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**NOTES ON *LITTORINA* AND *MUREX* FROM THE
MANGROVE AT AO NAM-BOR, PHUKET, THAILAND**

by

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NOTES ON *LITTORINA* AND *MUREX* FROM THE MANGROVE AT AO NAM-BOR, PHUKET, THAILAND

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ABSTRACT

The horizontal and vertical distribution of *Littorina scabra* and *L. carinifera* in a *Rhizophora* mangrove is described, and some observations on the biology of *Littorina* and *Murex capucinus* are reported.

I. INTRODUCTION

This paper describes some details of distribution of the periwinkles collected during the study described by Frith, Tantanasiwong and Bhatia (1976), which should be consulted for detailed information on the mangrove and the collecting.

Some additional observations on the biology of *Littorina* and *Murex* are included.

II. *LITTORINA*

The two species of periwinkles found in the

mangrove, viz. the highly variable *Littorina scabra* (L., 1758) and *L. carinifera* (Menke, 1830) (Fig. 1) were identified by use of the monograph by Rosewater (1970) and also compared with specimens in the Zoological Museum, Copenhagen, identified by Rosewater.

L. scabra occurred through the whole of the mangrove. At low tide (in daytime) it was sitting inactive on roots, branches or leaves of *Rhizophora apiculata* Blume. The distribution of the various size groups is illustrated in Fig. 2. The smallest specimens occurred at the lower levels of the trees,

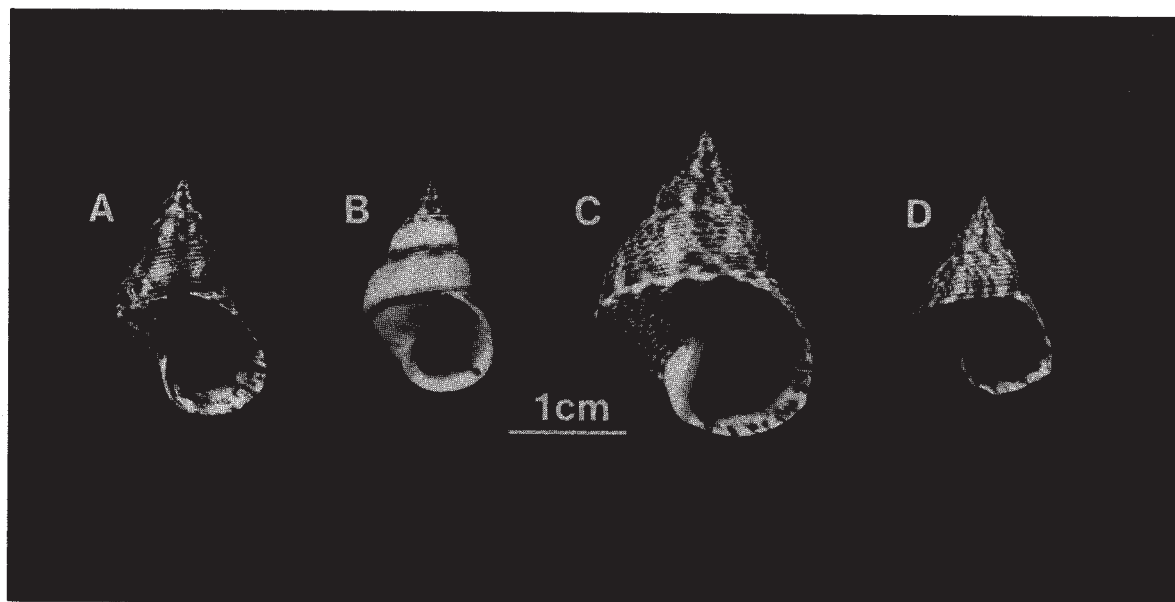


Fig. 1—(A—C), *Littorina scabra*, (A), the normal type; (B), an almost totally yellow variety of the normal type; (C), the type with white, rather wide columella. (D), *Littorina carinifera*.

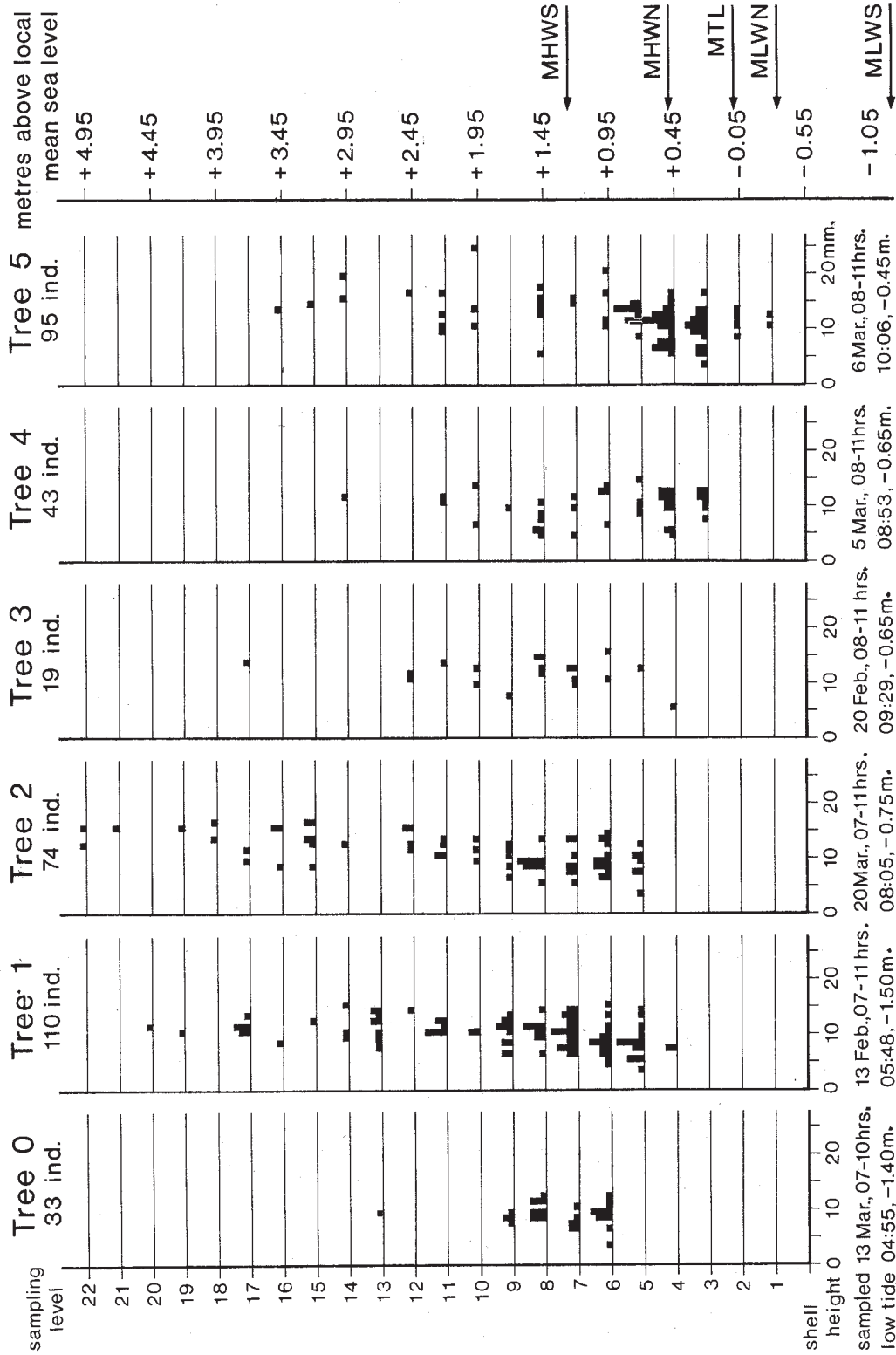


Fig. 2.—The distribution of *Littorina scabra* on the six trees investigated; each square represents one specimen. Local mean sea level (MTL) is 2.15 m. above datum level. A sampling level = 25 cm.

and very large specimens (shell heights 17-25 mm.) were found only at the tree facing the sand flat at the edge of the mangrove. These large specimens (Fig. 1C) usually have a shell which differs somewhat from that of the normal type (Fig. 1 A-B) in having a white, rather wide columella instead of a brownish, more narrow one. The periwinkles were found from the mud surface until $3\frac{3}{4}$ m. above MHWS and were found highest up at the inner trees (trees 1 and 2).

It was observed that rising water induced specimens at the lower levels to crawl further up so that they just escaped submersion, but the water in the mangrove was so turbid that it was impossible to ascertain if all specimens did so. Additional observations were therefore made on the specimens occurring on an *Avicennia marina* (Forsk.) Vierh. growing on the beach of Phuket Marine Biological Center at Laem Phan Wa. All specimens on the tree were collected at a high

tide, measured and placed on the tree again at the following low tide. Eleven days later all specimens were collected at low tide and measured. The results are shown in Fig. 3. All specimens avoided being submerged, but it was almost exclusively the small specimens which crawled down to the lower levels at low tide. It was earlier observed that some of the largest specimens occurred further up in the tree and that they started to migrate downward when the tide had reached the lowest level of the tree. Some specimens crawled all the way down to the water level and then turned round. After the first sampling the large specimens did not, however, climb so far up in the tree.

L. carinifera occurred only on the uppermost tree of the mangrove (tree 0), which was reached by the water only a few days around each spring tide. All specimens were found in the zone between the ground and $\frac{1}{2}$ m. above the ground, attached to roots or dead branches.

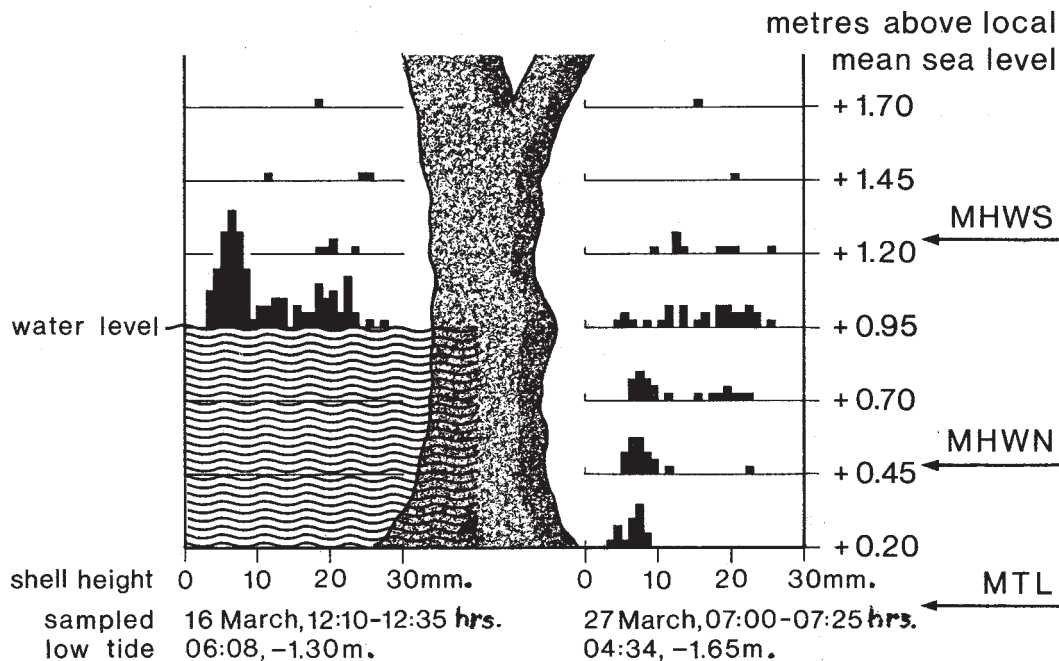


Fig. 3—The distribution of *Littorina scabra* on an *Avicennia* at high and low tide; each square represents one specimen.

III. MUREX

Murex capucinus (Lamarck) was usually sitting on the *Rhizophora* roots in contact with the mud. Three specimens were observed feeding on *Saccostrea cucullata* (Born) through small holes

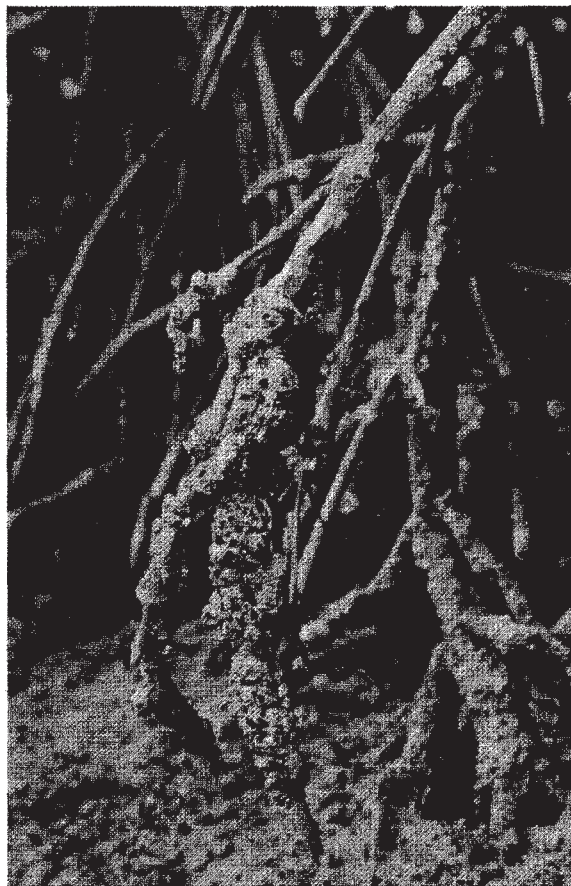


Fig. 4—*Balanus amphitrite* and a few *Saccostrea cucullata* on a free hanging root of *Rhizophora*. (S. Wium-Andersen photo.).

bored through the upper valves.

Most of the larger *Rhizophora* roots reaching out over the channels in the mangrove or at its edge bear a number of large *Balanus amphitrite* Darwin (Fig. 4). Such large specimens are only very rarely found on the roots which reach the mud. It was speculated that this distribution could be a result of predation by *Murex*, which crawls from one root to the other on the mud and which does not get access to the free-hanging roots. A root with large barnacles was, therefore, placed in an aquarium with some *Murex*, which willingly attacked the prey. Unfortunately, the snails did not thrive well in the aquaria, but two specimens managed to devour one large barnacle each. Afterwards one barnacle showed a nice hole on one of the scuta, while the other had been bored at the midline between the two scuta, which apparently after some time had been forced apart. It therefore seems reasonable to believe that *Balanus amphitrite* is normally preyed upon by *Murex capucinus* in the mangrove and hence that it usually attains its maximum size only on the free-hanging *Rhizophora* roots where it is protected from predation by the snail.

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