Reef degradation and coral biodiversity in indonesia: Effects of landbased pollution, destructive fishing practices and changes over time

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Abstract

Species-area curves calculated from line-intercept transect surveys on 15 reefs in three regions of Indonesia allow estimation of the relative decrease in within-habitat coral species diversity associated with different types of reef degradation. Reefs subject to land-based pollution (sewage, sedimentation, and/or industrial pollution) show 30–50% reduced diversity at 3 m, and 40–60% reduced diversity at 10 m depth relative to unpolluted comparison reefs in each region. Bombed or anchor damaged reefs are ca 50% less diverse in shallow water (3 m depth) than are undamaged reefs in the same region, but at 10 m depth the relative decrease is only 10%. Comparison reefs in the Java Sea are ca 20% less diverse than their counterparts in Ambon, Maluku. The results, compared with a previous survey in the Spermonde Archipelago found a 25% decrease in generic diversity of corals on two reefs resampled after 15 years. The decreased diversity on reefs subject to land-based pollution implies a dramatic, rapid decrease in Indonesian reefbased fisheries resources.

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