

ACARINA: PROSTIGMATA: TARSONEMOIDEA: PYEMOTIDAE OF SOUTH GEORGIA¹

By Earle A. Cross²

Sasa (1961), in a paper reviewing Japanese species of mites of the Family Pyemotidae, divided the morphologically diverse and unwieldy genus *Pygmephorus* Kramer, 1877, into four subgenera. Unaware of his paper, I (Cross 1965) restructured the genus extensively, thereby creating several synonyms. In this regard my genus *Neopygmephorus* (type: *Pygmephorus blumentritti* Krczal, 1959) is clearly a new synonymy of *Pygmephorus* (*Bakerdania*) Sasa (type: *P. cultratus* Berlese, 1904).

This paper is based upon collections containing 36 specimens, all assignable to 4 species of *Bakerdania* (Sasa). All species are probably undescribed but 2 of the 4 are represented by small numbers and are difficult to interpret. They will require further study. The remaining 2 are described herein. Except for a single specimen from Campbell I., all specimens were taken from berleses of petrel nests (or from "nesting material") on South Georgia in either April or November. Two species of petrel (Wilson's and the "Shoemaker") were involved.

Methods of measurement, terminology, and the procedure used in descriptions of the new forms are those found in my 1965 work except for the following: (1) *total length* is measured from the anterior termination of the anterior median apodeme (bottom of the "v" of the circumgnathosomal foramen) to the posterior margin of the body. (2) Measurements of the holotype are followed, in parentheses, by the range found in the type series, but means are not included. All measurements are in micrometers. Except as otherwise noted, specimens were returned to the collections of the B. P. Bishop Museum.

I gratefully acknowledge the assistance of Miss Patricia Jones, who drew and inked Fig. 3 and 4.

KEY TO SOUTH GEORGIA SPECIES OF *Bakerdania* (SASA)

FOUND IN BIRD NESTS

1. Punctuation of ventrites II marked, punctae variable in size and density but very coarse in anterior 1/2 of sclerite; caudal setae subequal in size, small and bristlelike.....**rugosa***
Punctuation of ventrites II evenly fine and close, only faintly distinct; caudal setae variable but not short and bristlelike.....2
2. Caudal setae subequal in size, subequally spaced, sparsely plumose, 55-60 long; solenidium of ta II clavate, moderately long (app. 14).....**equisetosa***
Internal caudal seta much longer than either of external caudals, external caudal I much closer to internal caudal than to external caudal II; solenidium of ta II subcylindrical, elongate (app. 20).....**species 1** (prob. undescribed)

Bakerdania rugosa Cross, new species Fig. 1-2.

This species composed 34% of the total collection. It was the most broadly distributed form in time and among nests, being found in both the April and November collections, and being taken from the nests of at least 2 species ("Shoemaker" and Wilson's petrels), and possibly another as well.

Diagnosis: Seemingly³ closest to *B. perforatus* (Mahunka 1964) in which it resembles in most characters

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³I have not had the opportunity to see this species.

*Described as new.

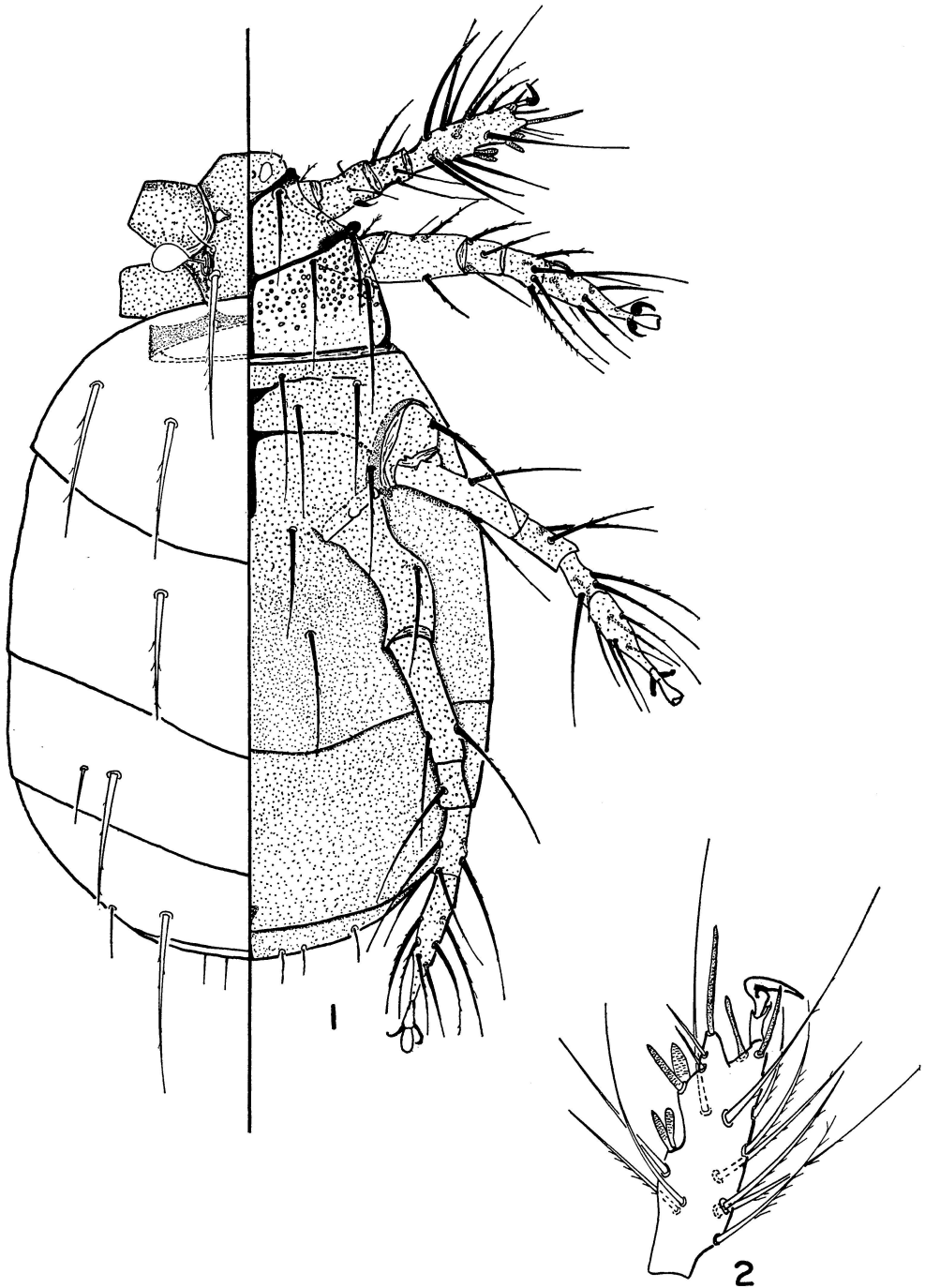


Fig. 1. *Bakerdania rugosa*, n. sp. ♀, dorsal and ventral. Composite drawing, holotype and paratypes 1, 3, 5, 9. Fig. 2. Same, left tibiotarsus UI, holotype, dorsal aspect.

given in the latter's description. It differs from the description of that species in that internal ventrals I overreach apodemes II and because external caudal seta II is over $2 \times$ as far from external caudal I as the latter is from the internal caudal. It appears to differ otherwise in the length and placement of both pairs of axillary setae, in the peculiarly coarse punctal pattern of ventrites II, in that apodeme II is modified laterally to form a lateroventral protuberance which bears external ventral I, and perhaps in being larger. Separable from all other species in the genus by its distinctive pattern of punctation.

Description of non-gravid ♀. Shape, in alcohol, limuloid; length, 390 (326–440); body well sclerotized, punctate throughout, punctal sizes and pattern distinctive. *Gnathosoma*: Length, about 40; gnathosomal punctae evenly coarse and sparse except for a lateral, ovoid patch in which the punctae are somewhat larger and densely aggregated, the posterior margin of this patch anterior to the external gnathosomal dorsal seta; internal gnathosomal dorsals about 20, larger than externals; solenidium 1 of palpus subcylindrical, nearly as long as solenidium 2, but about $1/3$ its width. *Propodosoma. Dorsum*. Punctation coarser and sparser than that of hysterosomal dorsum; distance between internal pseudostigmatal sockets 48 (43–61); posterior pseudostigmatal seta arising closely posteromedial to internal pseudostigmatal socket, nearly in a line with anterior pseudostigmatal seta; peritremes circular-guttate, the stigmata opening mesally; margins of peritremes thickened but not surrounded by a distinct platelike area. *Venter*. Punctation of ventrites variable in size, that of ventrites I differing from that of ventrites II (Fig. 1); punctae of ventrites I, on the average, distinctly coarser than those of propodosomal dorsum and about as sparse; anterior half of ventrites II with very coarse punctae which are about as sparse as those of ventrites I, punctation becoming much finer posteriorly; setae of anterior ventral plate moderately plumose, plumosity most pronounced in externals; apodemes II nearly straight, each developed laterally into a thick, lateroventrally-projecting process which bears external ventral seta I; internal ventral I arising well anterior to external ventral I, appearing to arise from a low tuberosity; lateral propodosomal margins produced, covering much of coxae I and II in ventral aspect; secondary transverse apodeme indistinct but linear seam present laterally (sometimes indistinct). *Hysterosoma. Dorsum*. Punctation of posterior segments fine and close, similar to that of posterior portion of posterior ventral plate and hysterosomal venter (Fig. 1), that of segment I (or I and II) becoming coarser and sparser anteriorly, the anterior margin of I resembling that of propodosomal dorsum; dorsal setae of segments I–IV sparsely plumose, laterals III and IV and the setae of segment V distinctly shorter and thinner than dorsals and nude; dorsals IV slightly thinner and more flagellate than remaining dorsals; dorsals I about 57, shorter than laterals I and arising distinctly posterior to them; dorsals II arising only slightly laterad of dorsals I; dorsals III arising well laterad of dorsals I and II, distinctly closer to lateral III than dorsal IV is to lateral IV; caudals short, internals and externals II subequal, about 19, externals I about $3/4$ as long; external caudal I more than $2 \times$ as far from external caudal II as from internal caudal. *Venter*: Punctation of anterior portion of posterior ventral plate similar to that of propodosomal dorsum but closer, becoming finer and closer posteriorly, portion behind external poststernals similar to that of entire hysterosomal venter and most of dorsum; all setae of posterior ventral plate distinctly thinner than dorsals, sparsely plumose but for poststernals which appear nude; internal poststernals shortest of setae of posterior ventral plate, about 40, reaching barely beyond areolae of external poststernals; external poststernals reaching barely beyond (or to) hind margin of posterior ventral plate; horizontal distance between internal presternal and external presternal much less than that between external presternal and axillary I; posterior margin of posterior ventral plate and of hysterosomal venter entire; apodemes III and IV incomplete; margin of coxal cavity III heavily sclerotized. *Legs*. Punctation similar to that of propodosomal dorsum. *Length*: Leg I, 107⁴; leg II, 135⁴; leg III, 148⁴; leg IV, 242 (201–322). *Width*: Leg I, 18 (17–24); leg II, 21 (21–28); leg III, 15 (14–19). *Segment lengths*: Tr III, 64 (52–82); cx IV, 76 (60–101); tr IV, 63 (53–87); fege IV, 19 (16–28); ta IV, 66 (49–89). Setae of cx I and II small, plumose; seta *c* of tr I phylliform, proflaxed, its apex attenuate, seta *d* slender, also distinctly proflaxed; shape of tita I characteristic (Fig. 2); tita I distinctly wider than fege I, in profile subequal to tr I in width; solenidia of tita I arising in 2 pairs; solenidia 1 and 2 arising together from a lateral steplike excavation; solenidium 1 thinner and only slightly longer than 2; solenidia 3 and 4 arising together; solenidium 4 subcylindrical, stout, about 11, solenidium 3 strobiloid, about $2/3$ as long and $2 \times$ as thick

⁴Holotype alone suitable for measurement.

as 4; apex of tita I with a lateral, marginal pinnaculum which bears a single sense rod at its tip and 1 dorsal and 1 ventral small setae basally, a median, dorsal tubercle also present, bearing an apical sense rod, its areola at base of pedicel; claw I of moderate size, its pedicel elongate and slender; basally, tita I with 5 or 6 setae proximal to midpoint of areolus of seta *A*; seta *d* of tr II small, nude, the other 2 setae at least $3 \times$ as long, plumose; tibial solenidia of legs II and III small, clavate, arising nearly half-way to apex of segment; solenidium of ta II stout, bullet-shaped, about 12 long; tr III appearing thin and elongate; cx IV arcuate, elongate, tr IV also elongate; lateral seta of tr IV not reaching tarsal base; ratio of length of fege IV to ta IV, 3.5 (2.9–3.5).

Habits: Unknown

DISTRIBUTION: Known only from type locality.

Holotype ♀ (BISHOP 8839), 9 ♀ paratypes from S. Georgia I., H. B. Clagg, coll., as follows: Holotype, paratypes 1, 9, Grytviken Pen., King Edward Pt., 12–14.XI.1963, berlese of nest material of “Shoemaker” petrel, *Procellaria aequinoctialis*. Paratypes 2–8 Bird I., North Valley, BI-183B, 15.IV.1963, from Berlese of “nest material” (no host given). Holotype and paratypes 1–3 to be deposited in the Bishop Museum, Honolulu; paratypes 4–5 in the U. S. Nat. Mus., Washington, D. C.; paratype 6 in the British Museum (Nat. Hist.), London; paratype 7 in the Zoological Institute, The Univ. of Erlangen, Germany; paratype 8 in the Field Museum of Natural History, Chicago, Illinois; paratype 9 in the Snow Entomological Collections, the University of Kansas, Lawrence.

SPECIMENS EXAMINED: In addition to the type material, 1 ♀ from Bird I., Bandersnatch, BI-141 B, 1.IV.1963, ex berlese of nest material of Wilson’s petrel, H. B. Clagg, and 2 ♀♀ from Grytviken Pen., same data as above. I have retained these specimens.

Bakerdania equisetosa Cross, new species Fig. 3–4.

This form composed 58% of the total collection, but was collected only once, in November, from the nest of *Procellaria aequinoctialis*.

Diagnosis: Seemingly³ closest to *B. hayashii* (Sasa 1961), from which it differs in having 2 short pinnacula on tita I rather than 1, in the shape of solenidium 3 of tita I, and in other characters. It can be separated from all other species in the genus by the placement and length of the caudal setae and in the conformation of tibiotarsus I.

Description of non-gravid ♀. Shape, in alcohol, limuloid; body well sclerotized, finely and rather evenly punctate throughout; length, 300 (290–332). *Gnathosoma*: Length, about 43 (palps extended); densely punctate lateral patches lacking; internal gnathosomal dorsals about 22 long, not much longer than externals; solenidium 1 of palpus short, subglobose, about $1/3$ as long as solenidium 2 but more than $1/2$ as wide. *Propodosoma*: *Dorsum*: Distance between internal pseudostigmatal sockets, 61 (52–66); posterior pseudostigmatal seta arising slightly anteromesally (or mesally) to a line drawn between internal pseudostigmatal sockets; peritremes circular-guttate, surrounded by a distinct plate, the stigmata opening slightly posteromesally. *Venter*. All setae distinctly plumose, internal ventrals I barely reaching, internal ventrals II reaching well beyond posterior margin of anterior ventral plate; external ventrals I arising well anterior to a line drawn between internal ventrals I; apodemes I slightly arcuate; apodemes II arcuate mesally, becoming straight or slightly obovate, bending suddenly anteriorly near the lateral margin, external ventral I arising from a tubercle near its apex; secondary transverse apodeme distinct, passing behind setae of ventrites II. *Hysterosoma*: *Dorsum*: All dorsal setae elongate, stout, flagellate, distinctly plumose; dorsals III longest, 148 (122–148), dorsals IV shortest, 86 (79–95), arising from short tubercles; dorsals II 87 (77–94) apart, this distance subequal to that between dorsals I; laterals III about as stout as dorsals III, about $3/4$ their length; margins of all dorsal segments entire; dorsals IV 53 (49–62) apart; external caudal I only slightly closer to internal caudal than to external caudal II; all caudal setae subequal in length, externals II barely longer than the rest, 55 (50–59). *Venter*. All setae of posterior ventral plate stout, flagellate, sparsely plumose, plumosity



Fig. 3. *Bakerdania equisetosa*, n. sp., holotype ♀, dorsal and ventral. Fig. 4. Same, left tibia-tarsus I, paratype 1, dorsal aspect.

distinctly less than for setae of anterior ventral plate; external poststernals longer than other setae of plate, 90 (79–95), 2nd axillaries next longest; internal presternals shortest, 58 (51–64), 1st axillaries nearly as short; internal poststernals surpassing areolae of externals by about 1/2 their lengths; horizontal distance between external presternal and internal presternal about the same as that between external presternal and 1st axillary; apodemes III interrupted, present as arcuate creases anterolaterad of coxae III; apodemes IV complete (or nearly so); hind margin of posteroventral plate entire; hind margin of hysterosomal venter with median shallow emargination. *Legs: Length:* Leg I, 99 (99–112); leg II, 114 (114–125); leg III, 117 (104–122). *Width:* Leg I, 15 (14–16); leg II, 18 (17–19); leg III, 16 (14–16). *Segment lengths:* tr III, 50 (43–52); cx IV, 63 (54–66); tr IV, 60 (53–61); fege IV, 16 (16–19); ta IV, 78 (73–84); ratio, length of fege IV to cx IV, 3.9 (3.5–4.1). Seta *c* of tr I bladelike, procurved; tita I subequal to fege I in width; solenidia 1 and 2 arising together from a lateral, steplike excavation, solenidium 1 much thinner and distinctly longer than 2 (fig. 4); solenidium 4 elongate, cylindrical, arising well distad of 3; solenidium 3 strobiloid, slightly more than half as long as 4; apex of tita I with two low pinnacula, one apical, the other apicolateral, each bearing apically a single rod seta, the apicolateral with a single basal ventral seta in addition; a tiny seta arising mesally from the base of the pedicel; basally, tita I with 4 setae proximal to midpoint of areolus of seta *A*; claw I medium-sized, arising from a moderately stout pedicel; tibial solenidia of legs II and III elongate, clavate, arising in basal 1/4 of segment; solenidium of ta II elongate-clavate, about 13; solenidium of ti IV not seen; cx IV elongate, arcuate, tr IV nearly as long, its length subequal to that of tr III; lateral seta of tr IV reaching well beyond tarsal base, at least lateral seta of fege IV extending beyond claw IV; ta IV elongate, attenuate; ratio, length of fege IV to ta IV, 4.9 (4.4–4.9).

Habits: Unknown.

DISTRIBUTION: Known only from the type locality.

Holotype ♀ (BISHOP 8840), 7 ♀ paratypes from S. Georgia, Grytviken Pen., 12–14.XI.1963, H. B. Clagg, berlese of nest material of *P. aequinoctialis*. Holotype and paratypes 1–2 in the B. P. Bishop Museum, paratypes 3–4 in the U. S. N. M., paratype 5 in the Snow Entomological Collections, Univ. Kansas, paratype 6 in the Brit. Mus. (Nat. Hist.), and paratype 7 in the Zool. Inst., Univ. Erlangen.

SPECIMENS EXAMINED: In addition to the type material, 20 ♀♀, same collecting data as the types. I have retained 4 of these.

Bakerdania, sp. 1.

A species morphologically close to *B. lithobii* (Krczal) but probably undescribed. Its status cannot be satisfactorily ascertained from the material in hand. Three ♀♀ from S. Georgia, Bird I., Bandersnatch, April 1, 1963 and April 1, 1964, H. B. Clagg, coll., from berlese of nest material of Wilson's petrel. BI-141B.

Bakerdania, sp. 2.

Morphologically close to sp. 1 above. 1, Campbell I., Tucker Cove, 21–25.XI.1961, coll., moss-lichen berlese, 1–50 m, J. L. Gressitt.

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