

Species composition and abundance at two protected spawning aggregation sites in Palau with different length of closure

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Grouper spawning aggregations are heavily targeted around the world. In Palau, Ngerumekaol and Ebiil Channels are both spawning aggregation sites that have been protected from fishing since 1976 and 2000, respectively. Groupers and other resource species were monitored monthly over a 1.5-year period at these two protected spawning aggregations and two nearby control areas. Surveys were conducted 2-6 days before the new moon of each month, which coincides with the peak aggregation period in Palau. At the aggregation sites, three grouper species (*Plectropomus areolatus*, *Epinephelus polyphekadion*, and *E. fuscoguttatus*) accounted for 78% of the number and 85% of the biomass of all resource species surveyed but comprised < 1% of the total number and biomass at control sites. Number and biomass of the three major grouper species pooled was significantly higher at Ngerumekaol compared to Ebiil. *Plectropomus areolatus* was the dominant grouper at both spawning sites and numbers, biomass, and size were all higher at Ngerumekaol compared to Ebiil. The larger *Epinephelus fuscoguttatus*, showed even more pronounced differences between the two sites with higher values also at Ngerumekaol. *Epinephelus polyphekadion* was the third most important species at Ngerumekaol but only one individual was encountered at Ebiil. Differences in densities and composition of grouper species at these two aggregations may be attributed to the differences in time since closure (Ngerumekaol = 31 years, Ebiil = 7 years). In addition, Ebiil is further from the capitol, Koror, and experiences problems with poaching. The peak spawning period at Ebiil occurs during the national open season for groupers and is therefore easier for poached fish to be sold. The lower numbers of *E.fuscoguttatus* and the near absence of *E. polyphekadion* at Ebiil may reflect the effects of previous and current overexploitation.