

Large *Porites* microatoll found by aerial survey at Sesoko Island, Okinawa, Japan



Fig. 1 Large *Porites* microatoll at Sesoko Island, Okinawa, Japan. **a** Aerial photo taken from an altitude of 11 m at near low tide. The top of the microatoll is near the sea surface. **b** Underwater view

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The hermatypic coral, *Porites*, grows into a large, solid or flat-topped microatoll, typically comprised of a single coral colony, usually round, and with a flat or concave upper surface devoid of living polyps (Stoddart and Scoffin 1979). The largest reported *Porites* microatoll in fossil records from the Pacific and southern China was ca. 9 m in diameter (Woodroffe and Webster 2014).

An extremely large microatoll of *P. australiensis* Vaughan, 1918 (Fig. 1) was found ca. 150 m offshore from the southern coast of Sesoko Island, Okinawa, Japan (26°37'39.47"N, 127°51'39.77"E) by aerial surveys in March–April 2017 using a drone (Phantom 3 Professional; DJI Co. Ltd, Guangdong, China), improved to be water resistant by Japan Circuit Co. Ltd (Kanagawa, Japan). Sesoko Island is located northwest of Okinawa Island in the East China Sea and is thus protected from Pacific typhoons. The microatoll is located east of the fringing reef from the south end the island on a slanted sandy to pebble bottom (ca. 1.2–3.0 m deep at near mean low-water springs). The reef protects the microatoll from ocean waves from the East China Sea. The tidal range of the site is ca. 2.3 m.

The length of the longest axis is 11.1 m, and the circumference is 33.7 m. The living part of the microatoll (on the outer edge) is circular and 0.5–1.5 m in width. The estimated growth rate of *P. australiensis* at Sesoko Island is 2.6–10.8 mm yr⁻¹ (Hayashi et al. 2013). At this growth rate, the age of the microatoll is between 500 and 2100 yr. The stable environment at the site could lead to such longevity. Our study highlights the usefulness of drone surveys in the study of coral reef topography.

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References

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