Indian Journal of Geo-Marine Sciences
Vol. 42(5), September 2013, pp. 606-610

Occurrence of *philometra lateolabracis* (philometridae) in the subcutaneous caudal fin region of sciaenid fishes of Bay of Bengal Large Marine Ecosystem (BOBLME), Tamil Nadu (India)

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Received 15 March 2012; revised 13 August 2012

Present study consists the prevalence of philometrid nematode, *Philometra lateolabracis* infections in two species of Sciaenid fishes along the Madras coastal water, Bay of Bengal during December, 2008 to July, 2012. Out of total 295 sciaenid fishes, examined, *Otolithes ruber* and *Pennahia macrophthalmus* showed 70% & 32.5% of parasitic prevalence on the subcutaneous region on caudal fins. The number of parasitic worms per fish varied from 1 to 7 with an average of 3.18±1.64. Parasites length varies from 5-16 mm with an average of 11.18±4.62 mm. The minimum and maximum sizes and weight of Sciaenid fishes were caught from Kasimedu landing centre (Chennai) during October-December, 2012 varied from180-287 mm and weight 120-245 gm respectively.

[Keywords: Nematode, *Philometra lateolabracis*, *Otolithes ruber*, *Pennahia macrophthalmus* and Bay of Bengal Large Marine Ecosystem (BOBLME)]

Introduction

Nematodes of the dracunculoid family Philometridae are frequent parasites of various body tissues and cavities of freshwater and marine fishes. *Philometra rajani* the gonadial nematode parasite was first described by from the ovaries of fishes *Polynemus polydactylus* and *Sciaena coiter*[1], recorded Philometrids from *Otolithus argenteus* and from his account it appears to be the same species described by[2] recorded philometrids from the sciaenid fish *Sciaena schegeli*. While examining the sciaenid fish *Pennahia aneus* (Bloch) from Mandapam and Pamban (Palk Bay) many specimens infested with *Philometra rajani* were observed.

Parasites have been used successfully as biological markers in the studies of stock structure, population levels and migratory patterns of marine fishes[3-7]. A mobile fish in an aquatic environment can acquire parasites by direct attachment, penetration or ingestion. Parasites often have a geographical range different from that of their host[8]. When fishes move into a parasite's geographical range, and environmental conditions are suitable, transmission can occur. Therefore, as fishes move within a school, from school to school, or along migratory routes, the parasite fauna they acquire changes, as does the prevalence and intensity of individual parasite species. It is these changes, as well as insight into a particular parasite's life cycle, that allows them to be used as biological markers.

In the present study the *Philometra lateolabracis* were recorded from the subcutaneous tissue of caudual fins of Sciaenids since 2008. It is observed that an interesting subcutaneous tissue region of caudual fin of *Otolithes ruber* and *Pennahia macrophthalmus* was infected with *Philometra lateolabracis* only not other major organs of the body.

Materials and Methods

The freshly landed Sciaenid fishes of Perciformes order (*Otholithes ruber, Nebia maculata, Johnius carutta, Johnius dussumieri, Johnius sina, Pennahia macrothalmus, Johnius carouna, Kathala axillaris, Protonibea diacanthus, Johnius belangerii, Johnius macropterus, Chrysochir aureus, Atrobucca nibe, Panna microdon, Johnius birostres*) were collected from Kasimedu landing centre, Chennai (Tamil Nadu) from December, 2008 to July, 2012. Fish were

Table 1—Average Length and weight of Sciaenid fishes infected with *Philometra lateolabracis* during 2008-2012

Sl. No.	Species	Length (mm)	Weight (gm)	No. of parasites recorded/ fish	Parasites length (mm)	Site of infections
1	*Otolithes ruber*	247	133	4	15	Subcutaneous caudal fin
2	*Otolithes ruber*	236	134	6	16	-do-
3	*Otolithes ruber*	273	223	3	13	-do-
4	*Otolithes ruber*	260	195	2	15	-do-
5	*Otolithes ruber*	250	155	2	10	-do-
6	*Otolithes ruber*	270	165	5	05	-do-
7	*Otolithes ruber*	250	139	2	07	-do-
8	*Otolithes ruber*	180	135	1	04	-do-
9	*Otolithes ruber*	165	120	2	16	-do-
10	*Pennahia macrophthalmus*	214	144	1	05	-do-
11	*Otolithes ruber*	285	245	3	16	-do-
12	*Otolithes ruber*	248	152	2	05	-do-
13	*Otolithes ruber*	260	180	3	10	-do-
14	*Otolithus ruber*	267	186	4	12	-do-
15	*Otolithes ruber*	285	218	6	14	-do-
16	*Otolithes ruber*	287	243	5	16	-do-
	Mean± SD	248.56 ±35.43	172.93±41.23	3.18±1.64	11.18±4.62	-

weighed, measured, necropsied and subjected to parasitological examination for external and internal parasites of various tissues (skin, gill, gut, gall bladder, liver, kidney, spleen and gonad) using a dissection microscope. Parasites of any significance were studied for morphometrics were fixed in 4% formaldehyde solution in physiological saline and also preserved in 70% hot ethanol for taxonomic identification. Photomicrographs were taken using an Olympus digital camera C7070 fitted to Olympus CX41 microscope. Taxonomic classification of the *Otolithes ruber* and *Pennahia macrophthalmus* fish host was carried out following Food and Agriculture Organization, (FAO), Sheets[9] and Fish base[10].

Results and Discussion

During the present study, 69 out of 295 sciaenid fishes belonging to species *Otolithes ruber* and *Pennahia macrophthalmus* were found infected with nematodes. Average length and weight of fishes were 248.56 ±35.43mm 172.93±41.23gm respectively in the groups (Table 1 & Fig. 1). Maximum number of infection was (56) in *Otolithes ruber* and least (13) in *Pennahia macrothalmus* among other sciaenid fishes. Maximum prevalence of parasitic infection was recorded in *Otolithes ruber* (70%) (Table2 & Fig. 2). Adult nematode parasites (*Philometra lateolabracis*) length was from 4-16 mm and numbers of parasites per fishes were from 1-7 numbers found mostly in sub-cutaneous region of caudual fins of the fishes. The body of the fixed gravid nematode females (Fig. 3, 4) from *Otolithes ruber* was reddish/dark brownish in colour whereas the larvae were

Fig. 1—Grouper, *Otholithes ruber* infected with *Philometra lateolabracis* from sub-cutaneous nodules of caudal fins the arrow points at the attachment sites of the fishes.

transparent/colour less. Posterior part of the body is distinctly narrower than the anterior part. Cuticle smooth, cephalic papillae are very small and indistinct when viewed laterally. Oesophagus narrow, swollen near the mouth to form a distinct bulb which is not separated from the posterior cylindrical part of the

Table 2—Showed the number of parasites infected on Sciaenid fishes during 2008-2012

Species of fishes examined	Number of fishes examined	Number of fish infected	Prevalence (%)	Fish Size (mm)
Otolithes ruber	80	56	70	150-319
Johnius carutta	70	Nil	Nil	130-210
Nibea maculata	55	Nil	Nil	120-209
Pennahia macrophthalmus	40	13	32.5	130-311
Johnius dussumeri	50	Nil	Nil	110-212

Fig. 2—Adults of *Philometra lateolabracis* infected sub-cutaneous portion of caudal fins of *Otholithes ruber* from the Kasimedu Fisheries Harbour, Bay of Bengal Large Marine Ecosystem (BOBLME), TN.

oesophagus. Uterus occupies most of the body and is filled with developing embryos and first-stage larvae; length of the larvae varied from 450 to 500µm (Fig. 5, 6). Majority of the worms were gravid possessing thousands of active larval stages inside the uterus which is spread almost throughout the body (Fig. 5 & 6).

Fig. 3—Adults of *Philometra lateolabracis* infected sub-cutaneous portion of caudal fins of *Otholithes ruber* with millions of larvae on background medium.

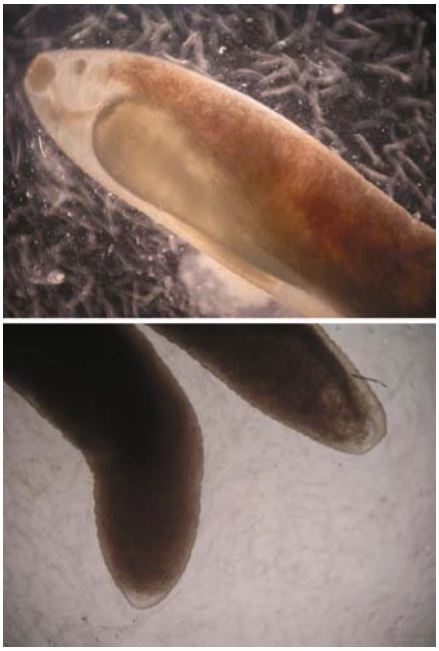

Fig. 4—Gravid female of *Philometra lateolabracis* infected sub-cutaneous portion of caudal fins of *Otholithes ruber*.

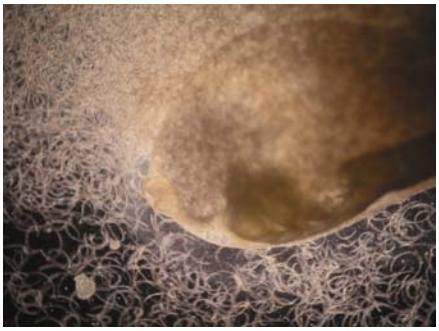

Fig. 4a—Gravid female of *Philometra lateolabracis* released millions of live larvae with distinct mouth portion.

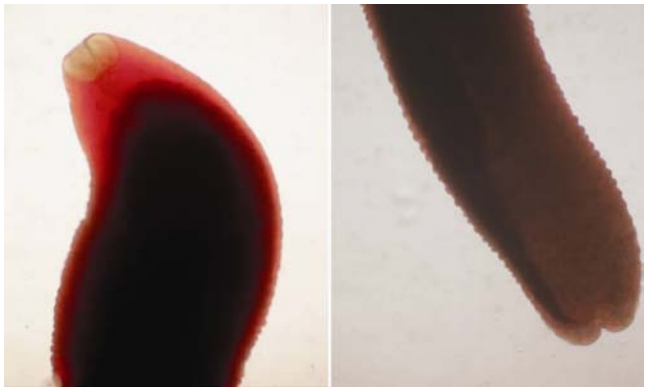

Fig. 5—Anterior and posterior end of adult nematode, *Philometra lateolabracis* collected from *Otholithes rubber.*

Fig. 6—Larvae of *Philometra lateolabracis* specimen from *Otholithes rubber*.

Gravid females of the nematode *Philometra lateolabracis*[11], a parasite of gonads of marine Perciformes fishes were found in wild and cultured dusky grouper, *Epinephelus marginatus* (Lowe) from waters near the Balear Islands (Spain, Mediterranean sea) and Sicily (Italy, Thyrrenean Sea), and in the greater amberjack *Seriola dumerili* (Risso) in Croatia. In wild *Epinephelus marginatus* in Spain, the overall prevalence was 21% and the intensity of infection 1 nematode per fish.

Sudhakar[12] studied the nematode parasites (*Contracaecum aduncum, Cucullanus aunulatus, Camallanus truncates, Ascrophis filiformis, Rhaphidascaris acus, and P. gracilacanthus*.) along the Paringipet, TN. The *Camallanides sp* showed their presence in two species of Sciaenids namely *Johnius soldado* and *Pseudosciaeno axillaries*. Maximum number of infection (9) was recorded in by the parasite *Rhabdochona sp.* from the intestine of the host fishes *Pseudosciaeno goldhanni.* In our present study the nematode parasites were *Philometra lateolabracis* and the prevalence was 70% in *Otolithes ruber* and the intensity of infection varied from 1-6 nematodes per fish. Even though no males of this *Philometrid* species were found, the general morphology and measurements of the gravid females show that they can be identified as *Philometra lateolabracis.* This parasite is available in caudal subcutaneous region of *O. ruber* not in other parts of the body. Philometrids parasitizing in the gonads of their fish hosts may cause serious damage to these organs (by sucking blood, causing atrophy of developing ova in the ovary, fibrosis of ovarian tissue, increased granulocytes and hemorrhages), thus negatively affecting the reproduction of some species of marine fishes[13]. Present data suggest that *Philometra lateolabracis* is a widely distributed parasite of marine Sciaenid, O. *ruber* fishes in Bay of Bengal region. Since it may prove to be a significant pathogen in fish cultures in this region, could be used as a potential biological markers for *Otolithes ruber* a further, more detailed studies of this parasite are desirable.

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