

Initial Characterisation of Upper Reef Slope Communities in Singapore Waters

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ABSTRACT

A survey of the upper reef slope community along 2 locations at each of 4 reefs (2 fringing and 2 patch reefs) in Singapore waters using the depth-specific 100-metre line-intercept transect technique showed that the live coral cover ranged between 15.11 and 62.00%. Total living resource cover was between 20.56 and 63.50%. Thirty-nine coral genera were recorded and the dominant genera among the different locations were *Pavona*, *Pectina*, *Montipora*, *Merulina* and *Goniopora*.

INTRODUCTION

Quantitative studies on the community structure of coral reefs in Singapore have been conducted using the perpendicular-to-shore, 1-metre belt transect method (Chou & Teo, 1985; Chou & Wong, 1985). Only 2 reefs, Pulau Salu and Pulau Hantu, have been investigated to date (fig. 1). As part of the "Living Resources in Coastal Areas" project (Asean-Australia Cooperative Programme on Marine Science), the coral reef is one of the marine resources for which base-line information is required. Two rapid survey methods have been identified for this purpose during the programme's 1985 workshop on survey methodology held at the Australian Institute of Marine Science. These are the manta-tow reconnaissance technique for broad-scale visual assessment of the state of reef slopes and the parallel-to-shore, 100-metre line transect technique for specific depth zone quantitative data. The manta-tow technique was tested here but found to be unsuitable due to the high turbidity which reduced visibility to less than 2 metres most of the time. It is currently in the process of being modified to overcome this difficulty. The line-transect technique was carried out at the 3-metre depth zone of the reef slope at 2 opposite locations on each of 4 reefs. Investigations are now being carried out at other depth zones of

the reef slopes.

MATERIALS AND METHODS

The rapid survey line-transect method has been fully described in the Manual of Survey Methods developed during the 1985 workshop (Anon. 1986). It consists essentially of laying a graduated 100-metre line along a fixed depth (in this case, 3 metres below the reef edge) following closely the contours of the slope. All life forms as well as abiotic characteristics transected by the line were recorded in pre-determined codes with the amount of transection recorded. As for the hard corals, we decided in this investigation to enhance the data by identifying them to generic level instead of grouping them under the single category of 'live coral'.

Four reefs, all located south of the Singapore mainland were selected for study. Two of them, Cyrene reef and an unnamed reef west of Pulau Hantu (designated as Hantu West in this paper), are patch reefs completely submerged at high tides. The other two reefs are fringing reefs surrounding the islands of Pulau Hantu and Pulau Semakau (fig 1). Of the four reefs, Cyrene reef ($1^{\circ}15'N$, $103^{\circ}45'E$)

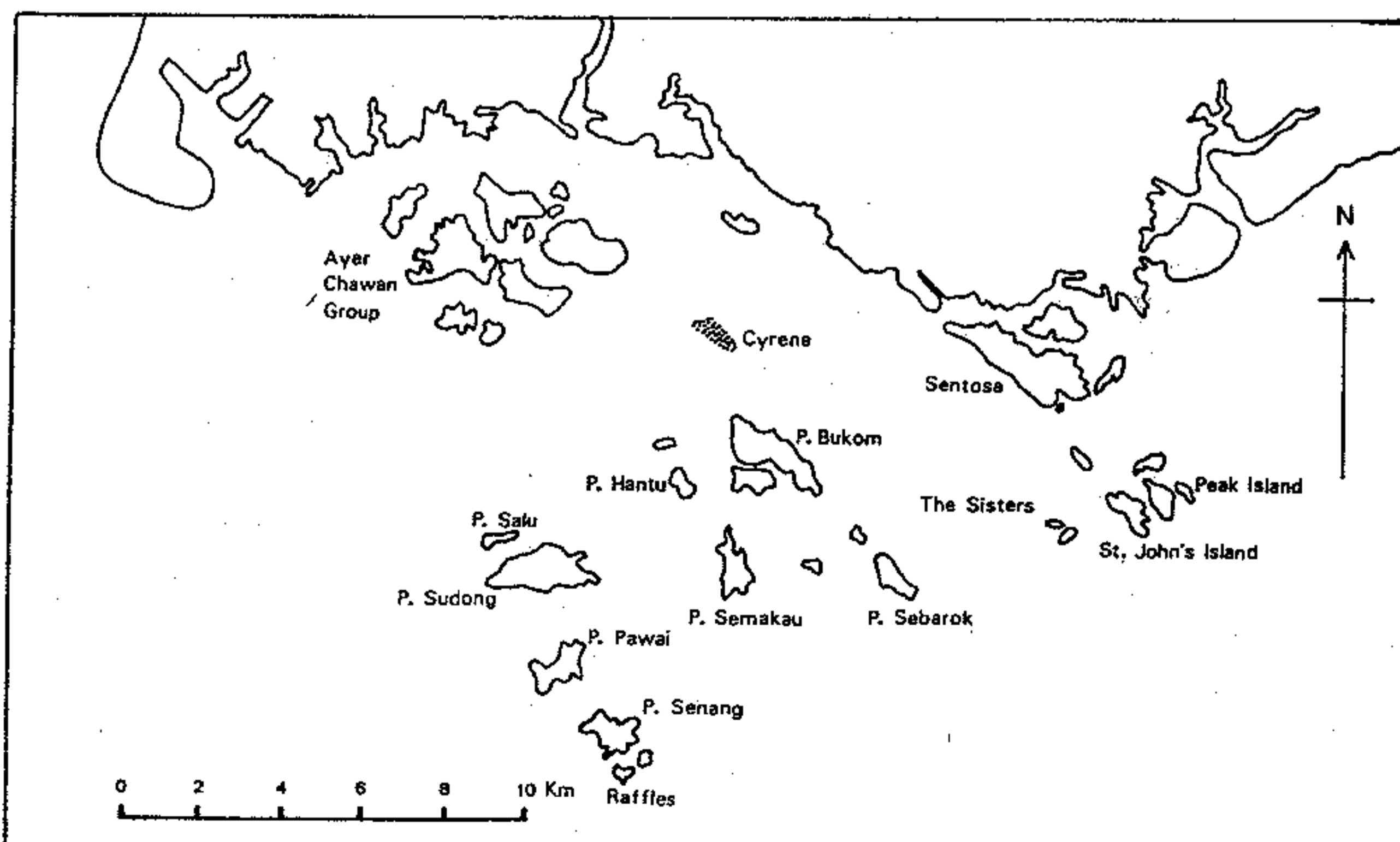


Fig. 1: Map of Southern islands showing location of reefs surveyed.