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21. NOTES ON ANIMAL RELATIONSHIPS : DROMIID
CRABS, *CRYPTODROMIA TUBERCULATA PILEIFERA*
ALCOCK, 1899 SHELTERING BENEATH COMMENSAL
SPONGES

Whilst collecting marine fauna in the inshore regions of Great Nicobar Island during February-May 1966, an interesting animal association between dromiid crabs and hemispherical commensal sponges was observed. The details of this association together with some experimental observations are presented in this note.

The inshore region of Great Nicobar Island is mainly coralline interspersed with sandy patches and rock boulders. The coral reefs abound in madreporarian corals and harbour an extremely rich fauna including sponges. Among the sponge fauna, there were a number of small hemispherical forms, ranging in diameter from 15 mm. to 18 mm. on corals exposed in the intertidal region during low tide.

As the apparent movements of these sponges attracted attention these were picked up, and it was found that each hemispherical sponge sheltered a small crab underneath. On examination the crab was seen holding the sponge as a cap by means of the last two pairs of ambulatory legs.

In addition to the specimens examined and experimented upon in the field, the following material was brought to Calcutta for study:

No. of sets	Stn. No.	Collection No.	Date	Locality
1. One	1	221	6.3.66	From low tide region of Campbell Bay.
2. Two	10	776	2.4.66	From low tide region of Casuarina Bay.
3. Six	20	1122	15.4.66	From low tide region of Shivdutt Bay.

Following Alcock (1901) and Buitendijk (1950), the crabs have been identified as *Cryptodromia tuberculata pileifera* Alcock, 1899, belonging to the family Dromiidae. The carapace of the largest specimens (male and female) are 8.5 mm. long and 10.5 mm. broad. The older collections of Z.S.I. comprise specimens from Port Blair, Great Cocos Islands and Little Andaman Island.

The sponges are all encrusting forms belonging to the family Suberitidae.

OBSERVATIONS

The following observations have been made in the field-laboratory :

Three sets of animal association obtained on 2-4-66 from Casuarina Bay were left in separate bowls containing sea-water. At the bottom of the bowl some sand and pieces of corals and rock were arranged to simulate conditions of the inshore region at low tide. The sponge caps were carefully dislodged from the crabs and the associates were released in the same containers. Within two hours the crabs had covered themselves with the detached caps, in all the three bowls.

In a second series of experiments where specimens of denuded *Cryptodromia* were released into large tanks containing sea-water along with live encrusting sponges and were not provided with removed sponge caps, it was observed that the crabs broke off pieces of live sponges and held them by their last two pairs of legs over their backs pressed close to their carapace.

In a third series of experiments where these specimens of *Cryptodromia* were released into tanks containing simple ascidians, empty bivalve shells, encrusting sponge etc. it was noticed that the crabs did not use the material other than encrusting sponges for protecting their carapace.

REMARKS

These observations reveal that these dromiid crabs prefer any encrusting sponge for protective purposes, because the sponge may eventually spread over the entire carapace. According to Alcock (1902) and Hyman (1940) the members of the family Dromiidae have the habit of sheltering under small animals such as sponges, ascidians, and empty valve of lamellibranch shells. In the case of *Cryptodromia tuberculata pileifera* Alcock it is probable that it covers itself only with any easily available species of encrusting sponge.

This type of bipartite relationship between sponges and crabs is probably mutually beneficial. Because of the disagreeable taste and odour as well as the bristly spiculation, sponges are seldom eaten by other animals (*vide* Hyman 1940) and therefore are of benefit to the crabs for shelter and protection. The sponges, however, are benefited to a limited extent only. Being sedentary in habit they get the advantage of being carried from place to place and also obtain small particles of food scattered about by the crab.

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22. GREGARIOUSNESS AND MIMICRY DURING COCOON STAGE BY THE BUTTERFLY *EUREMA HECABE* (L.)

In the month of August 1965 at Shillong, I observed that almost all *Acacia mollissima* Willd. and *Albizia* sp. trees were heavily infested by whitish green caterpillars, subsequently identified as the larvae of *Eurema hecabe* (L.).

Within a month's time the attacked plants were completely defoliated by the caterpillars and just after complete defoliation, the caterpillars started to make their leaf-like cocoons on the naked leaf midribs of the host-plant. The cocoons were arranged serially and hung by their stalk in such a way on the midribs that they looked like the leaves of the plant. The size and shape of the cocoons were nearly the same as that of the leaf of the host plant.



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