

NOTES ON *NANORCHESTES*

I. Description of *Nanorchestes wilbanksi*, n. sp. (Acari: Nanorchestidae) from Marie Byrd Land, Antarctica¹

By R. W. Strandtmann²

Abstract. Approximately 400 specimens of *Nanorchestes* were collected from 19 widely scattered outcrops in Marie Byrd Land between 74°–76°S and 132°–140°W. A study of 50 specimens revealed only 1 species, *N. wilbanksi*, n. sp. No other arthropod forms were found.

In the Antarctic summer of 1977, I had the good fortune to be included in a group going to Marie Byrd Land, Antarctica. That the rest of the group were all geologists and I the only biologist did not dampen (much) my enthusiasm.

Field camp was on a plain of snow from which helicopter flights were made to outcrops within the quadrat bounded by latitudes 74° to 76°S and longitudes 132° to 140°W. Altogether, 32 outcrops were visited, ranging in elevation from 30 m to 2400 m above sea level, and in area from less than 1 km² to perhaps 25 km². Mites were found on 19 outcrops, all at elevations of less than 1000 m. Details on locations are given later in this paper and in Strandtmann (1978).

All mites collected, a total of 400±, were found in sandy areas moistened by melting snow or ice. Some areas had no visible plant life, but fungi or 1-celled algae, or both, must have been present. Other areas had either moss or a greenish hue, indicating the presence of algal cells. Crustose and foliaceous lichens were abundant in some areas but did not harbor mites, probably because of insufficient moisture.

Mites were found by turning over small pebbles resting on sand, or indirectly by floating them out of loose sand and small moss mats. It is probably significant to note that no other arthropod was found except this 1 species of *Nanorchestes*. I say "probably" because when working with a group of geologists, one never stays long at any 1 place. Had I had the opportunity to work an area more intensively, I might have found more variety. Still, I doubt my methods were so superficial that I would have missed other mites or Collembola had they been there.

Why does this quadrat have only *Nanorchestes*, whereas other areas of Antarctica at the same latitude have several species of acarines as well as Collembola? An explanation might be found in the terrain. The outcrops are relatively small and do not extend much above the snow and ice. It is quite possible that in the past, conditions

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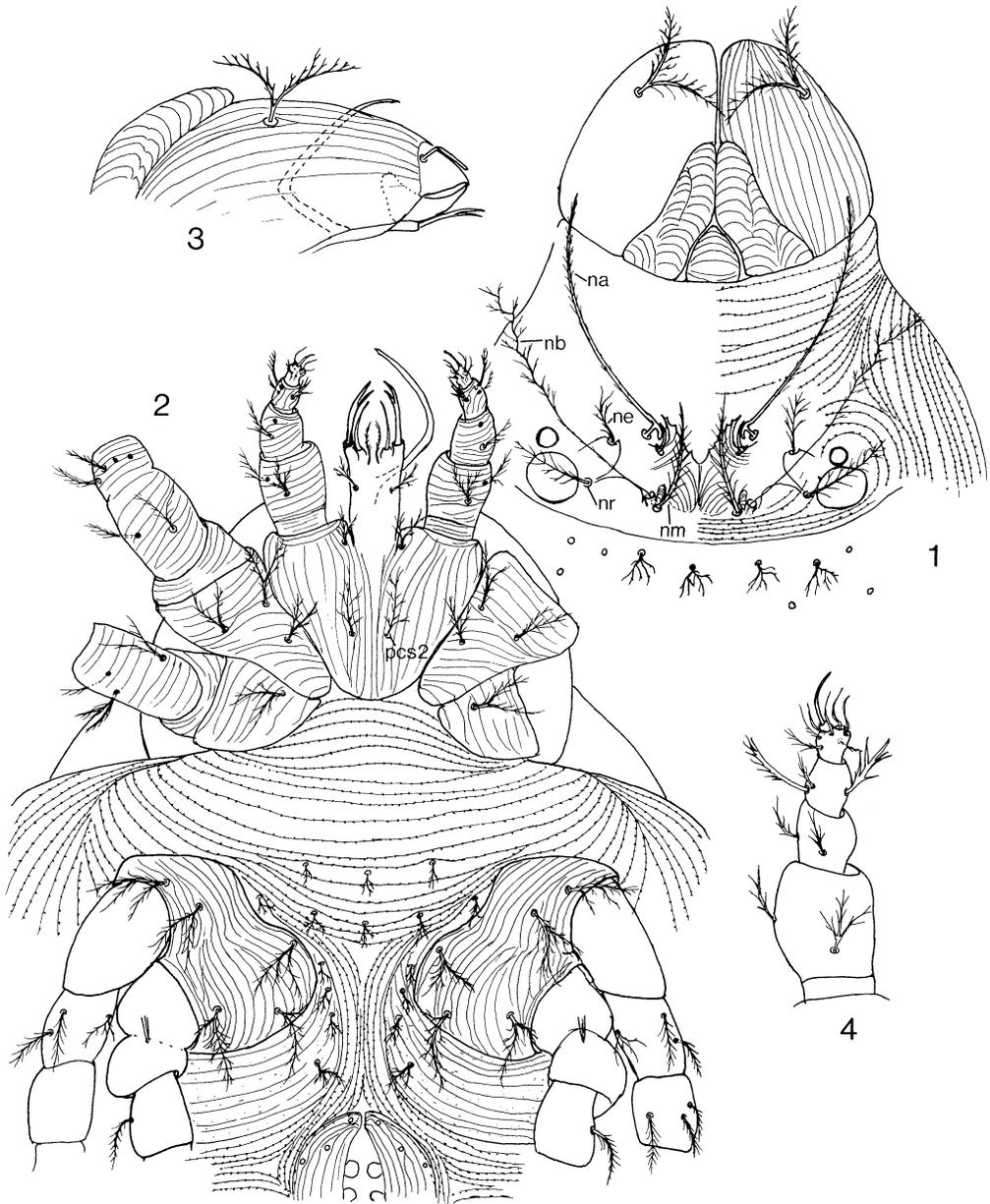


FIG. 1-4. *Nanorchestes wilbanksi*: 1, dorsum of propodosoma; 2, venter, anterior and midportion; 3, side view of chelicera; 4, pedipalp, left side.

here may have been harsher than in other parts of Antarctica and *Nanorchestes* is the only arthropod to have survived. It is my opinion that all species of Arthropoda on the continent of Antarctica are relict species.

Fifty specimens from 14 of the 19 outcrops yielding mites were mounted and

studied. Eventually the rest of the material will need to be processed and studied if we are to be certain there really is only 1 species of *Nanorchestes* in this area.

All measurements given in the description are in micrometres.

***Nanorchestes wilbanksi* Strandtmann, new species**

FIG. 1–15

Diagnosis. Naso deeply cleft, cheliceral seta bifurcate, sensory setae *na* and *nb* of equal length, *nm* longer than *nr*, tarsus III with 10 setae, femora II and IV each 3 setae.

A medium-large species. Average lengths, ♂ 255, ♀ 260, tritonymph 240, deutonymph 200, protonymph 170. *Dorsum.* Naso deeply cleft. Seta *na* about 47 (42–50), uniformly covered with short, close cilia. Sensillum *nb* circa 47 (42–50), slender, straight or slightly angulate, with relatively short, sparse, branched cilia on apical ½. A striated, cuticular lobe at inner base of *nb*. Seta *nm* longer and thicker than *nr*. *Nm*, 23 (20–25); *nr*, 18 (15–20); *ne*, 11 (10–14) and slender. Dorsal idiosomal setae branched treelike, 7–8 long. *Venter.* All ventral setae branched treelike. Coxal setae much larger and mostly bifurcate. Eight intercoxal setae between coxae III in 2 transverse rows of 3 and 5. Eight intercoxal setae between coxae IV in 2 longitudinal rows of 4 and 4. Genitalia of adult covered with 2 longitudinally striated flaps each with 8 branched setae, 1 more lateral. Two pairs of genital knobs, each apparently 4-partite. ♂ with 7 pairs of eugenital setae, ♀ with 3 pairs. Excretory pore (FIG. 6) ventral, with 1 pair of setae on each side. *Gnathosoma.* Cheliceral seta furcate, each arm with fairly uniform, moderately long, branched cilia. Anterior arm 20, posterior arm 15. Basal palp coxal seta (*Pcs* 2) not furcate, 8–10 long. Long outer seta of palp tibia about 10 and sparsely ciliated on 1 side (FIG. 4). Rutellum 2-tined. *Legs.* Moderately long and thick. Tarsus III with 10 setae, femora II and IV each with 3 setae. Empodial claw with 6–7 rays on each side. Leg chaetotaxy: I, 17(?)–6–5–6; II, 11–5–4–3; III, 10–3–3–3; IV, 11–3–3–3. Sensory lines; tarsus I with 2 long lines curving anteriorly and 1 shorter line between the long ones ending at famulus; tibia I with 2 lines, genu I with 1; tarsus II with 1 dorsal line ending apically in an elongated bulb. Genu I and II and tibia III seem to have each a dorsal line, but I cannot be sure. *Famuli:* Tarsi I and II each have a small, thornlike famulus middorsally. Most leg setae coarsely ciliated and nonfurcate, but bifurcate setae occur as follows: femur I, 1 posterior basal; femur II, 1 posterior basal and 1 anterior apical; genu IV, 1 ventroapical. Leg III has sometimes (?always?) a bifurcate seta on genu. Ventrobasal seta of femur III delicate and branched treelike.

Tritonymph. Length 240 (200–260); 6 pairs external genital setae; seta on basifemur IV present or absent. Otherwise as the adult.

Deutonymph. Length 190 (180–200); 3, sometimes 4, external genital setae; seta on basifemur IV absent in 3 of the 4 specimens examined. Otherwise chaetotaxy as in adult.

Protonymph. Length 170 (160–200); 1 pair of genital knobs and 1 pair external genital setae. Leg chaetotaxy: I, 16(?)–6–5–3+1; II, 10–5–4–2; III, 10–3–3–3; IV, 7–3–1–0. A coxal seta count (3–1–1–3) was possible in only 1 of the 3 specimens.

Holotype ♀, ANTARCTICA: MARIE BYRD LAND: Mt Steinfeld, 75°12'S–135°59'W, 24.XI.1977, R.W. Strandtmann (BISHOP 11,903).—Paratypes: 19♂, 16♀, 7 tritonymphs, and 3 protonymphs from 14 locations in MARIE BYRD LAND, as follows. Lewis Bluff, 75°54'S–140°42'W, 860 m, 20.XI.1977 and 12.XII.1977; Partridge Nunatak, 75°42'S–140°20'W, 730 m, 22.XI.1977; Cape Burks, 74°45'S–137°09'W, 120 m, 24.XI.1977; Cox Point, 74°56'S–136°45'W, 200 m, 24.XI.1977; Peden Cliffs, 74°56'S–136°36'W, 300 m, 24.XI.1977; Oelenschlager Bluff, 75°04'S–136°45'W, 200 m, 24.XI.1977; Mt Steinfeld, 684, 24.XI.1977; Mathewson Point, 74°17'S–132°30'W, 30–40 m, 2.XI.1977; Lynch Point, 75°05'S–137°56'W, 5.XII.1977; Kinsey Ridge, 75°20'S–139°25'W, 730 m, 5.XII.1977; Langway Mts (2 locations), 75°29'S–139°47'W, 12.XII.1977 and 75°28'S–139°47'W, 13.XII.1977; Cruzen, 74°47'S–140°42'W, 200 m, 13.XII.1977; Moran Bluff, 74°22'S–132°35'W, 14.XII.1977; Peacock Peak, 75°10'S–134°30'W, 14.XII.1977. All collected by R.W. Strandtmann.

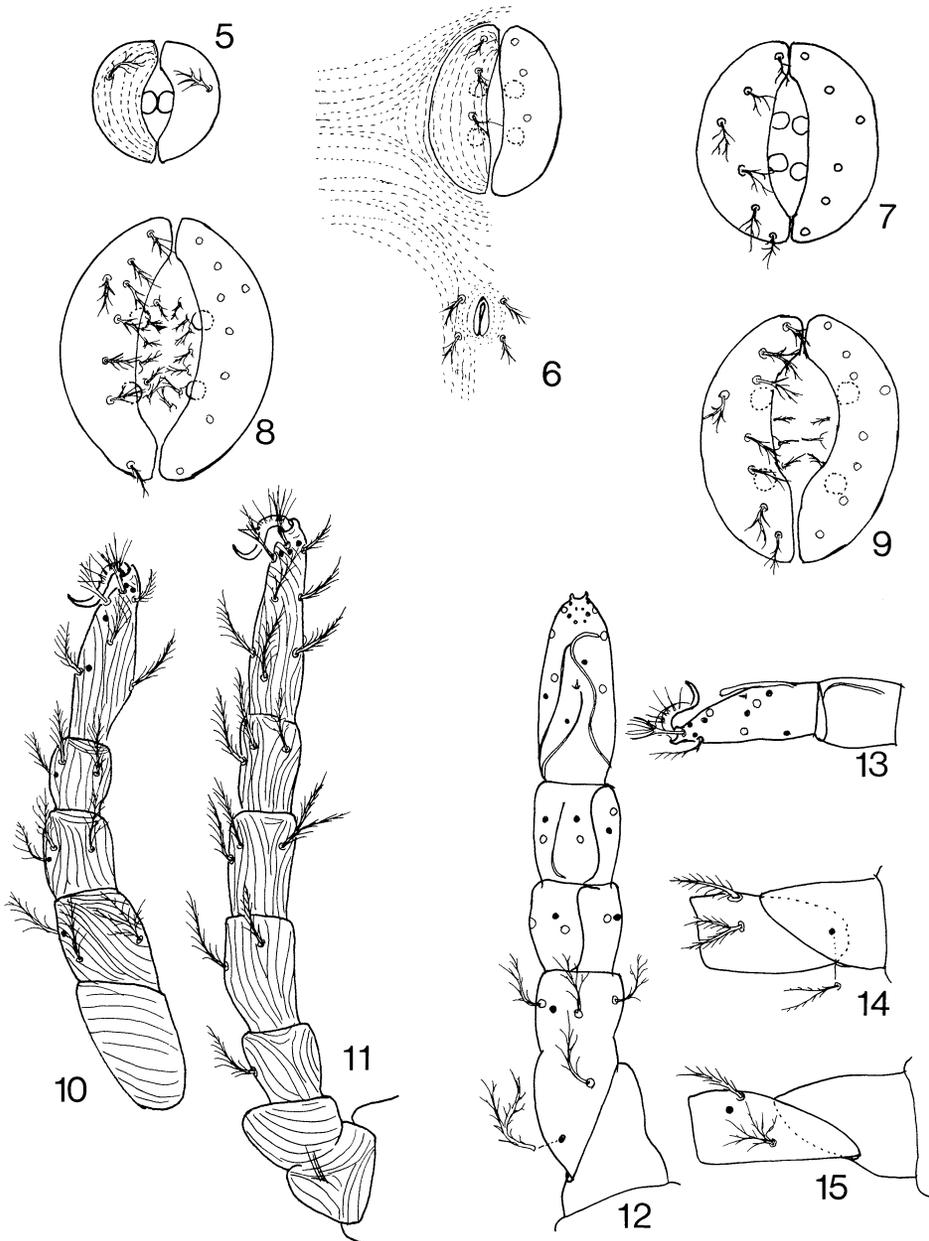


FIG. 5-15. *Nanorcheses wilbanksi*: 5, genitalia of protonymph; 6, genitalia and excretory pore of deutonymph; 7, genitalia of tritonymph; 8, genitalia of δ ; 9, genitalia of η ; 10, leg III; 11, leg IV; 12, dorsal view of leg I, with striations deleted; 13, side view of tarsus and tibia II; 14, femur and trochanter II; 15, femur and trochanter III.

Holotype and several paratypes are deposited in Bishop Museum, Honolulu, Hawaii. Other paratypes are in the Institute of Acarology, Ohio State University, Columbus, Ohio, and the United States National Museum, Washington, D.C.

Comments. Mites were also collected from the following locations (but the specimens have not been studied): Billey Bluff, 75°32'S–140°00'W, 760 m, 12.XI.1977; Rose Point, 74°45'S–136°45'W, 24.XI.1977, Gisella Dreschoff; Mt Prince, 74°59'S–134°28'W, 400 m, 14.XII.1977; Holmes Bluff, 74°56'S–133°45'W, 3.XII.1977.

All the above-mentioned locations in Marie Byrd Land are widely scattered, relatively small rocky outcrops in a vast plain of deep snow. No other arthropods were found on any of the outcrops.

Nanorchestes wilbanksi is closely allied to *N. antarcticus* Strandtmann, which occurs commonly in South Victoria Land across the Ross Sea from Marie Byrd Land, but differs consistently by the presence of 3 setae on femur II (only 2 in *antarcticus*). There are differences also in the hypostomal setae and relative lengths of the setae on the dorsal sensory quadrant.

This species is named for Dr John Wilbanks, the University of Nevada, who was the Science Leader of the Marie Byrd Land Expedition of 1977–78. He coordinated the activities of several groups in a most masterful manner.

LITERATURE CITED

- Strandtmann, R. W. 1978. Terrestrial arthropods, Marie Byrd Land, Antarctica. *Antarc. J.* **13**(4): 166–68.