

MODERN SHALLOW-WATER CORAL REEFS IN TRANSITION: EXAMPLES FROM THE BAHAMAS AND BELIZE

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The plight of coral reefs throughout the Caribbean region has been widely reported by reef scientists. Reefal decline, from a variety of sources, has been particularly severe in shallow waters. This study compares the responses of two shallow-water reefs in the Bahamas and Belize to outbreaks of white band disease (WBD).

In the early 1980s, Telephone Pole Reef on San Salvador, Bahamas was dominated by *Acropora cervicornis*, along with large colonies of *Montastraea annularis*. By the mid-1980s, virtually all *A. cervicornis* colonies were dead, presumably from bacterial infection of WBD. Following demise of *A. cervicornis*, an increase in *Porites porites* became obvious. *P. porites* was opportunistic in colonization and showed preference for *A. cervicornis* substrates. By the early 1990s, *P. porites* was a dominant coral on Telephone Pole Reef, with colony sizes commonly greater than 1 m in diameter. Reef surveys in 1998 and 2000 indicated significant decline in *P. porites* health, and in early 2002 continued deterioration was noted, with many colonies overgrown by fleshy macroalgae and/or encrusted by coralline algae.

Prior to the mid-1980s, reef ridges of the Pelican Cays of Belize were constructed of luxuriant stands of *Acropora cervicornis*. As elsewhere, this species suffered massive mortality in mid-1980s owing to WBD, and dead *A. cervicornis* ridges were colonized by *Agaricia tenuifolia* (Aronson et al., 2002). Subsequently, *A. tenuifolia* on these reef ridges was severely affected by the intense bleaching event of 1998. Our surveys showed that up to 90% of *A. tenuifolia* died following bleaching. More recent survey data indicate that sponges now are aggressively colonizing the coral substrates.

These two examples are similar in that both shallow-water reefs are in rapid transition to domination by non-coral groups that impede settlement of coral larval recruits: macro- and coralline algae in the Bahamas and sponges in Belize. Depending on how widespread similar transitions may be, the future of shallow-water coral reefs throughout the wider Caribbean is problematic. Turnover events such as these have been described as unprecedented for coral reefs, and paleontologists should examine the Cenozoic coral reef record in greater detail to explore these claims.

[2002 Denver Annual Meeting \(October 27-30, 2002\)](#)

Session No. 74

[Three Billion Years of Reef Evolution II: Onshore-Offshore Paleoenvironmental Reconstructions](#)

Colorado Convention Center: A105/107

8:00 AM-12:00 PM, Monday, October 28, 2002

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