



## Low symbiont diversity in southern Great Barrier Reef corals relative to those of the Caribbean

LaJeunesse, Todd C., William K. W. Loh, Robert van Woesik, Ove Hoegh-Guldberg, Gregory W. Schmidt, William K. Fitt

Limnol. Oceanogr., 48(5), 2003, 2046-2054 | DOI: 10.4319/lo.2003.48.5.2046

**ABSTRACT:** The specific identity of endosymbiotic dinoflagellates (*Symbiodinium* spp.) from most zooxanthellate corals is unknown. In a survey of symbiotic cnidarians from the southern Great Barrier Reef (GBR), 23 symbiont types were identified from 86 host species representing 40 genera. A majority (>85%) of these symbionts belong to a single phylogenetic clade or subgenus ("C") composed of closely related (as assessed by sequence data from the internal transcribed spacer region and the ribosomal large subunit gene), yet ecologically and physiologically distinct, types. A few prevalent symbiont types, or generalists, dominate the coral community of the southern GBR, whereas many rare and/or specific symbionts, or specialists, are found uniquely within certain host taxa. The comparison of symbiont diversity between southern GBR and Caribbean reefs shows an inverse relationship between coral diversity and symbiont diversity, perhaps as a consequence of more-rapid diversification of Caribbean symbionts. Among clade C types, generalists C1 and C3 are common to both Caribbean and southern GBR symbiont assemblages, whereas the rest are regionally endemic. Possibly because of environmental changes in the Caribbean after geographic isolation through the Quaternary period, a high proportion of Caribbean fauna associate with symbiont taxa from two other distantly related *Symbiodinium* clades (A and B) that rarely occur in Pacific hosts. The resilience of *Porites* spp. and the resistance of *Montipora digitata* to thermal stress and bleaching are partially explained by their association with a thermally tolerant symbiont type, whereas the indiscriminant widespread bleaching and death among certain Pacific corals, during El Niño Southern Oscillation events, are influenced by associations with symbionts possessing higher sensitivity to thermal stress.

### Article Links

[Download Full-text PDF](#)

[Return to Table of Contents](#)

### Please Note

Articles in L&O appear in PDF format. Open access articles may be freely downloaded by anyone. Other articles are available for download to subscribers only, or may be purchased for \$10 per article. All L&O articles are moved into Open Access after three years.

