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# **Comparative Assessment of Coral Reefs in West-Sumatra**

## **DISSERTATION**

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## 1. Introduction

### 1.1 Preview

It was the objective of the present study, to characterise and compare coral reef communities under different environmental impact regimes on the coastal shelf of West-Sumatra. The selected reefs showed high terrigenous sedimentation at inner shelf reef sites, physical disturbance caused by fisheries with explosives on outer shelf reef sites or a comparatively low impact of both factors on mid shelf reefs. The characterisation was based on integrated assessment and multivariate analysis of selected reef community parameters.

The following introductory chapters will lead the reader to the selected approach by briefly reviewing the economical and ecological value of coral reefs (Chapter 1.2) in contrast to environmental impacts, which are increasingly endangering the functional integrity of coral reef communities (Chapter 1.3). A short summary of current approaches in the assessment of benthic reef communities (Chapter 1.4) will be followed by the specific frame and objectives of this study (Chapter 1.5), highlighting the central questions and the chosen approach. The last introductory chapter (Chapter 1.6) will provide the main conventions regarding the used terminology.

### 1.2 Coral Reefs: Economical and Ecological Resource Value

The general perception of coral reef ecosystems has changed markedly during the last two decades. Growing awareness of the important economical and ecological role of global coral reef resources is paralleled by a strong increase in evidence for widespread reef degradation (Brown, 1988, 1997; Wilkinson *et al.*, 1994; Hodgson, 1997). This statement is underlined by the fact that half of the world's coastlines are situated in the tropics and about a third of the tropical coastlines are lined by coral reefs. They represent one of the most biologically productive ecosystems worldwide. Two decades ago, the global potential for coral-reef fisheries has been estimated at 6 million tons per year, or in other terms about 7% of the total marine fisheries of the world (Smith, 1978; Munro, 1984), while Longhurst and Pauly (1987) calculated a yield of 0.48 million metric tonnes for 1983. More recent data compilations tend to be site specific and document yields ranging from 0.4 to 36.9 t km<sup>-2</sup> year<sup>-1</sup> (Arias-Gonzales *et al.*, 1994).