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# First records of coral spawning on Norfolk Island

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Knowing when corals reproduce can help inform management and boost tourism. Norfolk Island (29.03°S; 167.95°E) is one of the most isolated locations in the Indo-Pacific (http://islands.unep.ch/) and therefore coral populations are likely to be highly dependent on self-recruitment. Consequently, it is important to know if and when the corals reproduce. Despite Norfolk Island being only a 2-hour flight from Brisbane, Australia, very little is known of the coral reefs. In the only assessment to date, the coral fauna was interpreted as consisting of a suite of wide-spread species plus species more typical of sub-tropical assemblages, such as Lord Howe Island and the Solitary Island (http://www.coralsoftheworld.org/page/home). Coral cover on exposed reef crests and in the lagoon is generally dominated by species of the genus *Acropora* (Fig. 1A). Here, we present the first records of coral spawning on Norfolk Island. A sampling design that aimed to collect at least one colony of every morpho-species on the island that occurred between the 9th and 12th of

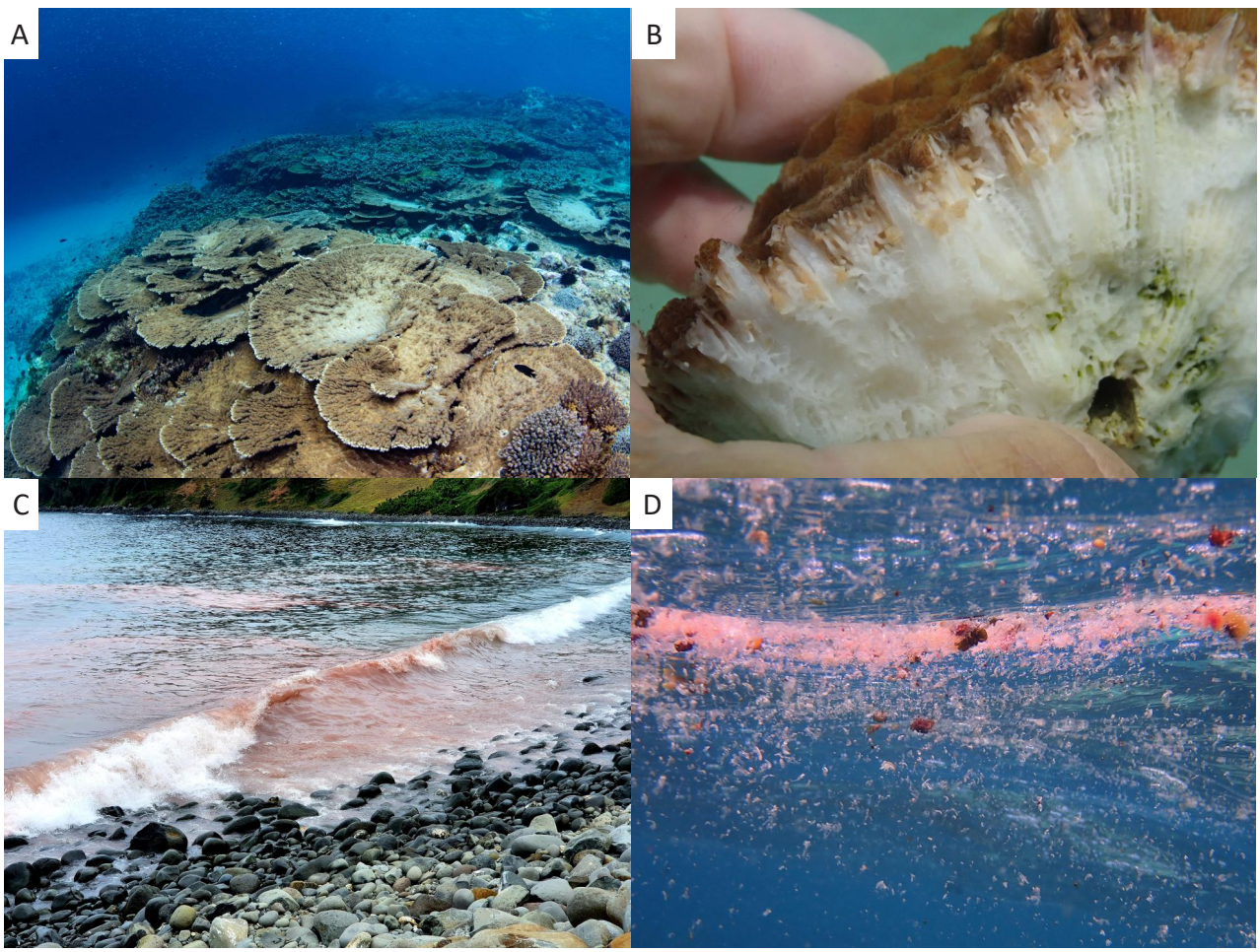


**Fig. 1** Coral reproduction on Norfolk Island (A) an exposed reef crest assemblage dominated by *Acropora* spp. (B) mature eggs in a colony of *Platygyra* sp. Cemetery Bay 9/11/2021 (C) A coral spawn slick washing onto the rocks at 27/12/2021 (D) Coral spawn on the surface of the ocean Slaughter Bay 26/02/2022.

November 2021 indicated that only one of 84 colonies had mature eggs as indicated by the orange color of the oocytes (Fig. 1B). This colony was therefore likely to spawn after the next full moon on 19 November 2021 (Baird et al. 2002). Subsequently, surface slicks indicative of coral spawning were observed on three occasions throughout the summer of 2021−22, 27 December 2021, 28 January and 26 February 2022 (Fig. 1C, D), between 8 and 11 days after the respective full moons. The spawning slicks were relatively large, suggesting that numerous colonies were likely to have spawned on these occasions, however, it is not possible to determine which species or how many colonies spawned on the basis of the size, or the color of the slicks. One earlier spawning slick was observed on 7 December 2021. These observations suggest a reproductive season beginning in November and continuing until at least February. However, quantitative surveys of coral reproduction condition are required to determine which species and what proportion of colonies are spawning on each occasion (Baird et al. 2002). The timing of coral spawning on Norfolk Island is similar to that on nearby Lord Howe Island (31.56°S; 159.08°E) where spawning typically occurs 8 to 10 days after full moons in December, January and February (Baird et al. 2015) and in contrast to the Great Barrier Reef where most species spawn in October, November or December (Baird et al. 2009). These observations also support the hypothesis that peak spawning is progressively later in the season south of the GBR (Baird et al. 2015).

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## References

Baird AH, Birrell CL, Hughes TP, et al. (2009) Latitudinal variation in reproductive synchrony in *Acropora* assemblages: Japan vs. Australia. Galaxea, J Coral Reef Stud 11: 101−108

Baird AH, Cumbo VR, Gudge S, et al. (2015) Coral reproduction on the world's southernmost reef at Lord Howe Island, Australia. Aquat Biol 23: 275−284

Baird AH, Marshall PA, Wolstenholme J (2002) Latitudinal variation in the reproduction of *Acropora* in the Coral Sea. Proceedings of the 9th International Coral Reef Symposium I. International Coral Reef Society, Bali, 385−389

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