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The First Occurrence of Double and Triple Parasitic Infestation of *Sacculina Spp.* Host Crab Portunus sanquinolentus from *Parangipettai Coastal* Waters

V Elumalai*, C Viswanathan, M Pravinkumar and S M Raffi

Centre of Advanced Study in Marine Biology, Faculty of Marine Sciences, Annamalai University, Tamil Nadu, India

Abstract

An unusual type of ecto-endo parasitism (*crustacea; rhizocephala*) has been explained at length on brachyuran crabs *P. sanquinolentus*. In the study 28 brachyuran crabs were found to be double parasites infected whereas only 7 brachyuran crabs were found to be triple parasites infected. This study was recorded from Parangipettai (Lat. 11o 29' N; long. 79º 46' E) coastal waters, during January 2011 to December 2011. This is the first report from Parangipettai, southeast coast of India. The infestation is discussed in relation to environmental parameters in this short communication.

Keywords: Double and triple parasitism; *Sacculina* spp; Brachyuran crabs

Introduction

Sacculinidae (*Rhizocephala*) are parasitic barnacles that infect crabs [1-3]. Parasitization by sacculinids induces severe (endoparasites) modifications in morphology, behavior, and reproduction of their host crabs. Larval *rhizocephala*n parasites infect mainly decapods and the effect is often a castration of both sexes of the host [4]. *Sacculina* spp are associated with many species of commercially important crabs around the world and cause significant economic losses to fisheries by killing, stunting, or damaging these crabs. Parasitic barnacles (*Cirripedia*: *rhizocephala*) are capable of reducing the value of commercial *crustacean*s [5-7].

Most studies on species diversity and biology of the *Sacculinidae* are based on temperate regions [3,8]. Research on *Sacculina* infestation on *crustacean*s in the Asian region has been conducted mainly in Japan [9] and Taiwan [10] whereas the *Sacculina* infestation on crabs from Indian region has been least reported.

*Sacculina Carcini*i was reported only 29 crabs single parasitizing separately infestation of brachyuran crabs during period January to march and October to December 1991 from Parangipettai coastal area. The total number of crabs bearing *Sacculina* externa was 181crabs, including Double infected 5 crabs, triple infected 1 crab, animals collected extends over the 12 months commencing [11]. Samples collected the sea shore near contains 19 specimens of Petrolisthes japonicas, The Marine Biological Laboratory at Shimoda, Shizuo-ken on May.

Hong Kong, 1,789 collected in trawl samples *Charybdis truncata* between 1997 and 2000 were infected by a *Sacculina* species [12]. *Hemigrapsus sanquineus* were collected 47 out of 78 specimens carried externae of *Sacculina polygenea* and 16 crabs without externae had scars produced by externae and well developed *Sacculina polygenea* internae, reported from July 1998 to August 1999, Vostok of the institute of Marine Biology, Japan [13].

Materials and Methods

Specimens were collected with a fish net from the coastal waters of the Parangipettai coastal waters during January-December 2011. All collected specimens were immediately fixed in 70 % ethanol and labeled. The parasites were mainly identified according to Lutzen [9] for the sacculinid species. The taxonomic position of the parasite host was in accordance with Food and Agriculture Organization sheets and from Fishbase. The work was carried out at Centre of Advanced Study in Marine Biology, Annamalai University, Parangipettai, Tamil Nadu and India. The work carried out here is an occasional record and nearly 15 different crab species of infected were examined during the sampling time.

Results and Discussion

The occurrence of double infection was low (totally 8 recorded over 3 years) and no crab was found with three or more external parasites was recorded from west coast of (Sweden) coastal waters [14]. The total number of crabs bearing *Sacculina* externae was 181crabs, including Double infected 5 crabs, triple infected 1 crab, animals collected extends over the 12 months commencing [11].

A double and triple infection of brachyuran (*P. sanquinolentus*) crabs, we have collected 11,250 specimens of brachyuran crabs from parangipettai coast (Figure 1). Among these finding the infected 2,865crabs, double infected 28 crabs, triple infected 7 crabs during study period. The prevalence of infection varied among the samples. Infected crabs were measured using verniyar caliper to obtain a size distribution. Mean carapace size of all males and females was calculated. Maximum was infected male animals compare to female.

Prevalence observed in this study, *Sacculina* spp infested the crab, it have changed the body damaged and castrated. This may have an important impact on the reproductive capacity of the resource and its fishery potential. Parasitism by *Sacculina* spp. must be monitored after the starting of an emerging fishery to assess the actual contribution on the reproductive stock.

***Corresponding author:** V Elumalai, Centre of Advanced Study in Marine Biology, Faculty of Marine Sciences, Annamalai University, Tamil Nadu, India, E-mail: v_7hills@yahoo.co.in, va7hills@gmail.com

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Figure 1: Showed image single, double and triple parasite.

Grosholz and Ruiz [15] reported one of these environmental factors to be considered in this respect is latitude and the resulting differences in water temperature. This is not unexpected as both abiotic andbiotic habitat characteristics can influence the distribution of parasites. The list of other abiotic parameters that can influence parasite transmission is long and includes salinity, pH, water hardness, UV radiation and pollutants [16]. At the biotic end of the scale, the presence of alternative hosts, predation and competition can lead to variation in parasite distribution [17] multiple factors are responsible for population control, including chemical and physical environment properties as well as community interactions.

Based on the present investigation, it is evinced that *Sacculina* infestation exhibits no clear specificity on sex wise and seasonal wise, we found in considerable quantities round the year with slight increase in warmer months.

From the present investigation, the higher prevalence of *Sacculina* spp. in *P. sanguinolentus* in Parangipettai coast pose an alarming situation and also putforth the query about the sustenance of crab fishery and its future stock; as this will pave way to the occurrence of parasitic castration that indeed negatively affects its reproductive capacity and future recruitment. This study will serve as a baseline platform for a detailed and thorough investigation aiming to understand the rate of sacculinid infestation in brachyuran crabs and its aftereffects in future stock of this valuable crab population.

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