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## Short communication

# A survey of terrestrial nematodes from the McMurdo Sound region, Antarctica

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**Abstract** A survey was undertaken of the nematode fauna associated with moss and algal growth from terrestrial sites on Ross Island and the Dry Valleys of the McMurdo Sound region, Antarctica. Six species, in decreasing order of abundance, were identified: *Plectus frigophilus*, *Eudorylaimus antarcticus*, *Scottinema lindsayae*, *Plectus antarcticus*, *Panagrolaimus davidi*, and *Monhystera villosa*. Maps are given showing the distribution of these species. Cultures of *Panagrolaimus davidi*, *Plectus antarcticus*, and *Plectus frigophilus* were established on nutrient agar plates, feeding on bacteria.

**Keywords** Nematode; Antarctica; Ross Island; fauna survey; moss; algae; *Plectus frigophilus*; *Eudorylaimus antarcticus*; *Scottinema lindsayae*; *Plectus antarcticus*; *Panagrolaimus davidi*; *Monhystera villosa*.

## INTRODUCTION

Few surveys have been conducted of the nematode fauna of the continental Antarctic. Timm (1971) detailed reports of nematodes to that date and described six species of nematodes from various sites in the McMurdo Sound region. These included two members of the Arabolaimida (*Plectus antarcticus* de Man 1904 and *Plectus frigophilus* Kirjanova 1958), two members of the Rhabditida (*Scottinema lindsayae* Timm 1971 and *Panagrolaimus davidi* Timm 1971), one member of the Dorylaimida

(*Eudorylaimus antarcticus* Steiner 1916), and one member of the Monhysterida (*Monhystera villosa* Bütschli 1873). In addition, *Plectus parientinus* and three *Mesodorylaimus* spp. have been recorded from Alexander Island in the continental west Antarctic (Maslen 1979) and Yeates (1979) reported *Plectus antarcticus*, *Plectus frigophilus*, and a *Helicotylenchus* sp. from the Bunger Hills and Gaussberg on the Wilhelm II coast. The present survey was conducted during the austral summer of 1988/9 and was based at Scott Base, Ross Island.

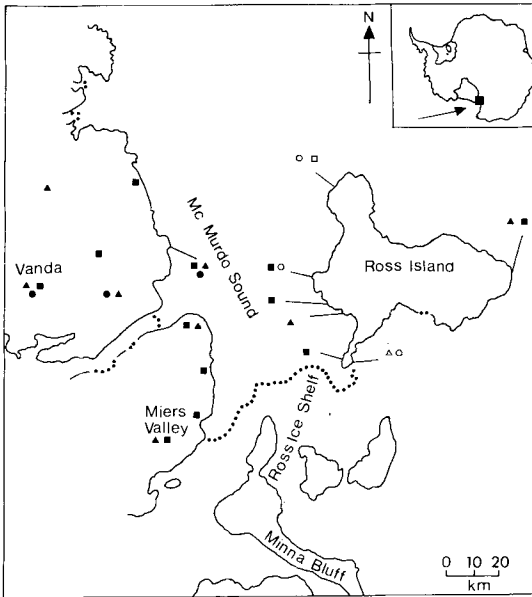
## MATERIALS AND METHODS

Moss and algal samples were collected from various sites around Ross Island and the Dry Valleys area of Antarctica. The samples were weighed (10–80 g) and nematodes and other microfauna were extracted by placing in a 175 cm<sup>2</sup> Baermann funnel for 12 h. This extraction period was chosen because of the limited time available for processing samples in Antarctica and because preliminary experiments had indicated that most nematodes had been recovered from the sample during this interval. The sample was further concentrated by centrifugation and the number of nematodes counted to determine the number of worms per gram of sample. Other microfauna (rotifers, tardigrades, and protozoa) in the sample were noted. The nematodes were identified using the key given by Maslen (1979) and the descriptions in Timm (1971).

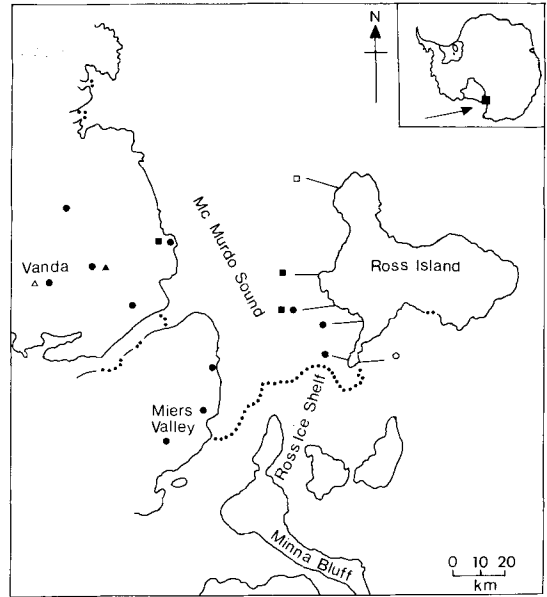
Culture of nematodes was attempted using nutrient agar (1% agar, 0.1% nutrient broth), cornmeal agar (0.1%) and "bio" agar (1% agar plus one drop of "Baby Bio" plant food). Growth of microorganisms contained in the samples provided food for the nematodes.

## RESULTS AND DISCUSSION

The results of the survey are shown in Table 1. Sample no. 1 was from a small area of moss growth on the lower slopes of Crater Hill behind Scott Base.



**Fig. 1** Map of the McMurdo Sound area showing the distribution of *S. lindsayae* (▲), *Plectus antarcticus* (●) and *Plectus frigophilus* (■). Open symbols indicate new site records, dotted lines indicate glacier snouts and the edge of the Ross Ice Shelf. Data from Timm (1971) and present work.



**Fig. 2** Map of the McMurdo Sound area showing the distribution of *Panagrolaimus davidi* (■), *E. antarcticus* (●) and *M. villosa* (▲). Open symbols indicate new site records, dotted lines indicate glacier snouts and the edge of the Ross Ice Shelf. Data from Timm (1971) and present work.

Cape Bird samples were from algal growth associated with runoff from the northern penguin rookery (sample 2), an area of algal growth near the path leading to the Cape Bird hut (sample 3), soil from runoff from the northern penguin rookery with no obvious algal growth (sample 4), and algae and moss from the Kibble Valley SSSI (Site of Special Scientific Interest: samples 5–8). Cape Royds samples were from the melt water around the edge of Pony Lake (sample 9) and from areas of moss growth in the valleys north of Pony Lake (samples 10–13). Samples from the Dry Valleys region were from algae growing in meltwater from the Barclay Glacier (samples 14–16), from areas of red or orange algal growth in the meltwater and around the edge of several small ponds in between Lake Vanda and Lake Bull (samples 17–20), from extensive areas of algal growth around the edge of Lake Canopus near Lake Vanda (samples 21 and 22), and from algal growth in Drift Stream near Lake Fryxell (samples 23–25). We also received samples from the Darwin Mountains region which were stored for several

months and contained no fauna.

Six species of nematode were found, all of which had been previously recorded by Timm (1971). Where nematodes were abundant they were usually found in association with tardigrades, rotifers, and ciliate protozoa. Nematode numbers varied considerably, even in different samples from the same general area. In general, algal samples contained greater densities of nematodes than did moss samples.

The results of this survey, together with those of Timm (1971), enable maps to be drawn showing the distribution of the different species of nematode in the McMurdo Sound region (Fig. 1, 2). *Plectus frigophilus* is the most widespread species (13 sites), followed by *E. antarcticus* (12 sites), *S. lindsayae* (9 sites), *Plectus antarcticus* (6 sites), *Panagrolaimus davidi* (4 sites), and *M. villosa* (2 sites). Most species have a widespread distribution in this area, with the exception of *M. villosa*, which has only been recorded from two sites in the Dry Valleys region, and *Panagrolaimus davidi*, which has only been recorded from coastal sites. *Plectus antarcticus* and *M. villosa*

Table 1 Nematodes of the McMurdo Sound Region, Antarctica.

Sample no.	Location	Description	Nematodes per gram	<i>Scottnema lindsayae</i>	<i>Eudorylaimus antarcticus</i>	<i>Plectus antarcticus</i>	<i>Plectus frigophilus</i>	<i>Panagrolaimus Davidi</i>	<i>Monhystera Villosa</i>	Other microfauna
1	Crater Hill	moss	0.18	+	+	+	-	-	-	R,T,C
2	Cape Bird	algae 1	0.17	-	-	+	+	+	-	R,T,F
3	Cape Bird	algae 2	0.64	-	-	+	+	+	-	R,T,C
4	Cape Bird	penguin runoff	0	-	-	-	-	-	-	-
5	Cape Bird	SSSI algae	0.32	-	-	+	+	+	-	R,T,C
6	Cape Bird	SSSI moss 1	0.29	-	+	+	+	-	-	R,T,C
7	Cape Bird	SSSI moss 2	0.15	-	-	+	-	-	-	R,T,C
8	Cape Bird	SSSI moss 3	0.47	-	-	+	-	+	-	R,T,C
9	Cape Royds	Pony Lake algae	0	-	-	-	-	-	-	F
10	Cape Royds	moss 1	0.01	-	-	+	-	-	-	C
11	Cape Royds	moss 2	0.08	-	-	-	-	+	-	R,C
12	Cape Royds	moss 3	0.17	-	-	+	+	-	-	C
13	Cape Royds	moss 4	0.28	-	-	-	-	+	-	R,T,C
14	Barclay Glacier	algae 1	0.54	-	+	+	-	-	-	R,T
15	Barclay Glacier	algae 2	1.41	-	+	+	-	-	-	R,T,C
16	Barclay Glacier	algae 3	1.52	-	-	+	-	-	-	R,T,C
17	pond nr. L. Vanda	algae 1 (dry)	0.72	-	+	+	-	-	+	R,T,C
18	pond nr. L. Vanda	algae 2 (dry)	1.25	-	-	+	-	-	-	R,T,C
19	pond nr. L. Vanda	algae 3 (wet)	20.1	-	-	+	+	-	-	R,T
20	pond nr. L. Vanda	algae 4 (wet)	10.5	-	-	+	+	-	-	R,T
21	Lake Canopus	algae 1	0.05	-	-	+	-	-	-	R,T,C
22	Lake Canopus	algae 2	0.48	-	-	+	-	-	-	R,T,C
23	Lake Fryxell	algae 1	0.5	-	-	+	-	-	-	R,T,C
24	Lake Fryxell	algae 2	6.8	-	-	+	-	-	-	R,T,C
25	Lake Fryxell	algae 3	3.8	-	+	+	-	-	-	R,T,C

(+) present, (-) absent, (C) ciliates, (F) flagellates, (R) rotifers, (T) tardigrades, (SSSI) Site of Special Scientific Interest

have also been recorded from the maritime Antarctic (Maslen 1979). The restricted distribution of *M. villosa* in the McMurdo Sound region suggests that it is at its southern limit at these sites. *E. antarcticus* has also been recorded from the west Antarctic (Maslen 1979). The remaining species appear to be restricted to the continental east Antarctic.

Cultures of *Panagrolaimus davidi*, *Plectus antarcticus*, and *Plectus frigophilus* were established on nutrient agar plates, feeding on bacteria which grew from the samples.

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#### REFERENCES

- Maslen, N. R. 1979: Additions to the nematode fauna of the Antarctic region with keys to taxa. *British Antarctic Survey Bulletin* 49: 207–229.
- Timm, R. W. 1971: Antarctic soil and freshwater nematodes from the McMurdo Sound region. *Proceedings of the Helminthological Society of Washington* 38: 42–52.
- Yeates, G. W. 1979: Terrestrial nematodes from the Bugar Hills and Gaussberg, Antarctica. *New Zealand Journal of Zoology* 6, 641–3.