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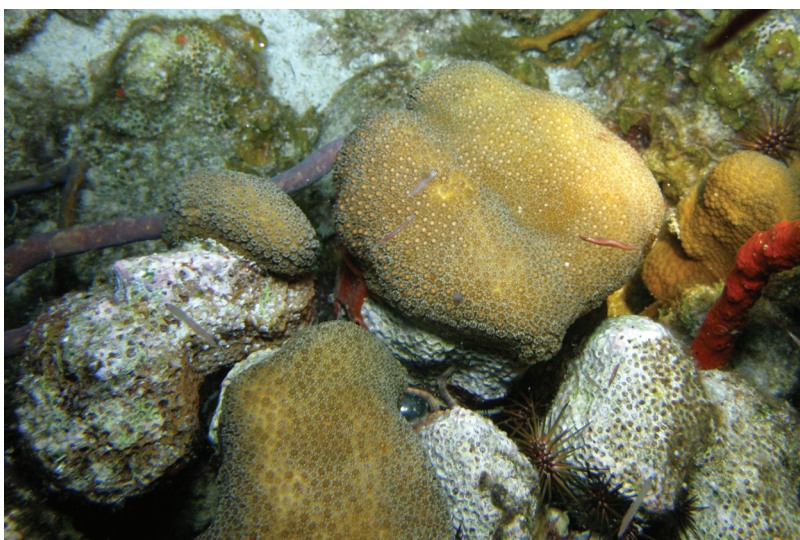
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HALF-DEAD COLONIES OF *MONTASTRAEA ANNULARIS* RELEASE VIABLE GAMETES ON A DEGRADED REEF IN THE US VIRGIN ISLANDS

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This figure shows a partially dead *Montastraea annularis* (Ellis and Solander, 1786) colony preparing to release gamete bundles on the night of 11 September, 2009, on Tektite Reef, St. John, US Virgin Islands (photo credit: K Grablow). In 2005, a protracted high-temperature anomaly resulted in significant coral bleaching followed by an outbreak of coral disease in the US Virgin Islands (Miller et al. 2009). The Tektite Reef population of *Montastraea* spp. (mainly *M. annularis*) experienced high mortality, due mainly to white plague (Miller et al. 2009). We monitored the September 2009 coral spawning at this reef in the 3.5–7 m depth range, observing ~50 colonies in a 30 × 30 m area. Gamete release by *M. annularis* on the seventh night after the full moon was quite spectacular. On that night (11 September), we observed the first colony preparing to release gamete bundles (“setting”) 3.13 hrs after sunset (21:33 hrs AST). Gamete release began ~15 min later, peaking after about 30 min, and continuing for at least 45 min. We estimate that > 90% of the population spawned on that night, and the colonies that spawned released gametes from > 95% of their live tissue area. Gametes from at least 20 colonies were collected with plankton nets suspended above each individual (defined as contiguous skeleton, regardless of contiguous live tissue) and combined, resulting in very high fertilization rates (near 100%, determined with microscopic examination in the laboratory). The number of colonies participating in the spawning event was particularly impressive considering that many of these colonies exhibited 50% or greater partial mortality.

This finding has considerable management implications. *Montastraea annularis* is a major reef builder in the Caribbean, and it is noteworthy that even compromised colonies that have sustained partial to considerable mortality can still generate gametes and continue to contribute to the genetic diversity of a reef. Therefore, resource protection efforts that could result in the preservation of live corals (e.g., small-scale shading, watershed management) are worthwhile even if entire reefs cannot be saved. Tektite Reef is contained within the Virgin Islands National Park adjacent to an undeveloped watershed. Efforts to protect degraded reefs such as this from local-scale insult should continue, for here it is shown that they can still be reproductively viable.

LITERATURE CITED

Miller J, Muller E, Rogers C, Waara R, Atkinson A, Whelan K, Patterson M, Witcher B. 2009. Coral disease following massive bleaching in 2005 causes 60% decline in coral cover on reefs in the US Virgin Islands. *Coral Reefs*. 25:418. <http://dx.doi.org/10.1007/s00338-006-0125-6>

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