CORAL REEF REHABILITATION IN THE SALEH BAY, WEST NUSA TENGGARA

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ABSTRACT

The covering area damages noted up to the year of 2000 for the Western Saleh Bay's coral reefs were ranged from 48.24-66.37%. A domain introduced to recover the coral damages in Saleh Bay waters was habitat enhancement by using an artificial reef technology. To identify possible successes in the habitat, enhancement project was conducted during the year 2004 and 2006. The objectives of this study were (1) to identify the progress of coral reefs rehabilitation scheme and (2) to estimate the succession rate of coral reef rehabilitation. Data collection consisted of oceanography parameters, coral healthy, fish community, and sessile organisms. The results showed that Bila Cape waters of Rakit Island and Ganteng Island waters in Saleh Bay were appropriate to be the candidates of coastal rehabilitee areas. During 2004-2006 some progresses of the both selected areas significantly noted for fish community and sessile organisms as such as changes in species numbers and diversity index. The study recommended a capacity expanding of artificial reef areas as wide as 55.600 m^2 for 115 unit modules in the Bila Cape waters and 6.504 m^2 for 46 unit modules in the Ganteng Island. The artificial reef will give more benefits as well as the economical value if it is constructed up to 400 m^3.

KEYWORDS: **habitat enhancements, coral reefs, coral fishes, artificial reefs, Saleh Bay, West Nusa Tenggara**

INTRODUCTION

Indonesia has about 85,700 km^2 in area of coral reefs or 14% of the whole coral reefs in the world (Nontji, 2002). The location of the coral reefs mostly closes in marginal community settlement. Actually, the coral reef waters have supported fishery industries and well being of fishers for long time; however, at present the majority of reef areas have already degraded. The human activities of economic developments lead to tremendous strain on coral reefs. Sukarno *et al.* (1983) confirmed that cyanide fishing, blast fishing, and coral exploiting were major sources of coral dwelling in Indonesia. For this reason, most coral reef ecosystems lost their functions as well as losses of production, genetics, protection, shelters, niches, nurseries, and spawning grounds.

The dwindling coral reefs dispersed on some regional reef areas of Indonesia waters, especially in the west region. Finding of LIPI's studies in 1996 (Dahuri, 2000) showed that around 40% of coral damages was due to natural and anthropogenic alterations. The damages extensively increased in intensity into 70% in a year of 2000. Only 28% was addressed to the well coral reefs (KPP-COREMAP, 2001).

Based on local fishermen notes, coral reefs in shallow waters of Saleh Bay have already been damages due to uses of destructive fishing gears. Percent covers of dead corals at southern coastal area of Saleh Bay ranged from 48.24-66.37% (Marasabessy & Abdul, 2001). Those included in a typical category of coral damages (Soekarno *et al.*, 1983).

Cesar (1997) explained that economical losses were derived directly from coral exploitations. A net profit of each kilometer square for coral exploitation will get USD $ 121,000; unfortunately it will make some losses for social incomes (US$ 93,600), for fishery industries (ranged from US$ 12,000-260,000), for coastal area protection (ranged from US$ 2,900-481,900), for tourism opportunities (US$ 67,000), and other unpredictable losses as well as nutrient, genetic, and biodiversity values.

Respecting of the last condition of coral reefs, one of decision makings for general coral reef managements struggled to establish guideline by making protected areas, restoration areas, conservation zones, and habitat enhancement. One of mitigation measures of dwindling coral reefs were development of artificial reefs in the Jakarta Bay (1980-1988) and then continuing from 1990-1993 for some regions such as North Sumatera, Lampung, West Java, Central Java, East Java, and Bali. Some reports stated that the cement block artificial reefs successfully lead to positive impacts for expected

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