



## **Physiographic Controls on Hamelin Pool Stromatolites and Associated Facies: SO WHAT??**

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Hamelin Pool, a hypersaline embayment with 135 km of shoreline within the Shark Bay World Heritage Area, Western Australia, supports the most extensive and diverse system of living marine stromatolites and microbial mats in the world. Here, we present results from a recent comprehensive field-mapping program to show the impact of shelf physiography on stromatolite morphology and sediment grain size distribution in Hamelin Pool. Interrogation of a combination of facies maps and shelf physiography revealed a unique geographic distribution of morphologically distinct buildups and associated sedimentary facies around the margins of Hamelin Pool, and supports the differentiation of eight distinct Stromatolite Provinces. Shelf physiography of each Province acts as the driver of the energy regime, influencing the depositional environment, which impacts the morphology of its stromatolites and sediment grain size distribution. Combined with a high-resolution bathymetry model, these maps provide insight into the spatial distribution of microbial deposits in a modern actively growing system. These datasets can be used to provide context for the control of depositional environment on the formation of stromatolite morphologies in both the modern and ancient geological record, and provides insight into the longstanding nature vs. nurture controversy about stromatolites (following Ginsburg 1990; Controversies about stromatolites: vices and virtues)