

# Short Communications

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## RHIZOCEPHALAN CIRRIPEDES FROM PAKISTAN COAST

**Abstract.** Three species of rhizocephalan cirripedes are reported from the coast of Pakistan. *Sacculina leptodiae* and *Heterosaccus ruginosus* were collected from brachyuran hosts *Leptodius exaratus* and *Portunus sanguinolentus* respectively while *Septodiscus flabellum* was found parasitizing porcellanid crabs *Petrolisthes boscii* and *Petrolisthes rufescens*.

**Key words:** Rhizocephala, cirripedes, *Sacculina leptodiae*, *Heterosaccus ruginosus*, *Septodiscus flabellum*.

Cirripede fauna of Pakistan was studied by Hassan (*Agric. Pakistan*, **24**: 297-306, 1963), Javed and Mustaqim (*Crustaceana*, **66**: 124-126, 1992), Moazzam and Niaz Rizvi (*Pakistan J. Zool.*, **10**: 175-190, 1978; *Pakistan J. Zool.*, **14**: 234-237, 1982). Murray (*A Handbook of geology, botany and zoology of Sindh*. Beacon Press, Kurruchee, pp. 310, 1880) and Mustaqim and Javed (*Pakistan J. mar. Sci.*, **2**: 73-75, 1993). Hashmi and Mohammad (*Proc. 16<sup>th</sup> Pakistan Sci. Conf.*, B-55, 1964) and Siddiqui and Ahmed (*Mar. Res.*, **2**: 61-72, 1993) studied *Sacculina* sp. parasitizing *Leptodius exaratus* from Karachi coast. Ahmed and Mustaqim (*Mar. Biol.*, **26**: 177-182, 1974) reported the occurrence of a rhizocephalan parasite on the porcellanid crabs from Karachi coast. Present study deals with the taxonomy of the rhizocephalan parasite from the coast of Pakistan.

### Materials and methods

Rhizocephalan cirripedes were collected from brachyuran and porcellanid crabs from different localities along the coast of Pakistan. Samples were preserved in 5% neutralized formalin.

### Results

#### Taxonomic enumeration

*Sacculina leptodiae* Guerin-Ganivet, 1911

*Sacculina leptodiae* Guerin-Ganivet (*Trav. Sci. Lab. Zool. Physiol. Maritimes Concarneant*, **3**: 1-97, 1911), Boschma (*Zool. Meded. Rijksmus. Nat. Hist. Leiden*, **19**: 187-328, 1937), Boschma (*Zool. Meded. Rijksmus. Nat. Hist. Leiden*, **30**: 49-71, 1948), Boschma (*Zool. Verh. Leiden*, **27**: 1-76, 1955), Boschma (*Proc. K. Ned. Akad. Wetensch.*, **70**: 137-143, 1967), Boschma (*Proc. K. Ned. Akad. Wetensch.*, **72**: 254-272, 1969).

Parasites collected from Pakistan resembles with the specimens described by Boschma (*op.cit.*, 1937; *op.cit.*, 1948, *op.cit.*, 1967, *op.cit.*, 1969) and Guerin-Ganivet (*op.cit.*). This parasite is characterized in having a broadly oval shape or almost panduriform body. Papillae round, located in the middle of the anterior region. Mantle opening lying on center of the papillae. The upper surface of the external cuticle with a dense covering of excrescences. Specimens from Pakistan can be distinguished from closely related species *Sacculina carpiliae* (Guerin-Ganivet) in having panduriform shape, small spines on excrescences. *S. carpiliae* has rounded body and have cuticle with comparatively large excrescences (Boschma, *Bull. Mus. Hist. nat. Nat. Paris*, 2.s. **8**: 342-344, 1936; *op.cit.*, 1947; *op.cit.*, 1969). This species is reported to parasitize a large number of xanthid and other brachyuran crabs including *Leptodius exaratus*, *L. gracilis*, *Thalamita stimpsoni*, *Pseudozium caystrus*, *Lachnopodus* sp. and *Trapezia* sp. (Boschma, *op.cit.*, 1936; *Proc. K. Ned. Akad. Wetensch.*, **50**: 3-9, 1947; *op.cit.*, 1967; *op.cit.*, 1969) and is reported to have wide distribution in Indo-Pacific area. Hashmi (*op.cit.*), Hashmi and Mohammad (*op.cit.*) and Siddiqui and Ahmed (*op.cit.*) have reported the occurrence of *Sacculina* on *Leptodius exaratus* from Karachi. From the information published in these three articles it seems that the parasite reported by all of

them was *Sacculina leptodiae*. Siddiqui and Ahmed (*op.cit.*) have studied in detail parasitization in *Leptodius exaratus* and noted their abundance during southwest monsoon along Karachi coast. They also observed that rate of infestation was 3.44% at Buleji whereas at Manora the percentage of infested males was 3.21% and female 3.72%. According to them *Sacculina* breed throughout the year whereas April to August is main recruitment season.

*Material examined*

13 specimens collected from Buleji, Karachi in December, 1975 attached to *Leptodius exaratus*; 6 specimen collected from Gwader (Demi Zur) in April, 1979 attached to *Leptodius exaratus*.

*Heterosaccus ruginosus* Boschma, 1931

*Heterosaccus ruginosus* Boschma (*Mem. Mus. R. Hist. nature. Belg. Horse. Ser.*, 3: 1-8, 1931).

Parasites collected from Pakistan resembles with the specimens described by George (*J. Zool. Soc. India*, 11: 171-204, 1959) from Madras. The parasite was dorso-ventrally compressed with mouth opening at the anterior end and peduncle at the posterior end, reniform to globular in shape. Mantle smooth with the exception of two ridges at the posterior end and a few grooves on the thoracical surface. Mantle opening prominent, elongated slit like or circular in shape, wall of the opening thrown into lappets; covered on the outside by a layer of thick cuticle, without excrescences. This species is reported to infest *Thalamita prymna* and *Lissocarcinus pulshellus* (Boschma, *op.cit.*, 1931) and *Portunus sanguinolentus* (George, *op.cit.*).

*Material examined*

2 specimens collected from Karachi Fish Harbour (commercial landings) in November, 1998 attached to *Portunus sanguinolentus*.

*Septodiscus flabellum* van Ball, 1937

*Septodiscus flabellum* van Ball (*Temminckia*, 2: 1-96, 1937); Boschma (*op.cit.*, 1969)

Parasites collected from Pakistan resembles with the specimens reported from Red Sea parasitizing *Petrolisthes rufescens* (Specimen 1) described by Boschma (*op.cit.*, 1969). The parasite was observed to be circular to oblong in shape with pronounced concavity at the posterior margin. Papillae small, lies at the dorsal surface near the anterior margin of the visceral mass. Mantle opening in the centre of the papillae. Central part the body robust, towards the margin of diminishing in thickness to a fairly sharp border. The border divided into parts by an incision extending from the margin to the owing to the presence of more or less radially arranged septa. This species is a parasite of porcellanid crabs and is reported to infest *Petrolisthes rufescens*, *P. carinipes*, *P. lamarckii*, *P. hastatus*, *P. molukkensis* and *P. japonicus* (Boschma, *op.cit.*, 1969; van Ball, *op.cit.*) Ahmed and Mustaqim (*op.cit.*) reported the occurrence of rhizocephalan parasite on two species of porcellanid crabs *i.e.* *P. rufescens* and *P. boscii* from Karachi coast. They reported that about 0.3% and 6.4% of the population of the two crabs respectively at Karachi coast were found to be parasitized by a rhizocephalan. Their report pertains to *Septodiscus flabellum*, as no other rhizocephalan parasite of porcellanid is known from the area. They also observed maximum number of this rhizocephalan on *P. boscii* during July and August.

*Material examined*

2 specimens collected from Buleji, Karachi in November, 1979 attached to *Petrolisthes rufescens*; 2 specimens collected from Manora rocky shore, Karachi in March, 1983 attached to *Petrolisthes boscii*; 1 specimen collected from Ras Juddi, Pasni, in April, 1983 attached to *Petrolisthes rufescens*.

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## OCCURRENCE OF PLANKTONIC LARVAE OF *ALBUNEA* (CRUSTACEA: ANOMURA) ALONG THE PAKISTAN COAST

**Abstract.**- Larva of *Albunea (steinitzi?)* was collected from coastal lagoon of Miani Hor. Based on the detailed morphological study, it is presumed that it is stage VI zoeal larva.

**Key words:** *Albunea*, zoea, morphological characters.

*Albunea steinitzi* was reported from coastal waters of Pakistan by Tirmizi (*Crustaceana*, **35**: 94-95, 1976) and Tirmizi *et al.* (*An illustrated key to the identification of anomurans (Porcellanidae, Albuneidae and Hippidae) of the Northern Arabian Sea*. Centre of Excellence Marine Biology, University of Karachi, pp. 29, 1982). However, no aspect of its biology or larval stages was studied so far. Very little is known about larval stages of *Albunea* from other parts of the world as well. Menon (*Bull. Madras Govt. Mus. N.S.*, **3**: 1-56, 1937) had recorded larval stages of *Albunea symmistica* from Madras. Seridji (*J. nat. Hist.*, **22**: 1293-1300, 1988) had studied some planktonic larval stages of *Albunea carabus* from Algeria. Gruney (*Larvae of decapod crustacea* Ray Society, London, pp. 306, 1942) have also mentioned some planktonic larval stages of *Albunea*. Present paper for the first time described a planktonic larva of *Albunea* from coastal lagoon of Miani Hor, Balochistan. The sample was collected using zooplankton net towed along the surface for 10 minutes during high water in April, 1992. The sample was preserved in 5% formalin.

### Larval morphology

The carapace is highly arched; in front produced into a long rostrum which projects forward and not bend (Fig. 1a). There is a pair of well-developed lateral spines present; which are shorter than the rostral spines. Colour of zoea was deep red but no chromatophore visible in preserved

specimen. The eyes are stalked. Antunules have peduncles with tripartite division. The flagellum is segmented. Antennae has long flagellum, unsegmented; with 25 plumose setae. The distal endite of the first maxilla has four setae; the proximal endite has several setae. The palps have 2 unequal setae. Second maxilla with 5 setae. Paeropods are well developed and show all segments of the adult. There are 13 gills on each side. All abdominal segments with appendages which are not biramous. The number of setae on the exopodite of uropod are 16 in the inner margin out of which 3 are on the tip. The setae of the outer border not plumose. Endopodite rudimentary. Telson with 50 spines (Fig. 1b).

Fig. 1. *Albunea* zoeal larval (a) whole larva (appendages not drawn); (b) telson.

### Remarks

The larva collected from Balochistan has considerable resemblance with the stage V larvae of *Albunea symnista* described by Memon (*Bull. Madras Govt. Mus. N.S.*, **3**: 1-56, 1937). It, however, has some differences as well. The posterior margin of the carapace has a small projection which is lacking in the larvae of *A. symnista*. There are also differences in setation of the appendages and telson.

The larva of *Albunea* has great resemblance with the larvae of genus *Hippa* and *Emirita* especially in the general morphological features (Sankholi, *Proc. Symp. Crustacea. Mar. Biol. Assoc. India*, **2**: 744-775, 1965; Hanson, *Crustaceana*, **16**: 143-157, 1969; Johnson and Lewis, *Biol. Bull.*, **83**: 67-87, 1942; Rees, *Biol. Bull.*, **117**: 36-370, 1959; Al-Kholy, *Publ. Mar. Biol. Stat. Al-Ghardaqua, Egypt*, **10**: 83-86, 1959; Smith, *Trans. Conn. Acad. Sci.*, **3**: 311-342, 1877; Foxon, *Bull. Mus. comp. Zool. Harv.*, **5**: 253-268, 1879). Mostly the shape of carapace and telson are different as well as they also differ in degree of setation.

There are two species of *Albunea* reported from India and Pakistan *i.e.* *A. symnista* and *A. steinitzi*.

No information on the larvae of the latter is available. Considering the differences with larvae of the former described by Menon (*Bull. Madras Govt. Mus. N.S.*, **3**: 1-56, 1937), it may be presumed that the larva collected from Balochistan may belong to *A. steinitzi*, however, there is need to rear the larvae of this species to ascertain the identification.

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