



Competition and grazers

Background reading for teachers

This reading gives you the background for each slide, with sources you can check.

Jamaica

In Jamaica, overfishing, hurricane damage and disease combined to destroy most corals, whose cover declined from more than 50% in the late 1970s to less than 5% by the early 1990s, producing a system dominated by fleshy macroalgae at more than 90% cover.¹ A regional disease killed the grazing urchin *Diadema antillarum* in 1983 to 1984.²

How common are phase shifts?

An analysis of 3,581 surveys of 1,851 reefs from 1996 to 2006 found only 4% of reefs were dominated by macroalgae (over 50% cover), and only 1% in the Indo-Pacific.²

Sources

1. Hughes, T.P. (1994). Catastrophes, phase shifts, and large-scale degradation of a Caribbean coral reef. *Science* 265: 1547-1551.
2. Bruno, J.F. and others (2009). Assessing evidence of phase shifts from coral to macroalgal dominance on coral reefs. *Ecology* 90.

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