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Two new species of the family Microlaimidae (Nematoda : order Chromadorida) from South Africa

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Abstract : *Microlaimus africanensis* n. sp. is described from harbour sand taken just inside the Dom Pedro Breakwater, Port Elizabeth. *Molgolaimus typicus* n. sp. is recorded from brown algae sampled subtidally from a rocky shore off Port Elizabeth. *Microlaimus africanensis* n. sp. is characterised by its length and thinness. *Molgolaimus typicus* n. sp. resembles *M. minutus*, but can be differentiated by the presence of a prominent ventral gland and ventral pore, as well as the absence of a gubernaculum.

Résumé : La description de *Microlaimus africanensis* n.sp. est faite à partir du sable du port de Dom Pedro Breakwater, Port Elisabeth. Celle de *Mogolaimus typicus* n.sp. à partir d'un échantillon d'algue brune récoltée sur la côte rocheuse au large de Port Elisabeth. *Molgolaimus typicus* n.sp. ressemble à *M. minutus*, mais peut être différencié par la présence d'une glande ventrale proéminente et d'un pore central, et par l'absence d'un gubernaculum.

INTRODUCTION

Intertidal and subtidal sediment samples were collected during a five year ecological and taxonomic study of meiofauna in the eastern Cape. Algal species were also sampled from subtidal rocky shores at Port Elizabeth. Several new nematode species were found in localities ranging from salty to brackish water ; from sand to mud and from unpolluted to polluted environments (Furstenberg & Heyns 1987 ; Furstenberg & Vincx 1988 a, b, 1989 ; Heyns & Furstenberg 1987 ; Vincx & Furstenberg 1988 a, b, 1989). The two new species in this article are described from sand sediment and from brown algae. *Microlaimus africanensis* was extracted from sand collected inside the Dom Pedro Breakwater in the Port Elizabeth harbour (34°00'E/25°55'S), where a huge ridge of sand is deposited next to the wall by current action. Although ships pass in a dredged channel approximately 20 meters away, the sampling site is only 0.5 meter deep at spring low tide. A settling tube was used to determine particle sizes and the median grain size was 180-200 µm. Cu concentration, determined by using Atomic Absorption Spectroscopy, was 25.1 µg/g. Total organic carbon (TOC) was determined as 2.9 %, according to Dean (1974). Salinity was 35 ‰. Nematodes formed the dominant taxon and counts varied between 500 and 800 worms per 100 cm^{-3} sand sample. *Molgolaimus typicus* n. sp. were collected with other epifauna from *Dictyota*

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dichotoma, a brown alga with regularly forked blades commonly found on the east coast of South Africa. Algal samples were removed from subtidal zones at Flat Rocks, 5 km south of the Port Elizabeth harbour (34°00'E/25°55'S). At Flat Rocks the gently sloping, sheltered shore experiences medium energy wave action and is boulder strewn. Salinity 35 ‰.

MATERIAL AND METHODS

Sediment samples were taken with a 60 cm long, hand held stainless steel corer and with an internal diameter of 3.6 cm. Seaweeds were harvested subtidally from rocks at a dephth of 0.5-1 meter.

Extraction from sand was done by Cobb's decanting and sieving technique (Cobb, 1918) after a 6 % $MgCl_2$ was added as a relaxant. Specimens were fixed in hot (60 °C) neutral formaline and mounted in glycerine after dehydration (Seinhorst, 1959). Seaweeds were fixed in 10 % formaline and subsequently rinsed on sieves to free the epifauna. The nematodes obtained were also mounted in glycerine after dehydration (Seinhorst, 1959).

Drawings were made with the aid of a drawing tube on a Leitz Diaplan 20 microscope with interference contrast equipment.

All measurements are in micrometers ; curved structures are measured along the median line (chord). Values in the formula used indicate the following.

Head (ceph. set) Ventr. pore Oesoph. end M/Vulva Anus

———————————————————————— Body length

Corresponding body diameter (µm)

M : (largest body diameter) was also used in the female when largest body diameter was not at the vulval level. Body regions were named in accordance with Coomans (1979).

The holotype males and allotype females are deposited in the collection of the Instituut voor Dierkunde, Universiteit Gent, Belgium. Other paratype material is kept in the Department of Zoology, University of Port Elizabeth, South Africa.

Classification of *Microlaimus* and *Molgolaimus*, based on Lorenzen (1981), is : Order Chromadorida, suborder Chromadorina, family Microlaimidae, genera *Microlaimus* de Man, 1880 and *Molgolaimus* Ditlevsen, 1921.

RESULTS

Microlaimus africanensis n. sp. (Fig. 1 A-J)

Type material. Holotype male 1♂ (slide n° 3608), paratype female 1 (also slide n° 3608), and other paratypes (♂♂ 2, 3, 4).

Type locality. Inside the Dom Pedro Breakwater in the Port Elizabeth harbour.

Sand samples taken on 5 May, 1988.

Measurements

Holotype

♂ 1	-	160	200	M	2 030	2 180 µm
	16	29	30	30	29	

a = 72.6 ; b = 10.9 ; c = 14.5 ; c' = 5.2 ; spicule : 42 µm

Paratype

a = 44.3 ; b = 8.4 ; c = 17.7 ; c' = 3.6 ; V = 61.6 %

Other paratypes

♀ 1	-	150	210	1 090	1 670	1 770 µm
	17	29	30	40	28	

Males (♂♂ 2, 3, 4) : L = 1 950-2 030 µm ; a = 66-71 ; b = 9.6-10.1 ; c = 14.8-17.3 ; c' = 4.6-4.8 ; spicules : 40-44 µm.

Description

Body cylindrical, slender, tapering towards extremities ; tail conical ; head set off at or just posterior to cephalic setae. Cephalic sense organs in 3 crowns as 6 internal labial papillae (3 µm long), 6 external labial setae (8-13 µm) and 4 cephalic setae (4-6 µm). Twelve rugae present. Cuticle without ornamentation, dots or longitudinal bars. Head and very tail tip not annulated. Anterior cuticle striations commence at the level of the posterior 4 cephalic setae. Tail conical without terminal setae. Two subventral pairs of caudal setae in males only. Four cervical setae behind amphids. Somatic setae few. Caudal glands prominent and not always possible to distinguish them from epidermal glands which occur throughout the length of the body. Relatively small circular amphids 6.5-7.5 µm wide, i.e. 33-46 % of the corresponding body diameter and more than one head diameter behind anterior end. Anterior border of amphids situated 18-25 µm posterior to front end.

Buccal cavity slightly sclerotized with one dorsal tooth and two ventrosublateral teeth, almost equal in size which are situated in an excavation of the buccal cavity. Further posteriorly a smaller projection inserts at the subventral wall. Oesophagus surrounding buccal cavity, posteriorly dilated to a pyriform bulb, 75-80 % cbd. Cardia not observed. Ventral pore 65 µm-70 µm from base of oesophagus and 68-70 % of oesophagus from front. Ventral gland posterior to oesophagus.

Copulatory apparatus with two symmetrical spicules ; curved, 40-44 µm long, with prominent capitulum. Paired gubernaculum 17-20 µm long. Preanal supplements not observed.

Female. Similar to males. Slightly thicker (a = 46 vs 66/73) and shorter (1.8 mm vs 2.0 mm) than males. The reproductive system is didelphic-amphidelphic. Vagina 60 % of corresponding body diameter. Detail of rest of system not observed due to coiling of female.

Diagnosis

Microlaimus typicus n. sp. resembles *M. arenicola* Schuk, 1938. Both have similar spicules with a prominent capitulum. Important differences are the length and the thinness of

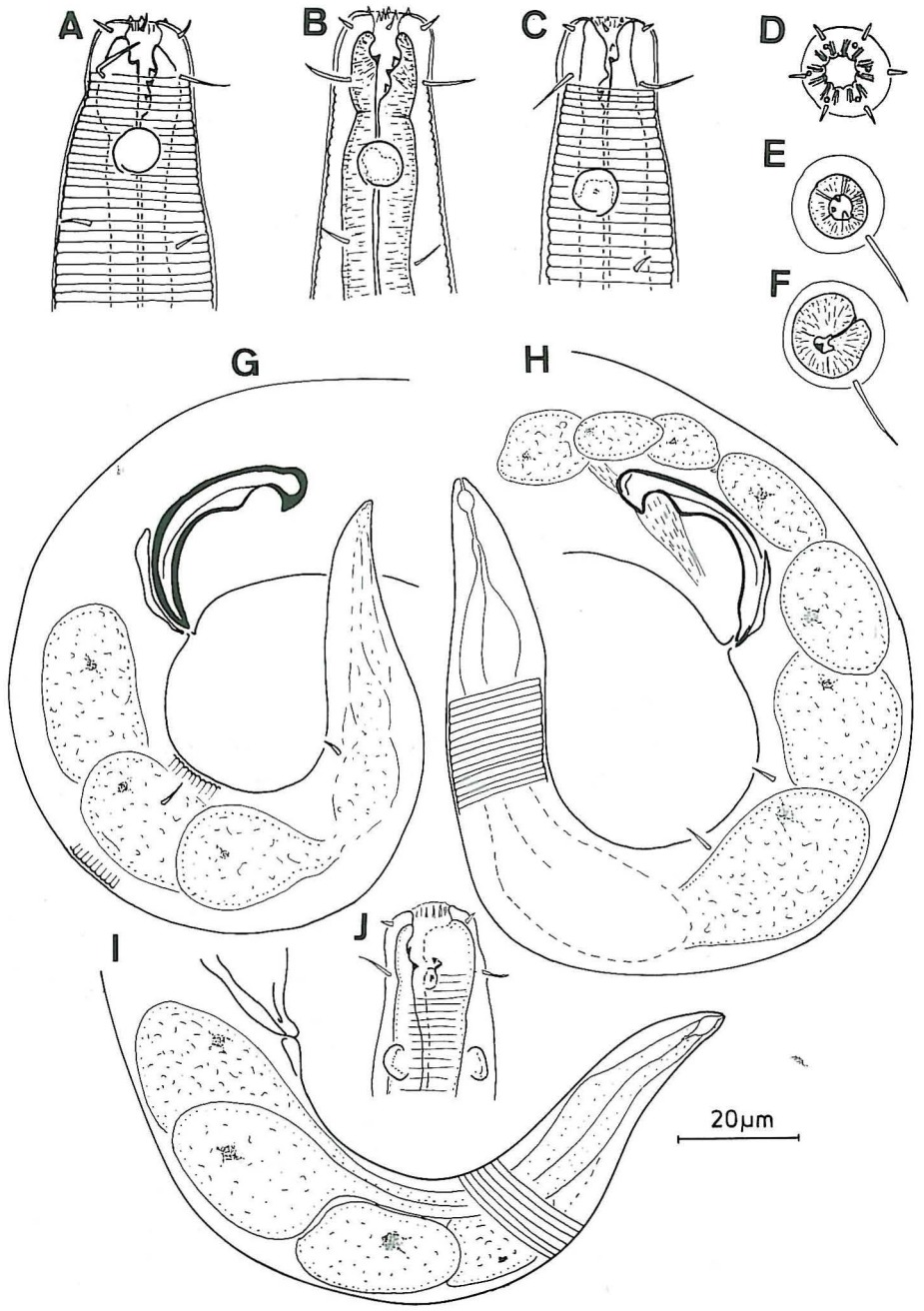

Fig. 1 : *Microlaimus africanensis* n. sp.
A : Anterior end of paratype ♂2
B : Anterior end of paratype ♂3
C : Anterior end of holotype ♂1
D : En face view of paratype ♂4 : level of rugae
E : En face view of paratype ♂4 : level of teeth
F : En face view of paratype ♂4 : level of pharynx
G : Tail region of paratype ♂2
H : Tail region of holotype ♂1
I : Tail region of paratype ♀1
J : Anterior end of paratype ♀1

the new species. The new species is almost twice the length of *M. arenicola* (1 770-2 180 µm vs 910-960 µm) and much thinner (a = 46-71 vs 24). *M. typicus* n. sp. also differs from *M. oblongilaimus* Gerlach, 1955, another closely related species, in body length, thinness, and tail length. *M. oblongilaimus* has a body length of 509-586 µm and "a" value of 21-24. The "c" value is 14-17 compared to 6-8 for *M. typicus*.

Molgolaimus typicus n. sp. (Fig. 2A-C).

Type material : Holotype male♂ 1 only (slide n° : 3609).

Type locality : Flat Rocks, Port Elizabeth. Epifauna was removed from *Dictyota dichotoma*, (brown algae), collected at a rocky shore at subtidal level on 12 June 1990.

Measurements

Holotype

♂ 1	-	10	81	M	381	456 µm
	4	7	13	12	11	

a = 35 ; b = 5.6 ; c = 6.1 ; c' = 6.8 ; spicule : 30 µm.

Description

Body slender and short. Cuticle thin with faintly developed striae. No pores observed. Tail cylindro-conical without ventral setae. Three caudal glands. No terminal setae. Head small and slightly set off. Buccal cavity minute. No teeth or projections observed. Four short cephalic setae, 2 µm long. Somatic setae absent.

Amphids circular in outline, 10 µm from head (2.5 head diameters) 3.2 µm in diameter i.e. 40 % of body diameter. Prominent ventral gland cell with ampulla and pore present. Pore adjacent to amphid and gland posterior to oesophagus. Oesophagus cylindrical, posteriorly enlarged to a well developed spherical bulb with a cuticularised internal lining. Cardia not observed.

Spicules paired, equal, slender and strongly bend, with a cephalised proximal end, 30 µm long, 2.7 abd. Gubernaculum not observed. Two precloacal supplements present as small papillae.

Females not found

Differential diagnosis

This new species resembles *M. minutus* Jensen, 1988. Both are very small with a body length less than 500 µm ; the a, b and c ratios values of de Man and the amphid sizes are in the same range and the spicules are of the same length. Important differences between the two species are the new species has no longitudinal rows of pores and no gubernaculum. It has a prominent ventral gland and ampulla and spicules with cephalised proximal ends.

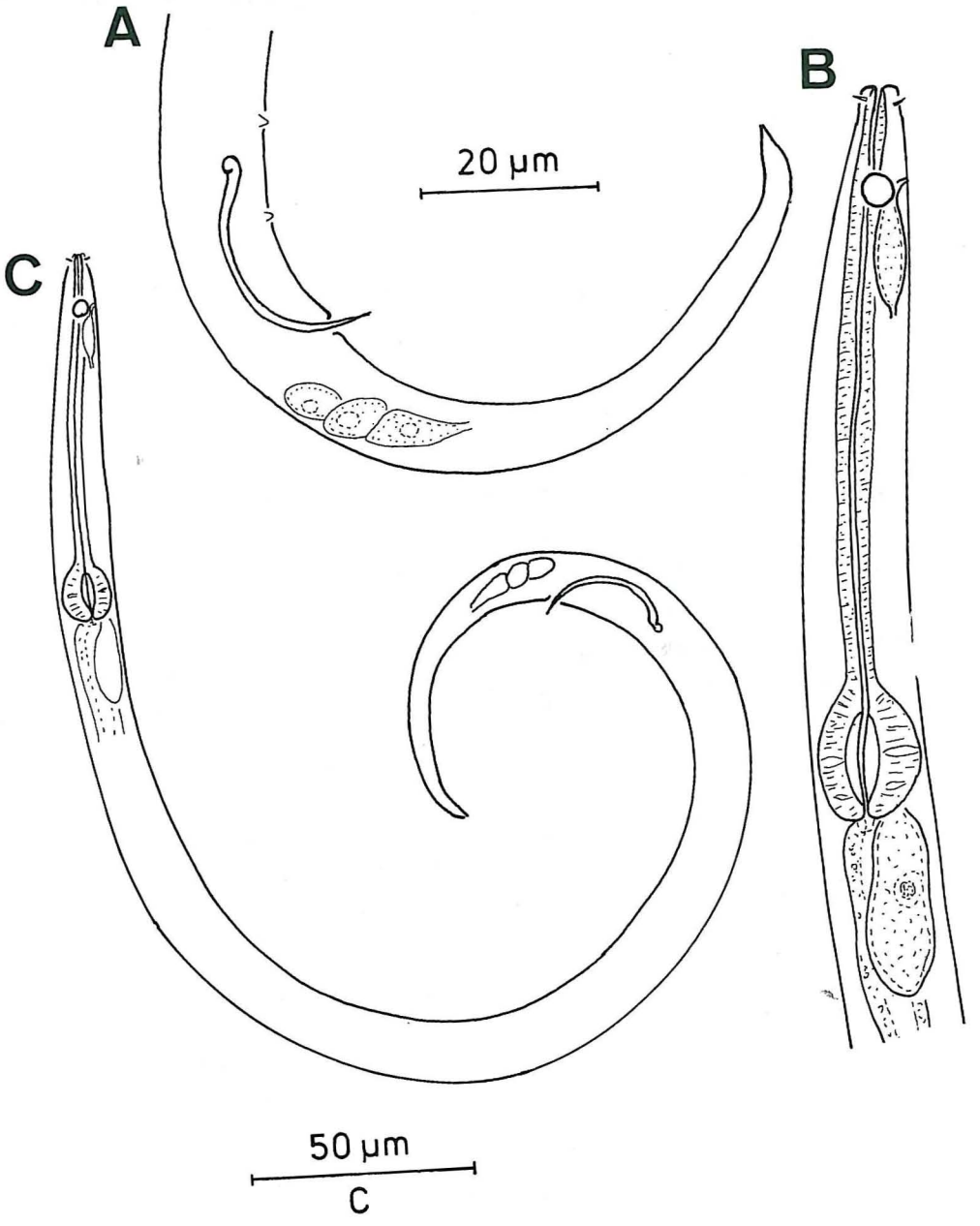

Fig. 2 : *Molgolaimus typicus* n. sp.
A : Tail end of holotype ♂1
B : Anterior region of holotype ♂1
C : Total view of holotype ♂1

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