

CORAL SEEDING AS A TECHNOLOGY FOR RECOVERING DEGRADED CORAL REEFS IN THE PHILIPPINES

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ABSTRACT

Philippine coral reefs have degraded at an accelerating rate over the past 20 years, resulting in an interest in the potential use of coral transplantation to rehabilitate disturbed reefs. We selected *Pocillopora damicornis* (Linnaeus) for transplantation because it is an opportunistic species that is ubiquitous and easily maintained under laboratory conditions. Planulae collected in laboratory aquaria from wild adult colonies during five spawning periods showed a mean settlement success rate of $52.9\% \pm 21.9\%$ ($n = 2714$ planulae) and a first week mortality rate of $30.7\% \pm 14.2\%$. In comparison, planulae ($n = 300$) seeded directly onto the reef during June 1997 showed 14.3% settlement success and 81% first-week mortality; none remained after 3 weeks. Monthly growth rates of laboratory-reared juvenile averaged 1.54 ± 0.15 mm (mean \pm SE, $n = 30$) during the first six months after settlement, indicating the feasibility of extended laboratory rearing for this species. We recently transplanted 320 laboratory-reared juvenile colonies from four age/size cohorts (<3 mm, 3-6 mm, 6.1-10 mm, >10 mm; $n = 80$ for each size class) to the field to examine the relationships between colony size, growth rate, and mortality. Preliminary results indicated decreased mortality with increased size at transplantation (6-week mortality: 82.5%, 60%, 27.5% and 2.5% for smallest to largest size categories, respectively). Growth rates were lower than those observed in laboratory aquaria, but steady. This suggests that rearing juvenile colonies to a minimum of 10 mm (six months of age) prior to transplantation to the field will ensure high post-transplantation survival. Our studies indicate that reintroducing corals to a degraded site may be possible by settling planulae in laboratory aquaria, rearing them to a minimum size, and transplanting them onto appropriate substrate.