

Two new species of *Chronogaster* Cobb (Nematoda: Araeolaimida)

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Abstract. *Chronogaster sclerostoma* sp. n. from banana soil near Karachi, Pakistan and *C. neoparva* sp. n. from soil around roots of *Patisola* sp. in Korup National Park, Cameroon are described and illustrated. *C. sclerostoma* is characterised by large-sized (1.0-1.1 mm) body having crystalloids, expanded sclerotized cheilostom and long conoid tail with a single terminal spine. *C. neoparva* sp. n. has 0.44-0.49 mm long body, cephalic setae indistinct, 3-4 μ m long, vulva at 44.1-46.4 percent of body length and a filiform, 129-158 μ m long tail. It resembles *C. parva* in most morphometric details but can be distinguished from it in the absence of glandular bodies, smaller 'V' and 'c' values and a longer tail devoid of a mucro. Males were not found for both new species.

Keywords. Cameroon, *Chronogaster*, *C. neoparva*, *C. sclerostoma*, description, new species, Pakistan, taxonomy.

INTRODUCTION

Genus *Chronogaster* Cobb, 1913 is represented predominantly by aquatic species which are cosmopolitan. In addition to other characters, the tail terminus and tail mucro are a good diagnostic characters. Good number of species of *Chronogaster* has been described by Heyns and Coomans (1980 and 1984) with morphological details. During the screening of collected samples from different parts of the world, two new species of *Chronogaster* were found which are described here.

The nematodes were heat killed and fixed in 4% formaldehyde and then dehydrated by slow dehydration method. The permanent mounts were prepared using anhydrous glycerine. Measurements and drawings were made using Olympus BH2 research microscope fitted with a drawing tube.

Chronogaster sclerostoma sp. n.

(Fig. 1)

Measurements: Table 1.

Female: Body large, ventrally curved upon fixation, tapering towards the extremities. Cuticle transversely striated with annule 1.2-1.5 μ m and 1.5-2 μ m wide at the base of lips and pharynx respectively. Lateral fields not demarcated with lateral lines. Amphidial slits located between 2nd and 3rd annules, 2-2.5 μ m across. Crystalloids present. Lip region continuous, unstriated, 6-7 μ m wide and 3-4 μ m high; lips

amalgamated. Cephalic setae distinct, 8 μ m long. Stoma with expanded and strongly cuticularised cheilostom followed by 6-8 μ m long and 1.4-2 μ m wide sclerotized buccal capsule; radial tubules 21-23 μ m from the base of stoma. Pharynx 226-239 μ m long with corpus, basal bulb and post-bulbar extension. Hemizonid and excretory pore obscure. Nerve ring encircling the pharynx at 100-116 μ m from anterior end or 44-48% of the pharyngeal length from the anterior end. Basal bulb 20-21 μ m \times 12-13 μ m with triradiate denticulate valves bearing irregularly arranged denticles or teeth in the anterior region. Post-bulbar extension well demarcated, 15-16 μ m in length. Cardia 3-5 μ m long.

Reproductive system monodelphic, prodelphic with reflexed ovary; oviduct and crustaformeria often difficult to distinguish. Vulva equatorial, pore-like with constricted lips; vagina 3-4 μ m long, anteriorly directed. Post-uterine sac 5-7 μ m long. No uterine eggs present. Intestine granular. Rectum 15-16 μ m long, about one anal body diameter. Tail 100-131 μ m, elongate-conoid, ventrally curved with 1.5-2 μ m long, terminal spine.

Male: Not found.

Type habitat and locality: Soil around roots of banana at Thatta, Karachi, Pakistan.

Type specimens: Holotype female on slide "*Chronogaster sclerostoma* sp. n. /1" deposited at the Rothamsted Research, Harpenden UK and the paratype female on slide "*Chronogaster sclerostoma* sp. n. /2" is in the nematode collection of Dr M. R. Siddiqi.

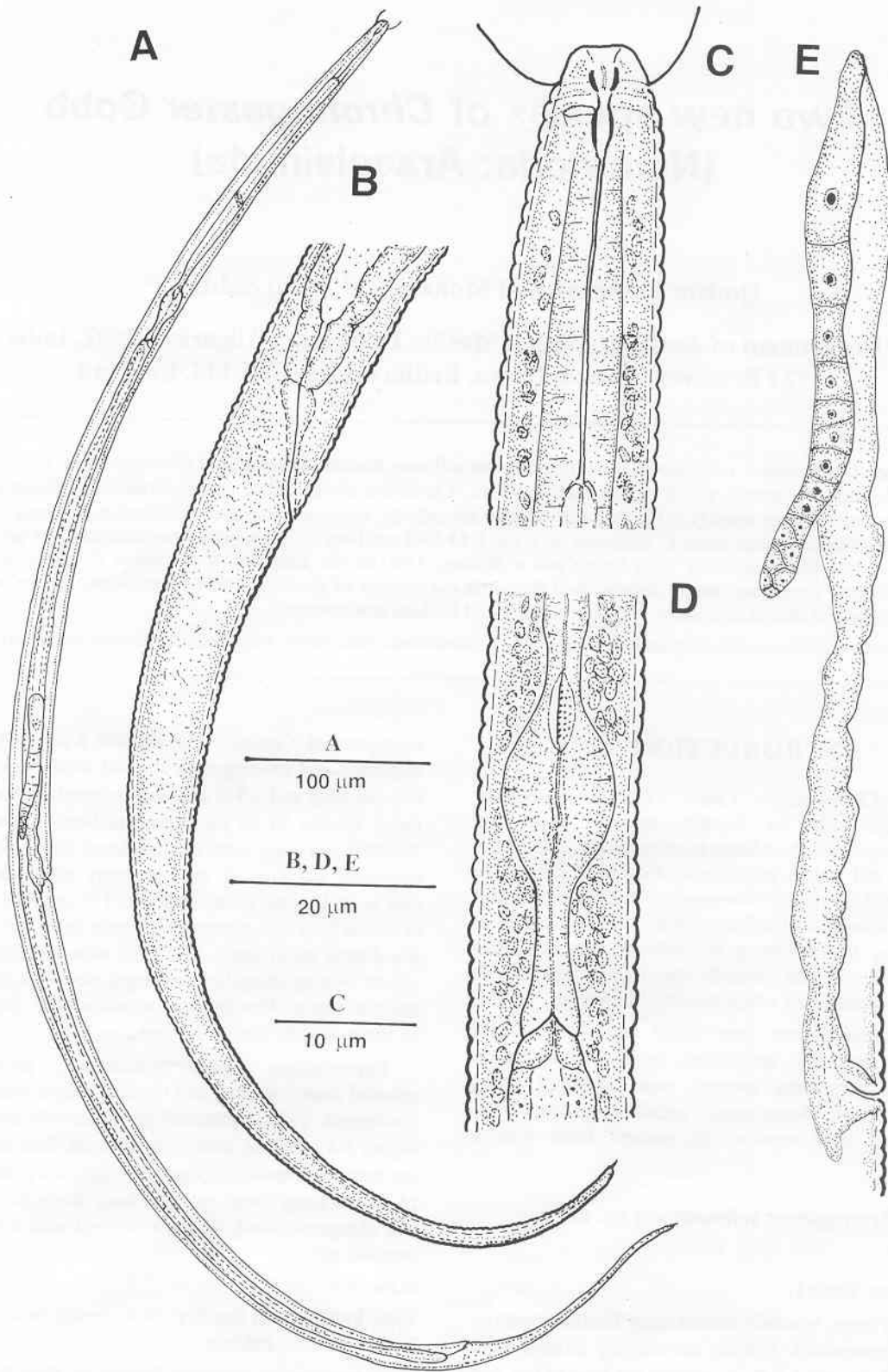


Fig. 1. *Chronogaster sclerostoma* sp. n. A. Female. B. Tail region. C. Head end. D. Basal region of oesophagus. E. Female reproductive organs.

Table 1. Morphometric characteristics of *Chronogaster sclerostoma* sp. n. and *C. neoparva* sp. n. Measurements are in μm .

Character	<i>Chronogaster sclerostoma</i> sp. n.		<i>Chronogaster neoparva</i> sp. n.	
	Holotype female	Paratype female	Holotype female	Paratype females (n=5)
Body length	1035	1127	495	459.7±16.95 (440-497)
Body width	20	21	13.7	12.5±0.68 (10.9-13.7)
a	53.9	54	36.3	36.9±1.58 (32-42)
b	4.6	4.7	4.68	4.4±0.18 (4.05-4.7)
c	7.9	11.2	3.2	3.3±0.35 (2.31-3.30)
c'	8.4	6.6	21.5	18.9±1.37 (17.8-21.7)
V	49.9	51.6	44.1	45.9±1.19 (44.1-46.4)
Lip width	6.7	6.7	4.6	4.5±0.01 (4-5)
Lip height	3	3.5	2.7	2.9±0.15 (2-3)
Cephalic setae length	8	8	3	3.4±0.24 (3-4)
Buccal capsule length	7	8	6.4	5.8±0.22 (5-7)
Buccal capsule width	2	2.5	1.5	1.5±0.03 (1.5-1.7)
Radial tubules from stoma base	22.1	21.1	11.8	12.0±0.34 (10-13)
Pharyngeal length	226	239	105	105.2±1.17 (101-108)
Nerve ring (%)	44	48	61	69.6±2.87 (52-61)
Basal bulb length	20.2	22.6	7.3	14.7±0.98 (13-16)
Basal bulb width	12.5	12.5	7.5	7.5±0.54 (7-9)
Post bulbar extension	16	15	5.5	5.1±0.22 (4-6)
Cardia length	4.8	5	6.4	6.2±0.16 (6-7)
Post-uterine sac	6	7	-	-
Anal body diameter	15.4	15.4	7.3	7.1±0.34 (6-9)
Rectum length	15.4	15.4	10.9	11.1±0.18 (10-12)
Tail length	130.6	100.8	156.5	136.3±10.55 (129-158)
Tail mucro length	1.5	2	-	-

Differential Diagnosis: *Chronogaster sclerostoma* sp. n. is characterised by large-sized body having crystalloids, expanded and strongly cuticularised cheilostom and long conoid tail with a terminal spine. It resembles *C. longicauda* Heyns and Coomans, 1980 in most morphometric characteristics but differs in having crystalloids, smaller 'c' value, larger 'c' and 'V' values and the lengths of radial tubules and basal bulb (crystalloids absent, c= 4.3-4.8, c'= 17-22.1, V= 43-48, radial tubules 14.5-18 μm and basal bulb 12.5-16.5 μm long in *C. longicauda* Heyns and Coomans, 1980). The new species also comes close to *C. cameroonensis* Heyns & Coomans, 1984 but differs in having smaller distance of radial tubules from stoma base, smaller tail, and a more posterior V (radial tubules 14.0-14.5 μm from stoma base, tail 216-238 μm long, and vulva at 43.5-44.5 percent of body in *C. cameroonensis*). *C. sclerostoma* sp. n. also resembles *C. glandifera* but differs

from it in the structure of stoma, absence of glandular bodies, smaller 'b' value and post-bulbar extension (cheilostom narrow, glandular bodies present; b= 5.0-5.7; post-bulbar extension 16-19 μm long in *C. glandifera* Heyns and Coomans, 1980).

Chronogaster neoparva sp. n.

(Fig. 2)

Measurements: Table 1.

Female: Body ventrally curved on fixation, tapering anteriorly and posteriorly beyond vulva. Cuticle transversely striated with annules 0.8-1.2 μm and 1.4-1.8 μm wide at the base of lips and pharynx respectively. Lateral lines absent. Vacuolated glandular bodies present; crystalloids absent. Cephalic setae 3-4 μm long, indistinct, often sticking to the lips. Lips amalgamated, unstriated lip region 4-5 μm wide

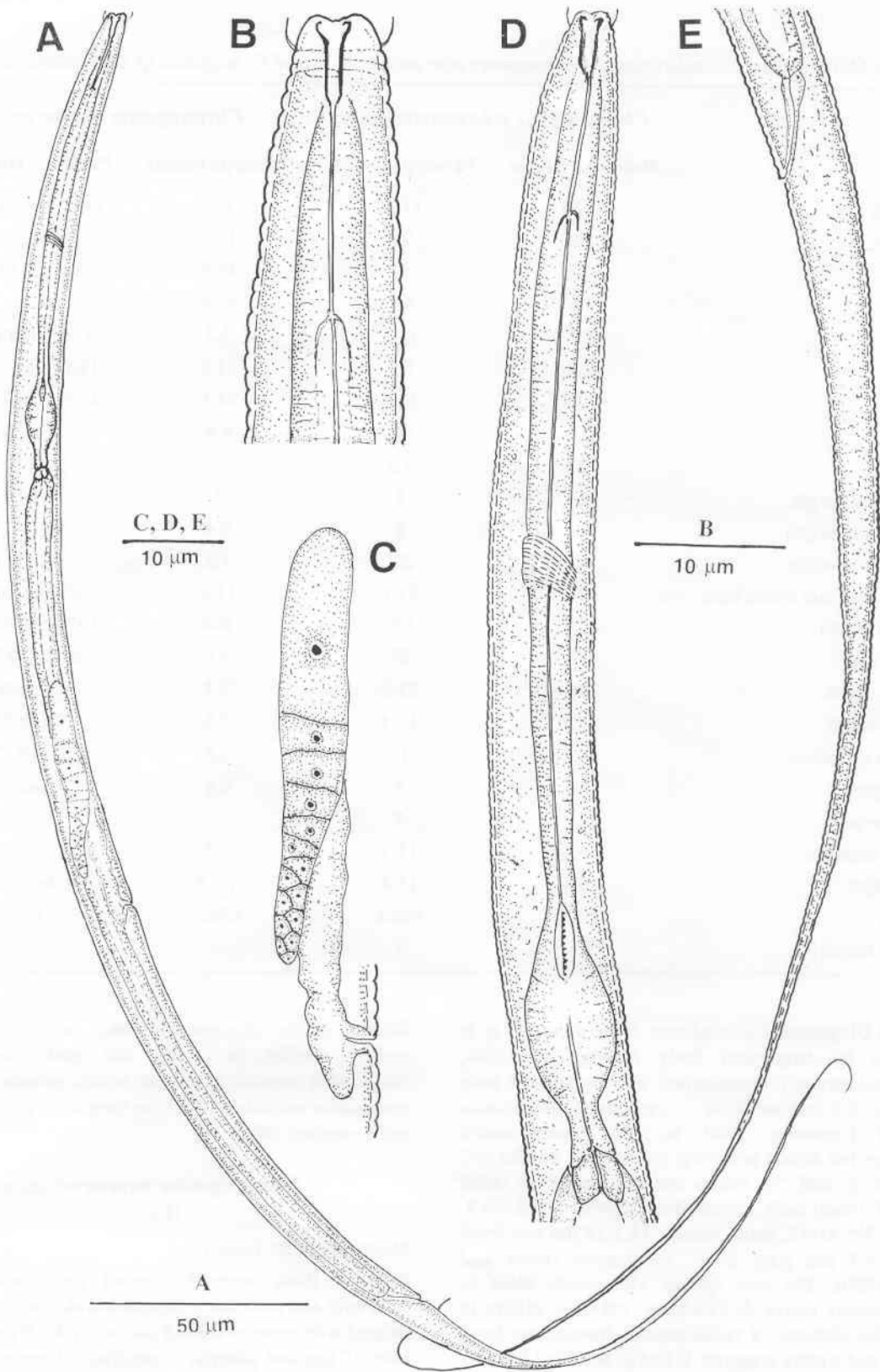


Fig. 2. *Chronogaster neoparva* sp. n. A. Female. B. Head end of female. C. Female reproductive organs. D. Basal region of oesophagus. E. Female tail.

and 2-3 μm high. Amphidial slits between 1st and 2nd annules, 2.5 μm across. Stoma with 5-7 μm \times 1.5-2 μm sclerotized buccal capsule. Anterior part of buccal capsule expanded, posterior part narrow and often collapsed. Radial tubules 10-13 μm from base of stoma. Pharynx 101-108 μm with cylindrical corpus, basal bulb and post-bulbar extension. Nerve ring encircling pharynx at 77-82 μm from anterior end or located at 52-62% of pharyngeal length. Pharynx 101-108 μm long. Basal bulb 13-14 \times 7-9 μm , triradiate denticulate valve in its anterior half with 9-12 linearly arranged denticles. Post-bulbar extension 5-6 μm long; cardia 6-7 μm in length. Intestine granular. Rectum 10-12 μm long. Tail elongate conoid with whip like terminal part, mucro absent.

Gonad monodelphic, prodelpic with reflexed ovary. Vulva pore like with constricted lips, slightly pre-equatorial. Post-uterine sac about half as long as body width. Uterine eggs not seen.

Male: Not found.

Type habitat and locality: Soil around roots of *Patisola* sp., Korup National Park, Near Mundemba town, Cameroon.

Type specimens: Holotype female on slide "*Chronogaster neoparva* sp. n. /1" and 1 paratype female on slide "*Chronogaster sclerostoma* sp. n. /2" deposited at Rothamsted-Research Nematode Collection, Harpenden UK. Four paratype females are in the collection of Dr M. R. Siddiqi.

Differential Diagnosis: *Chronogaster neoparva* sp. n. is characterised by a small-sized body having glandular bodies but no crystalloids, indistinct cephalic setae 3-4 μm long and a long tail with a whip-like terminus. The new species resembles *C. parva* Heyns and Coomans, 1984 in most of morphometric details but differs in smaller 'c' and 'V' values and a longer tail devoid of mucro (glandular bodies present; $c = 3.7-5.9$; $V = 47-52$ and tail 80-129 μm with ventrally curved 1.5 μm mucro in *C. parva* after Heyns and Coomans, 1984). The new species differs from *C.*

brasiliensis Meyl, 1957 in having shorter body, smaller 'c' value and cephalic setae, smaller distance of radial tubules from stoma base and a shorter post-bulbar extension (body length 0.8-0.9 mm, $c' = 24$, cephalic setae 6 μm long, radial tubules 22 μm from stoma base, post-bulbar extension 20 μm long in *C. brasiliensis* Meyl, 1957). *C. neoparva* differs from *C. cameroonensis* Heyns and Coomans, 1984 and *C. getachewi* Abebe & Coomans in having body nearly half as long as in the latter species, smaller cephalic setae which are indistinct and a shorter tail (body length 0.92-0.95 mm, cephalic setae 6.5-7.5 μm and tail 216-238 μm long in *C. cameroonensis*) and body length 0.82-0.92 mm, cephalic setae 5.5-6 μm and tail 175-203 μm long in *C. getachewi* after Abebe & Coomans, 1996).

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