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Hard coral conditions in Ratatotok Peninsula Reef, South-East Minahasa, North Sulawesi Province, Indonesia (a monitoring study: 1993-2012)

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Abstract

Since 1993-2012, an intensive monitoring esthablish by PT Newmont Minahasa Raya (PTNMR) to closely monitor the condition of coral reef in the coastal areas of Ratatotok and Buyat bay, South-East Minahasa region, North Sulawesi, Indonesia. In this area, PTNMR a gold mining company was operated in 1996 – 2004 and put its tailing in the seabed of Buyat Bay. One of coral reef monitoring programs is to monitor of hard coral condition. The objective of this study was to describe the hard coral condition before, during, and after PTNMR operation. A Line Intercept Transect (LIT) method was applied for gathering the hard coral data. Fix permanent transects were established in four location at the depth of 3 m and 10 m. All data were collected each year. There were several changes occurred during the monitoring period both on the number of genera of hard coral and the total coverage of hard coral on each study sites. The percentages of hard coral coverage were varied during the whole monitoring years. There are several factor were identified during this study that could be connected to the fluctuation of hard coral conditions. Fish bombing, bleaching (1997, 2010), Crown of Thorn Starfish attacked (1998), bottom gillnetting, and coral disease were major factors that caused the changes in hard coral. However, it can be concluded that beside such destructive factors mentioned above, the hard coral conditions were stable during the whole monitoring years. Moreover, there were no sign that the sediment from the PTNMR operation have influenced the coral condition these areas.