

STRUCTURE OF THE REEF FISH ASSEMBLAGES IN THREE BAYS OF NEW CALEDONIA, SUBJECTED TO DIFFERENT ANTHROPOGENIC DISTURBANCES

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The fish communities from fringing reefs were investigated in two bays around Nouméa, which are considered as moderately disturbed by human activities, and in one bay further south, where human activities are minimal. The fish were sampled using underwater visual censuses. The sampling was stratified according to wind exposure and to the location in the bays (end of the bay, middle of the bay, bay entrance). There were no significant differences between bays for species richness, density or biomass. There was an increasing gradient in species richness and average weight from the end to the entrance of the bays. Density and biomass were maximum in the middle of the bays. Windward sides of bays had higher values than leeward sides for species richness, density and biomass. Species composition is dominated by microherbivores, microcarnivores and zooplanktivores, with no gradient according to exposure, position or human disturbance. These species are essentially sedentary, of small size and tend to school. Density is dominated by small sedentary and schooling zooplanktivores. This dominance is greater in undisturbed bays than in disturbed ones. Biomass is dominated also by these planktivores, but microherbivores and carnivores make also a sizeable contribution to biomass. There are larger fish in the undisturbed bay, but their contribution to the structure in density is not significant. Most of the fish parameters are well correlated to the amount of hard substrate and coral. In particular, zooplanktivores are highly correlated to the presence of branched coral. The presence of algae is usually correlated with low densities and biomasses. The presence of diadema urchins is well correlated to the presence of fish and coral in the undisturbed bay, but these urchins are found on the stations with the lowest fish and coral densities in disturbed bays.

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Structure of the reef fish assemblages in three bays of New Caledonia, subjected to different anthropogenic disturbances.

In : Marine benthic habitats conference : programme and abstracts.

Nouméa : ORSTOM, 1997, p. 67 multigr.

Marine Benthic Habitats Conference,
1997/11/10-16, Nouméa