The coralline algal cascades of Tallon Island (*Jalan*) fringing reef, NW Australia

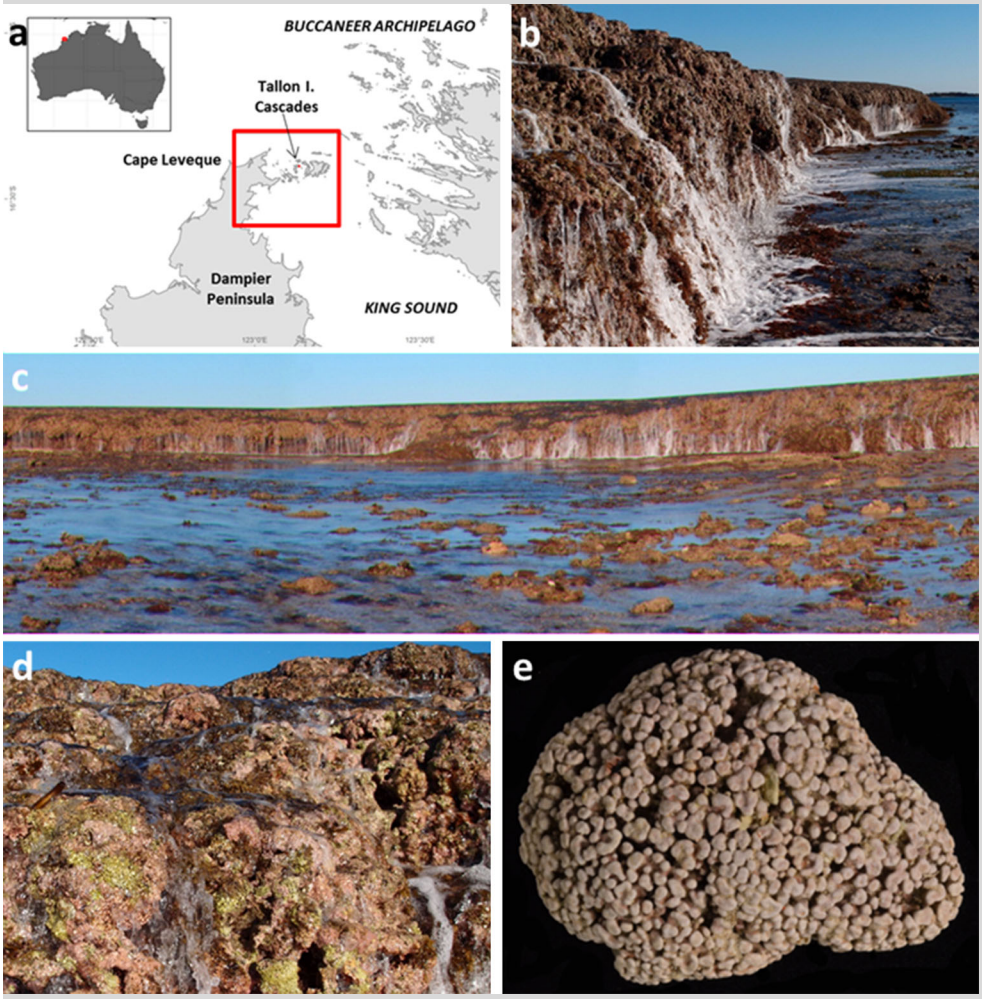

Fig. 1 Stepped crustose coralline algal terraces impound raised lagoonal habitat forming cascades at low tide. **a** Location of the cascades in the Buccanneer Archipelago. **b** The cascades reach 2 m high. **c** Panoramic view. **d** The crest of the cascades revealing the dominant coralline *Hydrolithon*. **e** Rhodolith *Lithophyllum stictaeforme* collected at the base of the cascades

Crustose coralline algae (CCA) are a dominant group of calcareous red algae (Corallinaceae, Rhodophyceae) that play a vital role on coral reefs by binding together structural elements such as corals that constitute the reef framework (Nelson 2009). In the Kimberley region of NW Australia, however, CCA are hypothesized to play a more significant role in reef construction (Wilson 2013). Here, we report the finding of an unusual and extensive CCA dominated reef platform in a tropical, low-energy reef setting.

On a recent survey of the intertidal reef platform at *Jalan* (16°24′07″S 123°08′12″E; Fig. 1a), we documented a lenticular CCA/rhodolith bank that coalesces to form a single 2-m-high, 200-m-long coralline algal terrace along the northeastern seaward margin of the island (Fig. 1b, c). Water that is impounded behind the terrace forms a shallow, raised lagoon that feeds a series of cascades over low tide. The lagoon contains habitat forming organisms including sea grass, macroalgae, and anemones. Reef-building hard corals are scarce on the reef platform; however, 20 species belonging to 13 genera were recorded.

Reefs in the Kimberley region of Australia experience the greatest tidal variation of any tropical location in the world (up to 11 m) leading to long subaerial exposure times (~3 h; Rosser and Veron 2011). The predominance of CCA at this location may indicate that corallines have replaced stony corals as the principal reef-building organism. Whether this is a more recent community shift in response to climate change or represents a longer period of CCA reef accretion is yet to be determined.

Acknowledgments This research was undertaken as part of WAMSI research programs 1.1.3 and 1.3.1. Thanks to Bardi-Jawi Rangers and Traditional Owners for collaboration and Adele Harvey for rhodolith identifications.

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Z. T. Richards · M. J. O'Leary
The Western Australian Marine Science Institution, Perth, Australia

Z. T. Richards (✉)
Western Australian Museum, Welshpool, WA 6105, Australia
e-mail: zoe.richards@museum.wa.gov.au

M. J. O'Leary
Department of Environment and Agriculture, Curtin University, Bentley, WA 6102, Australia

Received: 7 December 2014 / Accepted: 21 January 2015 / Published online: 4 February 2015
© Springer-Verlag Berlin Heidelberg 2015
Coral Reefs (2015) 34:595
DOI 10.1007/s00338-015-1262-6