

DIGENETIC TREMATODES OF MARINE FISHES. ON SOME NEW AND KNOWN DIGENETIC TREMATODES OF THE FAMILY BUCEPHALIDAE POCHE, 1907 FROM MARINE FISHES OF PURI, ORISSA, INDIA

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ABSTRACT

Five new species of bucephalid trematodes from the intestine of *Scomber microlepidotus* (Ruppell), *Cynoglossus lida* (Bleeker), *Caranx kalla* (Cuv. and Val.), *Rastrelliger kanagurta* (Cuv.) and *Chorinemus moadetta* (Cuv. and Val.) marine fishes of Bay of Bengal, at Puri, Orissa, have been described. *Proisorhynchus manteri* Srivastava, 1938 has been redescribed from the intestine of *Trichiurus muticus* (Griffith). A key to the species of the genus *Alcicornis* MacCallum, 1917 is also given.

RESUMEN

Cinco nuevas especies de tremátodos bucefálicos del intestino de *Scomber microlepidotus* (Ruppell), *Cynoglossus lida* (Bleeker), *Caranx kalla* (Cuv. y Val.), *Rastrelliger kanagurta* (Cuv.) y del de *Chorinemus moadetta* (Cuv. y Val.), peces marinos de la Bahía de Bengala, Puri, Orissa. *Proisorhynchus manteri* Srivastava, 1938 es redescrito del intestino de *Trichiurus muticus* (Griffith). Se da también, una clave del género *Alcicornis* MacCallum, 1917.

The trematodes described in this paper are part of a collection made by the junior author during the years 1972-1975 from marine fishes of Bay of Bengal, at Puri, Orissa. The fishes were obtained either from sea shore or from commercial fishing centers. The trematodes were fixed in AFA fixative (50% alcohol, formaline and acetic acid in the ratio of 100:6:2.5) under slight pressure of coverglass for 24 hours. After fixation, the parasites were removed, kept in AFA for some time, washed in 70% alcohol to remove excess of the fixative and finally preserved in 70% alcohol containing 5% glycerine. The specimens for whole mounts were stained either in Acetic alum carmine or Ehrlich's hema-

toxylin, differentiated in acid water, dehydrated in graded series of alcohols, cleared in clove oil and mounted in Canada balsam.

The diagrams were made with the aid of a camera lucida. All measurements are in millimeters. The type and paratype specimens of the forms described in this paper will be deposited in Prof. G. S. Thapar's Helminthological collection, 227, Mahatma Gandhi Road, Dilkusha, Lucknow, India.

Alcicornis scomberi n.sp.
(Fig. 1)

Only one specimen of this species was collected from the intestine of a marine

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fish, *Scomber microlepidotus* (Ruppell) from Bay of Bengal, at Puri, Orissa.

Description: Body elongate, slender, subcylindrical, slightly tapering anteriorly and rounded posteriorly, 3.52 long, 0.42 wide. Rhynchus oval, wedge-shaped, 0.17 long, 0.175 wide, with six short tentacles, without lateral processes. Mouth ventral, postequatorial, overlapping ovary, at 2.34 from anterior extremity. Pharynx spherical, 0.05 in diameter. Oesophagus short. Intestine saccular, 0.595 long, 0.29 wide, directed anteriorly up to middle of body. Excretory bladder tubular. Excretory pore terminal. Genital pore subterminal, a little anterior to hind end of body.

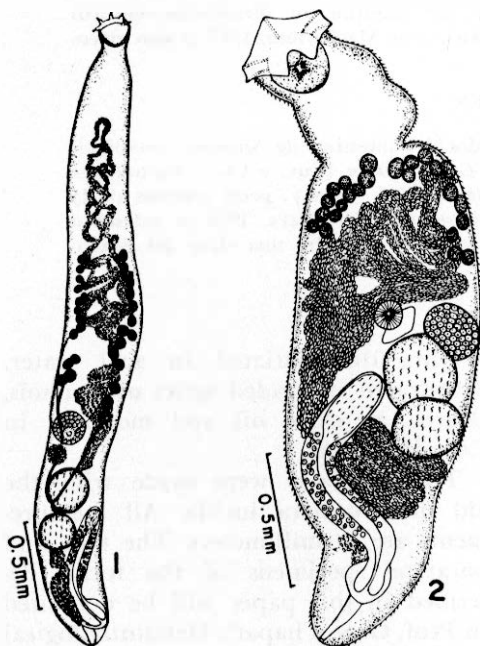


Fig. 1. *Alcicornis scomberi* n.sp. Ventral view.
Fig. 2. *Rhipidocotyle indicus* n.sp. Ventral view.

Testes oval, tandem, subequal, close together, in middle of posterior one-third of body. Anterior testis 0.25 long, 0.224 wide, at 2.52 from anterior extremity. Posterior testis smaller than anterior testis, 0.21 in diameter, at 0.68

from hind end of body. Cirrus sac elongate, 0.765 long, 0.12 wide, extending up to posterior third of anterior testis. Vesicula seminalis oval, 0.12 long, 0.07 wide. Pars prostatica 0.40 long, surrounded by a large number of prostate gland cells. Ejaculatory duct 0.10 long. Genital atrium spacious, enclosing genital lobes.

Ovary spherical, pretesticular, separated from anterior testis by uterine coils, 0.191 in diameter, at 2.21 from anterior extremity. Oviduct arises from hind end of ovary and opens at ootype. Vitellaria follicular, in two lateral rows, 15 on right side and 14 on left side, extending posteriorly up to middle of ovary. One vitelline duct from each side meet and open at ootype. Uterus arises from ootype, runs anteriorly up to some distance anterior to level of vitellaria and then runs posteriorly to open into genital atrium. Eggs oval, operculated, 0.015-0.024 long, 0.013-0.019 wide.

Host: *Scomber microlepidotus* (Ruppell)

Location: Intestine

Locality: Puri, Orissa

Prevalence: One specimen from one host out of 16 examined.

Discussion: The new species is referred to the genus *Alcicornis* MacCallum, 1917 of which the following species viz., *A. carangis* MacCallum, 1917, *A. baylisi* Nagaty, 1937, *A. cirrudiscoides* Velázquez, 1959, *A. siddiki* nahhas and Cable, 1960, *A. thapari* Hafeezullah and Siddiqi, 1970 and *A. multidactylus* Madhavi, 1974 are known. The new species differs from all these other species in having six tentacles and in the extent of vitellaria up to middle of ovary. It further differs from *A. carangis*, *A. baylisi*, *A. cirrudiscoides* and *A. siddiki* in having tentacles without lateral processes. The new form can further be distinguished from *A. carangis* and *A. cirrudiscoides* in the extension of uterus up to some distance anterior to

level of vitellaria instead of up to anterior level of it and in the extension of cirrus sac up to posterior third of anterior testis instead of up to level of ovary in *A. carangis* or middle of posterior testis in *A. cirrudiscoides*. It further differs from *A. cirrudiscoides* in having testes in middle of posterior one-third of body instead of in middle third of body and in the absence of anterior end of cirrus sac concave, disc-like.

It differs from *A. thapari* and *A. multidactylus* in the extension of cirrus sac up to posterior third of anterior testis instead of up to a little posterior to hind testis in *A. thapari* or up to level of anterior testis in *A. multidactylus*, in

the extension of uterus up to some distance anterior to level of vitellaria instead of up to anterior level of vitellaria. It can further be distinguished from *A. thapari* in having mouth overlapping ovary instead of some distance anterior to it and in having testes close together and ovary separated from anterior testis instead of testes separated from each other and ovary close to anterior testis. Accordingly, it is regarded as a new species with the specific name *A. scomberi* n.sp.

The new species is named after its host *Scomber microlepidotus*. Key to the species of the genus *Alcicornis* MacCallum, 1917.

Tentacles fifteen	<i>A. multidactylus</i> Madhavi, 1974	
Tentacles less than fifteen		1
1. Tentacles seven		2
Tentacles six	<i>A. scomberi</i> n.sp.	
2. Rhynchus conical, funnel-shaped		3
Rhynchus oval, wedge-shaped		4
3. Cirrus sac extending up to level of ovary	<i>A. carangis</i> MacCallum, 1917	
Cirrus sac extending up to middle of posterior testis	<i>A. baylisi</i> Nagaty, 1937	
4. Cirrus sac with anterior and concave, diselike	<i>A. cirrudiscoides</i> Velásquez, 1959	
Cirrus sac simple, without anterior end concave, disc-like		5
5. Uterus extending up to anterior level of vitellaria	<i>A. thapari</i> Hafeezullah and Siddiqi, 1970	
Uterus extending up to some distance anterior to level of vitellaria	<i>A. siddiqi</i> Nahhas and Cable, 1960	

Rhipidocotyle indicus n.sp.
(Fig. 2)

Five specimens of this species were collected from the intestine of a marine fish, *Cynoglossus lida* (Bleeker) from Bay of Bengal, at Puri, Orissa.

Description: Body flattened, tapering towards both ends, spinose, 1.5-2.49 long, 0.42-0.68 wide. Rhynchus cup-like, 0.15-0.19 long, 0.19-0.21 wide; hood polygonal or fan-shaped, with seven processes; a median dorsal, two dorso-lateral, two ventrolateral and two ventral papillae. Mouth equatorial, close to anterior testis, at 0.68-1.23 from anterior extremity. Pharynx spherical, 0.07-0.10 in diameter. Intestine short, 0.19-0.23 long, directed posteriorly. Excretory bladder tubular. Excretory pore terminal. Genital pore subterminal, a little anterior to hind end of body.

Testes oval, tandem, subequal, submedian, anterior testis overlapping posterior one, in middle third of body. Anterior testis 0.21-0.30 long, 0.20-0.27 wide, at 0.80-1.32 from anterior extremity. Posterior testis smaller than anterior testis, 0.21-0.22 long, 0.195-0.26 wide, at 0.89-1.56 from anterior extremity. Cirrus sac elongate, 0.81-0.992 long, extending either up to level of pharynx or up to middle of anterior testis. Vesicula seminalis oval, 0.15-0.30 long, 0.09-0.12 wide. Pars prostatica 0.47-0.49 long, surrounded by a large number of prostate gland cells. Ejaculatory duct 0.09-0.092 long. Genital atrium spacious, enclosing genital lobes.

Ovary oval, tandem, submedian, pretesticular, 0.18-0.21 long, 0.18-0.19 wide, at 0.692-1.24 from anterior extremity. Vitellaria follicular, in two lateral rows, 10-13 on right side and 9-12 on left side, extending up to level of ovary or a little anterior to it. Uterus runs anteriorly up to a little posterior to anteriormost vitellaria, then runs posteriorly to open into

genital atrium. Eggs oval, operculated, 0.021-0.025 long, 0.011-0.017 wide.

Host: *Cynoglossus lida* (Bleeker)

Location: Intestine

Locality: Puri, Orissa

Prevalence: Five specimens from two hosts out of 41 examined.

Discussion: The new species is referred to the genus *Rhipidocotyle* Die-sing, 1858, of which the following species viz., *R. galeata* (Rudolphi, 1819) Eckmann, 1932, *R. baculum* (Linton, 1905) Eckmann, 1932, *R. pentagonum* (Ozaki, 1924) Eckmann, 1932, *R. papillosa* (Woodhead, 1929) Eckmann, 1932, *R. septapapillata* Krull, 1934, *R. longleyi* Manter, 1934, *R. transversalis* Chandler, 1935, *R. elongata* McFarlane, 1936, *R. eckmanni* Nagaty, 1937, *R. khalili* Nagaty, 1937, *R. adbaculum* Manter, 1940, *R. barracudae* Manter, 1940, *R. nagatyi* Manter, 1940, *R. capitata* (Linton, 1940) Manter, 1942, *R. angusticollis* Chandler, 1941, *R. lingualis* Komiya et Tajim, 1941, *R. apapillosum* Chauhan, 1943, *R. ligulum* Chauhan, 1943, *R. lepisostei* Hopkins, 1954, *R. lintoni* Hopkins, 1954, *R. eggletoni* Velásquez, 1959, *R. lruiei* Velásquez, 1959, *R. sphyraenae* Yamaguti, 1959, *R. ghanensis* Fischthal and Thomas, 1968, *R. megagaster* Corkum, 1968, *R. kawakawa* Yamaguti, 1970 and *R. karthai* Hafeezullah and Siddiqi, 1970 are known.

Madhavi (1974) considered *R. karthai* as a synonym of *R. ghanensis* Fischthal and Thomas, 1968. Stunkard (1974) proposed a new species *R. heptathelata* n.sp. for *R. septapapillata* Nagaty (1937) from the intestine of *Thynnus thunnina* taken in the Red Sea. He distinguished *R. heptathelata* from *R. septapapillata* Krull, 1934 in having specimens three times larger, the diameter of sucker and pharynx are about two times larger and difference in the location of digestive and reproductive organs.

The new species differs from all these forms except *R. septapapillata* Krull, 1934, *R. laruei* Velásquez, 1959, *R. ghanensis* Fischthal and Thomas, 1968 and *R. heptathelata* Stunkard, 1974 in having polygonal fan-shaped hood with seven processes. It differs from the above mentioned species in having intestine short and in the extension of cirrus sac either up to level of pharynx or to middle of anterior testis. It further differs from *R. septapapillata* and *R. ghanensis* in the extension of uterus up to a little posterior to anteriormost vitellaria; from *R. heptathelata* in having specimens of smaller size and in the position of digestive and reproductive organs and from *R. laruei* in having anterior testis larger than posterior testis and in having seminal vesicle saccular. Accordingly, it is regarded as a new species with the specific name *R. indicus* n.sp.

Proisorhynchus caballeri n.sp.
(Fig. 3)

Only one specimen of this species was collected from the intestine of a marine fish, *Caranx kalla* (Cuv. and Val.) from Bay of Bengal, at Puri, Orissa.

Description: Body elongate, slender, spinose, with long neck, 2.98 long, 0.41 wide. Rhynchus oval, plug-shaped, lenticular, 0.18 long, 0.165 wide. Mouth median, postequareatorial, at 1.68 from anterior extremity. Pharynx spherical, 0.11 in diameter. Oesophagus 0.064 long. Intestine saccular, 0.55 long, extending posteriorly up to anterior margin of ovary. Excretory bladder tubular. Excretory pore terminal. Genital pore subterminal, near hind end of body.

Testes oval, tandem, subequal, contiguous, in posterior third of body. Anterior testis 0.225 long, 0.19 wide, at 2.06 from anterior extremity. Posterior testis smaller than anterior testis, 0.19

long, 0.165 wide, at 2.27 from anterior extremity. Cirrus sac elongate, 0.805 long, 0.165 wide, extending up to middle of anterior testis. Vesicula seminalis oval, 0.22 long, 0.13 wide. Pars prostatica 0.39 long, surrounded by a large number of prostate gland cells. Ejaculatory duct 0.19 long. Genital atrium spacious, enclosing genital lobes.

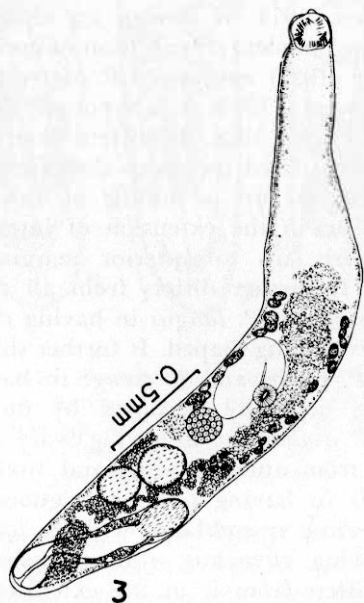


Fig. 3. *Proisorhynchus caballeri* n.sp. Ventral view.

Ovary spherical, pretesticular, tandem, separated from anterior testis, 0.15 in diameter, at 1.84 from anterior extremity. Vitellaria follicular, in two lateral rows, 10 on right side and 15 on left side, extending up to anterior margin of anterior testis. Uterus arises from ootype, runs anteriorly up to a little in front of anteriormost vitellaria and then runs posteriorly to open into genital atrium. Eggs oval, operculated, 0.019-0.021 long, 0.011-0.013 wide.

Host: *Caranx kalla* (Cuv. and Val.)

Location: Intestine

Locality: Puri, Orissa

Prevalence: One specimen from one host out of 37 examined.

Discussion: The new species in referred to the genus *Prosorhynchus* Odhner, 1905. It has a close resemblance with *P. facilis* Ozaki, 1924, *P. tsengi* Tsin, 1933, *P. platycephali* Yamaguti, 1934, *P. arabianum* Srivastava, 1938, *P. longus* Velásquez, 1959 and *P. indicus* Madhavi, 1974 in having an elongate body and tandem distribution of gonads. Nagaty (1937) considered *P. platycephali* Yamaguti, 1934 as a synonym of *P. facilis* Ozaki, 1924. It differs from the abovementioned species in the extension of cirrus sac up to middle of anterior testis and in the extension of intestine posteriorly up to anterior margin of ovary. It further differs from all these species except *P. longus* in having rhynchus oval, plug-shaped. It further differs from *P. facilis* and *P. tsengi* in having a long neck not occupied by uterus; from *P. arabianum* in having ovary separated from anterior testis and from *P. indicus* in having testes contiguous. It has a close resemblance with *P. longus* in having rhynchus oval, plug-shaped but differs from it in the extension of vitellaria up to middle of ovary and in being larger. Accordingly, it is regarded as a new species with the specific name *P. caballeroi* n.sp.

The new species is named in honour of Dr. Eduardo Caballero y Caballero.

Prosorhynchus orientalis n.sp.

(Fig. 4)

Only one specimen of this species was collected from the intestine of a marine fish, *Rastrelliger kanagurta* (Cuv.) from Bay of Bengal, at Puri, Orissa.

Description: Body elongate, slender, spinose, with long neck, 3.60 long, 0.29 wide. Rhynchus conical, 0.19 long, 0.098 wide. Mouth submedian, postequatorial, a little anterior to ovary, at 2.36

from anterior extremity. Pharynx spherical, 0.063 in diameter. Oesophagus 0.06 long. Intestine saccular, 0.325 long, 0.142 wide, directed anteriorly. Excretory bladder tubular. Excretory pore terminal. Genital pore subterminal, a little anterior to hind end of body. Testes oval, tandem, subequal, separated from each other by uterine coils, in middle of posterior third of body. Anterior testis 0.17 long, 0.135 wide, at 2.747 from anterior extremity. Posterior testis smaller than anterior testis, 0.15 long, 0.132 wide, at 2.94 from anterior extremity. Cirrus sac short, tubular, 0.55 long, 0.11 wide, extending up to posterior margin of posterior testis. Vesicula seminalis oval, 0.132 long, 0.095 wide. Pars prostatica 0.28 long, surrounded by a large number of prostate gland cells. Ejaculatory duct 0.10 long. Genital atrium short, enclosing genital lobes.



Fig. 4. *Prosorhynchus orientalis* n.sp. Ventral view.

Ovary oval, tandem, submedian, pre-testicular, postequatorial, separated from anterior testis by uterine coils, 0.13 long, 0.11 wide, at 2.495 from anterior extremity. Vitellaria follicular, 11 on right side and 10 on left side, extending up to middle of ovary. Uterus runs anteriorly up to anterior limit of anterior most vitellaria, then runs posteriorly to open into genital atrium. Eggs oval, operculated, 0.022-0.030 long, 0.011-0.017 wide.

Host: *Rastrelliger kanagurta* (Cuv.)

Location: Intestine

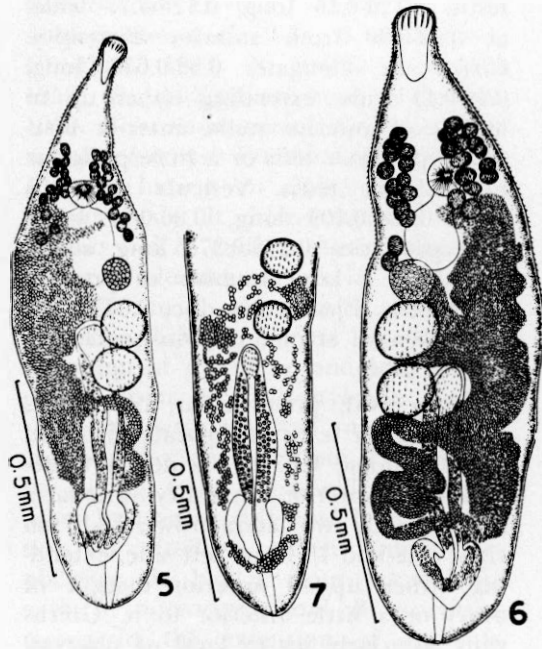
Locality: Puri, Orissa

Prevalence: One specimen from one host out of 19 examined.

Discussion: It has a close resemblance with *P. facilis* Ozaki, 1924, *P. tsengi* Tsin, 1933, *P. arabianum* Srivastava, 1938, *P. longus* Velásquez, 1959, *P. indicus* Madhavi, 1974 and *P. caballeri* n.sp. in having an elongate body and tandem distribution of gonads. It differs from the above mentioned species in the extension of uterus up to anterior limit of anterior most vitellaria. It further differs from *P. arabianum*, *P. longus*, *P. indicus* and *P. caballeri* n.sp. in the extension of intestine anteriorly; from *P. facilis* and *P. tsengi* in having a long neck not occupied by uterus and in having testes in middle of posterior third of body and from *P. longus* in the extension of vitellaria up to middle of ovary. Accordingly, it is regarded as a new species with the specific name *P. orientalis* n.sp.

Prosorhynchus manteri Srivastava, 1938
(Figs. 5-7)

Numerous specimens of this species were collected from the intestine of a marine fish, *Trichiurus muticus* (Griffith) from Bay of Bengal, at Puri, Orissa.



Figs. 5-7. *Prosorhynchus manteri* Srivastava, 1938. 5. Entire. Ventral view. 6. Cirrus sac extending up to anterior margin of posterior testis. 7. Cirrus sac extending up to a little posterior to posterior testis.

Description: Body elongate, cylindrical, spinose, anterior end truncated and posterior end rounded, 1.46-1.60 long, 0.33-0.45 wide. Rhynchus plug-shaped, with fine muscle fibres, 0.11-0.19 long, 0.058-0.09 wide. Mouth preequatorial, at 0.37-0.43 from anterior extremity. Pharynx spherical, 0.08-0.09 in diameter. Oesophagus short. Intestine saccular, 0.19-0.24 long, 0.138-0.165 wide, directed posteriorly either up to anterior or posterior margin of ovary. Excretory bladder tubular. Excretory pore terminal. Genital pore subterminal, a little anterior to hind end of body. Testes oval, tandem, subequal, submedian, contiguous or separated by uterine coils, in middle third of body. Anterior testis 0.12-0.186 long, 0.12-0.17 wide, at 0.692-0.745 from anterior extremity. Posterior testis equal or smaller than anterior

testis, 0.126-0.16 long, 0.126-0.17 wide, at 0.82-0.90 from anterior extremity. Cirrus sac elongate, 0.53-0.632 long, 0.09-0.11 wide, extending either up to middle of anterior testis, anterior margin of posterior testis or a little posterior to posterior testis. Vesicula seminalis oval, 0.091-0.105 long, 0.06-0.07 wide. Pars prostatica 0.278-0.374 long, surrounded by a large number of prostate gland cells. Ejaculatory duct 0.085-0.118 long. Genital atrium spacious, enclosing genital lobes.

Ovary oval, pretesticular, contiguous with anterior testis or separated from it, 0.09-0.12 long, 0.07-0.11 wide, at 0.588-0.64 from anterior extremity. Vitellaria follicular, in two lateral rows, 14-16 on right side and 15-18 on left side, extending either up to anterior margin of ovary or a little anterior to it. Uterus runs anteriorly up to level of pharynx and then runs posteriorly to open into genital atrium. Eggs oval, operculated, 0.018-0.024 long, 0.012-0.015 wide.

Host: *Trichiurus muticus* (Griffith)

Location: Intestine

Locality: Puri, Orissa

Prevalence: Numerous specimens from 20 hosts out of 57 examined.

Discussion: The present species belongs to *Prosorhynchus manteri* Srivastava, 1938 but differs from it in the extension of cirrus sac either up to middle of anterior testis, anterior margin of posterior testis or a little posterior to posterior testis instead of up to middle of posterior testis and in having testes and ovary close together instead of separated from each other. These differences are considered as intraspecific variations.

Bucephalopsis chorinemi n.sp.
(Figs. 8-9)

Twelve specimens of this form were collected from the intestine of a marine

fish, *Chorinemus moadetta* (Cuv. and Val.) from Bay of Bengal, at Puri, Orissa.



Figs. 8-9. *Bucephalopsis chorinemi* n.sp. 8. Entire. Ventral view. 9. Cirrus sac extending up to middle of posterior testis.

Description: Body elongate, slender, spinose, with rounded extremities, 3.57-4.75 long, 0.295-0.46 wide. Anterior sucker subspherical, subterminal, 0.08-0.12 long, 0.09-0.124 wide. Mouth ventral, equatorial, at 1.74-2.41 from anterior extremity. Pharynx oval, 0.08-0.14 long, 0.07-0.11 wide. Oesophagus 0.05-0.10 long. Intestine saccular, 0.23-0.46 long, 0.15-0.22 wide, directed posteriorly, extending up to posterior margin of ovary. Excretory bladder tubular. Excretory pore terminal. Genital pore subterbody. Testes oval, tandem, subequal, separated from each other by uterine coils, in posterior part of middle one-third of body. Anterior testis 0.14-0.192 long, 0.12-0.21 wide, at 2.23-2.802 from anterior extremity. Posterior testis nearly

equal to anterior testis, 0.14-0.20 long, 0.14-0.21 wide, at 2.48-3.14 from anterior extremity. Posttesticular space 0.75-1.438 long. Cirrus sac elongate, 0.60-1.15 long, 0.081-0.13 wide, extending either up to middle of posterior testis or a little posterior to it. Vesicula seminalis oval, 0.07-0.13 long, 0.06-0.10 wide. Pars prostatica 0.38-0.77 long, surrounded by a large number of prostate gland cells. Ejaculatory duct 0.10-0.16 long. Genital atrium oval, enclosing genital lobes.

Ovary oval, submedian, postpharyngeal, pretesticular, 0.10-0.122 long, 0.10-0.15 wide, at 2.01-2.62 from anterior extremity. Vitellaria follicular, in two lateral rows, 14-18 on right side, 14-19 on left side, extending from middle of anterior testis up to a region much anterior to pharynx. Uterus coiled, extending from hind end of ovary up to anterior end of genital atrium. Eggs oval, operculated, 0.019-0.029 long, 0.012-0.017 wide.

Host: *Chorinemus moadetta* (Cuv. and Val.)

Location: Intestine

Locality: Puri, Orissa

Prevalence: Twelve specimens from three hosts out of 29 examined.

Discussion: The new species is referred to the genus *Bucephalopsis* Diesing, 1855. It closely resembles *B. callicotyle* Nicoll, 1915, *B. exilis* Nicoll, 1915, *B.*

pleuronectis Layman, 1930, *B. scombroopsis* Yamaguti, 1938, *B. microcirrus* Chauhan, 1943, *B. tenuis* Yamaguti, 1952, *B. philippinoporum* Velasquez, 1959, *B. scomberomorus* Corkum, 1968 and *B. ghanensis* Fischthal and Thomas, 1968 in having an elongate and very slender body. It differs from *B. scombroopsis* and *B. exilis* in having digestive and reproductive organs in near mid-body; from *B. pleuronectis*, *B. tenuis* and *B. philippinoporum* in the non extension of uterus beyond level of the ovary; from *B. callicotyle* in having spinations less dense and anterior sucker and pharynx smaller; from *B. ghanensis* in having testes separated from each other by uterine coils and in the extension of vitellaria much anterior to pharynx. It has a close resemblance with *B. microcirrus* and *B. scomberomorus* in the extension of vitellaria much anterior to pharynx and in having testes separated from each other by uterine coils but differs from both these forms in the arrangement and number of vitellaria, in the extension of cirrus sac either up to middle of posterior testis or a little posterior to it and in the extension of intestine up to posterior margin of ovary. Accordingly, it is regarded as a new species with the specific name *B. chorinemi* n.sp.

The new species is named after its host *Chorinemus moadetta* (Cuv. and Val.)

LITERATURE CITED

- CHAUHAN, B. S., 1943. Trematodes from Indian marine fishes. Part II. On some trematodes of the gasterostome family Bucephalidae Poche, 1907, with description of four new species. *Proc. Ind. Acad. Sci.* 17: 97-117.
- CORKUM, K. C., 1968. Bucephalidae (Trematoda) in fishes of the Northern Gulf of Mexico: *Bucephaloides* Hopkins, 1954 and *Rhipidocotyle* Diesing, 1858. *Trans. Amer. Micros. Soc.* 87: 342-349.
- FISCHTHAL, J. H. and J. D., THOMAS, 1968. Digenetic trematodes of marine fishes from Ghana. Families Acanthocolpidae, Bucephalidae, Didymozoidae. *Proc. Helminth. Soc. Wash.* 35: 237-247.
- HAFEEZULLAH, M. and A. H., SIDDIQI, 1970. Digenetic trematodes of marine fishes of India. Part I. Bucephalidae and Cryptogonimidae. *Ind. Jour. Helminth.* 22: 1-22.
- KRULL, W. H., 1934. Study on the life history of a trematode *Rhipidocotyle septapapillata* n.sp. *Trans. Amer. Micros. Soc.* 53: 408-415.

- LAYMAN, E. M., 1930. Parasitic worms from the fishes of Peter the Great Bay. *Bull. Pacif. Scient. Fish. Res.* 3: 1-120.
- MACCALLUM, G. A., 1917. Some new forms of parasitic worms. *Zoopathol.* 1: 43-75.
- MADHAVI, R., 1974. Digenetic trematodes from marine fishes of Waltair Coast, Bay of Bengal. Family Bucephalidae. *Riv. Parassit.* 35: 189-199.
- MANTER, H. W., 1954. Some digenetic trematodes from fishes of New Zealand. *Trans. Roy. Soc. N. Z.* 82: 475-568.
- NAGATY, H. F., 1937. Trematodes of fishes from the Red Sea. Part I. Studies on the family Bucephalidae Poche, 1907. *Egypt. Univ. Fac. Med. Publ.* 12: 1-173.
- NAHHAS, F. M. and R. M., CABLE, 1960. Digenetic and Aspidogastroid trematodes from marine fishes of Curaçao and Jamaica. *Tulane Stud. Zool.* 11: 169-228.
- NICOLL, W., 1915. The trematode parasites of North Queensland III. Trematodes of fishes. *Parasit.* 8: 22-41.
- OZAKI, Y., 1924. Gasterostomatous trematodes and three new genera of them. *Zool. Mag.* 36: 173-201.
- , 1928. Some gasterostomatous trematodes of Japan. *Jap. Jour. Zool.* 2: 35-60.
- SRIVASTAVA, H. D., 1938. Studies on the gasterostomatous parasites of Indian food fishes. *Ind. Jour. Vet. Sci. and Anim. Husb.* 8: 317-340.
- STUNKARD, H. W., 1974. *Rhipidocotyle heptathelata* n.sp., A bucephalid trematode from *Thynnus thunnina* taken in the Red Sea. *Trans. Amer. Micros. Soc.* 93: 260-261.
- VELÁSQUEZ, C. C., 1959. Studies on the family Bucephalidae Poche, (Trematoda) from Philippine food fishes. *Jour. Parasit.* 45: 135-147.
- YAMAGUTI, S., 1934. Studies on the helminth fauna of Japan. Part 2. Trematodes of fishes, I. *Jap. Jour. Zool.* 5: 249-541.
- , 1938. Studies on the helminth fauna of Japan. Part 21. Trematodes of fishes, IV. Published by Author, 139 pp.
- , 1952. Parasitic worms mainly from Celebes. Part I. New digenetic trematodes of fishes. *Acta Med. Okayama.* 8: 146-198.
- , 1971. *Synopsis of digenetic trematodes of vertebrates. Part I and II.* Keigaku Publ. Co. Tokyo, Japan 1-1073.