Eudorylaimus nudicaudatus sp.n. from Antarctica (Nematoda: Dorylaimoidea)

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Eudorylaimus nudicaudatus *sp.n. is described from western Dronning Maud Land, Antarctica. The new species is characterised by an exceptionally small stylet aperture and by the fact that the outer layer of the cuticle does not embrace the tail terminus.* E. nudicaudatus *sp.n. is compared with other* Eudorylaimus *spp. described from Antarctic regions,* viz E. antarcticus *(Steiner 1916) and six species described by Loof (1975):* E. verrucosus, E. isokaryon, E. spaulli, E. coniceps, E. pseudocarteri *and* E. paradoxus.

Eudorylaimus nudicaudatus *sp.n. word vanaf westelike Dronning Maud Land in Antarktika beskryf. Die nuwe spesie word gekenmerk deur 'n buitengewoon klein stekelopening en die feit dat die buitenste laag van die kutikula nie die stertpunt omgeef nie.* E. nudicaudatus *sp.n. word vergelyk met ander* Eudorylaimus-*spesies uit Antarktiese gebiede, nl* E. antarcticus *(Steiner 1916) en ses spesies wat deur Loof (1975) beskryf is:* E. verrucosus, E. isokaryon, E. spaulli, E. coniceps, E. pseudocarteri *en* E. paradoxus.

Introduction

The Percy FitzPatrick Institute of African Ornithology of the University of Cape Town is conducting a research programme on the effects of ornithogenic products on ecosystem structure and functioning at Robertskollen, a group of nunataks (ice-free rocky outcrops) in the northern Ahlmannryggen, western Dronning Maud Land, Antarctica (Cooper *et al* 1991). A detailed area description and preliminary species lists of birds, lichens, mosses, algae, fungi, mites and tardigrades were given by Ryan *et al* (1989) and Ryan & Watkins (1989).

Further sampling was done at Robertskollen during the 1991/92 austral summer and the nematodes collected were made available for taxonomic studies. Only three dominant species were found, *viz* a plectid, a cephalobe and a dorylaim. This paper concerns only the dorylaim, which is described as *Eudorylaimus nudicaudatus* sp.n.

For information concerning material and methods, see Heyns (in press).

Description

Eudorylaimus nudicaudatus sp.n. (Fig 1).
For measurements see Table 1.

Body posture of relaxed specimens curved ventrally in the shape of the letter J. Body slender, of about equal thickness throughout, only slightly tapered towards both extremities. Cuticle smooth, without visible transverse striae under the light microscope, 1.2-1.8 µm thick in

Table 1

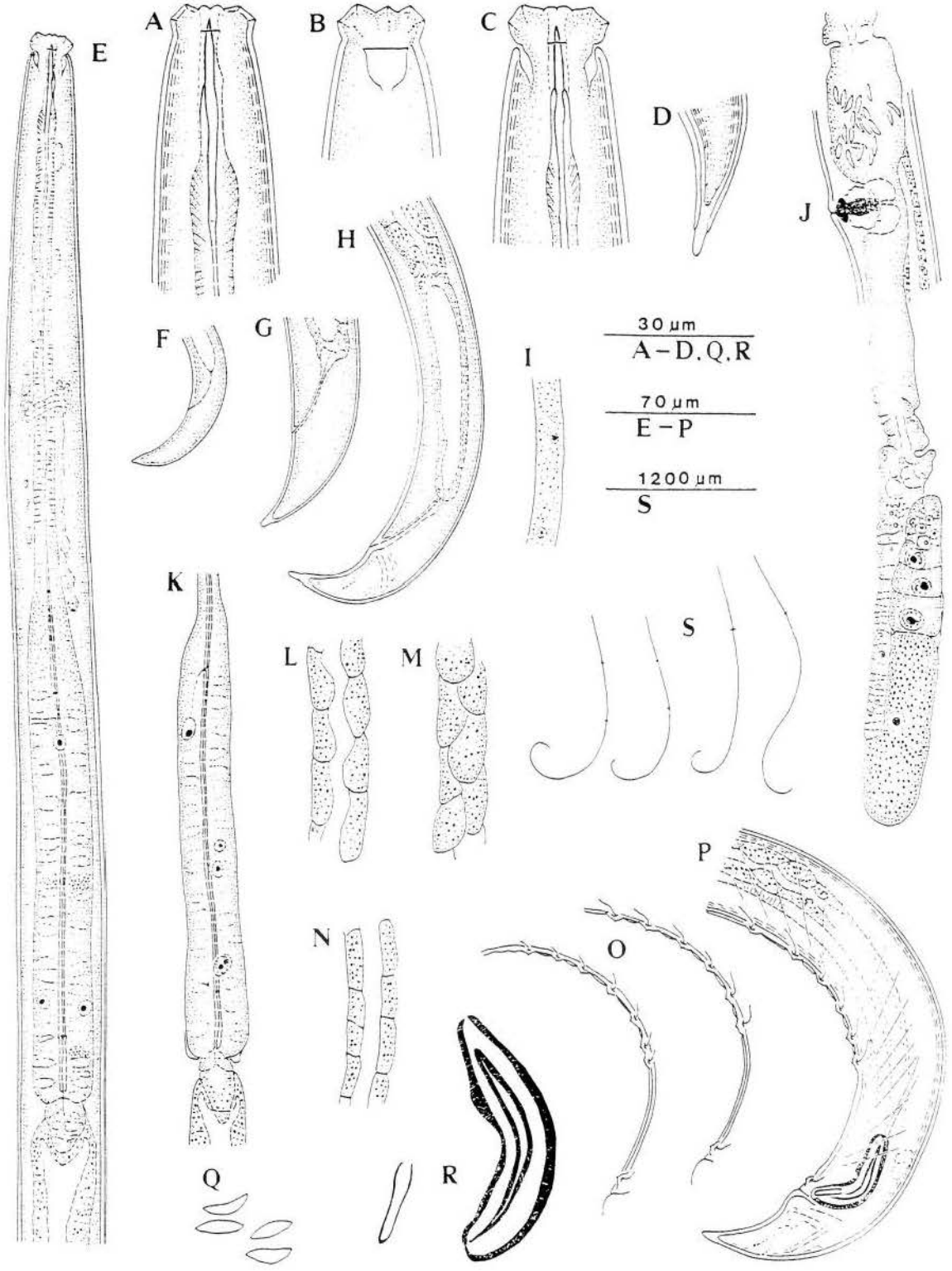
Morphometrical data of *Eudorylaimus nudicaudatus* sp.n.

	Holotype ♀	Paratype ♀♀ (n=6)	Paratype ♂♂ (n=8)
L(mm)	1.74	1.80 (1.40–2.08)	1.97 (1.77–2.20)
a	36.8	39.0 (32–46)	46.5 (42–49)
b	4.7	4.5 (3.7–5.0)	4.5 (4.0–4.7)
c	34.7	35.9 (32–46)	39.4 (36.3–44.0)
c'	2.08	1.94 (1.76–2.16)	1.59 (1.36–1.72)
V	42.9	44.4 (40.4–47.0)	–
Lip region width (µm)	17	17.7 (16–20)	18.1 (17–20)
Odontostyle (µm)	13	13.5 (13.0–14.0)	13.9 (13.5–14.5)
Odontophore (µm)	28	28.6 (28–30)	27.5 (24–32)
Tail length (µm)	50	50.3 (44–47)	50.6 (45–57)
Body width at middle (µm)	47	45.5 (43–47)	42 (39–44.5)
Body width at anus (µm)	24	25.0 (24–28)	31.7 (29–34.5)
Length of neck (µm)	380	432 (384–474)	440 (372–493)
Length of rectum (µm)	40	39.7 (34–49)	–

Figure 1

Eudorylaimus nudicaudatus *sp.n.*

A: Head end, internal structures. B: Head end, surface view showing amphid. C: Head end, dorso-ventral view. D: Tail tip. E: Oesophageal region. F: Tail of first juvenile stage. G: Tail of fourth juvenile stage. H: Tail of female. I: Appearance of lateral field at midbody. J: Posterior branch of female reproductive system. K: Oesophageal bulb, showing location of gland nuclei. L and M: Optical section and surface view of intestine just beyond posterior ovary. N: Optical section of intestine just before prerectum. O: Arrangement of supplements in two male specimens. P: Tail region of another male specimen. Q: Mature sperm cells in the vas deferens. R: Lateral guiding piece and spiculum. S: Relaxed body posture in two female (left) and two male specimens



neck region, 1.8-2 µm at midbody, and 1.5-2.2 µm on dorsal side of tail. Only two main layers seen in cuticle under light microscope, with the outer layer stopping short of the tail tip, which is covered only by the inner layer (Fig 1 D). Lips not closely amalgamated, rather angular, with prominent papillae and with six dome-shaped inner liplets surrounding the oral opening. Width of lip region 40-50% body width at base of neck in female, 44% to 54% in male. Lip region set of from neck by a distinct constriction. Amphids stirrup-shaped, the aperture 8-10 µm long, about half the width of the lip region. Lateral field 11.2(7.5-13)µm wide around midbody, homogeneous in structure, without obvious gland cells. Odontostyle small, shorter than lip region width, only 2 µm in diameter and with a minute subapical aperture. Odontophore more than twice as long as odontostyle. Guiding ring single, located far forward at 6-8 µm from anterior body end, mostly anterior to the labial constriction. Oesophagus with very gradual expansion somewhat posterior to middle of neck. Gland nuclei and their outlets mostly difficult to observe, located as follows (n =6 to 8):
DO=62.2(59.7-64.1), DN=68.2(66.1-70.6), DO-DN-6.2(4.4-7.8); S1N1=79.2(77.4-81.0), S1N2=79.9(78.5-81.2); S2N1=90.7(89.7-92.1), S2N2=91.4(91.1-92.0), S20=93.7(93.1-94.4).

Nerve ring situated beyond middle of slender part of oesophagus, at 151 (135-173) µm from anterior end. Hemizonid in vicinity of nerve ring. Hemizonion not observed. Cardia elongate heart-shaped, 16-18.7 µm x 25.7-30.3 µm, almost or altogether embedded in intestinal tissue. Intestinal wall with relatively few large cells which seem to overlap like roof tiles or fish scales (Figs 1 L and M) except in posterior part adjoining the prerectum; with small refractive granules. Prerectum 86(60-105) µm in length. Rectum 1.4-1.7 times the anal body width. Tail conoid, ventrally arcuate, with bluntly rounded terminus. Hyaline tail tip 8.7(5.5-11) µm in female, 7.1(4-10.5) µm in male. Two pairs of caudal papillae in both female and male, situated as shown in Figs 1 H and P respectively.

Female reproductive system typical of the genus; vulva transverse, vagina strongly developed, occupying more than half the corresponding body width. No differentiated ovejector and no pars dilatata uteri, but with a distinct sphincter muscle between uterus and oviduct.

Male reproductive system also typically dorylaimoid, with two testes; spicules stout, 53.3(48-56) µm long measured along the curved median line; lateral guiding pieces somewhat broadened proximally, 15.3(14-17) µm long; adanal pair of supplements and a midventral series of six to eight, the posteriormost one well anterior to the head of the spicules; not contiguous except for the posteriormost two which may be close together (Fig 1 O).

Type locality and habitat

From soil and mosses in exposed patches on nunataks at Robertskollen, western Dronning Maud Land, Antarctica, *legit* D Balfour and W Steele, Dec 1991 - Jan 1992.

Type specimens

Holotype female, four paratype females and six paratype males in the nematode collection of the Rand Afrikaans University. Two paratypes (female and male) deposited in each of the following institutions: Percy FitzPatrick Institute, University of Cape Town and Institute of Zoology, University of Ghent, Belgium.

Diagnosis

Within the genus *Eudorylaimus* the new species is exceptional in the possession of a minute stylet aperture, which is only visible under optimum conditions. It is also unique in that the outer layer of the cuticle does not continue around the tail tip. It does not fit any of the species in Andrássy's (1986) key.

Steiner (1916) described *Dorylaimus antarcticus* from Victoria Land, Antarctica. There was some uncertainty about the identity of this species and Thorne & Swanger (1936) placed it in *Antholaimus*. However, Yeates (1970) redescribed it from McMurdo Sound region and placed it in *Eudorylaimus*. Loof (1975) agreed with this. *E. nudicaudatus* sp.n. shows some resemblance to *E. antarcticus* as redescribed by Yeates (1970) but differs from it in the much smaller stylet aperture (half odontostyle length in *E. antarcticus*), absence of paired thickenings in the lips, vulva position (40-47% *vs* 44-52%), c'(1.8-2.2 *vs* 1.4-1.8 in female) and spicule length (48-56 *vs* 38-48 µm).

Several *Eudorylaimus* species were described from subantarctic islands by Loof (1975), *viz E. verrucosus*, *E. isokaryon*, *E. spaulli*, *E. coniceps*, *E. pseudocarteri* and *E. paradoxus*. The new species differs from all of these in the very small stylet opening, and the "naked" tail tip. Loof (1975) reported the aperture to be two fifths the odontostyle length in *E. verrucosus*, and one third the odontostyle length in the other five species. Apart from these differences the new species seems to be most similar to *E. spaulli*, except for a slightly more slender body, more anteriorly situated vulva (40-47% *vs* 44-52%), shorter odontostyle (13-14.5 *vs* 17-20 µm) and relatively broader lip region (44-54% of body width at base of neck *vs* 31-34% in *E. spaulli*). Measurements of the new species are also quite similar to those of *E. coniceps*, but the latter has a conoid, tylencholaimid-like lip region and much longer spicules (66-80 µm *vs* 48-56 µm). *E. pseudocarteri* has rather similar meas-

urements, except for a more robust body (a=27-39 *vs* 32-49), more posteriorly situated vulva (44-51% *vs* 40-47%) and a longer odontostyle (17-19 µm *vs* 13-14.5 µm). *E. isokaryon* and *E. paradoxus* are much larger species (L=2.87-3.51 mm and 2.24-3.13 mm respectively *vs* 1.40-2.20 mm in *E. nudicaudatus*) and *E. paradoxus* has 22-27 contiguous midventral supplements, *vs* 6-8 non-contiguous ones in *E. nudicaudatus*. Lastly, it differs from *E. verrucosus* in being somewhat smaller, with a more slender body, shorter odontostyle (13-14.5 µm *vs* 23-27 µm) and fewer midventral supplements (6-8 *vs* 13-14).

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