



Comparison of baited remote underwater video stations (BRUVS) and prawn (shrimp) trawls for assessments of fish biodiversity in inter-reefal areas of the Great Barrier Reef Marine Park

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Abstract

A field comparison of baited remote underwater video stations (BRUVS) and prawn (shrimp) trawls was made to assess the sampling options for describing patterns of fish biodiversity in the lagoonal waters of the Great Barrier Reef Marine Park. Replicated comparisons were made during the day and night on trawl grounds with different biophysical characteristics. Each trawl was made close and parallel to a long-shore set of five BRUVS set at regular intervals along one nautical mile. For each species, the sum of the maximum number of fish sighted on BRUVS at any one time ($\Sigma Max N_1, \dots, s$) was compared with the number of fish caught in trawls (N).

The two techniques recorded significantly different components of the fish fauna on the trawl grounds. Trawls caught mainly small (≤ 300 mm), sedentary or cryptic, demersal species—such as flatfishes, apogonids, synodontids, triglids and callionymids. The BRUVS recorded more larger, mobile species from a much wider size range of families, including large elasmobranchs, more fusiform pelagic species (such as carangids and scombrids), and numerous eels. Species accumulation curves were parallel and very similar in shape for both techniques, but were separated by about 11 extra species in trawls. Fifty-two species in 17 families were caught only in trawls and 38 species in 15 families were recorded only by BRUVS. The occurrence of 38 small mobile species in 21 families was common to both techniques, but most of these showed marked differences in relative abundance. Trawls recorded higher species richness at all sites, and at night, but the average number of species and individuals recorded per transect were only about 26% and 19% lower for the BRUVS. The BRUVS consistently recorded more species during the day than trawls, and are limited most by water clarity. Multivariate analyses showed that both techniques indicated the presence of six fish assemblages based on day and night in three locations, despite sampling quite different

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