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THE FEATHER MITE FAMILY ALLOPTIDAE GAUD
IV — A NEW GENUS OF THE ALLOPTINAE (ACARINA, ANALGOIDEA)

BY

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ABSTRACT

Heterobrephosceles, n. g., is defined; type species: H. rapiformis, n. sp. Species redescribed and reassigned: Brephosceles scissus (Trouessart, 1886). New species described: H. furcatus from Theristicus caudatus (Threskiornithidae), Paraguay; H. megathrix from Dendrocygna javanica (Anatidae), Malaysia; H. rapiformis from Tadorna radjah (Anatidae), Moluccas; and H. sexangularis from Phimosus infuscatus (Threskiornithidae), Colombia, Venezuela.

In the continuing study of host-parasite associations, we have acquired four new species of a new genus related to Brephosceles Hull, 1934, and Homeobrephosceles Peterson and Atyeo, 1968. These new species are congeners of Proctophyllodes (Alloptes) scissus Trouessart, 1886, described from one male taken from a museum skin of a hummingbird collected in South America. After examination of the type of P. scissus, Park and Atyeo (1975) tentatively transferred the species to Brephosceles while noting that the original host association was probably in error as Brephosceles and related taxa have never been reported from the Trochilidae. The four new species and scissus are the basis for a new genus within the subfamily Alloptinae. Chaetotaxal signatures in the descriptive sections follow Atyeo and Gaud (1966).

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Heterobrephosceles, n. g.

Within the Alloptinae the genera *Homeobrephosceles* and *Heterobrephosceles* are closely related. Both differ from other *Brephosceles*-like taxa by the absence of vertical setae (external and internal) and setae $kT$ on tibiae III. The females of both genera are similar, but the males of *Homeobrephosceles* lack setae $d_3$, have large postlobar lamellae, setae $ba$ at the bases of solenidia $\omega_1$ on legs I and II, setae $sR$ on trochanters III setiform, setae $d$ and $e$ on tarsi IV short and setiform, and genital discs incorporated in a well-developed pregenital arch which is continuous with the posterior epimerites of coxae IV (Peterson and Atvayo, 1968). *Heterobrephosceles* males have setae $d_3$, rudimentary or no postlobar lamellae, no setae $ba$, setae $sR$ spiculiform, setae $d$ and $e$ as short pegs, and the genital discs and pregenital regions differently arranged.

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**Diagnosis.** Alloptine mites with epimerites I V- or Y-shaped; idiosomal setae vi, ve, d I absent; legs with setae ba absent on I, II, setae kT absent on tibiae III, setae mG on genua II and sR on trochanter III peglike or spiculiform; genua and femora of all legs fused. Males with well-developed terminal lobes bearing interlobar membranes; hysterosomal shield with narrow, medial, non-sclerotized area arising at apex of terminal cleft; coxal fields III open, IV open or closed; variously formed narrow sclerites anteriorly directed from anal setae may be present; legs IV slightly longer than legs III. Females similar to *Homeobrophosceles* except epigynum thin, narrow; setae d 3 present, setae a and c 2 absent, and setae pae apparently absent.

**Type species.** *Heterobrephosceles rapiformis*, n. sp.

Within *Heterobrephosceles* there are two distinct species groups. The first consists of *P. scissus* and two new species from the Anatidae, the second, two new species from the Threskiornithidae. In the anatid group both sexes have the subhumeral setae and setae sR spiculiform and subequal and have apically pointed ambulacra; the males have legs IV extending slightly beyond the lobar terminations and a short and distinct pregenital arch in which are incorporated the genital discs.

The species from the threskiornithids have setae sR and the subhumerals unequal and long and have rounded ambulacra; the males have legs IV extending well beyond the lobar terminations and the area anterior to the genital organ, although sclerotized, lacks a distinct pregenital apodeme; and the females apparently lack pae. Other differences between the two groups relate to the hysterosomal setae of the males, but before noting the differences, it is necessary to briefly discuss the rationale for assigning signatures to specific setae.

For alloptine females, the positions of the hysterosomal setae are stable; there are usually four pairs of dorsals (d 2-5), five pairs of laterals (l 1-5), and the external and internal postanals (pae, pai) — see fig. 11. If setae are absent from this complement, the same setae are presumably absent in the males, e. g., setae d 3 are absent in the females of *Homeobrophosceles* and setae are absent from a similar position in the males, therefore it is assumed that setae d 3 are absent in both sexes. The enlarged terminal setae are assumed to be the homologs of the enlarged setae of the female (d 5, l 5) and the remaining setae can be determined by relative positions.

In the two species groups of *Heterobrephosceles*, each male has one pair less than the normal complement of dorsal hysterosomal setae, but for each group it can be established that a different pair is missing. The threskiornithid group, illustrated by Fig. 1, each has setae d 3 anterior to the cleft and when compared with *Homeobrophosceles*, other setae are similarly positioned except that one seta is missing from the mesal margin of the lobe, that is, d 4. In the anatid group (Fig. 4), setae d 3 have shifted to the mesal margin of the lobe and are positioned anterior to d 4 and pai; a setal pair is absent from the posterolateral margin of the lobe, that is, l 4. Thus, *Homeobrophosceles* has setae d 3 absent (also in the female), the *Heterobrephosceles* from Threskiornithidae have setae d 4 absent, and in those from the Anatidae, setae l 4 are absent. In the latter two groups, the females have a full complement of dorsal and lateral setae as in most Alloptinae.

**Key to the males of Heterobrephosceles**

1. Legs IV extending beyond apices of terminal lobes by length of tarsus and half of tibia; one pair of terminal setae enlarged, internal pair not leaf like; from Threskiornithidae.

2. Legs IV at most extending slightly beyond apices of lobes; 2 pairs of terminal setae greatly lengthened, internal pair leaf-like; from Anatidae.
2. Anal setae at terminations of Y-shaped adanal sclerite; dorsal shield without ornamentations.  

3. Anal setae inserted at terminations of large U-shaped sclerite.  

4. Adanal disc and terminations of U-shaped sclerite at approximately midlength of terminal lobes.

**Heterobrephosceles furcatus**, n. sp.

Two new species, *H. furcatus* and *H. sexangularis*, are closely related. Both are known only from the threskiornithids, both have setae sR and sh long and unequal in length, and the males have legs IV extending well beyond the apices of the idiosomal lobes. The oddly formed adanal sclerite (Fig. 7), an inverted Y with short stem and sinuous arms, is distinctive for *H. furcatus*.

**Male** (holotype). Length, excluding lamellae 466 µ, width 202 µ. *Dorsal idiosoma*: Propodosomal shield extending laterally between trochanters I-II, with reticular pattern; distance between setae sci-sci 50 µ, between sce-sce 106 µ. Hysterosomal shield fused with humeral shields; without reticular pattern; setae l I setiform; medial non-sclerotized area extending to level of setae l 2; integumental thickening posterior to d 2 — short, thick. Measurements of distance between setae or setal levels: d 2-d 3 116 µ, d 3-d 5 122 µ, d 3-d 4 103 µ, l 2-l 2 122 µ, l 1-l 2 70 µ. *Ventral idiosoma*: Setae sh long, spiculiform; genital discs positioned on supporting sclerotizations connecting anterior elements of epimerites IV, IVa; genital organ 8 µ, not extending to level of setae c 2; adanal shields fused medially into inverted Y; adanal discs 15 µ in diameter, positioned at anterior 1/3 of lobes. *Legs*: Legs IV extending beyond hysterosomal terminus by length greater than tarsus; setae mG on genu II lanceolate, 21 µ in length; setae sR on trochanters III spiculiform, 32 µ in length; ambulacra without apical points.

**Female.** Unknown.

**Type data.** From *Theristicus caudatus* (Boddart, 1783) (Threskiornithidae): ♀ holotype, 55 km east of (? Orloff), Paraguayan Chaco, Paraguay, October 5, 1939 (UGA 2081, USNM Bird 359447). The type is deposited in the National Museum of Natural History.

**Heterobrephosceles sexangularis**, n. sp.

This species and *H. furcatus* are closely related as shown by their many morphological similarities and common host group. The Y-shaped adanal sclerite of *H. furcatus* and the lack of adanal sclerites in *H. sexangularis* are distinguishing characteristics for the two species.
Figs. 7-8: *Heterobrephosceles furcatus*, n. sp., male: 7) ventral and 8) dorsal aspects. Setae: *a*, anal; *c 1-3*, centrals (*c 3 = cx 4*); *d 2-5*, *l 1-5*, dorsal and lateral hysterosomals; *pae*, *pai*, external and internal postanals.
MALE (holotype). Length, excluding lamellae 403 µ, width 168 µ. *Dorsal idiosoma*: Propodosomal shield not extending between legs I-II; with hexagonal pattern; distance between setae sci-sci 44 µ, between sce-sce 78 µ. Hysterosomal shield independent of humeral shields; with hexagonal pattern on anterior third; setae lI setiform; medial non-sclerotized area extending almost to level of setae d2; integumental thickening connecting setae d2 thin. Setal measurements: d2-d3 93 µ, d3-d4 116 µ, d3-d5 99 µ, l2-l3 95 µ, l3-l2 59 µ. *Ventral idiosoma*: Setae sk long, spiculiform; genital discs positioned on supporting sclerotizations connecting anterior elements of epimerites IV, IVa; genital organ indistinguishable; adanal sclerites minute; adanal discs 15 µ in diameter, positioned on anterior third of idiosomal lobes. *Legs*: Legs IV extending beyond lobes by length greater than tarsus; setae MG on genu II lanceolate, 13 µ in length; setae sR on trochanters III spiculiform, 21 µ in length; ambulacra without apical points.
FEMALE (paratype). Length 456 µ, width 192 µ. **Dorsal idiosoma**: Propodosomal and hysterosomal shields with hexagonal pattern; hysterosomal shields partially divided at level of setae *d 3* by transverse suture; setae *d 4* and *l 3* in straight row; measurements, *d 2-d 2* 32 µ, *d 2-d 3* 89 µ, *d 5-d 5* 48 µ. **Ventral idiosoma**: Epigynum encompassing setae *c 1*; setae *a*, *c 2* absent; setae *sh* spiculiform, 43 µ in length.

**TYPE DATA.** From *Phimosus infuscatus berlepschi* Hellmayr, 1903 (Threskiornithidae): ♀ holotype, 44 ♀♂, 3 ♀♀♀ paratypes, El Difícil, Magdalena, Colombia, December 27, 1946, M. A. Carriker, Jr. (UGA 2077, USMN 391826); 1 ♀ paratype, Caicara, Venezuela, March 15, 1898, M. Cherrie (YSU 2877, AMNH 469757); 1 ♀ paratype, near Merido, Venezuela, January 14, 1903, S. B. Gabolden (YSU 2876, AMNH 100411). The holotype and paratypes are in the National Museum of Natural History; paratypes in the University of Georgia.
**Heterobrephoseles megathrix**, n. sp.

Three species from the Anatidae have similar modifications, some of which are easily observed: setae $mG$ on genua II, $sh$ and $sR$ are short, peglike, and subequal in lengths; each ambulacrum has an apical point, and in males, setae $d5$ are expanded. The species are readily distinguished by the development of the ventral sclerotizations between the genital organ and the adanal discs, the adanal sclerites. In *H. megathrix*, the sclerites are short, paired and each bears two setae while in *H. rapiformis* and *H. scissus* the adanal sclerites form an inverted U with setae $a$ at the terminations.

**Figs. 13-14**: *Heterobrephoseles megathrix*, n. sp., male: 13) ventral and 14) dorsal aspects.

**MALE** (holotype). Length, excluding lamellae 346 µ, width 125 µ. **Dorsal idiosoma**: Propodosomal shield extending laterally between legs I-II; without reticular pattern; distance between setae $sci-sci$ 50 µ, between $sce-sce$ 72 µ. **Hysterosomal shield** independent of humeral shields; medial non-sclerotized area anteriorly expanded beyond insertions of setae $d2$; integumental.

thickening connecting d 2 sinous; setae d 3 inserted at 2/3 length of lobes; setae d 5 expanded, about 86 \( \mu \) in length. Setal measurements: d 2-d 3 124 \( \mu \), d 3-d 5 38 \( \mu \), d 3-d 4 29 \( \mu \), l 2-l 2 61 \( \mu \), l 1-l 2 49 \( \mu \). Ventral idiosoma: Setae sh lanceolate, 10 \( \mu \) in length; genital discs incorporated in short, arched pregenital apodeme; genital organ 10 \( \mu \) in length, not extending to level of setae c 2; setae c 2 and a inserted at ends of short adanal sclerites; adanal sclerites not fused medially; adanal discs 11 \( \mu \) in diameter, positioned at anterior 1/3 length of lobes. Legs: Legs subequal; setae mG on genua II and sR on trochanters III peglike, respectively 6 \( \mu \), 4 \( \mu \) in lengths; ambulacra each with apical point.

**Female.** Unknown.

**Type Data.** From Dendrocygna javanica (Horsfield, 1824) (Anatidae): 3 holotype, Pahang lowlands, Malaysia, winter, 1901 (UGA 8601, AMNH 731166); 1 3 paratype, Muang Fang, Chiangmai prov., Thailand, July 5, 1936, H. G. Deignan (UGA 2571, USNM 349906). The holotype is deposited at the American Museum of Natural History, the paratype at the National Museum of Natural History.


**Heterobrephoseele rapiformis, n. sp.**

This species from the Anatidae and the type species of the genus *Heterobrephoseles* is distinguished from the related *H. scissus* by the relative development of the adanal sclerite and the positioning of the adanal discs. In the males of *H. rapiformis* the adanal sclerite extends behind the posterior articulations of trochanter IV and the adanal discs are at approximately midlength on the lobes; in *H. scissus*, the adanal sclerite and adanal discs are at the levels of trochanters IV.

**Male (holotype).** Length, excluding lamellae 437 \( \mu \), width 168 \( \mu \). Dorsal idiosoma: Propodosomal shield extending laterally between legs I-II; without reticular pattern; distance between setae sci-sci 67 \( \mu \), between sce-sce 93 \( \mu \). Hysterosomal shield independent of humeral shields; medial non-sclerotized area to level of but not including insertions of setae d 2; integumental thickening immediately anterior to setae d 2, anteriorly convex; setae d 3 inserted at 2/3 length of lobes; setae d 5 basally expanded, apically attenuated. Setal measurements: d 2-d 3 375 \( \mu \), d 3-d 5 36 \( \mu \), d 3-d 4 25 \( \mu \), l 2-l 2 78 \( \mu \), 1 l-1 l 67 \( \mu \). Ventral idiosoma: Setae sh lanceolate, 10 \( \mu \) in length; genital discs incorporated in short, arched pregenital apodeme; genital organ 13 \( \mu \) in length, extending to level of setae c 2; setae a inserted at terminations of U-shaped adanal sclerite; adanal discs 13 \( \mu \) in diameter, positioned at midlength of lobes. Legs: Legs subequal; setae mG peglike, 6 \( \mu \) in length; setae sR lanceolate, 10 \( \mu \) in length; ambulacra each with an apical point.

**Female (paratype).** Length 442 \( \mu \), width 144 \( \mu \). Dorsal idiosoma: Propodosomal and hysterosomal shields without reticular patterns, without suture at level of setae d 3; setae d 4 and l 3 in curved row; setal measurements: d 2-d 3 29 \( \mu \), d 2-d 3 38 \( \mu \), d 5-d 5 44 \( \mu \). Ventral idiosoma: Epigynum brief, not encompassing setae c 1; setae a, c 2, pae absent; setae sh lanceolate, 10 \( \mu \) in length.
FIGS. 15-16: *Heterobrephosceles rapiformis*, n. sp., male:
15) ventral and 16) dorsal aspects
Figs. 17-18: Heterobrephosceles rapiformis, n. sp., female: 17) ventral and 18) dorsal aspects

**Type data.** From *Tadorna r. radjah* (Lesson, 1828) (Anatidae): ♀ holotype, 7 ♀♀, 4 ♂♂ paratypes, Ceram Island, South Moluccas, Indonesia, August 25, 1911, E. Stresemann (UGA AMNH 731501). The holotype and paratypes are deposited in the American Museum on Natural History; paratypes are deposited at the University of Georgia and the collection of J. Gaud, Nice, France.

**Heterobrephosceles scissus** Trouessart, n. comb.

*Proctophyllodes (Alloptes) scissus* Trouessart, 1886: 141-2.

The last species in the triad from Anatidae has the adanal sclerite of the male extending to a level midway between the anterior and posterior articulations of trochanters IV; the adanal
discs are positioned near the latter articulations. Compare these conditions with the related *H. rapiformis* in which the sclerite terminations and discs are at or posterior to the posterior articulations of trochanters IV.

**Figs. 19-20**: *Heterobrephosceles scissus* (Trouessart), male: 19) ventral and 20) dorsal aspects.

**Male** (holotype). Length, excluding lamellae 394 µ, width 144 µ. *Dorsal idiosoma*: Pseudosomal shield extending laterally between legs I-II; without reticular pattern; distance between setae *sci-sci* 58 µ, between *sce-sce* 84 µ. Hysterosomal shield independent of humeral shields; medial non-sclerotized area to level of and including bases of setae *d 2*; integumental thickening immediately anterior to setae *d 2*, convex anteriorly; setae *d 3* inserted at 2/3 length of lobes; setae *d 5* missing from specimen. Setal measurements: *d 2-d 3* 154 µ, *d 3-d 5* 34 µ; *d 3-d 4* 23 µ, *l 2-l 2* 59 µ, *l 2-l 2* 63 µ. *Ventral idiosoma*: Setae *sh* lanceolate, 11 µ in length; genital discs incorporated in short pregenital apodeme; genital organ 13 µ in length, extending to level of setae *c 2*; setae *a* inserted at terminations of U-shaped adanal sclerite; adanal discs 11 µ in diameter, positioned at 1/3 length of lobes. *Legs*: Legs subequal; setae *mG* and *sR* lanceolate, each 8 µ in length; ambulacra each with apical point.
FEMALE. Unknown.

TYPE DATA. From "Eutoxeres aquila" (Bourcier, 1847) (Trochilidae): $\delta$ holotype, Nouvelle-Grenade. The type is in the Trouessart Collection, Paris.

REMARKS. In the brief description of P. scissus, Trouessart (1886) described a long, narrow female. This specimen is no longer in the Trouessart Collection, but as the females of Heterobrephysoetes are very similar to Alloptes females (sensu Trouessart), the author would have made this observation. It is believed that the elongated female described by Trouessart might have been a pterodectine female, a group common on the hummingbirds.

The drawings and redescription are based on the type specimen which has a number of setae missing, including d 5. Based on the additional material which we believe to be conspecific with H. scissus, the missing setae have been added to the illustrations.

LITERATURE CITED


Paru en Mars 1978.