

Infestation of rhizocephalan barnacle in the Blue swimmer crab

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The parasitic rhizocephalan barnacle, *Sacculina* spp. were observed in the live Blue swimmer crab, *Portunus pelagicus* while collecting broodstock for crab seed production. Rhizocephalans have been reported from different aquatic habitat like the deep ocean to pelagic, intertidal, brackish water habitat and a few species

occur in freshwater also. An infection of rhizocephalan barnacle *Sacculina* spp. in the Blue swimmer crab can be distinguished by an external brood sac (Fig. 1A and B) under the host's abdomen, which closely resembles the egg mass of crab. The host will have one or two external brood sac, but these multiple sacs are smaller than a single

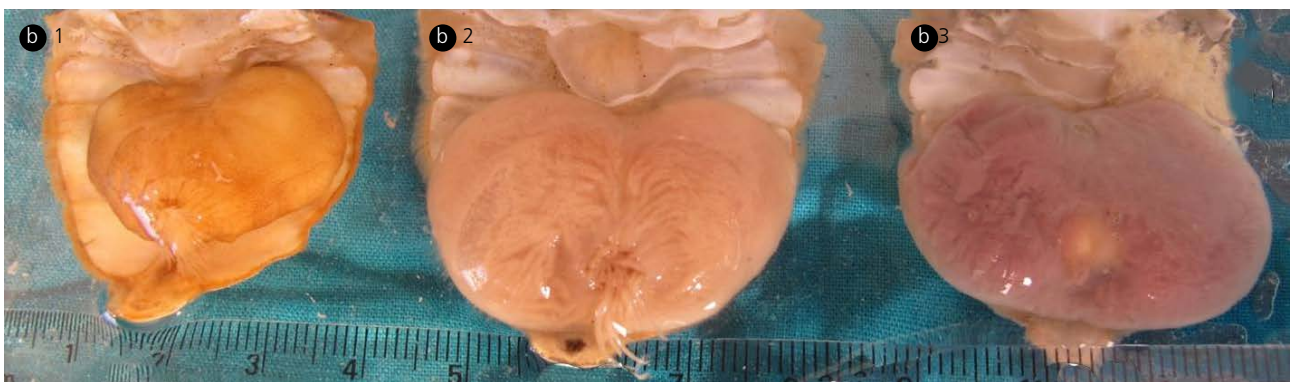


Fig. 1.A. Different sized *P. pelagicus* specimens infested with parasitic barnacle *Sacculina* spp.; B. *Sacculina* spp. externae attached on the abdomen of *P. pelagicus* with different maturity stages (B1- Premature, B2- Maturing and B3-Ripe)

one (Fig 3B). As the nauplii within the externa develop, the color of the sac appears brownish to dark brown or purplish until the larvae are released. There are reports that the rhizocephalans can cause “parasitic castration” of their hosts and the secondary sexual characteristics of the host may be altered. Parasitized male and sub-adult female crabs may have a broadening of the abdomen which lead to behavioral modifications like grooming and caring of the externae of rhizocephalan barnacle *Sacculina* spp., as that of females would do for her developing egg mass. In such cases, morphological changes in their abdominal segments resembles abdomen of a normal mature female instead of narrow T-shaped abdomen, deformed abdomen or total loss of pleopods (Fig. 2 and 3).

Male crabs have two pairs of pleopods, that functions as copulatory organ while females have four pairs of pleopods, to which the eggs are attached during spawning and remain there till hatching. In case of total loss of pleopods in *Sacculina* spp. infected male and female *P. pelagicus* there will be reduction in the reproductive ability eventually leading to a reduction in population over a period of time. Generally, crabs with egg mass do not moult, and also crabs infested with *Sacculina* parasite, therefore, inhibiting the subsequent growth.

Percentage of sexually infested *P. pelagicus* by *Sacculina* spp. was recorded during various months. It has been reported that the sacculinid parasite internally infest the host before the spawning season

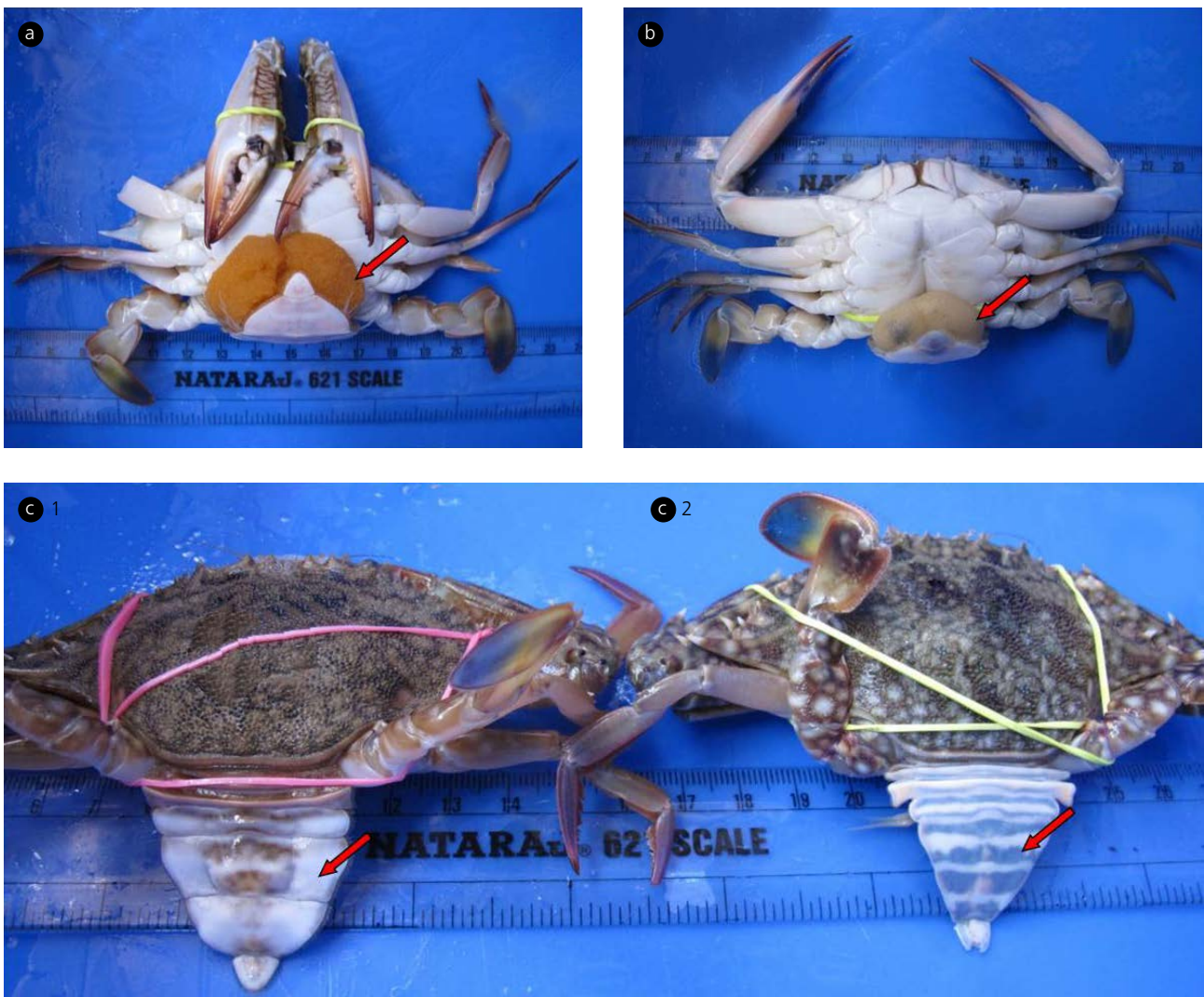


Fig. 2.A. Normal (Non-infected) berried female; B. An infected female crab showing externa in the abdomen; C. C1-An infected sub-adult female with round shaped abdomen (like a normal berried female abdomen). C2- Normal sub-adult female with triangular shaped abdomen.

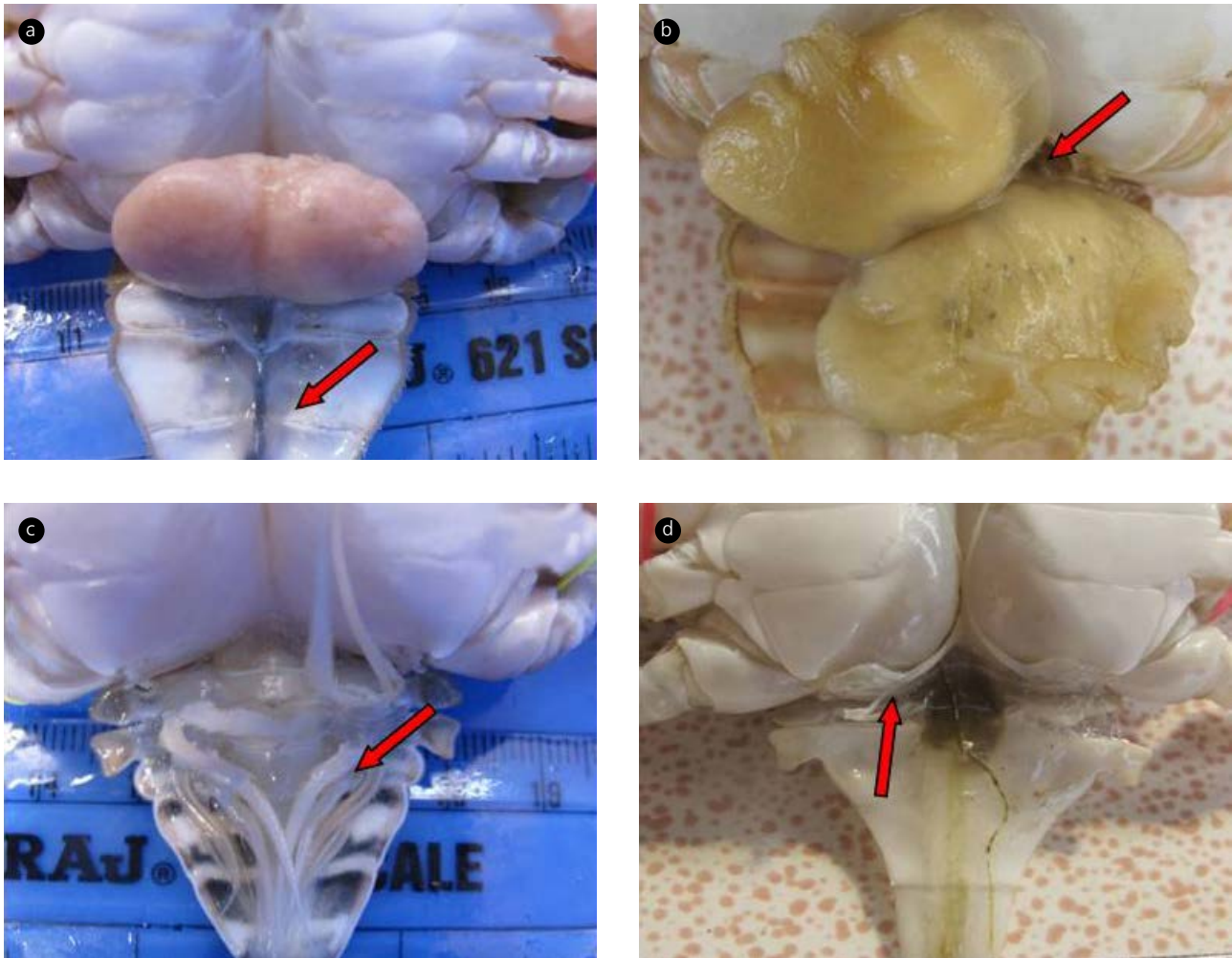


Fig. 3.A. Infected sub-adult female exhibiting one externa on the round shaped abdomen and total loss of pleopods (Arrow indicating area); B. Infected sub-adult male exhibiting two externae on the round shaped abdomen (Instead of inverted 'T' shaped abdomen) and total loss of pleopods (Arrow indicating area).C. Normal (Non-infected) sub-adult female with four pairs of pleopods and triangular shaped abdomen (Arrow indicating area). D. Normal (Non-infected) sub-adult male with two pairs of pleopods and inverted 'T' shaped abdomen (Arrow indicating area).

and the production of externae is synchronized with the spawning season of crab. In the present study, externae were found in both sexes, in all the five months of observation. One percentage of the crabs was also observed to possess two "externa" (Fig.3B). Female crabs showed a higher infestation rate by *Sacculina* spp. when compared to males, with the size range of 48 to 115 mm (carapace width). Infestation rate was 2 to 3 per cent in male *P. pelagicus* during all the observed months. Not much variation in the rate of infestation was noticed in male crabs which were sexed based on the shape of abdomen.

Rhizocephalans reportedly cause castration, stunting and increased mortality to their crab hosts, and by affecting the reproductive ability, growth and reducing the future recruitment can impact crustacean fisheries. The present study provided baseline data on the parasitic *Sacculina* spp. occurring in *P. pelagicus* population in Mandapam region and highlights future studies required on the effect of *Sacculina* spp. on health, growth and reproduction of *P. pelagicus* stocks.