

***Nanorchestes* Topsent and Trouessart, 1890 and *Eupodes* Koch, 1836 (Acari: Prostigmata) from Vestfjella mountain range, Antarctica**

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Two terrestrial prostigmatid mites were found from the Audunfjellet nunatak, Vestfjella mountain range, in Dronning Maud Land, Antarctica during the FINNARP expedition in Austral summer 1997/1998. The mites are close to, if not identical to, *Nanorchestes bifurcatus* Strandtmann, 1967 and *Eupodes tottanfjella* Strandtmann, 1967, also earlier reported from the area, but identification cannot be verified by using the published descriptions. Samples were also collected from an unnamed nunatak and the Basen nunatak, but these were miteless by chance.

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1. Introduction

During the geological survey of the Finnish Antarctic Research Programme (FINNARP, 1997/1998) to Vestfjella nunatak range (73–74°S, 13–16°W), Dronning Maud Land also some soil samples were collected in search for terrestrial mites. Earlier Sømme (1980) and Thor (1996) have reported *Eupodes tottanfjella* Strandtmann, 1967; *Protereunetes maudae* Strandtmann, 1967; *Tydeus setsukoe* Strandtmann, 1967; *Tydeus erebus* Strandtmann, 1967; *Nanorchestes bifurcatus* Strandtmann, 1967 and *Nanorchestes brekkeristae* Strandtmann & Sømme, 1977 from the nunatak area.

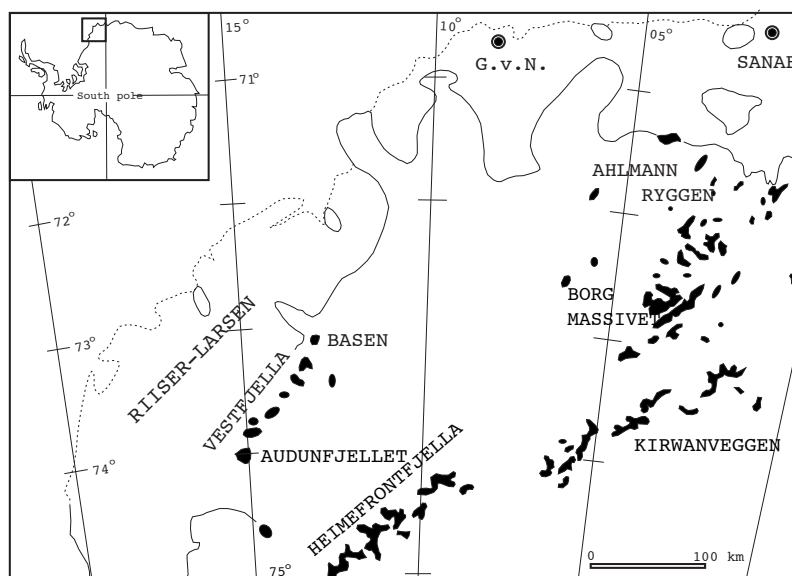
2. Material and methods

Soil and moss samples were collected in Vestfjella from three different nunataks (Fig. 1):

- Audunfjellet (73°55'34''S 15°37'48''W) 21 exx (P. Lintinen). Moss and soil ca. 1 litre, 2 January 1998.
- Basen (73°01'53''S, 13°21'41''W) no mites (P. Lintinen). Moss and soil ca. 1 litre, 16 January 1998.
- Basen (73°01'04''S, 13°21'41''W) no mites (P. Lintinen). Algae from a pond, ca. 0.5 litre, 17 January 1998.
- Unnamed nunatak (73°53'99''S, 15°46'58''W) no mites (P. Lintinen). Five km W from Audunfjellet, moss and soil ca. 1 litre, 1 January 1998.

After a three-day extraction process by Berlese funnels and preservation in alcohol during the expedition, the mites were identified in Finland. The specimens were studied by

Fig. 1. Map of western Dronning Maud Land. The grounding line at the inner edge of the Riiser-Larsen ice shelf is shown with a solid line, and the outer calving edge with a dashed line. The Finnish research station Aboa is situated on the nunatak Basen. Note that the nunataks are not drawn to scale.



SEM (scanning electron microscope JEOL JSM-5200) after dehydration by CPD (critical point drying method) and coating by gold.

3. Results and Discussion

Mitelessness of the samples both from the unnamed nunatak and from the Basen nunatak most probably is a mixture of coincidences: a small number of sample units together with aggregated distribution of mites (e.g. Berthet 1971, Ryan *et al.* 1989) and unknown distance of the sampling places from snow petrel colonies, where mites exist quite commonly (Sømme 1980, Ryan & Watkins 1989). Sømme (1980) and Thor (1996) record low numbers of *Tydeus erebus*, *Eupodes tottanfjella* and *Nanorchestes bifurcatus* from the Basen area.

From Audunfjellet nunatak Sømme (1980) reported *Eupodes tottanfjella*, *Tydeus setsukoe*, *Tydeus erebus* and *Nanorchestes bifurcatus*. Dr. R. W. Strandtmann, the author of the species, identified the mites. Our sample from Audunfjellet includes specimens belonging to two mite genera.

The specimens of genus *Nanorchestes* (1 larva, 5 nymphs, and 8 adults) correspond well with the fixed specimens of *N. bifurcatus* earlier collected from Audunfjellet by Dr. L. Sømme. There is, however, a noteworthy difference especially in

the pattern of prodorsal integument between chelicera (Fig. 2a) if we compare the specimens to the illustration of the redescription of *N. bifurcatus* (figure 1 in Strandtmann [1978]). The redescription, perhaps, only suffers from inadequate drawing techniques but the illustrated deutonymph has also lost most of the dorsal setae and a pair of prodorsal setae *exp* (Fig 2b; for symbols see Kethley [1990]). Differential diagnosis of *N. bifurcatus* (Strandtmann 1967, 1978) is based on the presence of 2-tined dorsal setae. Dorsal setae of our specimens of *Nanorchestes* have two branches arising from a single axis near its base (Fig. 2a), but 2-tined dorsal setae quite commonly occur on developmental stages of *Nanorchestes*-species (Theron & Ryke 1969, Lindsay 1972, Strandtmann 1982). The form of dorsal setae, at least alone, seem not to be a completely reliable character to identify developmental stages to species. Until now four species of *Nanorchestes* have been reported from Dronning Maud Land (Ohshima & Hiruta 1995). The species may inhabit the same sites and adults cannot be separated under field conditions (Sømme 1978).

Genus *Eupodes* is represented by 2 nymphs and 5 adults in our material. As to characteristics used in differential diagnosis, our specimens of *Eupodes* have non-swollen femora IV, medium-sized dorsal setae, and a relatively long pair of legs I and IV (Fig. 2c). Of Antarctic members of

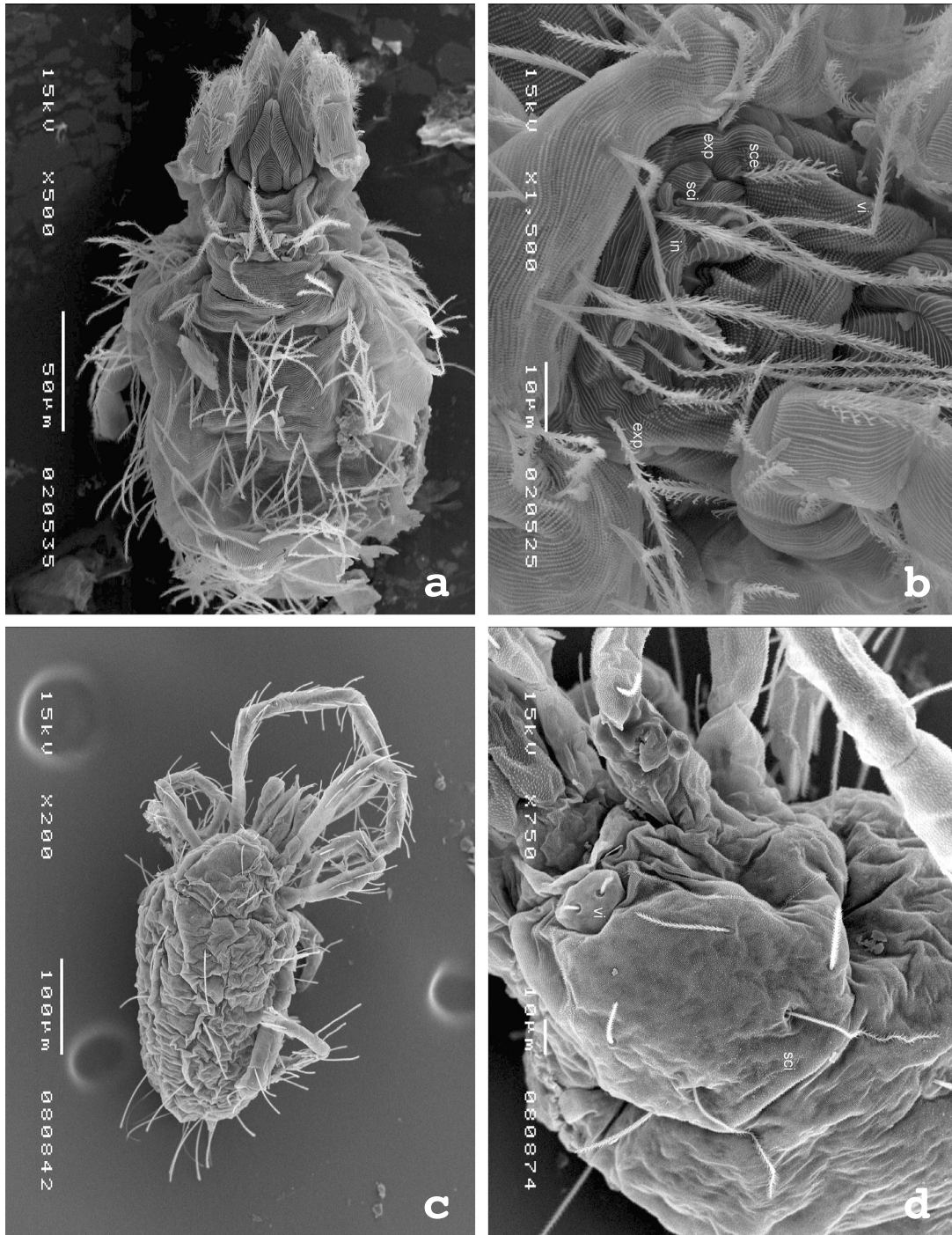


Fig. 2. — a. *Nanorchestes* nr. *bifurcatus*; dorsal view (SEM). — b. *Nanorchestes* nr. *bifurcatus*; prodorsum (SEM). — c. *Eupodes* nr. *tottanfjella*; dorsal view (SEM). — d. *Eupodes* nr. *tottanfjella*; prodorsum (SEM).

the genus also both *E. tottanfjella* Strandtmann, 1968 and *E. angardi* Strandtmann & Sømme, 1977 have non-swollen femora IV, *E. wisnesi* Strandtmann & Sømme, 1977 has slightly swollen ones and femora IV are swollen on *E. wisei* Womersley & Strandtmann, 1966. *E. tottanfjella* and *E. wisnesi* are long-legged while *E. angardi* and *E. wisei* have short legs. Dorsal setae are short on *E. angardi*, medium-sized both on *E. tottanfjella* and on *E. wisei*, and long on *E. wisnesi*. There is this variation in the states of the meristic characters between species, but there are also interesting reports of intraspecific variation. Strandtmann and Davies (1972) described two forms of a species (*E. crozetensis*) which differ not only in respect to the length of the body setae (long and short) but also in body size, and *E. angardi* is reported to occur in two colour morphs in different habitats (Ryan *et al.* 1989). Grandjean (1936) and Kethley (1990) emphasize usefulness of the leg solenidiotaxy in delineation of species, but solenidial formula of our species, and according to the descriptions, the formulae of *E. angardi*, *E. wisnesi* and *Eupodes tottanfjella* seemed to be identical, even if a solenidion on genu III of *E. tottanfjella* is missing in the text and in the figure, but it is present on fixed specimens from the Sømme Collection.

It is beyond the scope of this paper to revise any part of the Prostigmata fauna of Antarctica and the adjacent islands but inspection of more qualitative characters by modern techniques (e.g. prodorsum in 3-dimension by SEM; Fig. 2d) might help to verify if the mites from Vestfjella, and in general, whether the mite colonies on numerous nunataks of Antarctica really represent good morphospecies or only isolated populations of a species with wider distribution. Strandtmann (1978) proposed Antarctic species to be relicts. Originally *Nanorchestes bifurcatus* and *Eupodes tottanfjella* were described by Strandtmann (1967, 1978) from a material collected in the Heimefrontfjella mountain range. About 180 km of continental ice today separates the type locality and our sampling place (Fig. 1). At the moment, we would rather call our species *N. cf. bifurcatus* and *E. cf. tottanfjella*. A future revisor may find it

useful to have some figures of the mites from this remote, isolated, and only sporadically sampled area for comparison.

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