

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

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ABSTRACT - Three new species of the feather mite genus *Bychovskiata* (Avenzoariidae) are described from three exotic plover species (Charadriiformes: Charadrii): *Bychovskiata thinorni* sp.n. from the Shore Plover *Thinornis novaeseelandiae* (Charadriidae), *B. phegorni* sp.n. from the Diademed Sandpiper-plover *Phegornis mitchellii* (Charadriidae), *B. tibetana* sp.n. from the Ibis-bill *Ibidorhynchus struthersii* (Ibidorhynchidae).

INTRODUCTION

The feather mite genus *Bychovskiata* Dubinin, 1951 is one of the larger genera of the subfamily Avenzoariinae (Avenzoariidae, Oudemans, 1905). The mites of this genus are restricted to plovers (Charadriiformes: Charadrii), most widely they are distributed on the birds of the family Charadriidae and also occur on Recurvirostridae and Ibidorhynchidae. The genus *Bychovskiata* has included 6 described species up to present time (Dubinin, 1951, 1956; Gaud, 1972; Gaud, Mouchet, 1959; Chirov, Mironov, 1985; Vasyukova, Mironov, 1991), namely as follows: *Bychovskiata charadrii* (Canestrini, 1878), *B. intermedia* Chirov et Mironov, 1985, *B. nudidorsa* Gaud et Mouchet, 1959, *B. pseudocharadrii* Dubinin, 1951, *B. squatorolae* (Canestrini, 1878) and *B. subcharadrii* Dubinin, 1951. Recent studies of vast avenzoariid collections carried out by the author of present paper has shown that there are at least 15 undescribed *Bychovskiata* species in the world feather mite fauna.

The present paper gives the descriptions of three new species of the genus *Bychovskiata* from three exotic plover species representing monotypic genera and occupying isolated positions within the taxonomy system of Charadrii. The chaetotactic signatures used in 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

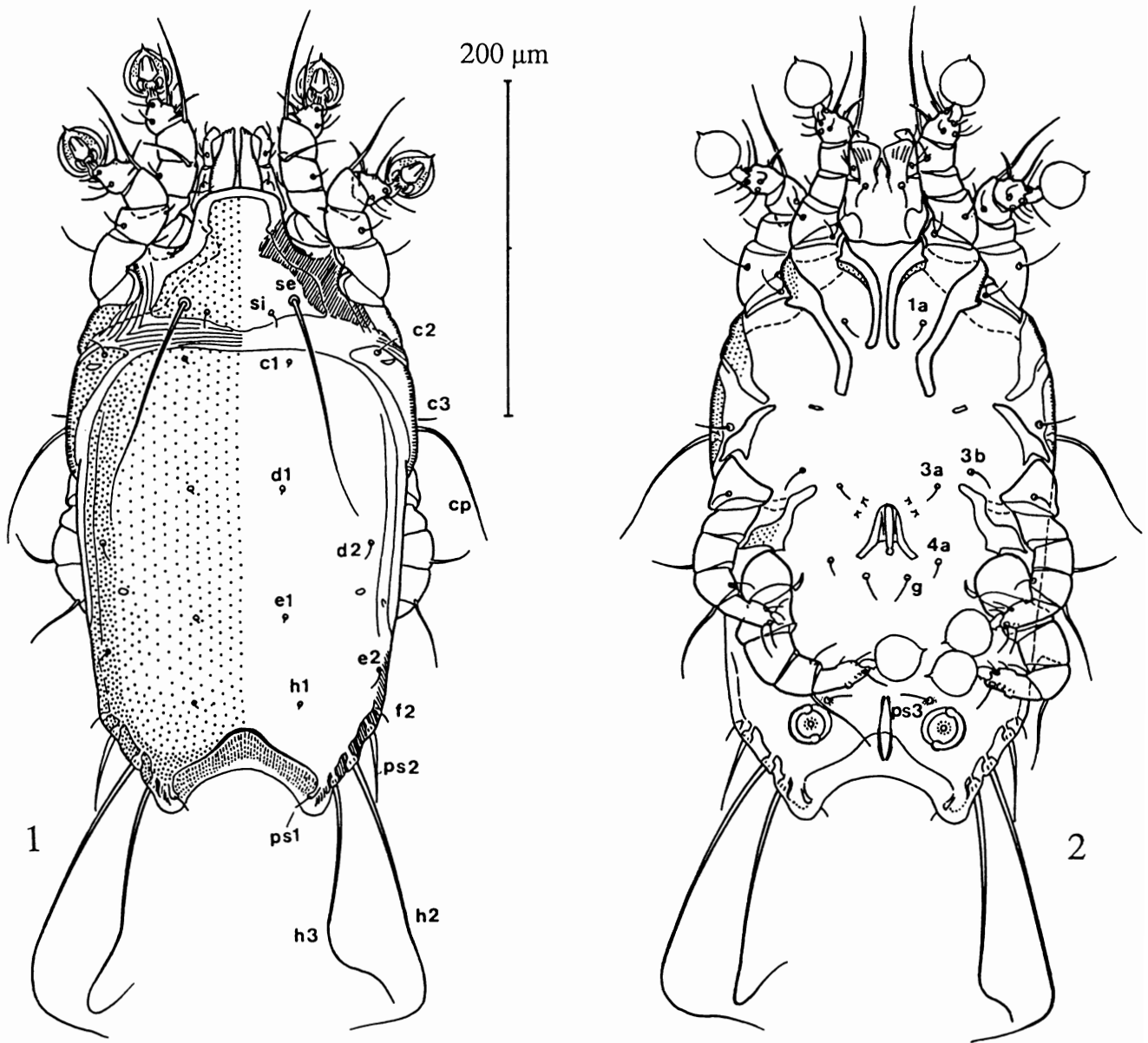
follow the check-list of the birds of the world (Howard, Moore, 1984).

Holotypes and paratypes are deposited in: UGA - University of Georgia, Athens, Georgia USA; ZIN - Zoological Institute, Russian Academy of Sciences, Saint-Petersburg, Russia; ZMUM - 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. *Bychovskiata thinorni* Mironov, n.sp.

(Figs. 1 - 4)

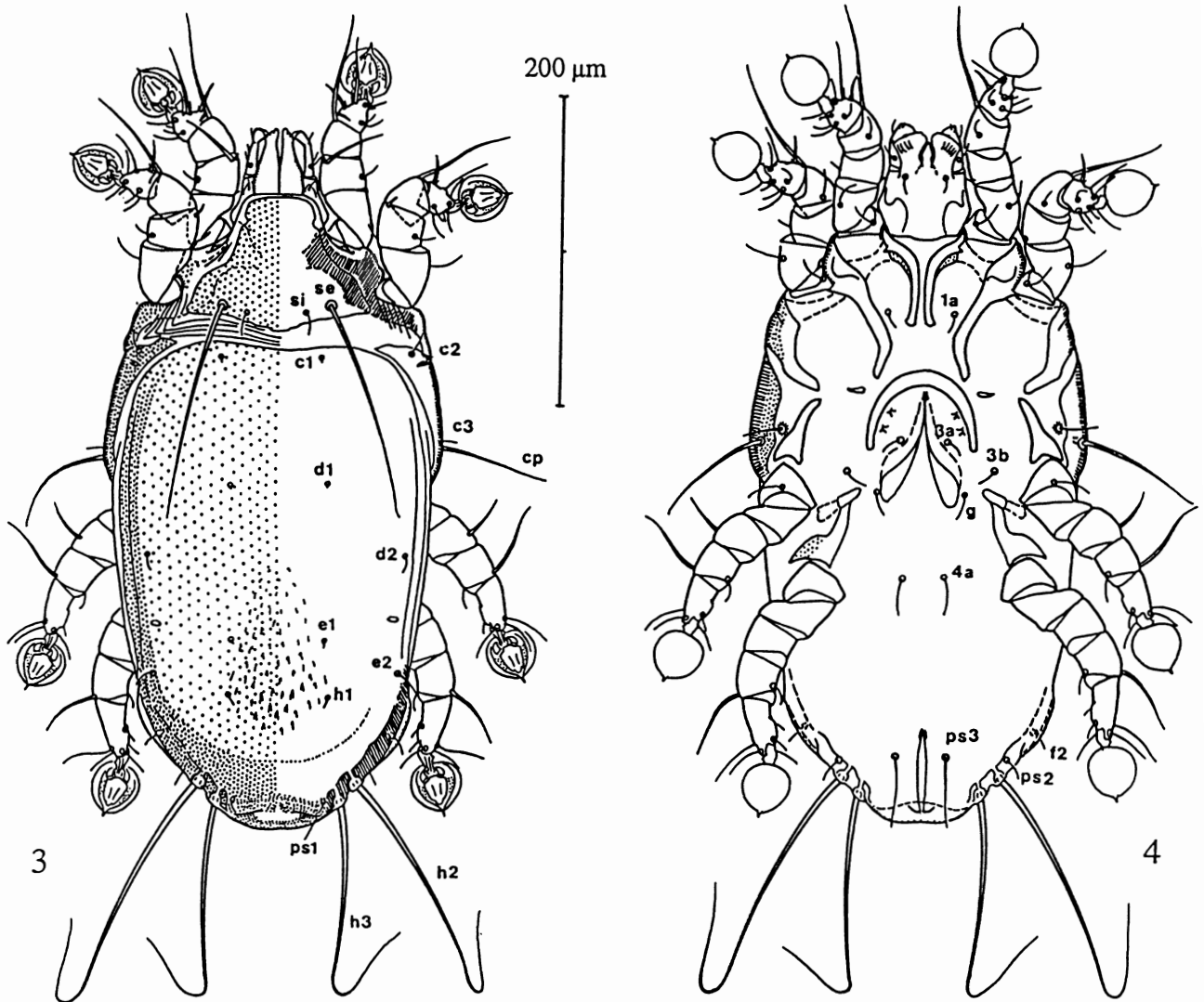
Male - Length of idiosoma (from anterior margin to bases of setae *ps1*) 360-370 (360), width of idiosoma 200-208 (206), length of hysterosoma 273-285 (284). Prodorsal shield: length 80-85 (84), width 103-108 (106), distance between bases of scapular setae *se* 63-67 (63), posterior margin slightly convex between bases of setae *se*, lateral margins entire. Scapular setae *si* and lateral setae *c2* small hair-like. Hysteronotal 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



Figs.1-2. *Bychovskiata thinorni* n.sp., male. 1 - dorsal view, 2- ventral view.

ps1) 77-81 (79). Wide interlobal membrane stretches along margin of terminal cleft and spreads to apexes of opisthosomal lobes. Ends of this membrane on apexes of lobes are rounded. Length of deflection in interlobal membrane 29-30 (29) (Fig. 1). Epiandrium and genital apodemes are absent. Genital arc: length 30-34 (30), width 36-38 (36), aedeagus straight, directed backwards, 31-36 (34) in length. Adanal shields represented by the pair of small transversal adanal sclerites. Setae *ps3* situated off of these shields. Pseudanal setae *ps2* are setiform. Setae *d* and *e* of tarsus IV are typical disk-like suckers.

Female - Total length of idiosoma 386-410, width of idiosoma 199-228, length of hysterosoma 289-317. Prodorsal shield: length 75-88, width 110-124, distance between setae *se* 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. Epigynum is semicircular, 41-46 in length, 63-72 in width. Pseudanal setae *ps3* extend slightly behind posterior margin of opis-



Figs. 3-4. *Bychovskiata thinorni* n.sp., female. 3- dorsal view, 4 - ventral view.

thosoma. Legs IV extend by ambulacral disk to posterior margin of opisthosoma.

Diagnosis - *Bychovskiata thinorni* 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 apexes of opisthosomal lobes and by the long aedeagus, which is equal in length to the length of genital arc. Females of *B. thinorni* differ from females of *B. squatorolae* and also from ones of other known species of *Bychovskiata* by the egg-shaped end of opisthosoma with sclerotized membrane between bases of setae *h3*. 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.

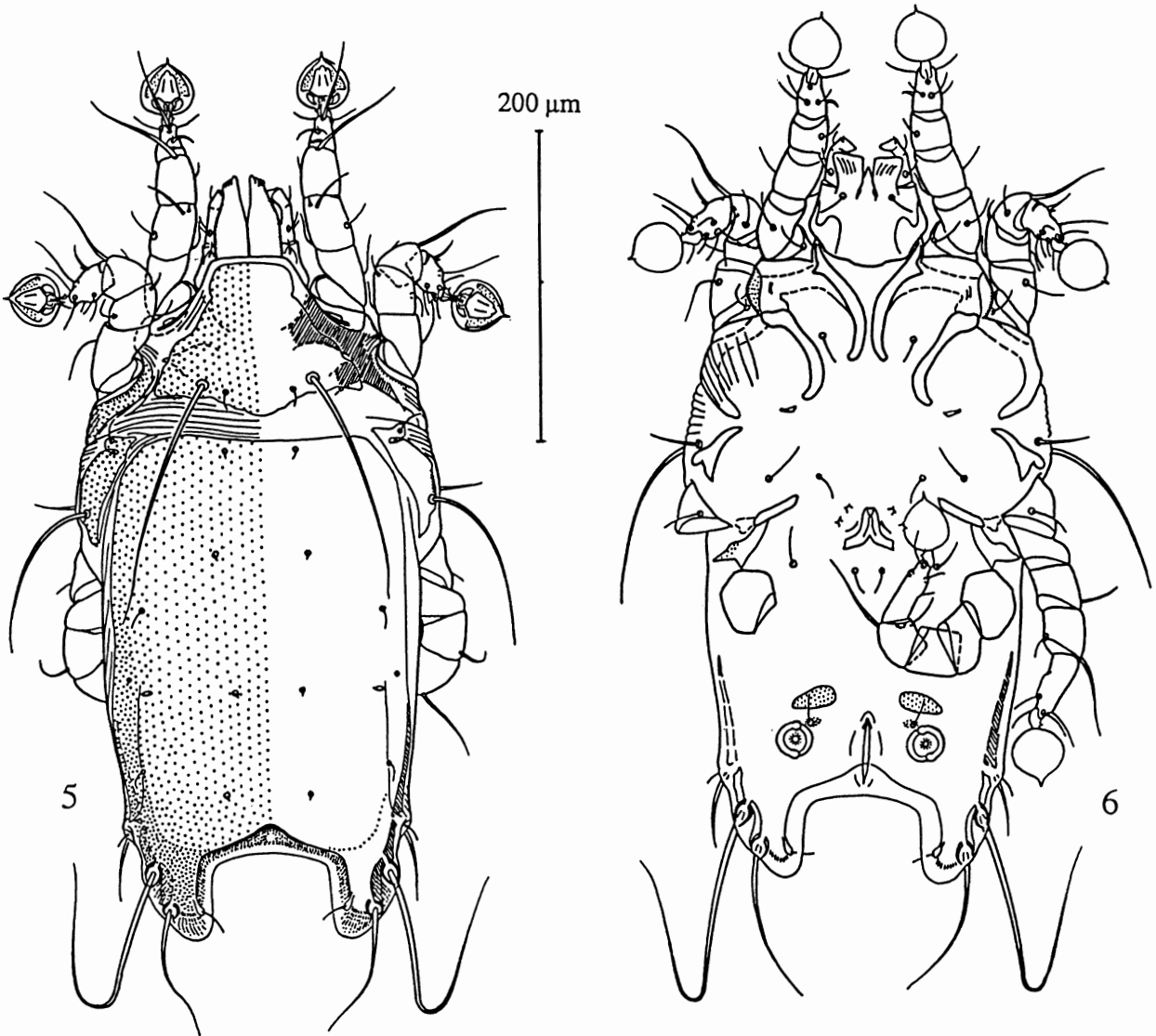
Material - From Shore plover *Thinornis novaseelandiae* (Gmelin, 1789) (Charadriidae): holotype male, paratypes 2 males, 6 females (# 208189) - Chatham Isls., Mangre Isl., 1892, W. Hawkins; paratypes 1 male, 1 female (NU 9489, USNM 151113) - Chatham Isls, April 1893, collector unknown.

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

2. *Bychovskiata phegorni* Mironov, n.sp.

(Figs. 5, 6, 9)

Male - Length of idiosoma 405-410 (410), width of idiosoma 226-240 (226), length of hysterosoma 293-313 (313). Prodorsal shield: length 80-94 (89), width 117-129 (120), distance between setae *se* 70-77 (72),

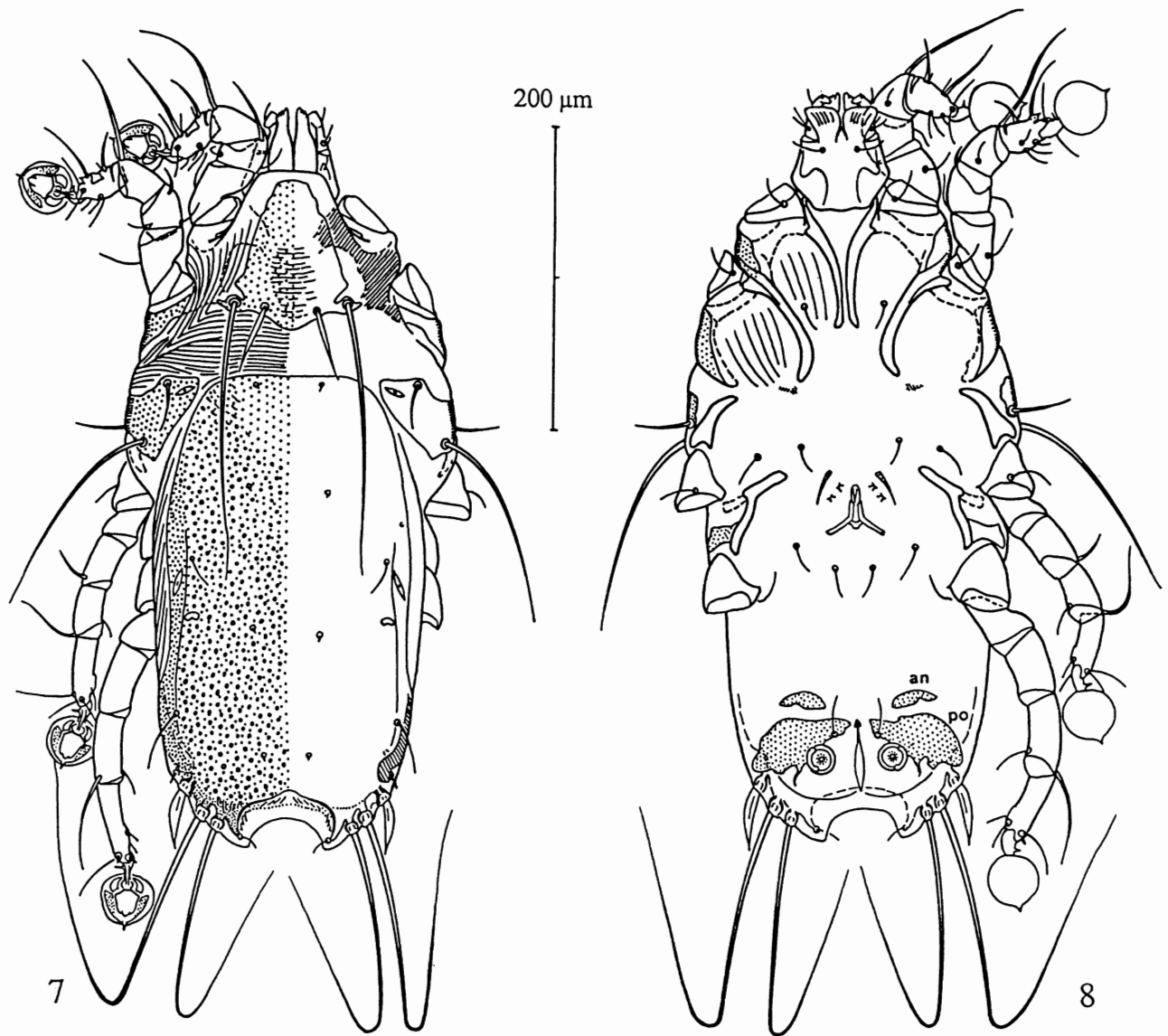


Figs. 5-6. *Bychovskiata phegomi* n.sp., male. 5- dorsal view, 6-ventral view.

lateral margins entire, posterior margin between setae *se* 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. Terminal cleft nearly rectangular, with small sloping incision on anterior margin, length of cleft 55-62 (60), width of cleft 83-85 (84). Narrow interlobal membrane spreads along all cleft margin and stretches on apexes of lobes. Margins of membrane on apexes of lobes are rounded. Length of deflection in interlobal membrane 52-57 (57). Epiandrium and genital apodemes are absent. Genital 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 *ps3* are situated out of these shields, but in some

specimens bases of these setae are surrounded by small sclerotized areas. Setae *ps2* are setiform. Setae *d* and *e* of tarsus IV are typical disk-like suckers.

Female - Length of idiosoma 405-410, width of idiosoma 223-240, length of hysterosoma 293-308. Prodorsal shield: length 86-91, width 113-132, distance between setae *se* 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 *h3* 67-72. Epigynum semicircular, 43-46 in length, 79-84 in width. Pseudanal setae *ps3* not extending to posterior margin of body. Legs IV extend by ambulacral disk behind the posterior margin of opisthosoma.



Figs. 7-8. *Bychovskiata 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 *Bychovskiata* species by the tongue-like opisthosomal lobes being widely separated from one another and by the nearly rectangular terminal cleft. In other species of *Bychovskiata* 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 *Bychovskiata* hysteronotal 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 Diademed Sandpiper-plover *Phegornis mitchellii* (Fras., 1845) (Charadriidae):

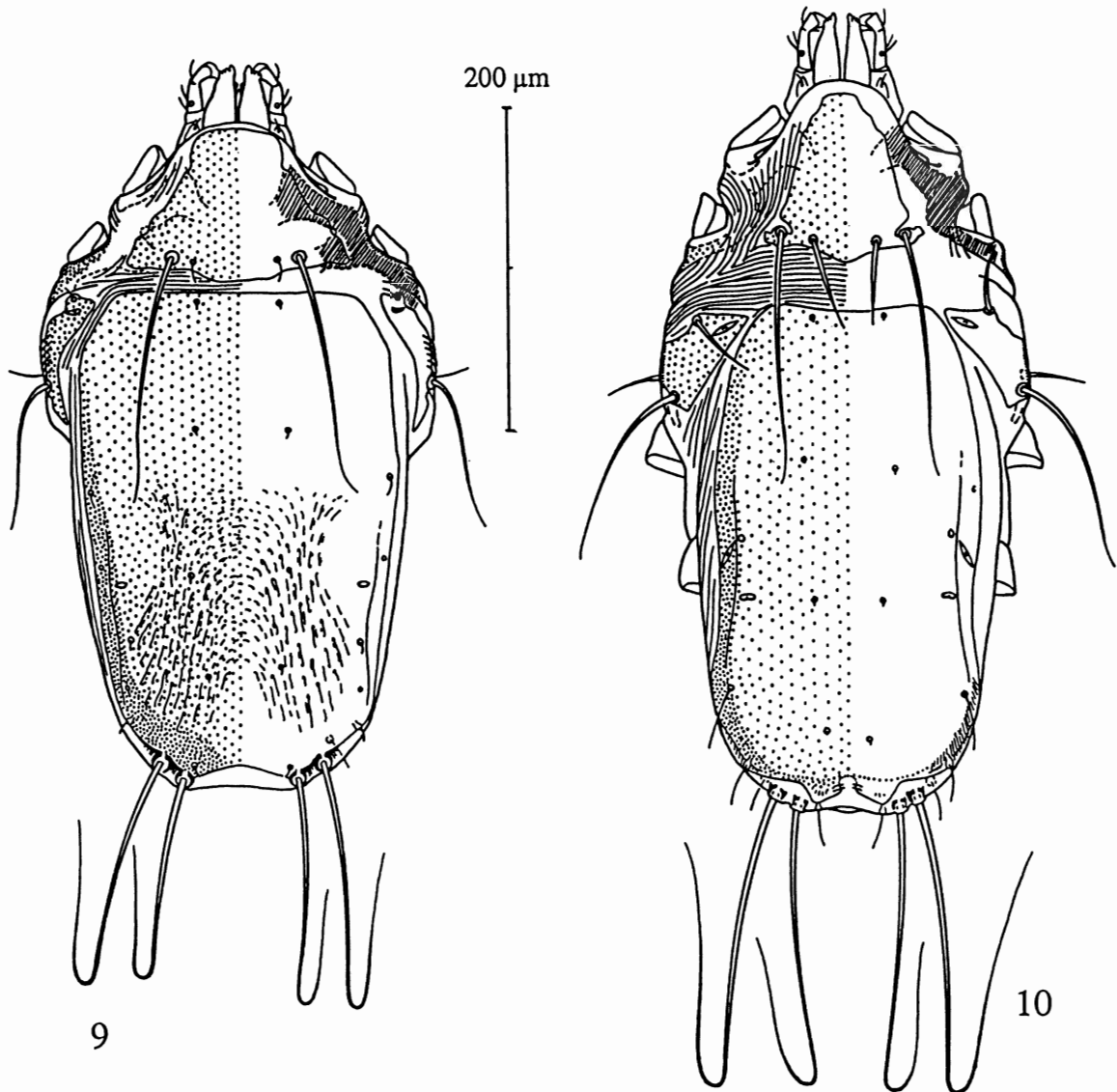
holotype male, paratypes 2 males, 2 females (# 217627) - Chile, Sanbrozo Prov., Valle Rio Yeso, h = 2.690 m, no date, S.Parren et E. Bernoth; paratypes 1 male, 1 female (# 219878) - Chile, Santiago Prov., Upper Maipo Vy, Embalzo del Yeso, 29 October 1961, R.W.Storer.

Holotype, paratype - ZMUM, paratypes - ZIN.

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

(Figs. 7, 8, 10)

Male - Length of idiosoma 422-450 (433), width of idiosoma 192-220 (193), length of hysterosoma 310-322 (320). Prodorsal shield: length 96-103 (100), width



Figs. 9-10. Females of *Bychovskiata*, dorsal view. 9 - *B. phegori* n.sp., 10 - *B. tibetana* n.sp.

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 (50) 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 narrowed 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 *ps3* are situated on anteromedial ends of these shields. Setae *ps2* lanceolate, 29-41 (41) in length. Setae *d* 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 dotted. Posterior end of opisthosoma widely rounded. Distance between setae *h3* 53-62. Epigynium semicircular, 50-54 in length, 79-89 in width. Pseudanal 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 *Bychovskiata* by the lanceolate internal scapular setae *si*, that is a unique character among the genus. Besides, males of *B. tibetana* have two pairs of adanal shields and rod-like setae of tarsus IV that are also unique characters for the genus. In all other recently known species of *Bychovskiata*, setae *si* are very small and hair-like; in males of recently known *Bychovskiata* species the adanal 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).

Material - From Ibis-bill *Ibidorhynchus struthersi* Vig., 1832 (Ibidorhynchidae): holotype male, paratypes 5 males, 6 females (NU 9179, USNM 192464) - China, W. Hopeh Prov., Fuping, 20 January 1904, E. Backwelder; paratypes 1 male, 2 females (# 43871), China, "E. Torub forest", 23 January 1925, collector unknown.

Holotype, paratype - UGA, paratypes ZIN, ZMUM.

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

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