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RESEARCH ARTICLE

SHORT NOTE ON THE RECORD OF *OCTOLASMIS COR* (AURIVILLIUS, 1892) IN THE GILLS OF CRAB *SCYLLA SERRATA* FORSKÅL, 1775 AT DIAMOND HARBOUR, WEST BENGAL

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ABSTRACT

Stalked barnacles of the genus *Octolasmis* Gray 1825 (Poecilasmatidae) are sessile invertebrates frequently found attached to decapods mainly in the branchial chambers of crabs. The main factors that determine the settlement and the distribution of stalked barnacles are water flow, which affects food availability, ventilation and removal of metabolites. *Octolasmiscor* was found attached on the external mouthparts, carapace margins and gill chambers of the crabs. This observation of *Octolasmiscor* attached to *Scylla serrata* is the first time record from the diamond harbour of West Bengal.

INTRODUCTION

Octolasmiscor was described by Aurivillius in 1892 as *Dichelaspiscor* which was collected from the gills of a decapod in South Africa. Mostly they lead a symbiotic life style with the hosts like crabs, lobsters, corals, molluscs, isopods etc. The hosts of octolasmid barnacles are mainly found in shallow water at 10 meters depth; very few are found beneath 1000 m depth. About 32 species of the genus *Octolasmis* have been identified worldwide of which 10 species viz., *O. orthogonia* (Darwin, 1851), *O. angulata* (Aurivillius, 1893), *O. bathynomi* (Annandale, 1906), *O. warwicki* (Gray, 1825), *O. lowei* (Darwin, 1851), *O. rhinoceros* (Annandale, 1909), *O. sessilis* (Hoek, 1838), *O. sociabilis* (Gravier, 1921), *O. stella* (Annandale, 1909) and *O. cor* (Aurivillius, 1892) reported from Indian ocean. Stalked barnacles of the genus *Octolasmis* Gray, 1825 (Poecilasmatidae) are sessile invertebrates frequently found attached to decapods mainly in the branchial chambers of crabs (Jefries and Voris, 1996). *Octolasmiscor* are mostly found in gills or in branchial chambers of the crabs. The crabs have short life span due to moulting; even then many organisms including octolasmids use the substratum as an alternative hard substrata.

The highest infestation rate of octolasmid barnacles was recorded in the gill chambers of crabs. It has been observed that in case of *O. cor* (Aurivillius, 1892) the rate of infection is less comparatively to other species. It has been observed that larger specimens of crab hosts are more prone to be infested with octolasmid barnacles. Gruvel (1902) described that there are three varieties of octolasmid barnacles which can be found in the same host at a time. They are mostly found in gills or in branchial chambers of the crabs. The crabs have short life span due to moulting; even then many organisms including octolasmids use the substratum as an alternative hard substratum. The present study explore the occurrence of *Octolasmiscor* infestation in *Scylla serrata*, number of individuals in the crabs and seasonal influences.

MATERIALS AND METHODS

Heavy infested *Scylla serrata* by the barnacles were noticed and were collected immediately from the local markets of Diamond harbour. With the help of Hand lenses and dissecting microscope infested crabs were observed and picked for investigation. The carapace, mouth parts and the gill chambers were inspected thoroughly in trace of *Octolasmis* sp. The individuals were removed and were preserved in ethyl alcohol. Total number of crabs infested with octolasmids were sorted separately and counted for the percentage contribution and the cirripede infestation in the external mouthparts, carapace

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margins and gill chambers of the crabs were also estimated. The barnacles were removed from the crabs and were subjected to taxonomical studies to reveal the species by their morphological features. The detailed morphology of the organisms found attached to the crabs were investigated using scanning electron microscope (Zeiss Evo-18). The surface view and the dissected setae were also subjected. The peduncle, capitulum, capitular plate, carina and scutum were noted and their capitular lengths were measured. Setal morphology were also studied (Jeffries and Voris, 1983).

RESULTS AND DISCUSSION

Scylla serrata (mud crabs) are edible crustaceans available in local markets of Diamond Harbour, West Bengal observed with severe infestations of *Octolasmiscor* (Fig. 1a, b). Scanning electron microscopic view reveals the morphological features of *Octolasmiscor* (Fig. 2a, b). The species identified as follows,

Phylum: Arthropoda
 Class: Maxillopoda
 Subclass: Cirripedia
 Super order: Thoracica
 Order: Lepadiformes (Buckeridge and Newman, 2006)
 Suborder: Lepadomorpha (Pilsbry, 1916)
 Family: Poecilasmatidae (Annandale, 1909)
 Genus: *Octolasmis*, Fray, 1825
 Species: *Octolasmiscor* (Aurivillius, 1892)

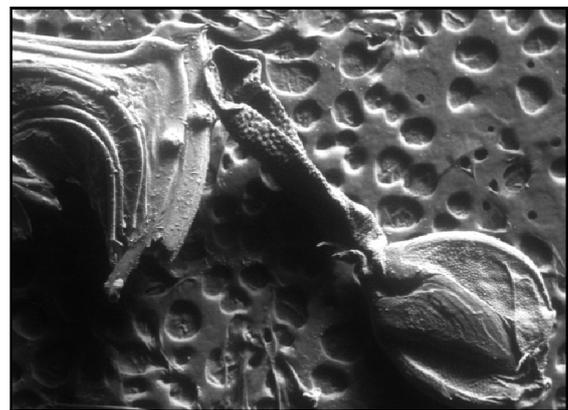


a)

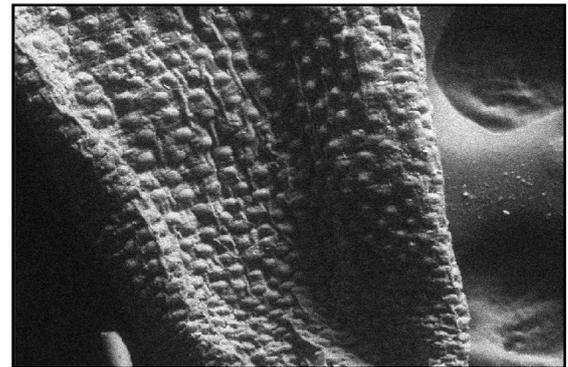


b)

Fig. 1 a,b. The dissected gills of *Scylla serrata* with severe infestation of *Octolasmiscor*



a)



b)

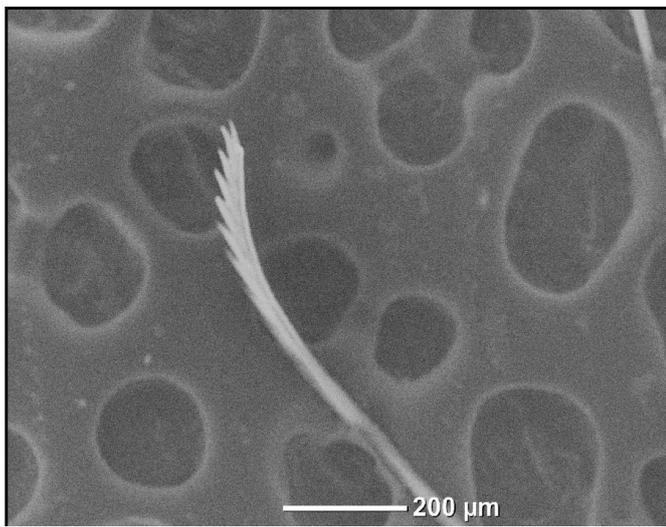
Fig.2a. SEM view of *Octolasmiscor* attached with gills
 b) Ornamentation observed in peduncle of *O.cor*

Diagnostic Character

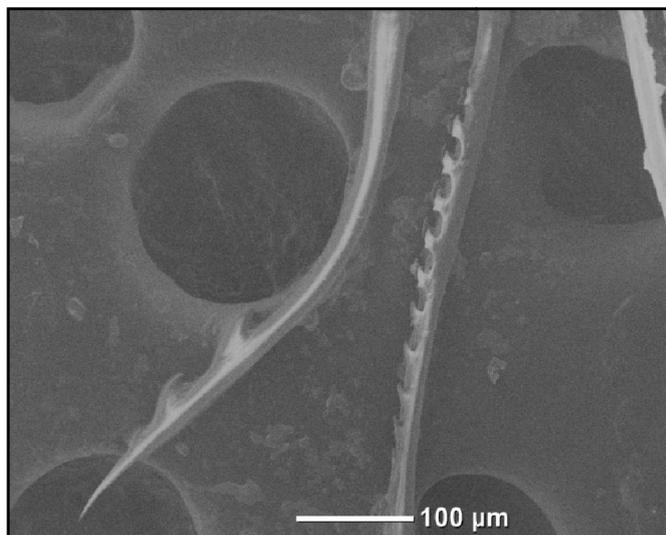
The peduncle is tubular, rough surface with ornamentation which supports and attaches towards the substratum of the host. The capitulum pale yellow colouration of 3 robust capitular plates, the carina and 2 scutum. The mean capitular length is of 2.48 ± 0.15 mm. Scutal basal lobe broad, oblong. Maxillule notched with two large spines on upper notch. Cirri I is smaller and cirri II to VI long and slender. The setal morphology of the cirri represents simple, serrate and multi-cuspidate types (Fig. 3a, b).

Infestation of *Octolasmiscor* (Aurivillius, 1892) on *Scylla Serrata*

Octolasmiscor individuals were attached on the edible crab *Scylla serrata* were counted to investigate the total no of individuals affected in the single host. From the study, the maximum infestations were registered around 121 individuals / host and the minimum infestation were recorded nearly 36 individuals/host (Fig. 4). *Octolasmiscor* were also found attached on the external mouthparts, carapace margins and gill chambers of the crabs. Maximum distribution of the *Octolasmiscor* on the gill surfaces of the host were 121 individuals/ host, mouth parts were infested with 24 individuals/ host and the carapace margins showed 11 individuals of *Octolasmiscor* found attached with the host crab. Rate of epibiont infestation of *Octolasmiscor* were recorded to be higher in the gill surfaces of *Scylla serrata* from the investigation (Fig. 5).



a)



b)

Fig 3a, b. SEM view of the serrate setae and multi-cuspidate setae of *Octolasmiscor*

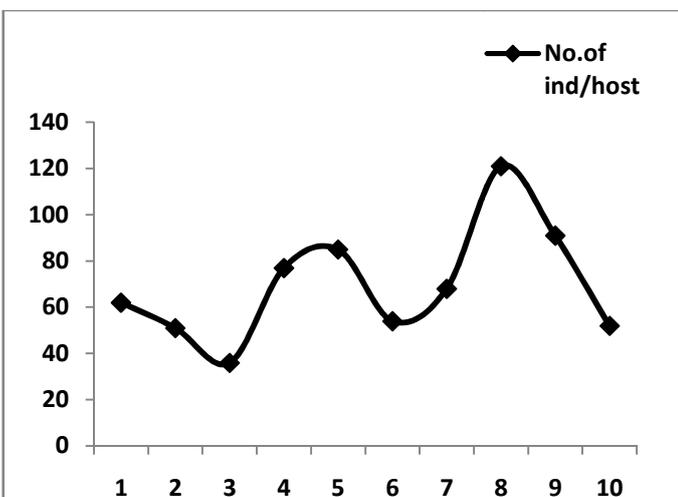


Fig. 4. No of *Octolasmiscor* individuals observed from the host *Scylla serrata*

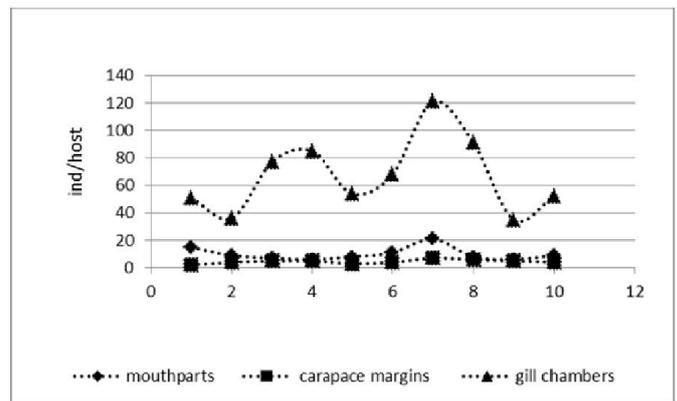


Fig. 5 Rate of infestation by *Octolasmiscor* occurs in mouth parts, carapace margins and the gill chambers of *Scylla serrata*

Such infestations were also reported by Kumaravelet *et al.* (2009) that they were observed in the gill surfaces on the chamber floor and adjacent to the incurrent channel openings of *Portunuspelagicus* and *Scylla tranquebarica*. The phenomenon epibiosis has been studied by Dinamani and Kurian (1961), Bullock, (1965), Arudpragasam, (1967); Walker (1974); Joel, and Sanjeeva Raj, (1980; 1981), Wahl, (1989), Jeffries *et al.* (1985; 1992; 1992); Coker (1902); Wahl and Mark, (1999), Voriset *et al.* (2000); Alvarez *et al.* (2003), Blomsterberget *et al.* (2004), Cordeiro and Costa, (2010). Moreover the movements of the host can optimize epibiont dispersion, gene flow and the hosts movement or breathing generates water currents that improve access to food and remove metabolic residues produced by the epibionts (Wahl, 1989, Key *et al.*, 1997). The main factors that determine the settlement and the distribution of stalked barnacles are water flow, which affects food availability, ventilation and removal of metabolites (Voriset *et al.*, 1994; Santos *et al.*, 2000).

Conclusion

Octolasmiscor infestation in *Scylla serrata* were observed for the first time from the diamond harbour of West Bengal. Still more extensive research on the stalked barnacles on potential hosts of edible and non-edible faunal groups on the coastal environment of West Bengal has to be carried out to reveal the species diversity of the cirripedia and their infestations.

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