RAPID ASSESSMENT
OF CORAL REEFS

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1 INTRODUCTION

In view of the worldwide degredation of coral reefs (Colloquium on Global Aspects of Coral reefs: Health, Hazards and History, Miami 1993) 1996 was destined as year of the reef. One of the themes to be explored was the rapid assessment of coral reefs. Rapid assessment of coral reefs has a high priority because the status of many reefs, healthy or degraded, is uncertain. Methods were proposed and are being tested at several locations. In general, techniques employed in reef surveys involve quadrats, line-transects, belt-transects and combinations of these techniques. Evaluations of survey techniques that best characterize reef areas have always pointed to methods involving quadrats (Weinberg, 1981). However, in terms of efficiency of a method (information gathered per unit effort) line-transects, especially the line-intercept technique is favored. The quadrat-method is besides time-consuming also difficult to handle on reef slopes, where the bottom topography in many cases is very complex (Loya, 1972). Marsh et al. (1984) used an extended version of a line-transect method in order to assess size-frequency distributions from the linear data. Despite extending the line-transect method, the risk still exsists that small colonies are generally overlooked or according to Weinberg (1981) overestimated, because observers include small colonies easily because they fear overseeing them completely. The belt-transect technique is virtually a combination of the line-transect and quadrat method. Essential information about the size-frequency distribution of coral colonies is provided without the risk that small colonies are overlooked or overestimated, and is easy to handle on reef slopes.

The hermatypic stony corals (Scleractinia) take up a keystone position as the main builders of the coral reef habitat (Bak et al., 1989). Many studies are, therefore, focused on the coral community structure for a better understanding of the complex reef system. Usually species are used as attributes to describe the coral community. However this requires extensive knowledge of coral taxonomy, especially in the Indonesian archipelago where approximately 350 species occur (Borel Best et al., 1989). According to Bradbury et al. (1986) analyses of community structure which rely on taxonomy may capture the differences between reefs rather than their similarities. Terrestial plant ecology has faced an equivalent problem and uses different basic data for classifying vegetation at different scales. Species level data have been used on a local scale, while morphological data have been used on a larger scale. The line intercept technique using physiognomic-structural (morphological) attributes was developed in terrestial plant ecology and subsequently was adopted by coral reef ecologists.

During this study the physiognomic-structural attributes will be used in combination with size frequency assessments and several health characteristics (environmental impact data). The "Rapid Assessment of Coral Reefs" (RAP) used during this research is a belt-transect method developped by a team under leadership of dr Robert Ginsburg (RSMAS, University of Miami) in 1994. A few adjustments were made to fullfil following conditions:

- suitable for persons with limited experience in the identification of hard corals
- requires little equipment and is relatively simple feasible
- efficient method, i.e., information gathered per unit effort
- reliable sampling method for obtaining environmental impact data

The aim of this research is to examine wether this method captures the differences between locations under different environmental circumstances. And as a consequence, which variables indicate these environmental circumstances?