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# Studies on the Free-Living Marine Nematodes from Hokkaido, III

By

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(With 6 Text-figures)

As the third report of the taxonomic work of free-living marine nematodes from Hokkaido, the present paper deals with three new and two known species, belonging to four different genera as *Metachromadora* Filipjev (Subgenus *Metachromadora* Filipjev; Family Desmodoridae), *Chromadora* Bastian and *Neochromadora* Micoletzky (Family Chromadoridae), and *Paracanthonchus* Micoletzky (Family Cyatholaimidae). The species of the first genus is interstitial and the other four generally phytal.

Specimens were collected from Oshoro Bay on the Japan Sea coast and all the specimens examined are deposited in the Zoological Institute, Faculty of Science, Hokkaido University.

Before going further I express my sincere gratitude to Professor Mayumi Yamada, Hokkaido University for his guidance and reading the manuscript. Sincere thanks are also due to Dr. T. Itô, Hokkaido University, who placed the specimens collected by his SCUBA diving at my disposal.

## Abbreviations

L=body length; eso=esophagus length; hd=head diameter at the level of cephalic setae; bd=body diameter at the base of esophagus; vd=body diameter at the level of vulva; ad=anal (cloacal) body diameter; mbd=maximum body diameter; cs=length of long cephalic setae, or longer+shorter; nr=distance of nerve ring from anterior; ep=distance of excretory pore from anterior; vg=distance of the posterior end of ventral gland from anterior; t=tail length; spic=spicule length, measured along the median line and the length of chord in parentheses; gub=gubernaculum length, measured along the median line; v=distance of vulva from anterior.

All measurements are in micra.

## Family Desmodoridae

*Metachromadora (Metachromadora) itoi* n. sp.

(Fig. 1, 2)

*Measurements*

*Males* (Holotype and 3 paratypes): L=1518; 1428; 1543; 1596, eso=202; 189; 227; 209, hd=25; 27; 23; 21, bd=53; 57; 61; 60, ad=51; 46; 54; 45, mbd=67; 59; 82; 86, cs=7; 7; 7; 7, nr=-; -; -; 96, t=109; 108; 95; 95, spic=62 (48); 70(54); 61(46); 60(46), gub=37; 38; 32; 29.

*Females* (Allotype and 3 paratypes): L=1275; 1224; 1258; 1566, eso=205; 219; 199; 249, hd=21; 26; 26; 27, bd=54; 62; 54; 68, vd (=mbd)=106; 92; 102; 114, ad=40; 34; 41; 36, cs=6; 7; 7; 8, t=80; 61; 91; 100, v=886; 853; 869; 1048.

*Male.* Body (Fig. 1-1) cylindrical with almost equal diameter, slightly narrow behind esophagus bulb, posterior to cloaca steeply tapering. Cuticle very thick at anterior, finely annulated,  $1\ \mu$  apart, but tip of tail smooth; some of these annules irregular, incomplete; on both lateral sides of amphids annules curve to form upward arcs oppositely, but running transversely on dorsal and ventral sides of head (Fig. 2-1,2). Lateral cuticular elevation longitudinally present near esophagus end to anterior tail; ventral cuticular elevation observed preanally with supplementary openings. Short, stout setae basically arranged in eight longitudinal rows, two at each lateral side, two dorsal and two ventral; these setae longer at posterior part of body,  $12\ \mu$  long.

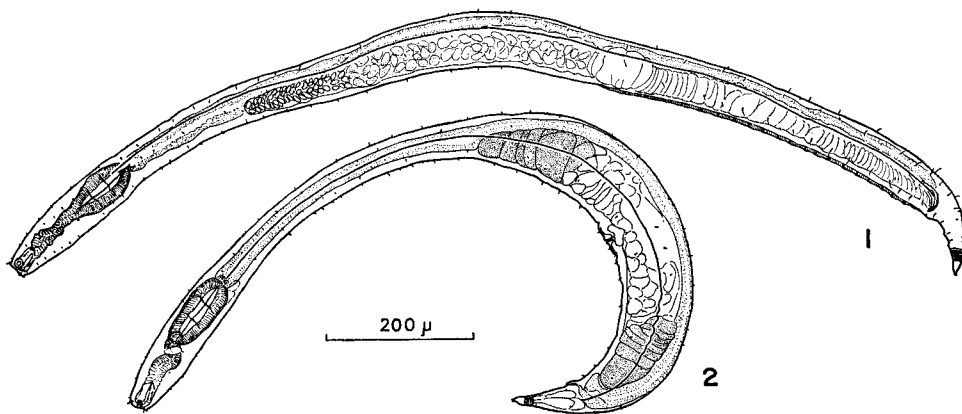


Fig. 1. *Metachromadora itoi* n. sp. 1. male (Holotype); 2. female (Allotype).

Head truncated, peaked, with six labial papillae, two circles of cephalic setae (6+4); inner setae short and outer setae stouter (Fig. 2-3). Amphids apparently ring-shaped, but overlapping loop-shaped in exact observation, situated on square cuticular plate,  $12 \times 12\ \mu$  in size ( $16 \times 13\ \mu$  in one paratype); short seta at middle

of dorso-lateral edge of plate and another one just posterior to ventro-lateral corner. Two short setae present laterally at level of amphids; cervical setae not

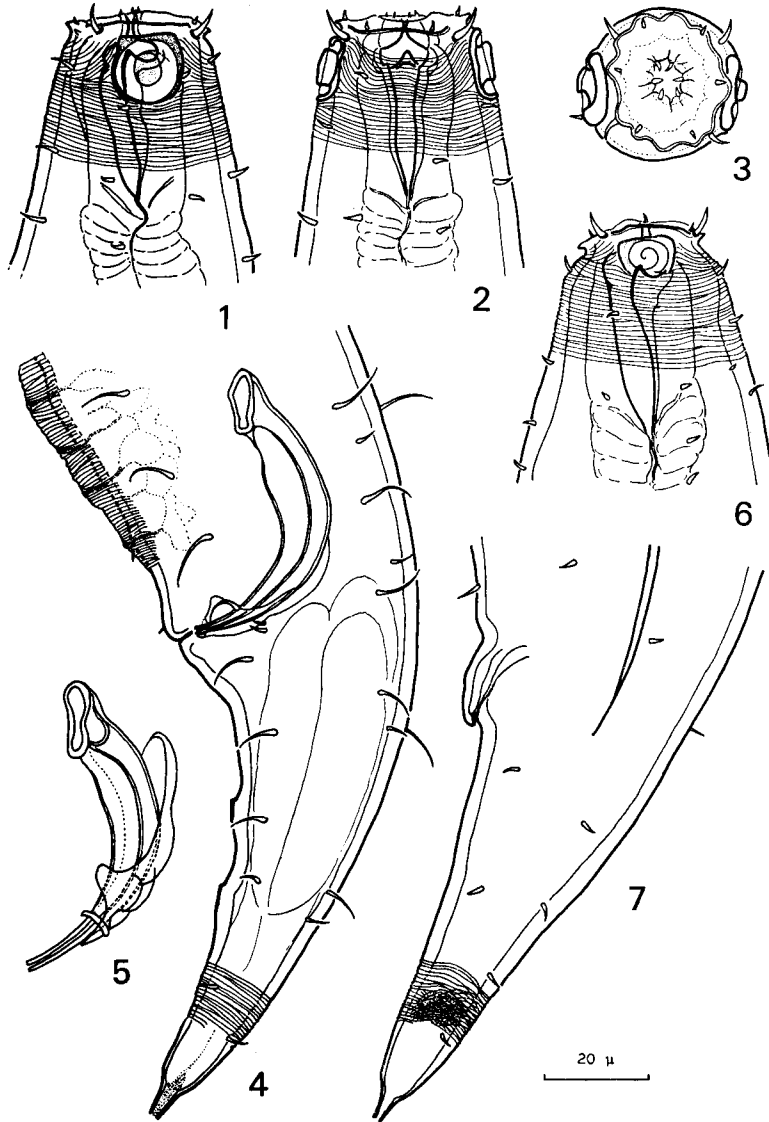


Fig. 2. *Metachromadora itoi* n. sp. Male (Holotype; 3,5, paratype). 1-3. head, lateral, ventral and *en face* view; 4. posterior end; 5. spicules and gubernaculum; Female (Allotype). 6. head; 7. tail.

distinguished from following other setae. Buccal cavity strongly cuticularized, with a well developed large dorsal tooth and two small subventral teeth. Esophagus divided into three parts; anterior  $36\ \mu$  long around buccal cavity sclerotized, the following part winding (probably contracted in fixation), and tripartite esophagus bulb,  $90\ (32+26+32)\ \mu$  long and  $46\ \mu$  wide. Nerve ring at 46% of esophagus length from anterior in one paratype. Excretory system not observed.

Reproductive system with a single, outstretched testis,  $1023\ \mu$  long. Spicules (Fig. 2-4,5) arcuate and expanded; proximal end remarkably dilated, well cuticularized like a haft with constriction, swelling at middle part and distally narrowed. Gubernaculum weakly cuticularized; distal part plumped laterally, with pointed end extended ventrally to support spicules. Preanal ventral cuticle elevated, forming striated membrane with 22 button-shaped openings connected with narrow ducts,  $499\ \mu$  long anterior to cloaca (21-25 openings and  $465-519\ \mu$  long, respectively in paratypes); some ducts not opening outside; pronounced short seta just behind the posteriormost opening. Another short seta present in front of cloaca.

Tail short, tapering to smooth tip end, one-fifth of tail length; ventrally two cuticular warts present; spinneret  $8\ \mu$ . Three caudal glands present.

*Female.* Similar to male in general but different in following features.

Body (Fig. 1-2) greatly swollen in posterior part before and after vulva; diameter at vulva double at esophagus end.

Amphids (Fig. 2-6) smaller and spiral-shaped,  $8\times 7\ \mu$  in size, 1.75 turns; no setae around cuticular plate. Esophagus bulb,  $102\ (37+26+39)\ \mu$  long and  $46\ \mu$  wide.

Reproductive system with paired, opposed and reflexed ovaries; the anterior 20.8% and the posterior 20.2% of body length (17.4-22.0 and 17.2-22.3% in paratypes, respectively). Vulva situated posteriorly at 70% of body length from anterior end. Eggs not observed.

Tail (Fig. 2-7) with smooth tip end, a quarter of tail length; annules near smooth tip irregularly broken, crossing over but precisely indistinct. Ventral warts absent, somatic setae not lengthened.

*Remarks.* This new species is remarkably similar to *Metachromadora macroutera* Filipjev, 1918 and *M. chandrewi* (Chitwood, 1951) in the general shape of the body, but is clearly discernible from the latter, mainly by the combination of four characters. The present species is characterized by the length (1.2-1.6 mm), arcuate annules on the anterior head, sexual dimorphism of the amphids and the preanal button-shaped supplements (21-25 in number), while the latter first is by the length (2.4-2.7 mm), arcuate annules on the anterior, no sexual dimorphism of the amphids and the preanal supplements (26-48), and the second, referred to Timm (1952) and Gerlach (1955), is by the length (1.0-1.4 mm), sexual dimorphism of the amphids, longitudinal annules on the anterior head and the preanal supplements (12-14). Although *M. cystoseirae* reported by Filipjev (1918) also shows similar cuticular pattern, the relation between the present and his species can not be dis-

cussed because of his incomplete description only on the basis of a single female.

*Material studied.* Five males and four females. Holotype ♂ and allotype ♀ (9-IX-1977, K. Kito leg.), paratypes; 2♂♂ and 2♀♀ (6-VII-1977, T. Itô leg.), 2♂♂ and 1♀ (9-IX-1977, K. Kito leg.): Sotokabuto in Oshoro, in fine sand at 25 m in depth.

The trivial name is in honor of Dr. T. Itô who found first some of these specimens.

#### Family Chromadoridae

##### *Chromadora heterostomata* n. sp.

(Fig. 3)

##### *Measurements*

*Males* (Holotype and 4 paratypes): L=775; 751; 753; 858; 879, eso=122; 103; 116; 107; 128, hd=10; 12; 11; 13; 11, bd=26; 26; 22; 25; 22, ad=24; 23; 24; 24; 24, mbd=31; 30; 31; 29; 32, cs=6; 6; 6; 7; 7, nr=72; 57; 65; 63; 75, ep=82; 66; 73; 70; 82, vg=173; 148; 167; 170; 194, t=89; 85; 88; 93; 91, spic=30(25); 32(27); 29(25); 27(22); 28(23), gub=18; 18; 20; 17; 16.

*Females* (Allotype and 3 paratypes): L=807; 810; 835; 887, eso=118; 110; 119; 129, hd=10; 11; 12; 10, bd=26; 27; 28; 26, vd=32; 32; 32; 32, ad=21; 23; 20; 21, mbd=34; 33; 34; 34, cs=6; 5; 7; 7, nr=68; 67; 65; 75, ep=74; 68; 78; 85, vg=174; 169; 153; 187, t=108; 111; 112; 113, v=372; 382; 355; 426.

*Male.* Cuticle faintly annulated with transverse rows of punctations; these punctations differentiated laterally into four pronounced longitudinal rows, but irregular at anterior head and tail; ventral and dorsal punctations rather thread-like. Short setae distributed sublaterally.

Head (Fig. 3-2, 3, 4) truncated; outer cephalic setae four, labial papillae and inner cephalic setae indistinct. Amphids loop-shaped at anterior buccal cavity, 3  $\mu$  wide. Pigment spots not observed. Buccal cavity deep, buccal wall strongly sclerotized, expanding inside in front of buccal teeth. Conspicuous large, movable dorsal tooth on the expanded base; two weak teeth on ventral walls, two pronounced tooth-like projections arising from a common thickened cuticular base of lateral wall (difficult to observe these projections when overlapped with the tip of dorsal tooth in lateral view). Esophagus (Fig. 3-1) slender except anterior swelling around buccal cavity, ending in definite bulb with an interruption anteriorly, one-sixth of esophagus length. Esophagus surrounded by nerve ring at three-fifths of esophagus length from anterior. Excretory pore opening just posterior to nerve ring. Cervical setae arranged near the level of 15  $\mu$  from anterior; two adjacent setae ventro-laterally, four dorso-laterally at intervals of about 5  $\mu$  in length.

Reproductive system with a single, outstretched testis, 468  $\mu$  from anterior to cloaca. Spicules (Fig. 3-5, 6) equal, identical and arcuate with alae?; proximally cephalated and distal end not pointed. Gubernaculum covering spicules distally,

0.6 spicule length; distal and dorsal parts rather cuticularized, dorsal side notched just posterior to distal end. Preanal supplements large ( $3.5 \times 3.6 \mu$  in size, posteriormost one), twelve in number, arranged at almost equal interval; anterior-

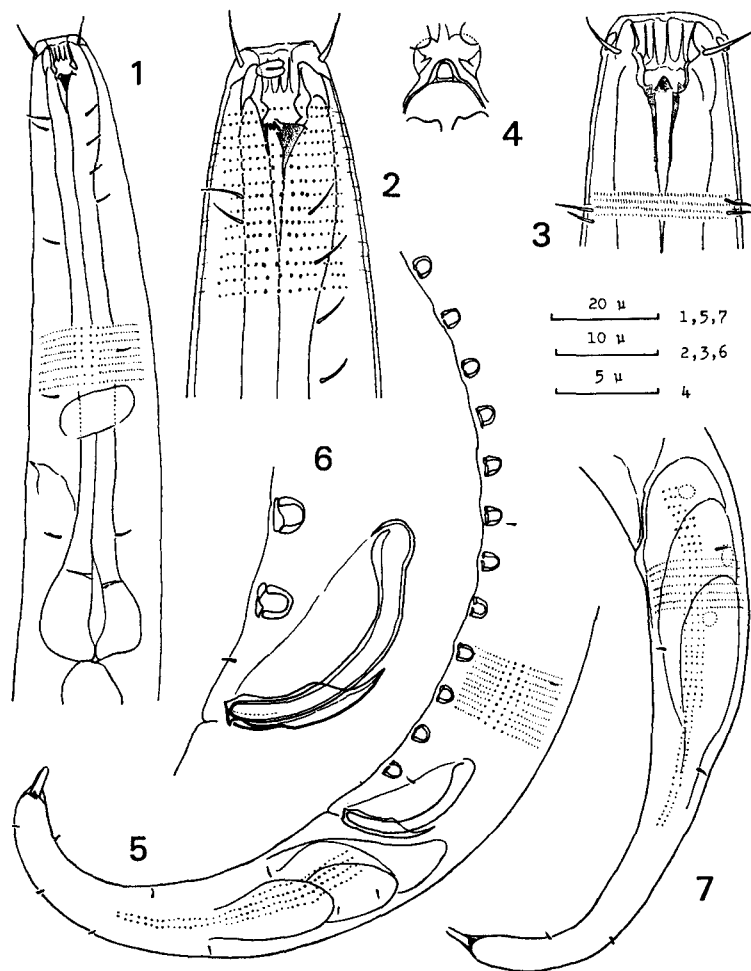


Fig. 3. *Chromadora heterostomata* n. sp. Male (Holotype; 3,4, paratypes). 1. anterior end; 2-3. head, lateral and ventral view; 4. buccal armatures, *en face* view; 5; posterior end; 6. spicules and gubernaculum; Female (Allotype). 7. tail.

most one at  $115 \mu$  long before cloaca (paratypes; supplement number 13, 11, 14, 13 and anteriormost one at 120, 123, 153,  $126 \mu$  before cloaca in order of measurement); minute seta between posteriormost supplement and cloaca.

Tail gradually tapering, with three caudal glands; spinneret,  $6 \mu$  long.

*Female.* Similar to male in most detail.

Reproductive system with paired, opposed and reflexed ovaries; the anterior 18.0 and the posterior 18.5% of body length (16.9–18.3 and 17.8–24.1 in paratypes, respectively). Vulva situated slightly anterior to middle of body. One egg in each uterus, 40–54 × 23–28  $\mu$  in size (including paratypes).

Tail (Fig. 3–7) longer rather than of male.

*Remarks.* The present new species is remarkably characterized by the strongly cuticularized and complicated buccal cavity ornamented with one large dorsal tooth, two weak ventral teeth and two tooth-like projections on each lateral wall. These specimens, however, have to be identified with special attention because they resemble *Chromadora macrolaima* De Man, 1889 in the general features; especially, the number of the preanal supplements (11–14), the shape of the genital apparatus and pronounced large dorsal tooth (*C. macrolaima* is characterized by only one dorsal tooth, while the lateral projections of the present species may be overlooked for overlapping with the tip of the dorsal tooth under certain angled observation).

Gerlach (1965) described and figured the specimens from Svalbard under the name *C. macrolaima*, bearing a similar tooth-like structure except one dorsal tooth, and so his species might be synonymous with the present species.

*Material studied.* Seven males and four females. Holotype ♂ and allotype ♀ (28–III–1974), paratypes; 2 ♂♂ and 1 ♀ (7–IX–1973), 4 ♂♂ and 2 ♀♀ (28–III–1974): Oshoro, on *Sargassum confusum* Agardh in subtidal zone (K. Kito leg.).

### *Chromadora nudicapitata* Bastian, 1865

(Fig. 4)

#### *Measurements*

*Males* (5): L=493; 524; 533; 617; 659, eso=93; 90; 99; 93; 106, hd=9; 8; 9; 9; 8, bd=19; 19; 20; 22; 21, ad=16; 17; 17; 19; 20, mbd=20; 21; 22; 23; 24, cs=4; 6; 5; 5; –, nr=59; 53; 64; 52; –, ep=8; –; 9; 9; 9, vg=133; 140; 139; 147; 162, t=72; 72; 81; 84; 75, spic=21(18); 19(17); 22(20); 23(19); 22(19), gub=12; 13; 13; 15; 16.

*Females* (5): L=577; 602; 633; 644; 678, eso=98; 103; 100; 100; 100, hd=9; 9; 9; 9; 10, bd=23; 23; 21; 22; 24, vd=26; 24; 25; 26; 27, ad=16; 15; 16; 16; 16, mbd=27; 26; 25; 27; 31, cs=5; 5; 4; 5; 5, nr=61; 54; 60; 62; 56, ep=8; 12; 8; –, –, vg=148; 145; 155; 152; 149, t=94; 97; 96; 100; 106, v=249; 281; 296; 293; 285.

*Male.* Cuticle (Fig. 4–1) weakly striated with transverse rows of punctations; laterally differentiated into four longitudinal rows, but not so distinct as foregoing species (only one male distinctively differentiated among 44 specimens including females, as shown in Fig. 4–4). Short somatic setae arranged in four sublateral rows.

Head (Fig. 4–2) with four cephalic setae, less than 0.8 head diameter length.

Amphids indistinct but transversely oval in out line. Buccal cavity weakly cuticularized, with one dorsal and two subventral teeth. Pigment spots present at about 2 head diameters length from anterior. Two pairs of cervical setae situated at both sides of pigment spots. Esophagus bulb rounded, anteriorly with a single interruption. Nerve ring posterior to middle of esophagus. Excretory pore opening near anterior end.

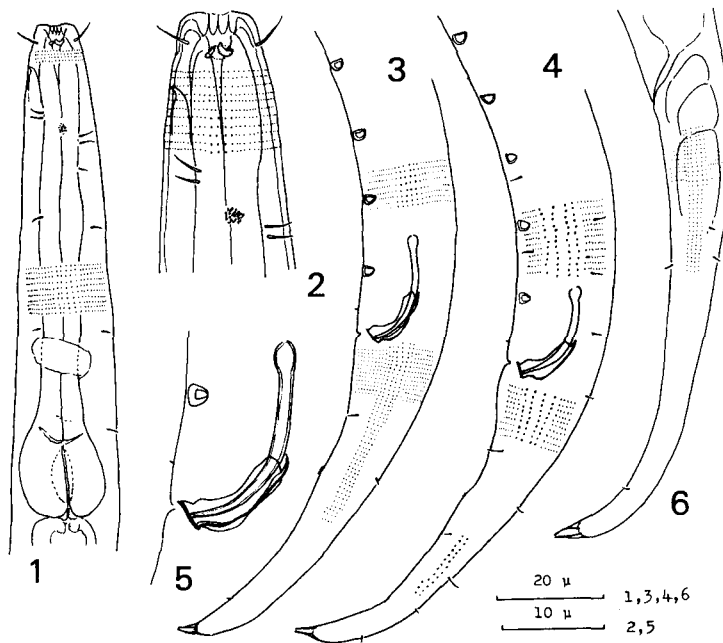


Fig. 4. *Chromadora nudicapitata* Bastian, 1865. Male (4, another specimen). 1. anterior end; 2. head; 3-4. posterior end; 5. spicules and gubernaculum; Female. 6. tail.

Reproductive system with a single, outstretched testis. Spicules (Fig. 4-3, 4, 5) slender, curved ventrally; proximal end slightly cephalated, distally pointed. Gubernaculum somewhat complicated, weakly serrated at dilated distal end, rather cuticularized in dorsal part. Usual preanal supplements 4, 4, 5, 4, 3 in order of measurement, arranged at almost equal interval, 13-19  $\mu$  and anteriormost one situated at 63, 50, 73, 69, 44  $\mu$  before cloaca, respectively. Short seta present just anterior to cloaca (not microsupplement).

Tail with slight elevation of cuticle at about 40% of tail length from cloaca, a pair of short setae or papillae anterior to tail end. Spinneret short, about 4  $\mu$  long. *Female*. Similar to male in most detail.

Reproductive system with paired, opposed and reflexed ovaries; the anterior 14.8-17.8 and the posterior 13.4-21.0% of body length, respectively. Vulva slightly

before middle of body. Eggs  $37-40 \times 21-25 \mu$  in size, one per uterus.

Tail (Fig. 4-6) slimer than of male, with no postanal elevation.

*Remarks.* *Chromadora nudicapitata* is regarded as a cosmopolitan species and shows some variations on the structure of the esophagus bulb, the number and arrangement of the preanal supplements, the presence or absence of the postanal papillae in the male, and so on (see Wieser, 1956). In Japan this species has been reported from Shirahama by Wieser (1955) and all his males were homogeneously equipped with three large preanal supplements and one micropapillary one immediately in front of the cloaca. The present specimens collected from Oshoro, however, have three to five usual supplements arranged at almost same interval (3 individuals - 3 supplements, 25-4 and 11-5) and none of them has a micropapillary one. This different distributional pattern of the preanal supplements between two populations in Japan will be discussed in another paper.

*Material studied:* 39 males and 5 females. 4 ♂♂ and 4 ♀♀ (10-VIII-1973), 27 ♂♂ and 1 ♀ (7-IX-1973), 8 ♂♂ (28-III-1974): Oshoro, on *Sargassum confusum* Agardh in subtidal zone (K. Kito leg.).

### *Neochromadora bilineata* n. sp.

(Fig. 5)

#### *Measurements*

*Males* (Holotype and 4 paratypes): L=662; 567; 642; 696; 744, eso=101; 100; 109; 98; 108, hd=8; 9; 9; 8; 8, bd=20; 21; 19; 21; 21, ad=18; 18; 18; 17; 19, mbd=23; 22; 23; 24; 25, cs=6; 4; 5; 5; 5, nr=61; 57; -, 63; 66, vg=158; 145; 157; 149; 169, t=101; 89; 97; 92; 96, spic=26(22); 24(20); 23(17); 24(20); 26(22), gub=16; 15; 16; 15; 18.

*Females* (Allotype and 4 paratypes): L=773; 752; 765; 765; 852, eso=104; 107; 104; 108; 115, hd=9; 9; 8; 9; 9, bd=23; 23; 23; 23; 24, vd(=mbd)=36; 31; 28; 31; 33, ad=18; 17; 17; 17; 17, cs=4; -, 6; 6; 6, nr=67; -, 68; 66; -, vg=156; 154; 155; 161; -, t=137; 130; 124; 133; 148, v=336; 328; 352; 341; 383.

*Male.* Cuticle striated, complicated and heterogeneously differentiated; four transverse rows of small oval to rectangular markings present just posterior to cephalic setae, posterior two rows of markings larger than anterior ones (Fig. 5-2); following part of cuticle to 40% of esophagus length characteristically thicker than any other part (Fig. 5-1), two longitudinal rows of distinct markings laterally differentiated, transverse bands on the both sides of these two apart markings appeared to be fused structure of such markings; near esophagus end longitudinal markings enlarged, appeared semicircular, and transverse bands becoming rod-like form (Fig. 5-4); at middle body and near cloaca (Fig. 5-5, 6), lateral markings oval-shaped, and transverse bands apparently composed of narrowing two rows (horseshoe-like structure was observed under these lateral markings at middle part of body in paratype as shown in Fig. 5-7). Lateral membrane occurring from

posterior esophagus bulb,  $3.8 \mu$  wide at middle body. Cervical and somatic setae arranged sublaterally, less than  $7 \mu$  long.

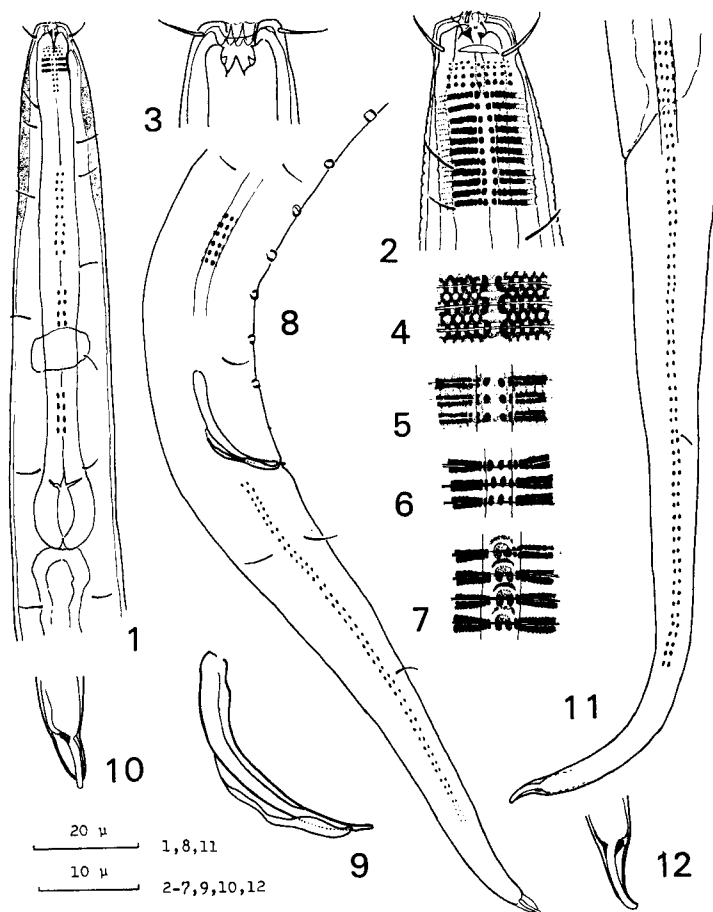


Fig. 5. *Neochromadora bilineata* n. sp. Male (Holotype; 3, 7, paratypes). 1. anterior end; 2-3, head, lateral and dorsal view; 4-7. lateral cuticular pattern, near esophagus end, at middle of body, near cleaca and at middle of body; 8. posterior end; 9. spicules and gubernaculum; 10. spinneret; Female (Allotype). 11. tail; 12. spinneret.

Head (Fig. 5-2, 3) truncated with six labial papillae and cephalic setae (6+4). Amphids crescent-like,  $3.6 \mu$  wide. Buccal cavity shallow, ornamented with one dorsal, two subventral teeth, and other modifications; tooth-like processes at anterior subventral walls and minute denticles or ridges on lateral walls. Esophagus surrounded by nerve ring at about 60% of its length from anterior; esophagus bulb with an interruption. Excretory ampulla near anterior esophagus,

pore probably posterior to cephalic setae.

Reproductive system with a single, outstretched testis. Spicules (Fig. 5-9) slender, arcuate and gradually pointed. Gubernaculum distally dilated as supporting spicules, distal tip slightly bent upwards. Seven preanal supplements present, and minute seta in front of cloaca (Fig. 5-8); distance between the anteriormost, the posteriormost and cloaca, respectively 70 and 15  $\mu$  long (seven supplements and distance between the anteriormost and cloaca, 11-12% of body length are also constant in paratypes).

Tail long and gradually tapering; spinneret (Fig. 5-10) conspicuously plumped, tube slender, 5  $\mu$  long.

*Female.* Similar to male in most detail.

Reproductive system with paired, opposed and reflexed ovaries; the anterior 18.6 and the posterior 19.9% of body length, respectively (16.1-18.8 and 18.8-19.5, respectively in paratypes). Vulva situated anterior to middle of body. One egg in each uterus, 38-44  $\times$  26-28  $\mu$  in size (including paratypes).

Tail (Fig. 5-11) longer than of male; spinneret (Fig. 5-12) longer, not plumped, 7  $\mu$  long.

*Remarks.* Among the members of *Neochromadora* characterized by the heterogeneous cuticular pattern pronouncedly differentiated and the possession of about 7 preanal supplements, the present species closely resembles *N. complexa* Gerlach, 1953 in the body size (less than 1 mm long), lateral differentiation of the cuticle beginning from just anterior head, the shape of the spicules and gubernaculum, 7 preanal supplements and so on. This new species, however, is distinguishable from *N. complexa* by the following features, without comparing in the female because the female of the latter not founded; which are, the cuticle of anterior 40% of the esophagus is characteristically thickened and at this part cuticular markings except two lateral ones are fused becoming transverse bands, and that the preanal supplements are more weak and smaller.

*Material studied.* Five males and five females. Holotype ♂ (10-VIII-1973) and allotype (28-III-1974), paratypes; 1 ♂ (10-VIII-1973), 2 ♂♂ (7-IX-1973), 1 ♂ and 4 ♀♀ (28-III-1974): Oshoro, on *Sargassum confusum* Agardh in subtidal zone (K. Kito leg.).

#### Family Cyatholaimidae

##### *Paracanthonchus macrodon* (Ditlevsen, 1919)

(Fig. 6)

##### *Measurements*

*Males* (3): L=2239; 2384; 2441, eso=333; 369; 301, hd=35; 35; 31, bd=67; 71; 64, ad=65; 61; 59, mbd=78; 82; 81, cs=8+-; 11+7; 11+-, ep=111; 126; 114, vg=-; -, 399, t=165; 169; 162, spic=64(54); 67(59); 66(59), gub=60; 63; 62.

*Females* (2): L=2562; 2685; eso=371; 360, hd=42; 37, bd=-; 80, vd (=mbd)=

92; 95, ad=66; 67, cs=12+6; 14+10, nr=147; 173, ep=121; 116, vg=423; -, t=208; 186, v=1213; 1198.

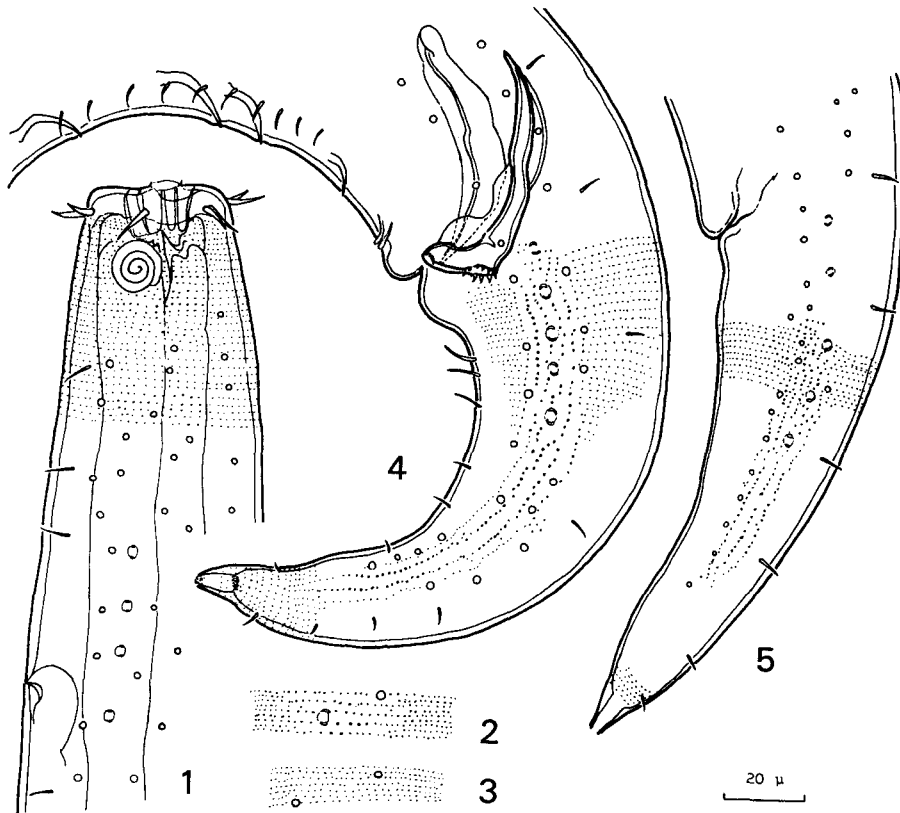


Fig. 6. *Paracanthonchus macrodon* (Ditlevsen, 1919). Male. 1. anterior end; 2-3. lateral cuticular pattern, behind excretory pore and near esophagus end; 4. posterior end; Female. 5. tail.

*Male.* Cuticle with transverse rows of fine punctations, somewhat heterogeneous; rows  $2\ \mu$  apart from each other at anterior (Fig. 6-1), posterior to excretory pore another row situated between above two rows except laterally (Fig. 6-2), all the rows completely crossing and their interval becoming narrower near esophagus end (Fig. 6-3), at middle of body interval widening again, on tail some longitudinal rows remarkably differentiated and rather irregular (Fig. 6-4). Two types of pores present; small rounded pores arranged basically in four longitudinal rows, two sublateral, ventral and dorsal, but anteriorly and posteriorly being irregular; larger pores bounded anteriorly and posteriorly by a crescent structure, longitudinally observed at middle esophagus and tail.

Head with six labial papillae and short, stout cephalic setae (6+4). Amphids spiral, 11–12  $\mu$  wide, 3–3.25 turns. Buccal cavity bearing pronounced, pointed dorsal tooth and probably two minute subventral teeth. Esophagus gradually broadening, without bulb. Excretory pore distinct at one-third esophagus length from anterior; ventral gland indistinct.

Reproductive system with paired, opposed testes. Spicules arcuate, swelling at middle part, distally pointed. Gubernaculum heavily cuticularized; distal end broadening, about 20  $\mu$  wide, bearing series of tiny processes and three or four large ones, expanding outside antero-distally. Preanal tubular supplements arranged in 4+2, anterior four typical, posterior two rather delicate, adjacent; distance between the anteriormost and second, the second and third, the third and fourth, the fourth and cloaca, respectively, 35, 11, 24, 28  $\mu$  long. A series of short setae distributed on both lateral sides of supplements.

Tail rather plumped, conoid; three large setae postanally present.

*Female.* Similar to male in most detail.

Cephalic setae slightly longer than of male. Amphids 11  $\mu$  wide, 2.25 turns.

Reproductive system with paired, opposed and refflexed ovaries; the anterior 12.8–13.6 and the posterior 14.9–17.2% of body length, respectively. Vulva situated anterior to middle of body. Two eggs in the anterior uterus, three in the posterior, 51–72  $\times$  50–55  $\mu$  in size.

Tail (Fig. 6–5) rather slender, with no postanal setae in male.

*Remarks.* The present specimens are well accord with the specimens reported from the North Sea by Lorenzen (1972) in almost features, especially, cuticular differentiation, the position of the excretory pore, the shape of the spicules and gubernaculum, and the shape and arrangement of six preanal supplements. The position of the excretory pore, however, is more posterior than of the specimens originally described by Ditlevsen, situated only 18  $\mu$  behind the front end.

*Material studied.* Three males and two females. 2 ♂♂ and 2 ♀♀ (7–IX–1973): Oshoro, on *Sargassum confusum* Agardh in subtidal zone. 1 ♂ (11–VI–1975): Oshoro, in sand in the *Sargassum* region (K. Kito leg.).

## References

- Bastian, H. Ch. 1865. Monograph on the Anguillulidae, or free Nematoids, marine, land, and freshwater; with descriptions of 100 new species. Trans. Linn. Soc. London 25: 73–184, pls. IX–XIII.
- Chitwood, B. G. 1951. North American marine nematodes. Texas Jour. Sci. 3(4): 617–672.
- Ditlevsen, H. 1919. Marine freeliving nematodes from Danish waters. Vidensk. Meddr. danks. naturh. Foren. 70: 147–214, pls. I–XVI.
- Filipjev, I. N. 1918–1921. Free-living marine nematodes of the Sevastopol area (in Russian). Part I (1919) and II (1921). (English translations by M. Raven, Israel Program for Scientific Translations, Jerusalem 1968—part I: 1–255, 1970—part II: 1–203).
- Gerlach, S. A. 1953. Freilebende marine Nematoden aus dem Küstengrundwasser und

- aus dem Brackwasser der chilenischen Küste. *Acta Univ. lund. (N.F. 2)* **49**(2): 1-37.
- 1965. Freilebende Meeresnematoden aus der Gezeitenzone von Spitzbergen. *Veröff. Inst. Meeresforsch. Bremerh.* **9**: 109-172.
- Lorenzen, S. 1972. Die Nematodenfauna im Verklappungsgebiet für Industrieabwasser nordwestlich von Helgoland. II. Desmodorida und Chromadorida. *Zool. Anz.* **187**: 283-302.
- De Man, J. G. 1889. Troisième note sur les Nématodes libres de la mer du Nord et de la Manche. *Mém. Soc. Zool. France* **2**: 182-216, pls. V-VIII.
- Timm, R. W. 1952. A survey of the marine nematodes of Chesapeake Bay, Maryland. *Chesapeake Biol. Lab. Publ.* **95**: 1-70.
- Wieser, W. 1955. A collection of marine nematodes from Japan. *Publ. Seto Mar. Biol. Lab.* **4**: 159-181.
- 1956. Eine Sammlung mariner Nematoden aus Piraeus (Griechenland). *Österr. Zool. Z.* **6**: 597-630.
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