sce:sce  $127.5 \pm 0.9$  (121.5-133.3, 14), sci length 19.9 (17.6-21.6, 8), c2 length  $31.8 \pm 1.4$  (25.4-41.2, 12), c1:c1  $75.0 \pm 1.5$  (64.7-82.3, 14), ps1 length 84.3 (82.3-88.2, 7). ps1:ps1  $59.1 \pm 0.7$  (54.9-64.7, 14).

Females: Length  $451 \pm 3$  (432-478, 15), width  $273 \pm 4$  (262-281, 15), sce:sce  $147.0 \pm 1.5$  (139.2-154.8, 10), sci length 27.6 (25.4-29.4, 6); c2 length  $35.4 \pm 1.3$  (27.4-41.2, 11), c1:c1  $92.7 \pm 1.6$  (82.3-103.9, 14), h3:h3  $35.4 \pm 1.3$  (31.4-47.0, 12).

Diagnosis: The two species within **Pereziella** are very similar, but morphometric data can be used to separate the taxa. In general, **P. decorata** is smaller than **P. duplicata**, but sizes of specific setae are critical. Setae c2 in both sexes and sci in males are shorter in **decorata**, whereas setae ps1 of males are shorter in **duplicata**.

Type data: **Eulipoa wallacei** (Gray): Indonesia: Moluccas: Ceram Island, holotype male, 14 male, 15 female paratypes, 4 TNN, 13 September 1911, E. Stresemann (AMNH 539285, UGA 5321); Ternate Island, 3 male, 2 female paratypes, September 1896, W. Doherty (AMNH 539284, UGA 5320); Halmahera Island, 2 male, 2 female paratypes, October 1884, collector unknown (AMNH 539283, UGA 5317), and 1 male, 1 female paratypes, 1 TN, December 1894, A. A. Bruijn (AMNH 539282, UGA 5318); Moluccas: no other data, 7 male, 8 female paratypes (AMNH no number, UGA 8542). The holotype is deposited in AMNH, paratypes in AMNH, FMNH, UGA, UMI, UNAM, ZMH.

Etymology: From decoro, -atus (L., ornament) to refer to the well-developed sculpturing of the hysterosomal shield.

Sites of infestation: From the number of specimens, this species probably occurs on the exposed ventral surfaces of the primaries, and possibly the rectrices.

Remarks: Setae f2 and ps1 are long, thin, and relatively stiff for about half their lengths. In microslide preparations, the setae tend to adhere to each other, giving the impression of one thick seta, but by examining a number of specimens, there are always a few in which the setae are clearly separated distally.

The large observed limits of male setae c2 is probably due to the breaking off of the smaller distal portions of the setae. Thus, the actual lengths should be near the upper limits (see Pérez and Atyeo 1989 for a discussion of variation in this type of study).

The tritonymphs are easily recognizable from other immatures on the Megapodiidae. Five pairs of setae along the posterior margin of the hysterosoma are trifold and subequal in size and length, namely, e2, f2, h1 ps1 and ps2. Two dorsal shields have polygonal ornamentations as in the adult, the prodorsal shield which is limited to the region anterior of the scapular setae, and a circular hysterosomal shield which bears setae d1 and e1. Other distinguishing features are thickened setae sci, c2 and cp each of which has few small basal branches; setae c1 are half the length

of setae cp; and setae d1, d2 and e1 are microsetae. The posterior margin of the idiosoma has a few spines between setae f2 and the level of setae e1 similar to **Aralichus canestrinii** (Trouessart) (Atyeo 1988).

**Pereziella duplicata** sp. n. (Fig. 6)

Description: Male: Length  $399\pm 3$  (386-416, 11), width  $254\pm 1$  (247-262, 12), sce:sce 132.0 (129.4-135.2, 6), sci length 23.5 (N=1), c2 length 41.2 (39.2-43.1, 4), c1:c1 82.8 (76.4-88.2, 8), ps1 length 69.6 (66.6-72.5, 4), ps1:ps1  $58.6\pm 1.1$  (52.9-64.7, 10).

Female: Length 490 (478-509, 5), width 290 (285-293, 5), sce:sce 156.9 (N=1), sci length 44.1 (43.1-45.1, 2), c2 length 40.4 (35.3-47.0, 5), c1:c1 101.4 (92.1-107.8, 4), h3:h3 38.4 (37.2-41.2, 4).

Diagnosis: In addition to the character states useful in distinguishing the two included species (see above), **P. duplicata** has very weak dorsal sculpturing of the hysterosomal shields (compare Figs 5, 6). Under phase microscopy, the pattern is difficult to discern.

Type data: From **Megapodius freycinet eremitus** Hartlaub: Solomon Islands: Florida Islands: MacFarland Bight, holotype male, 11 male, 5 female paratypes, April 1943, collector unknown (UMI 112.331, NU 9549); Banika Islands: Russel Islands, 1 male, 1 female paratypes, 29 July 1943, collector unknown (UMI 112.121, NU 9548); Guadacanal: Kukum Beach Area, 3 male, 1 female paratypes, 20 April 1943, F. E. Ludwig (UMI 112.331, NU 9550). From **Megapodius freycinet**: Papua New Guinea: Manam Island, 1 male, 1 female paratypes, 3 December 1913, A. S. Meek (AMNH 539127, NU 11831); Kanganaman, 175 mi up north shore of Sepik River, 1 male paratype, 21 December 1953, E. T. Gilliard (AMNH 766153, NU 11834). The holotype is deposited UMI, paratypes AMNH, FMNH, UMI, UGA, ZMH.

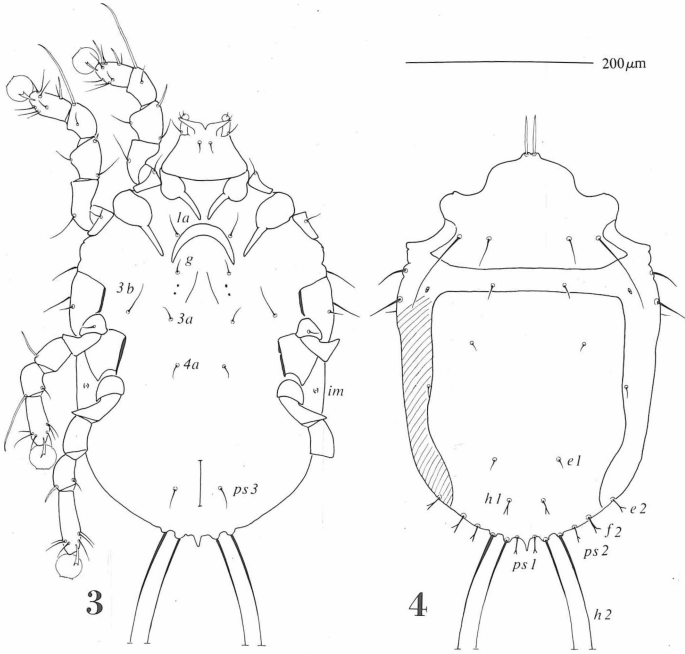
Etymology: From duos (L., two) to refer to the two terminal setae inserted on a single tubercle.

Sites of infestation: Unknown, but as in **decorata**, the mites probably occur on the exposed ventral surfaces of the primaries, and possibly the rectrices.

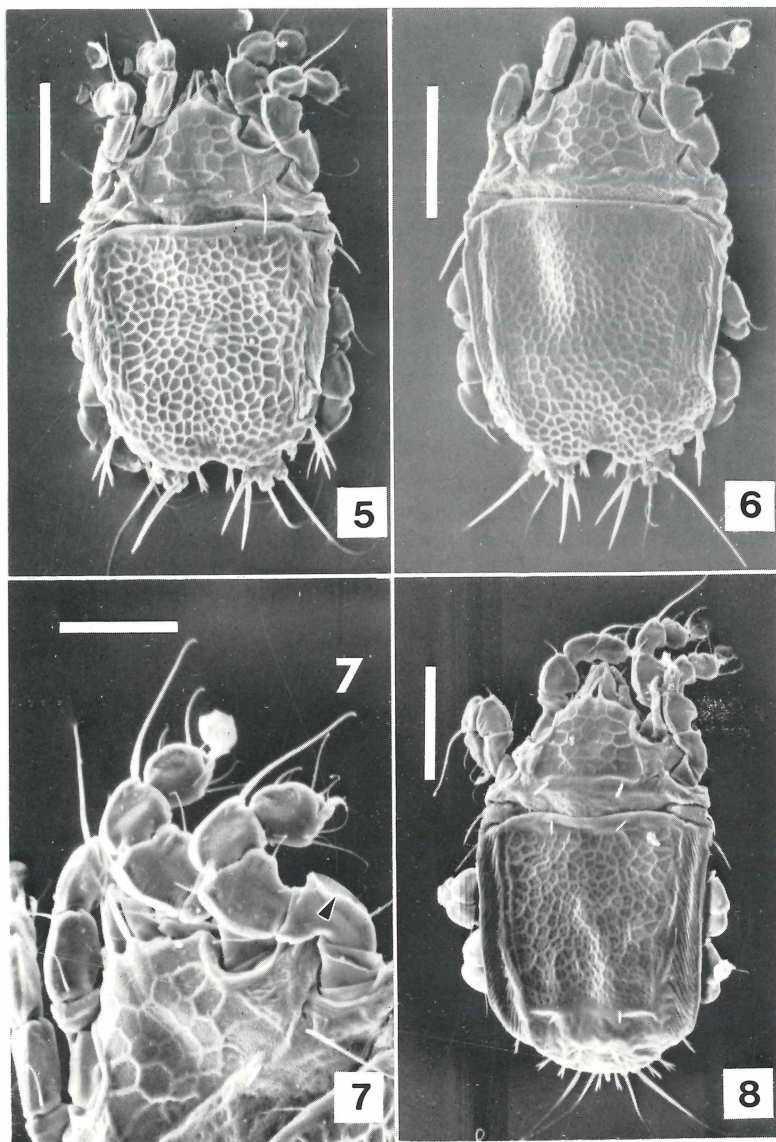
**A c k n o w l e d g e m e n t**

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Figs 3, 4: *Pereziella decorata* sp. n.: female, ventral and dorsal aspects. Setal signatures follow Griffiths et al. (1990).



Figs 5-8: SEM micrographs, dorsal aspects of 5, 7, 8, *Pereziella decorata* sp. n. and 6, *P. duplicata* sp. n.: 5-7, males; 8, female. Scale bars: 5, 6, 8 = 100  $\mu$ m; 7 = 50  $\mu$ m.

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