Box 8

New generations: strong coral recruitment in the southwestern lagoon of New Caledonia

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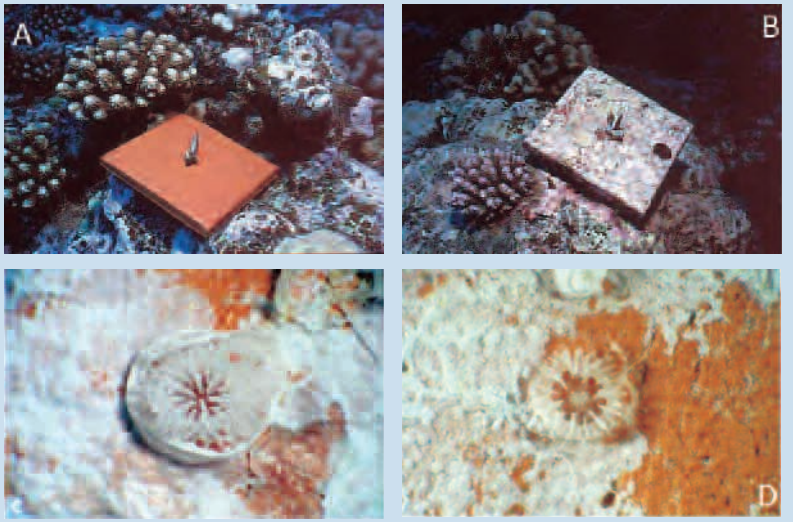
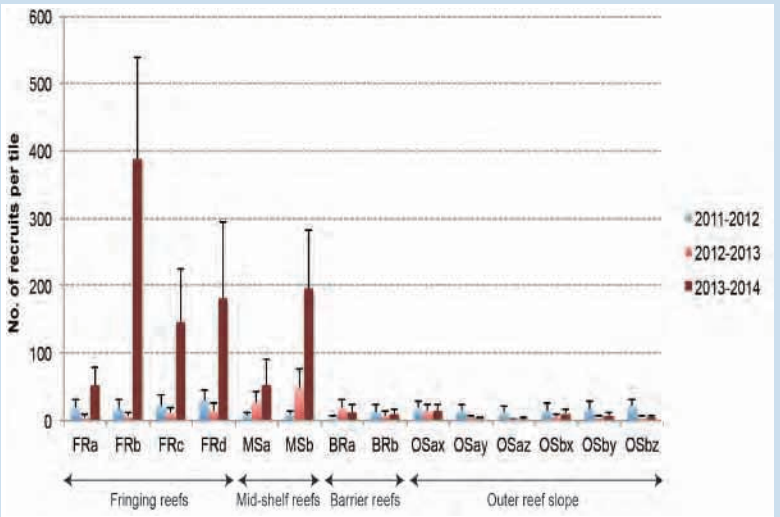
Recruitment, defined as the integration of young individuals into adult populations, is a crucial stage in the life of corals. It influences both the spatial distribution of adult populations and their temporal variability. After major disturbances, such as tropical cyclones, coral bleaching events or outbreaks of predators (e.g., acanthasters), which cause severe mortality in adults, recovery occurs mainly through recruitment. In their first year, recruits are only a few millimeters in diameter. These recruits grow up rapidly but only become adults and able to reproduce sexually, after 4 years, on average.

In order to better understand how New Caledonian corals are structured and maintained, a recruitment study was launched in 2011. Terracotta tiles were placed at 14 sites, representing the main habitats of the southwestern lagoon. These tiles were left on the bottom of the reefs and lagoons for 5 months (October to March) to allow for the settlement of recruits. The tiles were then returned to the laboratory for microscopic examination. At this stage, the morphological characteristics on which species identification is based, are not sufficiently developed and only a few families of recruits can be distinguished.

The results of the first three years of research show that coral recruitment is highly variable in space and time. Compared to other reefs in the Pacific, recruit abundance is often relatively high with a significant peak at some of the sites on fringing reefs and mid-shelf reefs in 2013-14. These rates of recruitment are even higher than those recorded on the Great Barrier Reef in Australia. These results suggest that New Caledonia's reefs have a high capacity for recovery and resilience.



Terracotta tiles used for the recruitment study of corals.
A: Newly deployed tiles.
B: After 5 months on the reef, tiles have been colonized by crustose calcareous algae and corals invisible to the naked-eye. Microscopic photographs of recruits from the two most abundant families in New Caledonia.
C: *Acropodiae*.
D: Pocilloporidae.© IRD/M. Adjeroud



Spatial and temporal variability in the abundance of coral recruits (all families combined) recorded at 14 sites in the four main reef habitats of the southwestern lagoon of New Caledonia. © IRD/M. Adjeroud

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