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NOTES ON THE ASSOCIATION OF *LISSOCARCINUS POLYBIODES* ADAMS AND WHITE, 1848 (PORTUNIDAE, CAPHYRINAE), WITH SEA STAR *LUIDIA MACULATA* MULLER AND TROSCHEL, 1842.

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INTRODUCTION

A portunid swimmer crab *Lissocarcinus polybiodes* Adams and White, 1848, which is usually free living or associated with hard corals (Stephenson, 1972), is shown to have commensal association with a sea star *Luidia maculata* Muller and Troschel, 1842, is reported for the first time. Significantly, this is the second only report of this species from the Indian waters (Chennai Coast) after Alcock's (1899) description of specimens from Malabar, Orissa, Ganjam, Malabar and Andamans.

SYSTEMATIC ACCOUNT

Family PORTUNIDAE

Subfamily CAPHYRINAE

Lissocarcinus polybiodes Adams and White, 1848

Materials studied : 1 ♂, Chennai Coast, 12° 45′ 50.12″ N; 080° 17′ 00.14″ E, Depth 20 m, 1-vii-2010, coll. K. Venkataraman (Reg. No. D1-1–NZC–MBRC), Fig. 1. c.

Three specimens of sea star obtained from Chennai coast was introduced in the Marine Aquarium of Marine Biology Regional Centre, Chennai and the commensal association observed in one of them was studied. The crab species was observed to be usually attached to central disc of the starfish (Figure 1), though it moved briefly over the arms. The movement however was never to the distal ends of the arms. At no occasion the crab species was observed to leave the starfish, even when the starfish goes buried under the sand. On experimental detachment by means of forceps, it immediately returned to the starfish.

Among the species of *Lissocarcinus* Adams and White, 1848 – three reported from Indian waters (Alcock, 1899) and one species — *L. arkati* Kemp, 1923 known to occur from Indian waters (Sakai, 1976), *L. orbicularis* and *L. leavis* are known for associations with sessile organisms or organisms with limited mobility (e.g. echinoderms) (Table 1). The crab species reported has been known to inhabit bottoms of the sand, mud or broken shells and usually found at a depth range of 30-100 meters (Sakai, 1976); Stephenson's (1972) is the only account of its association with hard corals. Nonetheless, no association records of this species have been reported with echinoderms from India or elsewhere. The present specimen was retrieved from a depth of 20 m, along with its commensal host. After Alcock (1899), this species has not so far been reported in the studies of the brachyuran fauna from India.

The Aquarium observations prove that the association is of the commensal type. More specimens and further studies are required to show whether it is an epibiotic or an obligative commensal. As described by Low *et al.* (1995) obligative commensals are host specific and determine the health of the host and ecosystem.

Keywords: *Association, Portunidae, Lissocarcinus, sea star, Luidia, India*

This report points out that investigations of crab commensal associations are few (James, 1995; Gokul, 2006) and in its preliminary stages in the marine ecosystems of India (Table 1); Commensal associations of tiny swimmer crabs of the family Portunidae, and Xanthidae, with organisms of limited mobility (many of the echinoderms) need to be studied. It is suggested that ecosystem health assessments also could include indices based on commensal associations, given the ecological significance of these associations.

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Table-1. Host associations of *Lissocarcinus* Adams and White, 1848.

Crabs species	Host species.	Type of association	Reference
BRACHYURA			
Family : Portunidae			
Subfamily : Caphyrinae *Lissocarcinus laevis*	Sea anemones	Symbiotic	Allen, 2000
Lissocarcinus orbicularis	Holothurian : *Actinophyga mauritiana*	commensal	James, 1995; Bakus, 1973; Eeckhaut *et al.*, 2004
Lissocarcinus orbicularis	Holothuria atra, and holothurians in general	Symbiotic association	Ng and Jeng, 1999; Lyskin and Britaev, 2005; Jhonson, 1994
Lissocarcinus arkati	Sea urchin (unidentified)	Facultative commensals	Spiridonov, 1999
Lissocarcinus laevis	Anthozoa: *Cerianthus*	Facultative commensals	Spiridonov, 1999
Lissocarcinus orbicularis	Holothurians and sea urchins	Obligate commensals	Spiridonov, 1999

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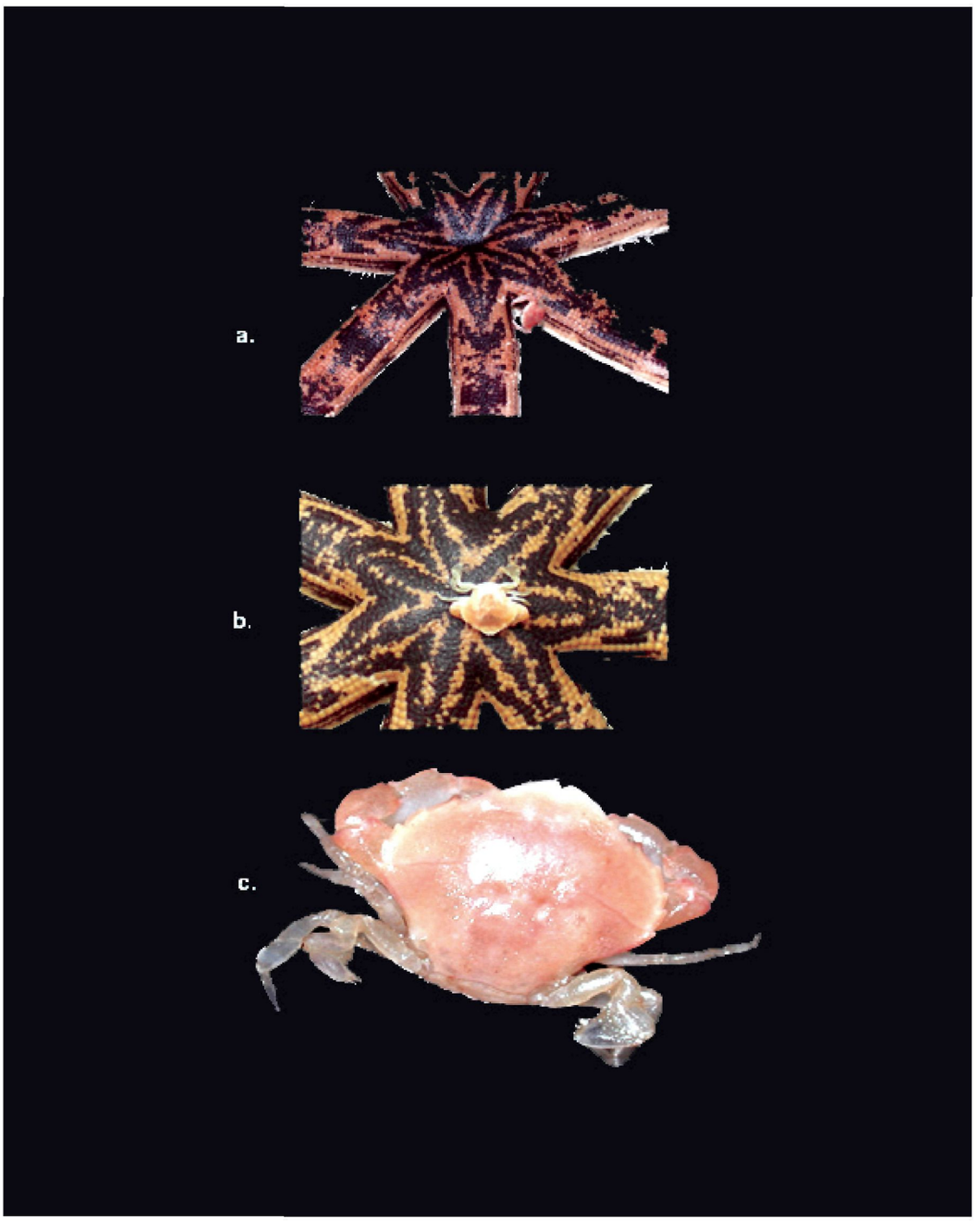

Fig. 1 : *Lissocarcinus polybiodes* Adams and White, 1948 (Portunidae, Caphyrinae); associated with sea star, *Luidia maculata* Mullar and Troschel, 1842 a. and b. Crab showing association; c. Entire crab.

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