

Reef sites

A monospecific *Millepora* reef in Marquesas Islands, French Polynesia

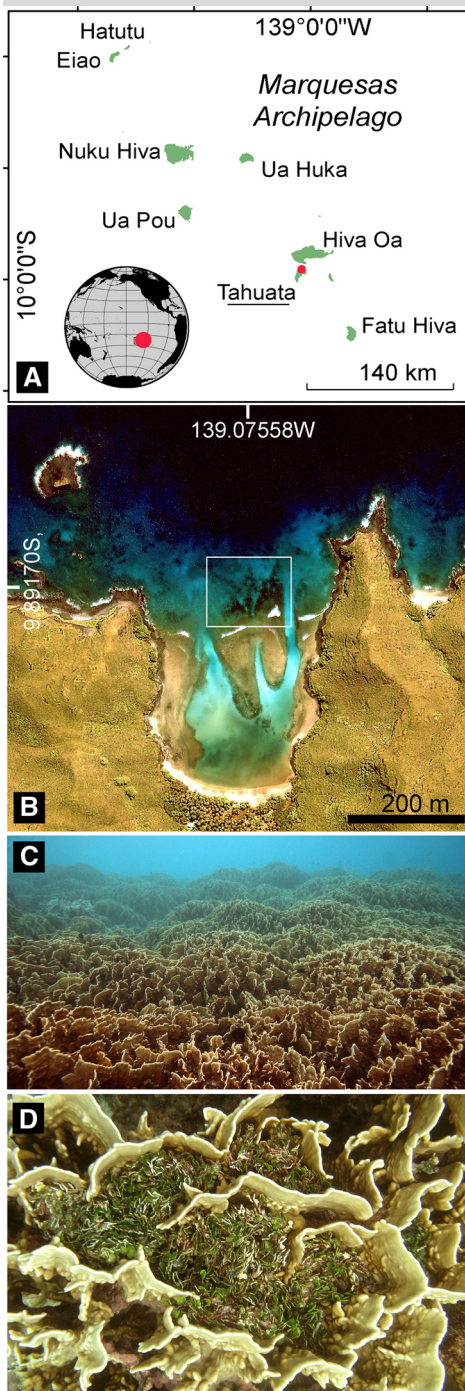


Fig. 1 a, b Location of the Tahuata reef and its forereef (square), c seascape view of the forereef, with stands of *Millepora*, d honeycomb-like *Millepora* cells colonized here by the green alga *H. distorta*

The equatorial Marquesas Islands, North French Polynesia (Fig. 1a), are a volcanic archipelago devoid of fringing coral reefs, except in Anaho Bay, Nuku-Hiva Island (Chevalier 1978). Paleo-barrier reefs were discovered in 1997 at 80–90 m depth. They drowned during rapid sea-level rise (Melt Water Pulse 1-A circa 15,000 yrs ago), with which they did not keep up (Cabiocch et al. 2008). Present Marquesas benthic assemblages between 0 and 30 m are largely dominated by *Porites lobata* colonies (Chevalier 1978). In November 2011, the Pakaihi i te Moana biodiversity expedition revisited nine Marquesas islands. Identified first on high-resolution satellite imagery, a shallow reef sheltering a small lagoon was investigated in the north of Tahuata Island (9.89170S, 139.07558W; Fig. 1b). The 0.005 km² forereef was entirely made of *Millepora* cf. *platyphyllia* (Ehrenberg 1834) colonies, characterized by a honeycomb-like vertical growth form, filled with *Halimeda distorta*, *H. melanesica*, and some *Dictyosphaeria cavernosa* (Fig. 1c, d). *Millepora* alone accounted for around 30–40 % of the cover, with colonies reaching 1.6 m high. *Millepora* was common in Marquesas during the 2011 cruise and recorded at 30 of 32 stations, but never in such dominance. This peculiar reef is the result of opportunistic growth of the hydrocoral over a dead *Porites* framework, still visible at the edge of the reef and in nearby patch reefs. The reason for *Porites* mortality remains unknown. While *Millepora* is a common and opportunistic hydrozoan genus in reefs, monospecific *Millepora* reefs are rare, and have never been reported before in French Polynesia. This type of formation has been documented only in Yemen (Richard et al. 2011). For the Marquesas, this finding is significant as it represents the second record of a documented fringing reef, with a unique community and reefscape architecture.

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References

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