

Short Communication

Pakistan J. Sci. Ind. Res., Vol. 22, No. 6, Dec. 1979.

**SOME OBSERVATIONS ON THE POST
CYPRID STAGES AND POPULATION
STRUCTURE OF *CONCHODERMA
VIRGATUM* VAR. *HUNTERI* FROM
OFFSHORE WATERS OF PAKISTAN**

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(Received August 22, 1978; revised April 1, 1979)

Conchoderma virgatum var. *hunteri* (Owen 1830), a pedunculate cirriped is found attached to the under surfaces of buoys, floating objects, body of fishes and decapoda [1,2]. Few specimens of *Conchoderma virgatum*, however, have been recovered from the decapod crustaceans [2]. Out of 23 references regarding this pedunculate only 3 deal with such like infestation on the body of crabs [2]. Moazzam and Rizvi [3] were first to report *Conchoderma virgatum* var. *hunteri* attached to the carapace and abdomen of the pelagic crab *Charybdis smithii* from the offshore waters of Pakistan.

MATERIALS AND METHODS

Specimens of the portunid crab *Charybdis smithii* have been collected from various stations along the offshore

Table 1. The occurrence of *Charybdis smithii* in the catches of 'R/V Dr. Fridtjof Nansen' in the offshore waters of Pakistan during February – April 1977.

Date (M)	St. No.	Time (hr)	Position	Bottom depth (m)	Type of gear used	No. of specimens of <i>C. smithii</i>	Weight <i>C. smithii</i> (kg)	Dominant species in the catch
7.2.77	21	1350	N 23°48' E 62°28'	3600	Small pelagic trawl	20	1	<i>Diaphus</i> sp.
8.2.77	23	1635	N 24°57' E 62°12'	15	do	7	0.5	<i>Dussumieria acuta</i>
28.3.77	89	1922	N 24°40' E 63°50'	1450	Pelagic trawl	9	0.5	<i>Bregmaceros</i> sp.
1.4.77	96	1935	N 24°44' E 61°50'	25	Small pelagic trawl	26	1.2	<i>Benthoosema pterotum</i>
3.4.77	98	2125	N 24°54' E 63°01'	640	-do-	13	0.6	<i>Benthoosema pterotum</i>
7.4.77	107	0415	N 24°45' E 66°00'	760	-do-	1	0.01	<i>Benthoosema pterotum</i>

waters of Pakistan (Fig. 1) on board the Research Vessel 'R/V Dr. Fridtjof Nansen' from February to April 1977. Samples were preserved in 5% neutralized formaline. The measurements were taken accurate up to 0.01 mm.

RESULTS

Table 1 shows the occurrence of *Charybdis smithii* collected from various stations in the catches of 'R/V Dr. Fridtjof Nansen' in the offshore waters of Pakistan during February – April 1977. Although a total of 186 fishing stations were made all along the offshore waters of Pakistan from January to June 1977 by 'R/V Dr. Fridtjof Nansen' but the crabs were found on a few stations only. The data regarding the fishing stations on which the *C. smithii* were found are given in Table 1. The dominant species in the

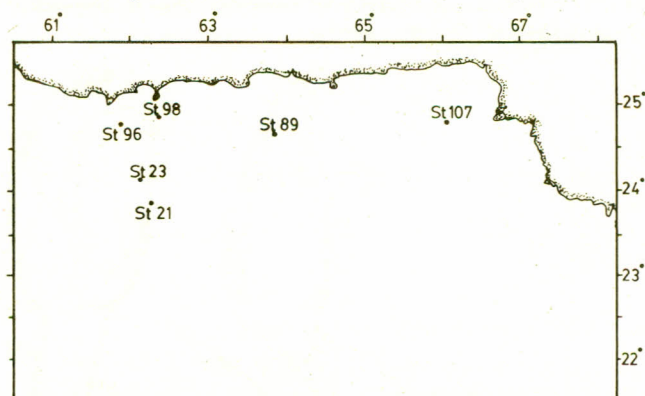


Fig. 1. Locations of fishing stations where the portunid crab *Charybdis smithii* was collected during the cruises of 'R/V Dr. Fridtjof Nansen' in the offshore waters of Pakistan from February to April, 1977.

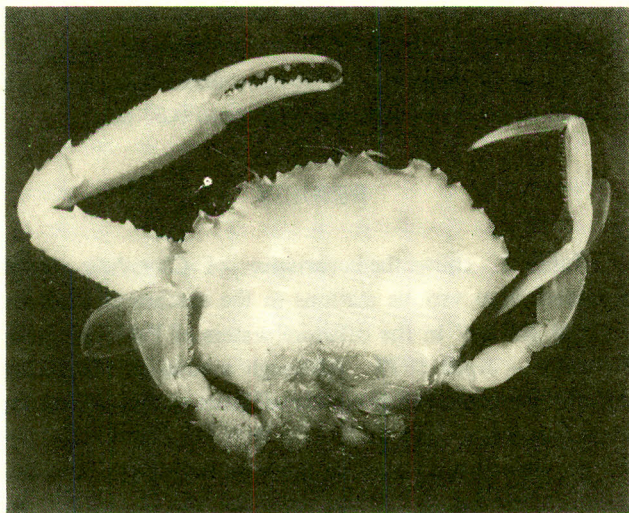


Fig. 2. *Conchoderma virgatum* var. *hunteri* attached to the body of the portunid crab *Charybdis smithii*.

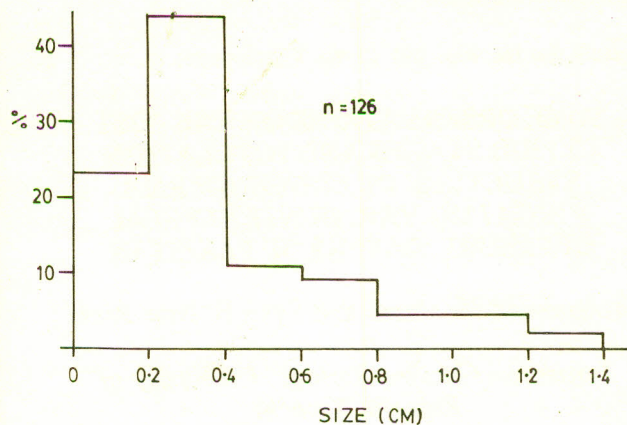


Fig. 3. Size frequency distribution of *Conchoderma virgatum* var. *hunteri*, collected from 14 crabs.

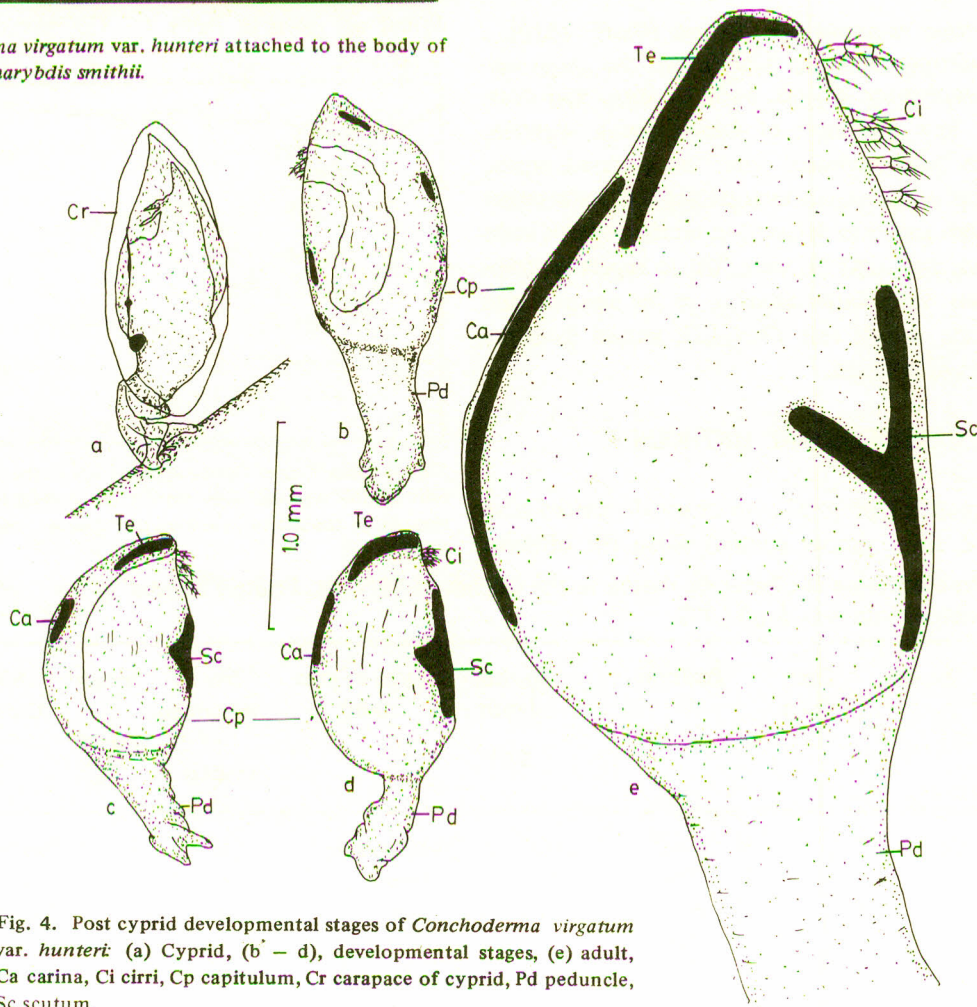


Fig. 4. Post cyprid developmental stages of *Conchoderma virgatum* var. *hunteri*: (a) Cyprid, (b - d), developmental stages, (e) adult, Ca carina, Ci cirri, Cp capitulum, Cr carapace of cyprid, Pd peduncle, Sc scutum.

catches are also mentioned which mostly included myctophids. From stations 96, out of 26 crabs 14 were observed to harbour a large number of *Conchoderma virgatum* var. *hunteri*, attached to the carapace at the junction of abdomen and to the fifth swimming leg (Fig. 2).

Population Structure. Fig. 3 illustrates the capitular

length of the population of the *Conchoderma virgatum* var. *hunteri*, collected from the body of all infested *Charybdis smithii*. The histogram shows that major part of the population comprised of small individuals (measuring 0.1 - 0.4 cm capitular length). Only a few individuals of large size (measuring 0.6 - 1.4 cm capitular length) were recor-

ded. A large number of cyprids were also found along with the juveniles and adults of *Conchoderma*. The presence of cyprids indicates the breeding season of this barnacle species which is also confirmed by the presence of matured egg lamellae in the mantle cavity of the adults. Roskell [2] observed a large number of cyprids and juveniles of *Conchoderma virgatum* var. *hunteri* from Gulf of Aden in November 1962. These observations tend to suggest that this species has a long breeding period.

The size distribution graph shows that there is no distinct size class mode in the size distribution histogram which suggest that they belong to same generation rather than two or three different generations. Cheung [4] has noted similar observations on the *Lepas (Dosima) fascicularis* Ellis et Sonder and *Lepas pacifica* Henry from California. The gregarious behaviour of the larvae of *Conchoderma virgatum* var. *hunteri* is evident from their aggregation at places the body of host (Fig. 2). A large number of cyprids were also found attached to the capitulum and peduncle of the adult barnacles.

Post Cyprid Development. Development stages which include cyprids as well as juveniles and adults were sorted out from the samples. Fig. 4 shows some of these developmental stages. It is not easy to identify cyprids to species level but present collection of cyprids were dubiously believed to be *Conchoderma virgatum* var. *hunteri* because of their presence along with a large number of juveniles and adults.

The cyprids contain distinct compound eye and an

orange spot (Fig. 4a). Primordial plates were not distinctly visible before the shedding of the cyprid carapace. After shedding the carapace the pigment spot and compound eye disappears and appearance of the plates begins (Fig. 4b). The ratio between the size of capitulum and size of plate is comparatively smaller but with the increase in size of the capitulum this ratio increases. As the animal grows in size the distinct Y-shaped scutal plate appears (Fig. 4e). The post cyprid development of *Lepas anserifera* and *Lepas anataifera* have similar patterns of development [5]. Lang [6] has also reported the appearance of primordial plates and disappearance of compound eye in *Octolasmis mulleri*. Metamorphosis of *Conchoderma virgatum* var. *hunteri*, *Octolasmis* and *Lepas* appears to be similar.

Acknowledgement. We express our gratitude to Prof. N.D. Aziz of the Institute of Marine Biology, University of Karachi, Karachi, for manuscript reading.

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