

A new species of *Chronogaster* Cobb, 1913 (Nemata : Plectidae) with an amended diagnosis of the genus and discussion of cuticular ornamentation¹⁾

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SUMMARY

Chronogaster spinicorpus n. sp. is described from soil about the roots of coconut palm in Kerala, India. It is distinguished from all other species of *Chronogaster* by its longitudinal rows of spines. The stability of the genus *Chronogaster* is discussed with stress on internal anatomy and distribution of cephalic sensillae as generic characteristics. Most external ornamentation is judged to be diagnostic for species only.

RÉSUMÉ

Description d'une nouvelle espèce de *Chronogaster* Cobb, 1913 (Nemata : Plectidae),
diagnose émendée du genre et considérations sur l'ornementation cuticulaire

Description est donnée de *Chronogaster spinicorpus* n. sp., venant de sol de rhizosphère de cocotier, au Kerala (Inde). Il se distingue de toutes les autres espèces du genre par la présence de rangées longitudinales d'épines sur le corps. La solidité du genre *Chronogaster* est discutée en insistant sur l'anatomie interne et la position des sensilles céphaliques en tant que caractères génériques. La plupart des ornements cuticulaires sont considérées comme caractères de niveau spécifique seulement.

In 1913, Cobb proposed the genus *Chronogaster* to accommodate his newly found freshwater species *C. gracilis*. Andrassy (1958) synonymized Cobb's species with Daday's 1899 *Cephalobus longicollis*. Therefore, the correct contemporary nomenclatorial designation for the type species is : *Chronogaster longicollis* (Daday, 1899) Andrassy 1958, syn. *C. gracilis*, Cobb 1913. Twenty nominal species from marine, freshwater and soil environments are now recognized in the genus. Heyns and Coomans (1980) reviewed the genus and clarified many, heretofore, poorly understood morphologic features. The specimens described and proposed here as a new

tant than a new species proposal it adds new dimensions to this widespread and varied genus.

Materials and methods

Nematodes, after separation from soil by sieving and decanting, were killed by heating in water. Subsequently, the recovered specimens were preserved in 2 % formalin and stored for several weeks prior to transfer to F.A.A. Dehydration to glycerin follow-

ethanol, minimum 24 h ; specimens are then transferred to 5 % glycerin in 30 % ethanol and allowed to evaporate to glycerin under ambient conditions. Final dehydration to anhydrous glycerin was achieved over CaCl_2 in a dessication chamber. *En face* sections cut in glycerin were mounted in glycerin-jelly.

Specimens for scanning electron microscopy were transferred from F.A.A. into a graded series of ethanol beginning at 30 % ethanol and terminating in absolute ethanol. Specimens were then taken through a graded series of amyl acetate-absolute alcohol, beginning with 30 % amyl acetate and ending with absolute amyl acetate. Other specimens from permanent glycerin slides, whose method of preservation was unknown, were first placed in a mixture of glycerin-alcohol-water, 80:6:14. Through a series of gradual changes the glycerin was removed and the specimens were in 30 % ethanol. These specimens were then transferred to F.A.A. then to 2.5 % formalin where they remained a minimum of 24 h. From this point they were processed into a graded series of ethanol and then amyl acetate as described above for specimens not previously in glycerin. A 15 sec sonication was applied in absolute amyl acetate. After critical point drying with CO_2 the

short vestibule leading to stoma. Stoma composed of two parts : anterior cylindrical cheilostome and posterior funnel-shaped esophastome. Radial tubules on each ray of esophageal lumen (characteristic of the suborder Araeolaimina) located one and one-half to two and one-half body diameters posterior to base of stoma. Esophagus often slightly expanded in this area. Esophagus cylindroid anteriorly, expanding posteriorly to an ovoid bulb, followed by a stem-like extension leading to the esophago-intestinal valve. Lumen of subterminal bulb generally strongly cuticularized in anterior half of bulb, forming a denticulate chamber. When visible, excretory pore and hemizonid located just posterior to level of circum-esophageal commissure (nerve ring). Circumesophageal commissure surrounds the slender anterior esophagus near its middle. Tail elongate-conoid to nearly filiform ; terminus either minutely rounded or sharply pointed. Tail terminus sometimes with one or more mucros accompanied by one or more spines. Caudal glands, spinneret doubtful ; lateral gland cells rarely present. Vulva generally near equatorial. Genital system antepudendal, *i.e.*, with a single anteriorly directed reflexed genital tube. Postuterine branch absent or when present may exceed two vulval

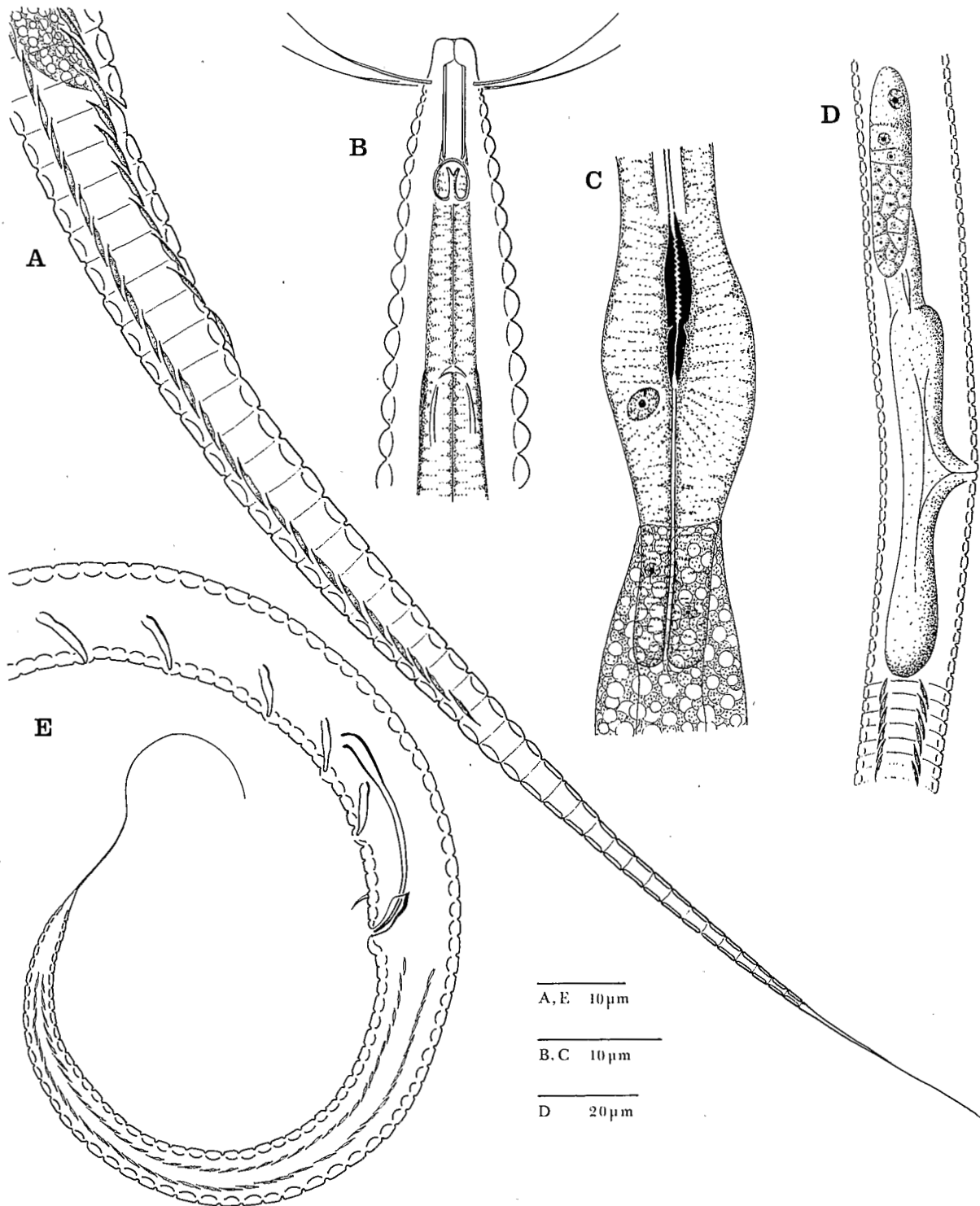


Fig. 1. *Chronogaster spinicarpus* n. sp. Female, A-D. A : Tail region ; B : Cephalic region ; C : Posterior bulbar region of esophagus ; D : Vulvar region, lateral view. Male, E : Tail region, lateral view.

Males ($n = 10$) : $L = 1.22$ (1.0-1.40) mm ; $a = 83$ (74-91) ; $b = 5.5$ (5.2-6.0) ; $c = 8.5$ (8.0-9.3) ; $T = ?$ 37 ; $R = 303$ (255-371).

Juveniles ($n = 8$) : $L = 0.74$ (0.57-0.87) mm ; $a = 55$ (44-64) ; $b = 4.2$ (3.5-4.8) ; $c = 6.4$ (3.3-9.1) ; $R = 331$ (209-366) ; vestibule = 2.6 (1.0-3.5) μm ; stoma = 7.2 (6.5-8.0) μm ; stoma to radial tubules = 25 (21-26.5) μm ; amphid 4-6 annules posterior to lip cap ; amphid aperture = 3.3 (3.0-3.5) \times 3.5 (3.0-4.0) μm .

Holotype ; female : $L = 1.07$ mm ; $a = 49$; $b = 5.0$; $c = 7.9$; $V = 9$ 52⁴ ; $R = 328$.

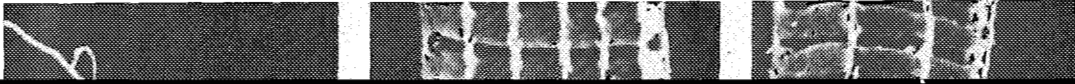
Allotype ; male : $L = 1.07$ mm ; $a = 77$; $b = 5.4$; $c = 8.0$; $T = 37$; $R = 345$.

DESCRIPTION

Female : Body, when killed by gentle heat, assumes an arcuate posture ; body, for the greater part of its length, cylindrical with pronounced taper from anus to filiform tail tip ; anteriorly tapered but less noticeable. Labial capsule truncate, non-annulated, with four long submedian setae near posterior margin. Anterior edge of amphid three to five annules pos-

half of bulb. Basal bulb 21-26 μm long ; post bulbar extension 10.5-13.0 μm in length. Tail approximately thirteen anal body diameters in length, shape conoid-filiform, non-annulated tip extends to hair-like process 17.0-35.1 μm long (difficult to measure because often broken). Caudal glands and spinneret absent. Vulva not prominent, located near mid-body (50-52 %) ; vagina inconspicuous ; anterior gonad 93.6-209.6 μm , reflexed portion of gonad 44.7-191.5 μm (length of gonad and reflexed portion varies according to stage of egg development). Post-uterine branch long, 42.6-63.8 μm .

Male : Body and cephalic shape similar to female ; tail slightly more curved when killed by gentle heat. Amphid aperture similar to that of female ; aperture taller than wide : 3.2-4.0 \times 4.3-5.3 μm . From posterior rim a tongue-like, apically-forked arm projects anteriorly, arm three-fourths the height of aperture. Oral vestibule shallow, 1.6-2.7 μm ; stoma cylindroid, 6.1-8.8 μm long ; base of stoma funnel-shaped. From base of stoma to radial tubules 26.1-32.5 μm . Esophagus length 197.9-242.6 μm ; base of esophagus at level of annule 49-67. Posterior bulb with valve and extension similar to female. Transverse annulation interrupted by twelve rows of hook-like spines, similar to those of females. Tail conoid-filiform, non-annulated tip extends to hair-



University of California Nematode Collection (UCNC),
Davis, California.

Allotype : Male, same data as holotype, Catalogue
No. 1, UCNC.

is based are the form and distribution of the cephalic
sensillae and internal anatomy. Most external
characteristics are employed to distinguish species.
For instance, the non-annulated lip can may be

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