

# Terrestrial arthropods of Bouvetøya

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*Steveacarus evansi* (Hunter) (Acari, Mesostigmata) and *Friesea tilbrookii* Wise (Collembola) are reported for the first time from Bouvetøya (54°25'S, 3°21'E). At present a total of four free-living species of Acari and three species of Collembola are known from this isolated island.

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Bouvetøya is situated at 54°25'S and 3°21'E in the South Atlantic Ocean (Orheim 1981). Due to its isolated position this uninhabited island is rarely visited, and relatively few biological studies have been performed. The island lies within the Maritime Antarctic zone (Holdgate 1964). The vegetation consists of algae, lichens, fungi and bryophytes (Engelskjøn 1981). No vascular plants have been found.

Records of free-living terrestrial arthropods at Bouvetøya have previously been published by Tilbrook (1967) and Holdgate et al. (1968). A total of two species of Collembola and four species of Acari were reported. During the Norwegian Antarctic Research Expedition 1978/79 several samples of terrestrial arthropods were collected from different sites on the island. The availability of a helicopter made it possible to collect samples at higher elevations. In addition to the species that have previously been reported, two new species were found. The present paper gives a complete list of all free-living terrestrial arthropods so far known at Bouvetøya. Geographical names are according to the map of Bouvetøya (Norsk Polarinstitutt 1986, 1:20,000).

## Localities

1. *Nyrøysa* 27 Dec. 1978. – About 40 m a.s.l., under rocks between vegetation of lichens, mosses and *Prasiola*-algae, close to nests of cape pigeons and southern fulmars. Arthropods were collected by hand.

2. *Nyrøysa* 31 Dec. 1978. – At the border of the rookery of chinstrap and macaroni penguins and around resting places for fur seals. Hand-collected under rocks between *Prasiola* and moss (*Brachytecium* sp.).

3. *Mountain ridge above Nyrøysa, about 150 m a.s.l.*, 29 Dec. 1978. – The ridge is covered by fields of mosses (*Turtula* sp., *Brachytecium* sp.). Arthropods were hand-collected from rocks between *Prasiola* and lichens (*Usnea* sp.) close to nests of cape pigeons and southern fulmars. More specimens were obtained from samples of algae, mosses and lichens extracted in Tullgren funnels.

4. *Moseryggen* 1 Jan. 1979 at 287 m a.s.l. – The small cliff is surrounded by glaciers and has a rich vegetation of mosses (*Andreaea* sp., *Polytrichum* sp.) and lichens (e.g. *Usnea* sp., *Stereocaulon* sp.). Samples of mosses and lichens were extracted in Tullgren funnels.

5. *Kapp Valdivia* 30 Dec. 1978 at about 100 m a.s.l. – From rocky grounds with sparse vegetation of moss (*Drepanocladus* sp.). Arthropods were hand-collected close to nests of cape pigeons and southern fulmars and extracted from samples of moss.

## Acari

*Nanorchestes antarcticus* Strandtmann

This prostigmatid mite is widely distributed in

the Antarctic (Strandtmann 1967), including the Maritime islands and South Georgia. It has previously been recorded at Bouvetøya by Holdgate et al. (1968) and was collected at loc. 1 during the present study.

*Protoreunetes minutus* Strandtmann

This species, which also belongs to the Prostigmata, is known from the Antarctic Peninsula, the Maritime islands and South Georgia (Strandtmann 1967). It was not found during the present study, but has been reported from Bouvetøya by Holdgate et al. (1968).

*Alaskozetes antarcticus* (Mich.) ssp. *intermedius* Wallwork

According to Wallwork (1973) the nominate form occurs on the Antarctic Peninsula, the South Shetland and South Orkney Islands, while *A. antarcticus* ssp. *intermedius* is reported from the South Sandwich Islands and South Georgia. The last form was also recorded at Bouvetøya by Holdgate et al. (1968). It appears to be widespread and numerous on the island and was found in all samples during the present study. *Alaskozetes bouvetøyaensis*, reported from Bouvetøya by van Pletzen & Kok (1971), is presumably synonymous to the *intermedius* form.

*Steveacarus evansi* (Hunter)

The species belongs to the Mesostigmata and has previously only been reported from Macquarie Island and South Georgia (Hunter 1970). At Bouvetøya it appeared to be widespread and was found at all locations during the present study.

## Collembola

*Cryptopygus antarcticus* Willem

*C. antarcticus* is probably the most common species of Collembola in the Antarctic and is widely distributed within the Maritime and sub-Antarctic zones (Wise 1967; Wallwork 1973). It was reported at Bouvetøya by Holdgate et al. (1968), who found that the specimens ranged in size from 320 to 1,250 µm. They are smaller than specimens of *C. antarcticus* from the South Orkney Islands, which obtain a length of up to 2,000 µm (Tilbrook 1967). During the present

study *C. antarcticus* was found on all locations, usually in vast numbers. In a sample of 8,000 individuals the size ranged from 250 to 1,300 µm.

*Archisotoma brucei* (Carpenter)

This species is widely distributed in the Maritime Antarctic zone (Wise 1967; Wallwork 1973) and has been recorded at Bouvetøya by Holdgate et al. (1968). During the present study about 15 specimens were collected under rocks at Kapp Valdivia (loc. 5).

*Friesea tilbrooki* Wise

The only previous record of this species is from South Georgia (Wise 1970). At Bouvetøya about 20 specimens were collected at Nyrøysa in vegetation at the border of the penguin rookery (loc. 2).

## Discussion

At present three species of Collembola and four species of Acari are known from Bouvetøya. The poverty of the fauna of free-living terrestrial arthropods reflects the isolated position of the island. Bouvetøya is of volcanic origin, emerging above sea level between one and two million years ago (Prestvik & Winsnes 1981). Accordingly, the present fauna is not a relic of an older and richer continental fauna, as suggested for some Antarctic micro-arthropods (Wallwork 1973). How the present species of Bouvetøya arrived is uncertain. As discussed by Wallwork (1973) the relic Antarctic fauna has probably been joined by a penetrant element. There is evidence to suggest that dispersal of micro-arthropods may take place over wide stretches of ocean.

All species of Bouvetøya are found further to the south or south-west in the Maritime or sub-Antarctic zones. *Friesea tilbrooki* is known only from South Georgia (Wise 1970), and *Alaskozetes antarcticus* ssp. *intermedius* only from South Georgia and the South Sandwich Islands (Wallwork 1973). *Steveacarus evansi* is also known from South Georgia (Hunter 1970), and *Protoreunetes minutus* has a western distribution in the Maritime zone (Strandtmann 1967). The remaining species of Acari and Collembola are more widespread in the Maritime and Sub-Antarctic zones (Wallwork 1973). The patterns of distribution of the micro-

arthropods parallel the distribution of the bryophytes and lichens of Bouvetøya, which are widespread in the Maritime Antarctic to the southwest (Engelskjøn 1981; Engelskjøn & Jørgensen 1986).

The prevailing winds at Bouvetøya are also from the southwest, and wind-dispersal is one way of explaining the arrival of micro-arthropods on the island. More likely, they have arrived with birds, which would offer better protection during transport. In addition, the birds are likely to land on snow- and ice-free habitats, where living conditions for micro-arthropods may be found in the vegetation.

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