THREE NEW SPECIES OF THE FEATHER MITE GENUS BYCHOVSKIATA (ANALGOIDEA: AVENZOARIDAE) FROM EXOTIC PLOVERS (CHARADRIIFORMES)

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ABSTRACT - Three new species of the feather mite genus Bychovskiiata (Avenzoaridae) are described from three exotic plover species (Charadriiformes: Charadriidae: Bychovskiiata thinomi sp. n. from the Shore Plover Thinornis novaeseelandiae (Charadriidae), B. phugomi sp. n. from the Diadem Sandpiper-plover Phugomi michilii (Charadriidae), B. sibana sp. n. from the Ibis-bill Ibidorhynchus struthersii (Ibidorhynchidae).

INTRODUCTION

The feather mite genus Bychovskiiata Dubinin, 1951 is one of the larger genera of the subfamily Avenzoarinae (Avenzoaridae, Gudeman, 1905). The mites of this genus are restricted to plovers (Charadriiformes: Charadriidae), most widely they are distributed on the birds of the family Charadriidae and also occur on Recurvirostridae and Ibidorhynchidae. The genus Bychovskiiata has included 6 described species up to present time (Dubinin, 1951, 1956; Gaud, 1972; Gaud, Mouuchet, 1959; Chitov, Mironov, 1985; Vassjakova, Mironov, 1991), namely as follow: Bychovskiiata charadrii (Canestrini, 1878), B. intermedia Chitov et Mironov, 1965, B. nandoraa Gaud et Mouuchet, 1959, B. pseudocharadrii Dubinin, 1951, B. squamosata (Canestrini, 1878) and B. subcharadrii Dubinin, 1951. Recent studies of vast avenzoarid collections carried out by the author of present paper has shown that there are at least 15 undescribed Bychovskiiata species in the world feather mite fauna.

The present paper gives the descriptions of three new species of the genus Bychovskiiata from three exotic plover species representing monotypic genera and occupying isolated positions within the taxonomy system of Charadrii. The chaetotactic signatures used is the descriptions are those of Griffiths et al. (1990). All measurements are given in micrometers, measured data display the observed limits for type series and in parentheses the measurements for the holotype. Differential diagnoses to species are provided. The taxonomy and the Latin names of waders follow the check-list of the birds of the world (Howard, Moore, 1984).

Holotypes and paratypes are deposited in: UGA - University of Georgia, Athens, Georgia USA; ZIN - Zoological Institute, Russian Academy of Sciences, Saint-Petersburg, Russia; ZNUM - Zoological Museum, University of Michigan, Ann Arbor, Michigan, USA. The materials belonging to the Zoological Museum of the University of Michigan are provided with the bird collection number only, the ones from the Natural History Museum of the University of Georgia carry the mite collection number and the bird collection number.

1. Bychovskiiata thinomi Mironov, n.sp.
(Figs. 1 - 4)

Male - Length of idiosoma (from anterior margin to bases of setae p1,r, r1) 360-370 (360), width of idiosoma 200-208 (206), length of hysterosoma 273-285 (284). Prodorsal shield: length 94-95 (94), width 103-108 (106), distance between bases of scapular setae sc 65-67 (63), posterior margin slightly convex between bases of setae se, lateral margins entire. Scapular setae sc and lateral setae s2 small hair-like. Hysterosomal shield: length 262-292 (264), width 173-187 (175), surface uniformly dotted. Opisthosomal lobes blunt triangular, widely separated from one another. Terminal cleft wide triangular, rounded on anterior end, length of cleft (from anterior end to level of apexes of lobes) 37-41 (37), width of cleft (distance between bases of setae...
female - total length of idiosoma 386-410, width of idiosoma 199-228, length of hysterosoma 269-317, prodorsal shield: length 75-88, width 110-124, distance between setae 69-72, form of shield as in male, hysteronotal shield: length 293-308, width 185-213, surface uniformly dotted with small weakly distinct slit-like lacunae (fig. 3). posterior end of opisthosoma egg-shaped, terminal margin of opisthosoma between bases of setae h3 with narrow heavy sclerotized membrane, distance between setae h3 74-77, epigynium is semicircular, 41-46 in length, 65-72 in width, pseudanal setae p3 extend slightly behind posterior margin of opis-
thosoma. Legs IV extend by annulacral disk to posterior margin of opisthosoma.

Diagnosis - Bychoveschiata thinomi is most similar to B. squatorolae (Canestrini, 1878), the only previously known species with triangular opisthosomal lobes in males. Males of the new species differ from ones of B. squatorolae by the interlobal membrane rounded on apaxes of opisthosomal lobes and by the long aedeagus, which is equal to length to the length of genital arc. Females of B. thinomi differ from females of B. squatorolae and also from ones of other known species of Bychoveschiata by the egg-shaped end of opisthosoma with sclerotized membrane between bases of setae h.

Males of B. squatorolae have rather acute ends of interlobal membrane and the aedeagus is not longer than half of the genital arc. Females of other recently known species have no membrane on opisthosomal terminus.

Material - From Shore plovers Thinomis novazelandiae (Gmelin, 1789) (Charadriidae): holotype male, paratypes 2 males, 6 females (# 208189)
- Chatham Is., Mangre Is., 1892, W. Hawkins; paratypes 1 male, 1 female (NU 9489, USNM 151113).
- Chatham Is., April 1893, collector unknown.

Holotype, paratype - ZMUM, paratypes - UGA, ZIN.

2. Bychoveschiata phogorni Mironov, n.sp.

(Figs. 5, 6, 9)

Material - Length of idiosoma 405-410 (410), width of idiosoma 226-220 (226), length of hysterosoma 293-313 (313). Prodorsal shield length 80-94 (89), width 117-129 (120), distance between setae s.e 70-77 (72),
lateral margins entire, posterior margin between setae is convex. Scapular setae si and lateral setae c2 are small hair-like. Hysteronotal shield: length 278-317 (303), width 154-185 (173), surface uniformly dotted. Opisthosomal lobes straight, tongue-like, widely separated from one another. Termina clefret nearly rectangular, with small slanting incision on anterior margin, length of clefret 55-62 (66), width of clefret 83-85 (84). Narrow interlobal membrane spreads almost all clefret margin and stretches on apices of lobes. Margins of membrane on apices of lobes are rounded. Length of deflection in interlobal membrane 52-57 (57). Epandrium and genital apodemes are absent. Geitrid arc: length 24-26 (26), width 29-36 (34), aedeagus is very short, curved ventrally. Adanal shield is represented by pair of drop-like transversal sclerites. Setae ps2 are situated out of these shields, but in some specimens bases of these setae are surrounded by small sclerotized areas. Setae ps3 are setiform. Setae d and e of tergus IV are typical disk-like successions.

Female - Length of idiosoma 405-410, width of idiosoma 223-230, length of hysteronota 293-308. Prodorsal shield: length 86-91, width 113-132, distance between setae te 70-79, structure of shield as in male. Scapular setae si and lateral setae c2 as in male. Hysteronotal shield: length 283-303, width 170-192, surface uniformly dotted, medial area of its posterior part with many small slit-like and wavy longitudinal lacunae (Fig. 9). Posterior end of opisthosoma is widely rounded, distance between setae k3 67-72. Epignaom, semicircular, 43-46 in length, 79-84 in width. Pseudanal setae ps3 not extending to posterior margin of body. Legs II extend by ambulacral disk behind the posterior margin of opisthosoma.
Figs. 7-8. *Bychovskia tibetana* n. sp., male, 7 - dorsal view, 8 - ventral view. an - anterior adanal shields, po - posterior adanal shields.

Diagnosis - Males of *B. phegorni* are easily distinguished from all other known *Bychovskia* species by the tongue-like opisthosomal lobes being widely separated from one another and by the nearly rectangular terminal cleft. In other species of *Bychovskia* with well-developed lobes these lobes are triangular in form and the terminal cleft is sloping triangular or semi-circular. Females of the new species differ by small slit-like wavy lacunae on the posterior part of hysterosomal shield. In females of other known species of *Bychovskia* hysteronal shield is usually uniformly dotted and with another pattern of tegument or with a pair of big lacunae on the opisthosomal part of shield.

Material - From Diadem Sandpiper-plover *Phegornis mirichili* (Fras., 1845) (Charadriidzae):

- holotype: male, paratypes: 2 males, 2 females (øj 217627) - Chile, Sanbrecro Prov., Valle Rio Yeso, h = 2,690 m, no date, S.Parron et E. Bernet; paratypes: 1 male, 1 female (øj 219878) - Chile, Santiago Prov., Upper Maipo Vv, Embalse del Yeso, 29 October 1961, R.W.Storer.

Holotype, paratype - ZMUM, paratypes - ZIN.

3. *Bychovskia tibetana* Mironov, n. sp.

(Figs. 7, 8, 10)

Male - Length of idiosoma 422.450 (433), width of idiosoma 192-220 (193), length of hysteroma 316-322 (320). Prodorsal shield: length 96-103 (100), width
92-98 (92), distance between setae se 74-78 (74), posterior angles short, posterior margin with sloping medial extension between setae si, lateral margins with small incision anterior to bases of setae se. Scapular setae si narrow lanceolate, 44-50 (56) in length. Lateral setae c2 long, setiform. Hysteronotal shield: length 305-310, width 151-168, surface uniformly dotted with many small pit-like lacunae. Opisthosomal lobes small, triangular (Figs. 7, 8). Terminal cleft as transversal oval, length of cleft 27-32 (30), width of cleft 51-56 (56). Interlobal membrane spreads along all margin of cleft and narrows to apexes of lobes. Length of deflection in interlobal membrane 14-18 (15). Epiandrium absent. A pair of two small thin genital apodemes present. Genital arc: length 28-32 (29), width 35-39 (39), aedeagus is short, curved ventrally. Adanal shields are represented by two pairs of sclerites (Fig. 8). Anterior adanal shields are small transversal sclerites. Posterior adanal shields are big plates outlining anal field from anterior side; setae ps1 are situated on anterocentral ends of these shields. Setae ps2 lanceolate, 29-41 (41) in length. Setae a and e of tarsus IV are short, rod-like. Female - Length of idiosoma 433-452, width of idiosoma 213-258, length of hysterosoma 305-332. Prodorsal shield: length 94-112, width 100-110, distance between setae se 80-84, form of shield as in male. Scapular setae si narrow lanceolate, 45-53 in length. Lateral setae c2 long, setiform. Hysteronotal shield: length 287-318, width 157-178, posterior margin is slightly concave between bases of setae ps1, surface
uniformly doted. Posterior end of opisthosoma widely rounded. Distance between setae h3 53-62. Eilepionium semicircular, 50-54 in length, 79-89 in width. Postanal setae ps3 extending to posterior margin of opisthosoma. Legs IV extend by ambulacral disk and distal half of tarsus behind the posterior margin of opisthosoma.

Diagnosis - Both males and females of this species easily differ from all other known species of the genus Bychoviskiata by the lanceolate internal scapular setae si, that is a unique character among the genus. Besides, males of B. tibetana have two pairs of aedanal shields and rod-like setae of tarsus IV that are also unique characters for the genus. In all other recently known species of Bychoviskiata, setae si are very small and hair-like; in males of recently known Bychoviskiata species the aedanal shields are represented by one pair of small sclerites or absent, and setae d, e of tarsus IV are always disk-like (for example Figs. 1, 6).


Etymology - The specific name points to the main area of the distribution of the host.

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REFERENCES


