

in press-a). Not only the production of zooplankton as a whole showed a dramatic increase in 1993 and 1994, a clear shift in the population maxima from July-August to

February-April was also evident. These changes are also reflected in the population of chaetognaths. A significant increase in salinity (38.1‰) was also observed.

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**REGENERATION OF EYESTALK IN THE HERMIT CRAB *CLIBANARIUS LONGITARSUS* (DE HAAN) (CRUSTACEA : DECAPODA : ANOMURA)**

## ABSTRACT

Three hermit crabs with unequal eyestalks were collected from Vellar estuary. The identity was established as *Clibanarius longitarsus* (De Haan). This hermit crab regenerates the eyestalk when it is cut distally. But when the eyestalk is cut proximal to the optic ganglia there is no regeneration.

THE LENGTH of the eyestalk is an important taxonomic character in the identification of hermit crabs coming under the genus *Clibanarius* (Dana). These hermit crabs are mostly found in estuaries and backwaters, among them, *Clibanarius longitarsus* (De Haan) is the dominant one. The occurrence of this hermit crab has been reported by Sundararaj (1927), Reddy (1935), Gravely (1941), Thomas (1967), Sarojini and Nagabhushanam (1972) and AjmalKhan (1992) from the estuaries and backwaters situated on the east coast of India.

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In Vellar estuary (lat. 11°29' N; long. 79° 46' E), this hermit crab occurs abundantly and is the most dominant species. The eyestalks in this species are equal and as long as the antennular peduncle (Fig. 1A). The eyestalks are yellow in colour and no stripes are present on the eyestalks.

The eyestalks are also a little longer than the anterior border of the carapace (Sarojini and Nagabhushanam, 1972). While in fresh

specimens colour notes are helpful in the identification of species, in preserved specimens, the length of the eyestalk in relation to

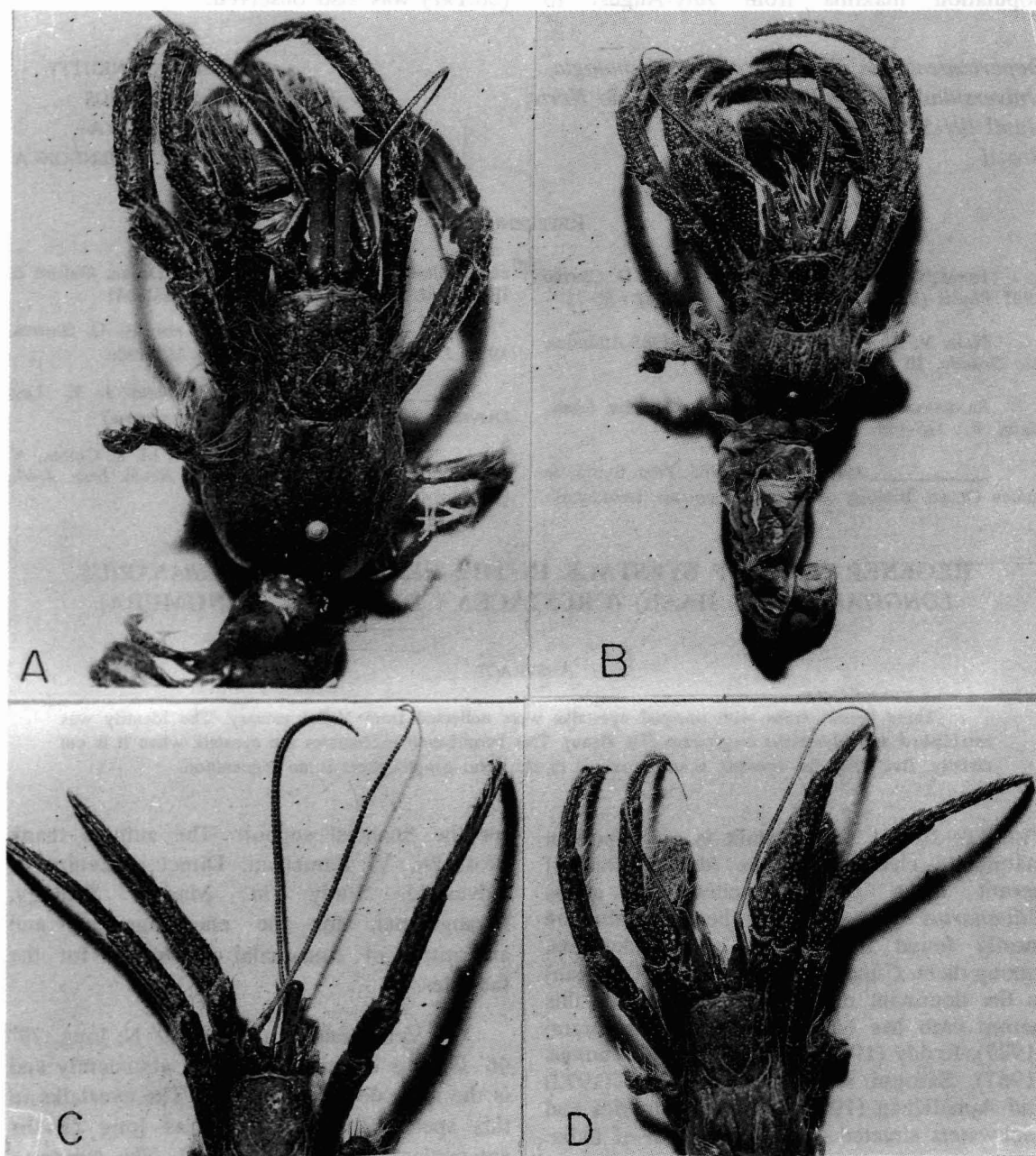


FIG. 1. A *Clibanarius longitarsus* with equal eyestalks, B and C. *C. longitarsus* with shorter left eyestalk, D., *C. longitarsus* with shorter right eyestalk

antennular peduncle and anterior body of carapace is an important character. During routine collections, three specimens which showed peculiarities in the size of the eyestalk were collected from the estuary. In all the three specimens the eyestalks were unequal size. In two specimens (Figs. B and C), the right eyestalk was normal and the left one was shorter than the other and also the anterior border of carapace. In the third specimen (Fig. D), the left eyestalk was normal and the right one was shorter than the other and anterior border of carapace. Table 1 presents data on the length of the eyestalk in relation to body measurements in these hermit crabs.

TABLE 1. Length of eyestalks in the hermit crab *Clibanarius longitarsus*

Characteristic	Specimen number		
	1	2	3
Length of the body	7.0 mm	5.4 mm	5.2 mm
Length of the carapace	2.7 mm	1.75 mm	1.6 mm
Length of the anterior border of carapace	0.9 mm	0.65 mm	6.25 mm
Length of the right eyestalk	1.05 mm	0.8 mm	4.5 mm
Length of the left eyestalk	0.6 mm	0.35 mm	7.25 mm

The presence of unequal eyestalks might be probably due to injury/accidental cut in one eyestalk and subsequent regeneration of the

cornea. If both the eyestalks sustain injuries simultaneously or one after another and the cornea is regenerated, then it can pose problem in the identification of this organism, as the eyestalks will not be as long as the antennular peduncle and a little longer than the anterior border of carapace as in the normal ones. That is why this peculiarity is reported through this note. In order to confirm regeneration of the eyestalk, a small test was conducted. Hermit crabs with normal eyes were collected and divided into three sets. In the first set of animals, the cornea alone was removed. In the second set, the eyestalk was cut in the middle and in the third set, one whole eyestalk was extirpated. In the first and second set of organisms, the cornea was formed within a month. The eyestalks also became equal in the second set of organism in six months. However, in the third set of organisms, there was no trace of regeneration of eyestalk. Bliss (1960) reported regeneration of antenna like structure (heteromorphic regeneration) in the place of an eyestalk when the eyestalk of adult decapods was resected proximal to the optic ganglia. The present report shows that such a regeneration is not taking place in the hermit crab *C. longitarsus*. But if the eyestalk is sustaining injury at a distal location to the optic ganglia-in the middle or at the tip, the cornea is regenerated first and then the stalk grows.

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