A NEW SPECIES OF *PARACANTHONCHUS* MICOLETZKY, 1924 AND A KNOWN SPECIES OF *PARACYATHOLAIMUS* MICOLETZKY, 1922 (NEMATODA, CYATHOLAIMIDAE, PARACANTHONCHINAE) FROM POLLUTED INTERTIDAL SAND IN SCOTLAND

by

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Résumé

Description d'une espèce nouvelle *Paracanthonchus platti* sp. n. et redescription de *Paracyatholaimus pentodon* Riemann, 1966 (Nématode, Cyatholaimidae, Paracanthonchinae).

Introduction

A study dealing with the systematics and ecology of free-living marine nematodes from two polluted sandy beaches in Scotland viz, 1) Irvine beach (55°38'N, 4°44'W) in the Firth of Clyde on the west coast of Scotland and 2) Portobello beach (55°57'N, 3°7'W) in the Firth of Forth on the east coast of Scotland was undertaken from August, 1974 to June, 1975. The present paper deals with the description of a new species and redescription of a known species of free-living marine nematodes encountered in the material collected during this study. The detailed results of the investigations will be published separately.

The descriptions are based on glycerine mounts. The type material (syntypes) has been deposited at the British Museum (Natural History). Curved structure such as spicules have been measured as the chord and not as the curve. The classification followed here is that given in the Bremerhaven Checklist of Aquatic Nematodes by Gerlach and Riemann (1973). The drawings were accomplished with the aid of a Wild drawing tube fitted to a Wild M-20 microscope.

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Family CYATHOLAIMIDAE

Subfamily Paracanthonchinae

PARACANTHONCHUS PLATTI (1) sp. nov. (Fig. 1)

Material studied:

4 ♂♂ and 1 ♀, B.M. (N.H.) Reg. No. 1976.2254-5.

Measurements

♂1	—	272	M	1355	L = 1500μm; a = 39.5; b = 5.5; c = 10.3
	22	35	38	36	Spicule = 45μm
♂2	—	280	M	1644	L = 1800μm; a = 50.0; b = 6.4; c = 11.6
	21	32	36	35	Spicule = 40μm
♂3	—	280	M	1692	L = 1850μm; a = 46.3; b = 6.6; c = 11.7
	22	36	40	38	Spicule = 44μm
♂4	—	280	M	1759	L = 1920μm; a = 48.0; b = 6.9; c = 11.9
	23	38	40	40	Spicule = 44μm
♀	—	270	940	1680	L = 1820μm; a = 45.5; b = 6.7; c = 13.0
	22	32	40	30	Vulva = 51.6 percent

Description

Cuticle strongly punctated. Lateral differentiation absent. Hypodermal pore complex consists of six longitudinal rows of pores with transverse slits, distributed throughout the entire length of the body, starting from just posterior to the amphids; one pair of rows arranged laterally, one pair subdorsally and one pair subventrally. Mouth surrounded by six lips, each bearing a 3—3.5μm long labial seta. Head bears 10 cephalic setae of which 6 (2 lateral + 4 submedian) are 9—11.5μm long. Buccal cavity cyathiform, about 16μm deep, bearing a big hollow dorsal tooth and two small subventral teeth. The wall of the buccal cavity supported by 12 cheilorhabdions. Amphids 5.5—6 turns, 12-13μm wide (52-58 percent of corresponding body diameter), situated at 12-14μm behind anterior end. Excretory pore situated at 27μm behind anterior end. Oesophagus rather cylindrical. Nerve ring situated at 50—52 percent of oesophageal length behind anterior end. Tail conical, 4—4.5 cloacal diameter long in male and 4.7—5 anal diameter in female. Somatic setae 3—9μm long, scattered throughout the body.

Male: spicules slender, slightly curved, cephalated proximally and pointed distally; 1.1—1.3 cloacal diameter long. Faint ventral alae present. Gubernaculum paired, narrow proximally and expanded distally. Each piece distally bears a highly cuticularised massive lateral plate with strong conical spine-like structures, 9—11 numbers. The cloacal region is thick and protruding. Five tubular precloacal supplements present, of which the posteriormost two supplements are situated very close together. The distance (in μm) between the cloacal opening and each supplement in 4 males are given below.

(1) This species is named after Dr. Howard M. Platt, British Museum (Natural History), London, acknowledging his finding of its individuals previously.

	Suppl. 1	Suppl. 2	Suppl. 3	Suppl. 4	Suppl. 5
δ_1	15	16	31	51	75
δ_2	12	14	30	50	79
δ_3	14	16	37	66	100
δ_4	11	13	27	52	83

Female: ovaries paired, opposed and reflexed. Vulva very narrow and indistinct.

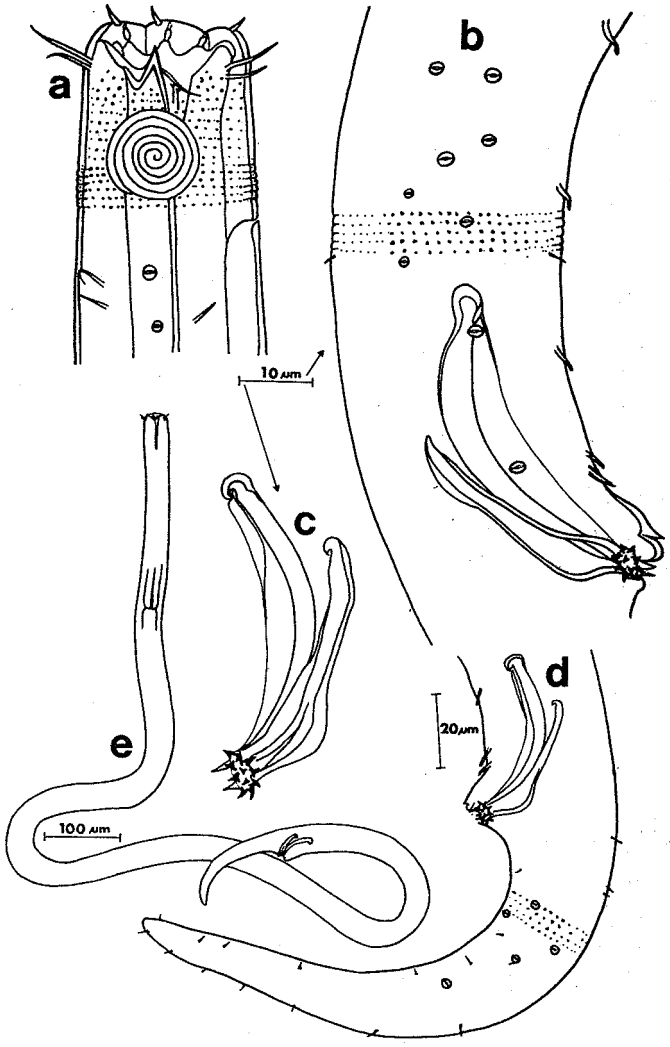

FIG. 1
Paracanthonchus platti sp. nov.
a) head region of δ_1; b) posterior region of δ_1;
c) spicular apparatus of δ_2; d) tail of δ_2; e) δ_1 entire.

Discussion

Paracanthonchus platti sp. nov. has close resemblance with *P. tyrrhenicus* (Brunetti, 1949) Gerlach, 1953, in the structure of the

buccal cavity and head region, and also in the number and arrangement of precloacal supplements. However, the major difference between these two species lies in the structure of the spicular apparatus. The paired gubernaculum of the present species possesses distally a pair of lateral massive plates each bearing a cluster of 9-11 strong conical spine-like structures, as opposed to 2 strong distal spines borne by the gubernaculum in *P. tyrrhenicus*. Moreover, the present species is more slender (a = 39.5—50) than *P. tyrrhenicus* (a = 23.5—31.0); the proportion of the amphids with the corresponding body diameter (52-58 percent of corresponding body diameter) also differs from that of the latter species (70 per cent of corresponding body diameter). But for the striking difference in the structure of the spicular apparatus, these minor differences could have been attributed to the regional differences possessed by one and the same species. However, neither the drawings nor the descriptions of *P. tyrrhenicus* given by Brunetti (1949) or by Gerlach (1953) provide any indication of the massive lateral plates bearing clusters of conical spine-like structures on the gubernaculum, which should hence be regarded as a characteristic feature of *P. platti*.

Individuals of this new species had been recorded by Platt (1971, Ph. D. thesis) (1) from the intertidal region in Strangford Lough (N. Ireland); he had identified them provisionally as *P. tyrrhenicus,* but, had pointed out the possibility that the specimens might prove to be a new species. The present individuals closely conform with the description and illustrations provided by him.

The species was encountered in the Firth of Clyde as well as in the Firth of Forth material.

PARACYATHOLAIMUS PENTODON Riemann, 1966 (Fig. 2)

Material studied:

2 ♂♂ and 1 ♀, B.M. (N.H.) Reg. No. 1979.

Measurements

♂1	—	285	M	1350	L = 1450μm; a = 30.2; b = 5.1; c = 14.5
	27	37	48	37	Spicule = 40.5μm
♂2	—	265	M	1082	L = 1180μm; a = 22.7; b = 4.5; c = 12.0
	28	50	52	42	Spicule = 39.0μm
♀	—	325	725	1185	L = 1280μm; a = 26.7; b = 3.9; c = 13.5
	32	38	48	32	Vulva = 56.6 percent

Description

Cuticle with punctations which are differentiated laterally in the cervical and posterior regions of the body. The wall of the buccal cavity is supported by 12 rugae whose anterior ends were seen protruded out in most of the specimens examined. Buccal cavity bears one big dorsal tooth and two small subventral teeth. The vestibular ridge is very cuticularised. Labial setae 8—10μm long, almost equal in length to the 4 shorter cephalic setae. The longer 6 cephalic setae 16—20μm (0.6—0.7

(1) Quoted with the kind permission of the author.

head diameter) long. Amphids 3—3.75 turns; 15—16μm (50 percent of corresponding body diameter) wide. 4 submedian cervical setae 14—20μm long, situated at about 50—55μm behind anterior end. Other somatic setae very small, 2—3μm long and scarce except on male tail.

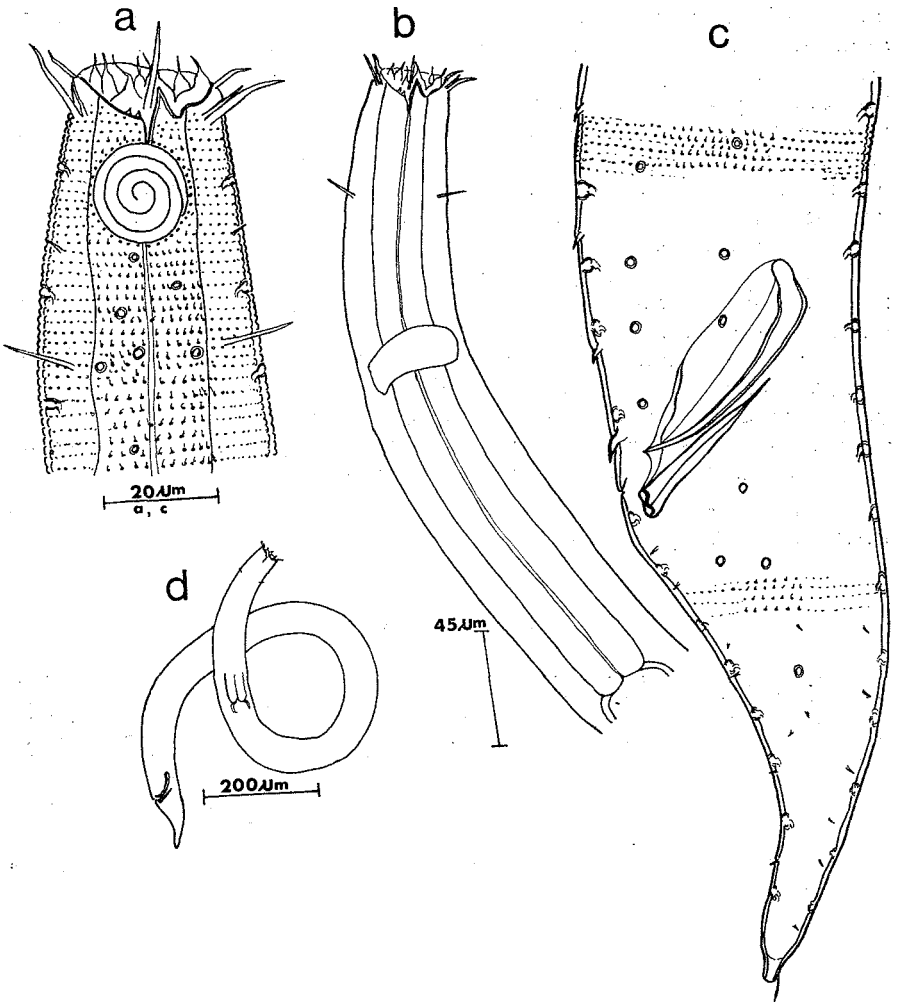

FIG. 2
Paracyatholaimus pentodon Riemann, 1966
a) head of δ_1; b) oesophageal region of δ_1; c) posterior region of δ_1; d) δ_1 entire.

Male: spicules paired, equal, bent proximally and fairly straight distally; ventral alae present. Gubernaculum paired, pointed proximally and expanded distally bearing a blunt cuticular projection. 4 conical papilliform precloacal supplements present and were seen protruded outside the body in most of the males examined. Their internal structures are indistinct. The posteriormost supplement is more robust and bigger than the rest.

Female: ovaries paired and reflexed. Vulva very prominent with protruding lips which bear small conical setae.

Discussion

Identification of the present specimens was confronted with some initial difficulty, but subsequently they proved to be the same as *Paracyatholaimus pentodon* Riemann, 1966. In the original description of the species, the author also discussed the difficulty of the generic placement of this species and provisionally placed it under *Paracyatholaimus*. The possession of two combined generic features viz., the protruding conical papilliform/setose supplements (characteristic of *Paracyatholaimus*) and distally expanded gubernaculum (characteristic of *Paracanthonchus*) makes the assignment of this species to *Paracyatholaimus* uncertain. Four other species viz., *Paracyatholaimus paucipapillatus* Gerlach, 1955; *P. pesavis* Wieser and Hopper, 1967; *Paracanthonchus digitatus* Gerlach, 1957 and *Zyzzors inglisi* Wieser and Hopper, 1967 also apparently possess these two features in common with *P. pentodon*. A revision of both *Paracanthonchus* and *Paracyatholaimus* in future might prove that the abovementioned group of five species belongs to a transitional group in the evolutionary line, linking both these genera; and this might entail a new genus to accommodate these species.

The species was encountered in the Firth of Clyde and also in the Firth of Forth material.

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Summary

Description of a new species *Paracanthonchus platti* sp. nov. and a redescription of *Paracyatholaimus pentodon* Riemann, 1966 (Nematoda, Cyatholaimidae, Paracanthonchinae) are given.

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