

Recovery of the Apo Island Marine Reserve, Philippines, 2 years after the El Niño bleaching event

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The Apo Island Marine Reserve is unique in that it is dominated by unusually large colonies of *Galaxea fascicularis*. Ninety percent of these colonies bleached in August and September 1998, and hard coral cover has continued to decline annually (Reef Check 1998). A detailed survey 2 years post-bleaching revealed that 65% of previously bleached colonies had suffered an average 90% tissue loss. Surviving tissue existed as small, isolated patches occupying roughly 10% of the colony surface (Fig. 1). The colonizing community consisted of turf (*Gelidium pusillum*, *Wurdemannia miniata*) and blue-green (*Phormidium* sp., *Oscillatoria* sp.) algae and hard corals in 13 genera (Raymundo and Maypa 2001). Recruitment of scleractinians began during the spawning season following bleaching (April–May 1999). Recruits averaged 1.5 cm², and were dominated by acroporids. Significantly, only two of the 100 recruits censused were *G. fascicularis*, suggesting that recovery of this species is unlikely to occur via sexual reproduction. Regrowth via budding from remaining tissue patches may allow some colonies to persist, though bleaching was again observed in July 2000. It appears likely that repeated bleaching episodes will result in a gradual decline of this spatially dominant but highly susceptible species, with replacement by a more diverse recruiting community.

Recovery from bleaching and changes in community structure of the Apo Island reef will likely be driven by interactions between hard coral recruitment, soft coral competition, corallivory, and future bleaching episodes. However, it is evident that recovery of this well-managed, relatively pristine reef is slow and greatly influenced by the response of a single, dominant species. Since it is predicted that



Fig. 1. *Galaxea fascicularis* live tissue patch, surrounded by eroded skeleton

bleaching events will increase in frequency and severity in the future (Hoegh-Guldberg 1998), data such as these provide insight into reef responses and sources of recovery and community change.

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