



ACANTHOCEPHALAN PARASITES OF MARINE FISH *JOHNIUS ANEUS* (BLOCH 1793) FROM VISAKHAPATNAM COAST, ANDHRA PRADESH

Vijaya Lakshmi K* and K Sreeramulu

Department of Zoology, Andhra University, Visakhapatnam-530003, Andhra Pradesh, India.

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Abstract: A survey has been conducted to collect metazoan parasites from *Johnius aneus* (Bloch 1793) off Visakhapatnam coast. Four Acanthocephalan species were identified, they are *Rhadinorhynchus ganapati* Chandra et al., (1985), *Gorgorhynchus* sps. Chandler (1934), *Serrasentis* sps., Van cleave (1923) and *Serrasentis aspinosa* Van cleave (1923).

Key words: Acanthocephalan parasites; *Johnius aneus*; Visakhapatnam coast

INTRODUCTION

Fish is a vital source of human food particularly in terms of high quality proteins. For the people of Eastern India in general and North East India in particular fishes constitute a major component of diet. In the present study *Johnius aneus* is taken since they occur throughout the year in considerable numbers at Visakhapatnam coast whereas other species occur rarely.

The genus *Johnius* belongs to the family Scianidae. The genus *Johnius* is represented by many species like *J.dussumieri*, *J.diacanthus*, *J.aneus*, *J.coibor*, *J.osseus*, *J.maculatus*, *J.sina*, *J.carutta*, *J.axillaris*, *J.soldado*, *J.argentatus* etc., But in and around Visakhapatnam coast only very few species are available like *J. aneus*, *J. maculatus* etc. *Johnius aneus* is commercially known for their delicacy as food fish and have good quality of proteins and other nutrients. This fish is usually parasitized by Acanthocephalans of the family Rhadinorhynchidae, Gorgorhynchidae, and Serrasentina.

MATERIALS AND METHODS

Fishes of all sizes from 10.5 to 20 cm were brought to the laboratory for the examination of parasites. Gills were removed carefully and placed in saline solution. Gill filaments were carefully rested and contents were observed under a binocular microscope. Some Acanthocephalans were collected from the stomach and intestine and were fixed in FAA solution. Later these parasites were washed thoroughly and stained with Alum carmine. After proper dehydration in graded alcohol the specimen were cleared in Carbol xylene and mounted in Canada balsam. All diagrams were drawn with Camera lucida for which scale is given. All measurements are given in millimeters unless otherwise mentioned.

RESULTS

During the present study, altogether four Acanthocephalan species were identified, they are *Rhadinorhynchus ganapati* Chandra et al., (1985), *Gorgorhynchus* sps. Chandler (1934), *Serrasentis* sps. Van cleave (1923) and *Serrasentis aspinosa* Van cleave (1923). A detail description of these parasites are given below.

***Rhadinorhynchus ganapati* (Chandra et al., 1985):** Body uniformly thick measuring 2.9 – 3.1 x 0.26. Proboscis cylindrical, elongate and measure 0.50 x 0.15, with 12 longitudinal rows of 20 – 26 hooks each, similar in shape but different in size (Figure 1). Hooks on dorsal side smaller, thicker and more curved than the more slender ventral hooks. Both dorsal and ventral hooks are smaller posteriorly. Neck small and without spines. Trunk spines present anteriorly, with 4 rows dorsally and ventrally. Proboscis receptacle long claviform, double layered measuring 1.24 x 0.21. Lemnisci equal and larger than proboscis receptacle. Lemnisci extend up to the middle half of the trunk, measuring 1.10. Cement glands two 0.05 in length tubular with their thick ducts opening near the penis. Testes two, sub equal in size measuring 0.22 x 0.08. Testes are in the middle region of the body from a distance of the 1.2 from the posterior region. Seminal vesicle small, situated near bursa and circular when averted. Bursa elongate and muscular, opening terminally.

*Corresponding Author:

Dr. K. Vijaya Lakshmi,
Department of Zoology,
Andhra University,
Visakhapatnam – 530003,
Andhra Pradesh, India.



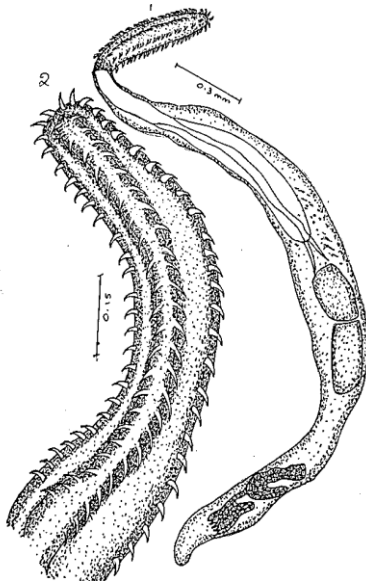


Figure 1: *Rhadinorhynchus ganapati*

Gorgorhynchus sp. (Chandler, 1934): Body elongate, slender and bent in anterior direction. Parasite measures 1.34 x 0.71. Proboscis club shaped, stout and densely armed with numerous rows of strong hooks and spines (Figure 2). Proboscis measures 1.07 x 0.55. It is covered with 12 rows of hooks, each row consists of 6 – 10 hooks. Hooks show variation in size. Larger hooks present in the apical region and decrease in size gradually towards the posterior region. Hooks of anterior region are longer, strong thick and curved. Hooks measure 0.11 x 0.03. Posterior hooks are thin and spiniform and are densely arranged. Neck short and naked, measuring 0.23 x 0.30. Anterior trunk region consists of 12 - 14 rows of cuticular spines. Each row consists of 10 – 11 spines. Proboscis receptacle is clearly formed. Lemnisci long and slender. Reproductive organs are not formed.

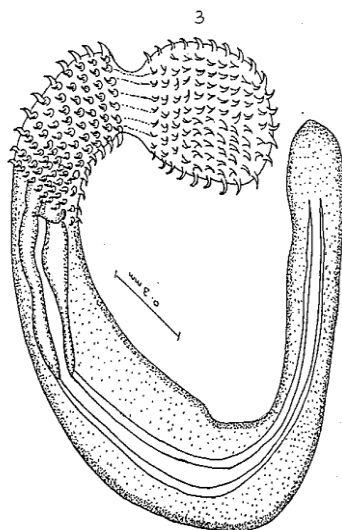


Figure 2: *Gorgorhynchus sps.*

Serrasentis sp. (Van Cleave, 1923): Body elongate, cylindrical, thick and creamy white in colour. Body walls give the appearance of annulations on the body from the anterior to the posterior extremity (Figure 3). The worm measures 1.70 x 0.28. Proboscis elongate, clubshaped, broad in the anterior region, becoming narrow towards the posterior region. It measures 0.62 x 0.08. Proboscis is in withdrawn condition in the present parasite. Proboscis is followed by a short spineless neck region. Neck is followed by the body proper. Body shows annulations towards left side. These annulations extend only to the center of the body on side. On the left margin of the body each annulation bears a single large curved hook. There are nearly 16 cuticular annulation. No spines are seen on the anterior right margin of the body. The distance between annulations is more in the anterior region, gradually becoming narrower towards the posterior. The size of the spines also decreases towards the posterior region of the body. Spines are triangular, arrow shaped, strong and covered with cuticular theca. Proboscis sheath single walled, thick, elongate and longer than proboscis measuring 1.23 x 0.18. Lemnisci are as a pair of long filamentous structures hanging from the base of the proboscis.

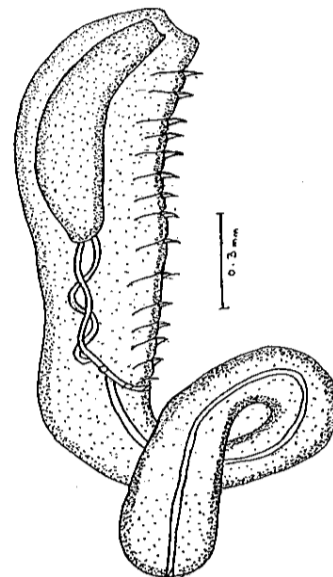


Figure 3: *Serrasentis sps.*

Serrasentis aspinosa (Van Cleave, 1923): Body elongate, cylindrical, thick and creamy white in colour. Body wall gives the appearance of annulations on the body from the anterior to the posterior extremity (Figure 4). The worms measure 4.10-4.32 x 0.49-0.51. Proboscis elongate, club shaped, broad in the anterior region, becoming narrow towards the posterior region. It measures 0.726-0.75 x 0.25-0.35. Proboscis is covered by spirally arranged uniform sized hooks. Hooks are bigger and strongly curved. It is armed with 18-20 rows of hooks, each row with 9-10 hooks. Proboscis is

followed by a short spineless neck region. Neck is followed by the body proper. Lateral wall of anterior part of the body proper is armed with a row of collar spines. There are about 4-5 hooks present on the lateral region of the collar, which are very closely arranged. Remaining body shows annulation towards left side. These annulations extend only to the centre of the body on one side. But in the posterior region annulations can be seen on both walls. On the left margin of the body each annulation bears a single large curved hook. There are nearly 20 hooks on the left body wall. No hooks are seen on the surface of the body, nor on the right margin. The distance between annulations is more in the anterior region, gradually becoming narrower towards the posterior. The size of the hooks also decreases towards the posterior region of the body. Hooks measure 0.025-0.030. The distance between annulations in the anterior region was from 0.15-0.18 and in the posterior region 0.08-0.10. These hooks are triangular, arrow shaped, strong and covered with cuticular theca.

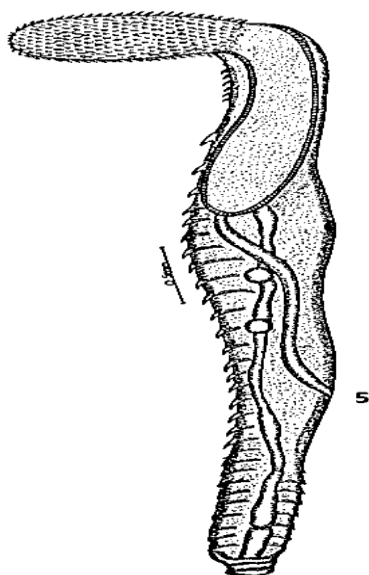


Figure 4: *Serrasentis aspinosa*

Proboscis sheath double walled, thick, muscular, elongate and longer than proboscis measuring 1.03-1.05 x 0.28-0.300. Lemnisci are as a pair of long filamentous structures hanging from the base of the proboscis. Testes two, oval, tandem, small and present in the middle of the body measuring 0.10-0.13 x 0.06-0.08. Testes are 2.10-2.50 distance away from proboscis sheath. Both the testes are separated by a short distance of 0.20-0.23. Bursa is weakly muscular with a ring like sphincter measuring 0.12-0.13 x 0.10-0.120.

DISCUSSION AND CONCLUSION

The genus *Radiorhynchus* was erected by Luhe (1911)¹ with type species *R. pristis* (Rudolphi, 1802) from *Belone belone*. The genus *Rhadiorhynchus* is characterized by a long proboscis as well as long lemnisci. *R. ganapati* has been reported by Chandra *et.al* (1985) from Visakhapatnam coast. But they reported these parasites from Sconbrid fish *Euthynnus*, *Sconboerides* and *Lepturacanthus*. The size of the previously reported parasite is slightly larger than the present parasites. Due to this there are minor differences in measurements. In spite of these minor differences present parasites are considered to be *Rhadiorhynchus ganapati* Chandra *et al.*, 1985 since in all morphological characters they resemble this species. It is a new host record.

Chandler (1934)² erected the genus *Gorgorhynchus* with type species, *G. gibberum*. Later there are reports of many species under this genus³. In the present study immature worm is obtained which shows resemblance to the proboscis hook patterns of *Gorgorhynchus*. So it is considered belonging to the genus *Gargorhynchus* Chandler, 1934.

The genus *Serrasentis* was erected by Van Cleave (1923)⁴. The type species is *S. lamelliger* (Syn: *Echinorhynchus*). *Serrasentis* is characterized by the presence of spines on the lateral body wall and annulations⁵. There is report of *S. segittifer* (Linton, 1889) from *Johnius dussumieri*. The present parasite is an immature one but from the annulations and other characters this can be identified upto genus level and so is considered as *Serrasentis* (pre-adult) Vancleave, 1923.

Serrasentis was erected by Van Cleave (1940)⁶. Members of this genus occur in the intestines of marine fishes. *Serrasentis* species are characterized by the presence of hooks on the lateral body wall as well as on the surface of the body⁷. They also possess a patch of collar spines. The species designation is mainly based on the number of rows of cuticular spines. Till now 5 species were described from different hosts⁸. The present parasites are found to be unique. It is very close to *Serrasentis* in overall characters and appearance, but peculiarly the spines on the body surface are not present. The spines of lateral body wall developed very well, even the collar spines also can be observed on the left lateral body wall but not on the surface and right body wall margin. As the appearance and other characters resemble *Serrasentis* these parasites were retained in the genus *Serrasentis*⁹. Basing on the characters of spineless surface, the present species is considered as a new species and named as *Serrasentis aspinosa*.

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