

Coral reef organisms as bioregion indicators off Halmahera, Moluccas, Indonesia

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ABSTRACT

1. In the planning of marine protected areas for the conservation of coral reef systems, it is important to be able to distinguish between certain bioregions, i.e. regions with distinct species assemblages. This was done off western Halmahera (Moluccas, Indonesia), where three such bioregions were distinguished based on species inventories of 41 coral reef sites.

2. The relative value of species belonging to different trophic groups was examined with regard to their possible role as indicators for these three regions. The study focused on ascidians (Asciacea), macroalgae, mushroom corals (Fungiidae), and a selection of coral-associated gastropods (Epitoniidae and Coralliophilidae).

3. The best results for the detection of bioregions were obtained when datasets of all four trophic groups were pooled. When comparing the taxa and their indicator values, ascidians were the most suitable, followed by macroalgae, corals and gastropods with 98, 83, 71 and 66 % certainties, respectively. The occurrence of 17 species correlated strongly with the bioregions, which therefore were identified as potential indicator species consisting of 13 ascidians, three macroalgae, and one mushroom coral. These data suggest that ascidians have a significant value as indicators to evaluate bioregion boundaries.

4. Water quality measurements indicated that salinity and turbidity could be responsible for at least part of the differences between the species assemblages in the three bioregions.

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