Studies on the Trinidad Chitons

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INTRODUCTION

This project began as part of a field course in ecological studies on the rocky shore fauna at Barracuda Point, Balandra, undertaken by undergraduate students in the Department of Zoology, U.W.I., St. Augustine. A study of chiton zonation and behaviour was attempted. We found the animals very abundant but heavily exploited by the inhabitants of this area. From our research however, we realised that the available literature was inadequate: references on Trinidad chitons were limited, and some of the species collected may have been misidentified.

As a follow-up to the field course report (Mutunhu, 1978) and with the guidance of Dr. P.R. Bacon, Senior Lecturer in Zoology at U.W.I., St. Augustine, we decided to study these interesting animals in greater detail, and subsequently composed the present report. Collection was done at several sites on the north-east, north, and north-west coasts and the specimens were sent for identification by Robert C. Bullock, Associate Professor of Zoology, University of Rhode Island, U.S.A. The number of species identified was unexpectedly large, since previous literature cited only two or three species in Trinidad.

This report is only a beginning, since only a few areas were chosen for collection, but it reveals a little of the wealth of our fauna yet to be uncovered.

LITERATURE REVIEW

Most of the literature on local chitons is based on studies done in the Northern Caribbean. Warmke and Abbott (1961) list twenty-one species of chitons in five families. These were from South-east Florida, west Florida, some of the West Indian islands, Puerto Rico, and Central America. There is no direct The mention of Trinidad. families described were Lepidochitonidae (7 species); Mopalidae (1 sp.); Cryptoplacidae (5 species); Ischnochitonidae (7 species); Chitonidae (5 species) and sub-family Acanthopleurinae (2 species). The first recorded work from Trinidad (Bacon, 1970) was an introductory study of chitons carried out at Cumana. The two species identified were Chiton marmoratus Gmelin, and Acanthopleura granulata Gmelin.



FIG. 1

An extensive study which examined the chitons of the Caribbean in detail, was published by P. Kaas (1972). Thirtytwo species of the thirty-four known in this region are described by the author, including five new species and a new variety. Humphrey (1975), dealing with marine molluscs of the Caribbean, devoted a few pages to the order Chitonida. As in other published works, the locations are given generally as 'West Indies', although the chitons found in Jamaica are dealt with in some detail. Eight species were described from southern Florida, the Florida Keys, Central America, Brazil and Peru. Eight other species from Jamaica are listed.

Only recently have any more attempts been made to study chitons of Trinidad. One of these includes a study of the zonation and behaviour of chitons on the rocky shores of the northeast coast (Mutunhu, 1978). The most recent contribution to the study of these animals in the Trinidad fauna was made by Cooper and Bacon (in press), and lists *Chiton marmoratus* Gmelin, *Chiton tuberculatus* Linne and *Acanthopleura granulata* Gmelin among coastline, since the area was extremely jagged and steep and subject to heavy wave action.

SPECIES DESCRIPTIONS

A. Ceratozona spualida (C. B. Adams) (Fig. 2)

Length 3-4 cm. Colour, grey with blue-green mottling. Girdle is leathery and greenish brown in colour bearing numerous spines. The surface of the valves is roughly sculptured and frequently eroded or with dense algal growth. When alive, the animal's foot is bright orange in colour. This species is fairly commonat Forest Point and is found in smaller numbers at Pt. Gourde and Barracuda Pt. It shows a preference for the more exposed rock faces subjected to intense wave action.

B. Chiton marmoratus Gmelin (Fig. 3)



A. <u>Ceratozona</u> <u>squalida</u>

FIG. 2

edible molluscs, under their common names of "pachro" and "sea cockroach."

COLLECTING SITES

All the sites studied were rocky shore formations although differing in degree of exposure (Fig. 1). These sites were chosen since the chitons were more abundant on such shores. Most of the collecting was done during the low tide and the water marks indicated that collecting areas were almost completely covered at high tide.

The rocky coast at Barracuda Point consisted of a few enclosed bays, with boulder beaches and wave cut platforms. These bays were bordered by steep-sided, deeply creviced rocks jutting out into the sea. There was also a boulder beach at Forest Point, but not many specimens were found there. Most of the collecting at this site was done on the rocky headland where wave action was intense.

At Salybia, collection was concentrated on the coral rubble, and boulder-strewn areas east of the reef, again, where there was heavy wave action.

The main collecting sites at Point Gourde were greatly eroded rock faces in a dredged area, and a fairly calm enclosed bay with large boulders and stones. The collecting sites at Saut d'Eau were limited to a few very deep crevices in the rocky Length 4 - 6 cm. Colour, dark brown or grey, with blotches on longitudinal lines of a lighter colour. The girdle consists of distinct alternating areas of dark green and white scales. The surface of the valves is smooth and devoid of algal growth. This helps to distinguish the species from *C. tuberculatus*. This species is very common at Barracuda Pt., and Forest Pt., where it was seen in large numbers. It also seems to prefer more exposed areas and was found far above the water level at low tide, but in areas splashed intermittently by the waves.

C. Chiton tuberculatus Linne (Fig. 4)

Length 6 - 8 cm. Colour, greyish green to dark brown. The girdle consists of alternating areas of dark green and whitish scales. The lateral area has about five irregular radiating cords. The central areas of the valves are smooth at the top, with wavy longitudinal ribs on the sides. This species can be distinguished from *C. marmoratus* by the ridge on the central area of the valves. The other specimens have eroded dorsal surfaces, usually covered with algae. This species is fairly common at Barracuda Point. It was usually found either in deep crevices in rocks which were exposed at low tide; or permanently submerged in rock pools. Its habitat preference is related to its low tolerance to desiccation and its photonegativity as compared with other species.



B. Chiton marmoratus.

FIG. 3



C. Chiton tuberculatus

FIG. 4



FIG. 5



FIG. 6



girdle with imbricate, oval, striated scales.

valves not beaked, central areas evenly granulose sides appear stricte with granules in parallel longitudinal rows.

F. Ischnochiton striolatus.

FIG. 7



D. Acanthopleura granulata Gmelin (Fig. 5)

Length 4 - 6 cm. Colour, brownish green. This species is easily recognised by its thick, fuzzy girdle with alternating areas of black and greenish white. The surface of the valves is commonly eroded. This species is common at Salybia Reef, Pt. Gourde and Saut d'Eau. It was found deeply wedged in rock crevices and under ledges at higher levels on the shore.

E. Ischnochiton pectinatus Sowerby (Fig. 6)

Length 2-4 cm. The animal is narrow and elongate. Colour, mottled grey with black. The surface is granulose with longitudinal ridges on the central area. The cephalic valve has radiating granulose riblets. The girdle is covered with extremely fine scales among larger long flat scales which are irregularly scattered. This species was found at Salybia only, and may be common in coral





reef areas. It was found attached to the under surface of boulders and stones.

F. Ischnochiton striolatus Gray Fig. 7

Length 0.5 - 1 cm. Colour, light orange to yellow brown. The animal is oblong to oval-shaped. The girdle is moderately wide, covered with scales, and is generally variegated with alternating light and dark patches. The central areas are evenly granulose. Before the diagonal ridge, the granules are arranged in parallel longitudinal rows, so that the lateral areas appear striated. Head and tail valves are sculptured with close shallow concentric grooves. This species also seems restricted to coral reefs and was found attached under boulders and stones.

G. Calloplax janeirensis Gray (Fig. 8)

Length 1 - 1.5 cm. Colour, grey to yellowish brown. The animal is elongate, oval and rather narrow. The girdle consists of strongly ribbed scales among which may be found sharply pointed spicules. The lateral areas of the valves are sculptured with large beaded ribs. The head valve and tail valve bear radiating rows of roundish tubercles. The central area of valve is ridged with the apex being elevated, smooth and rounded. This species is also relatively common in the coral reef area at Salybia, and found in habitats similar to *Ischnochiton pectinatus*, and *I. striolatus*.

H. Stenoplax purpurascens Adams (Fig. 9)

Length 1-2 cm. The animal is elongated and narrow, only slightly elevated. The girdle is greenish grey with small groups of dark scales among small transparent scales. Head and tail valves bear concentric riblets. The tail valve is large and slightly concave. Intermediate valves bear raised lateral areas. This species is uncommon but found under boulders at Salybia Reef.

GENERAL DISCUSSION

Of the eight species identified, the more common ones were Chiton marmoratus, Chiton tuberculatus, Acanthopleura granulata, and Ceratozona squalida. These were found in large numbers, but their presence was restricted to certain areas of the coast. Chiton marmoratus was found both at Barracuda Point and at Forest Point, and seemed to be the dominant species in these areas. Chiton tuberculatus was found in lesser numbers, only at Barracuda Point. Acanthopleura granulata dominated the rock faces at Point Gourde and Saut d'Eau, but was found in lesser numbers at Salybia reef. Ceratozona squalida was abundant both at Staubles Bay and at Forest Point.

The rare species were Calloplax janeirensis, Stenoplax purpurascens, Ischnochiton striolatus, and Ischnochiton pectinatus. Their presence was restricted to the coral reef area at Salybia reef, where they were found clinging to the undersurfaces of boulders and stones which were permanently submerged.

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