



Why are there stromatolites along South Africa's coastline?

FUNCTIONAL DRIVERS OF STROMATOLITE PERSISTENCE

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for tomorrow

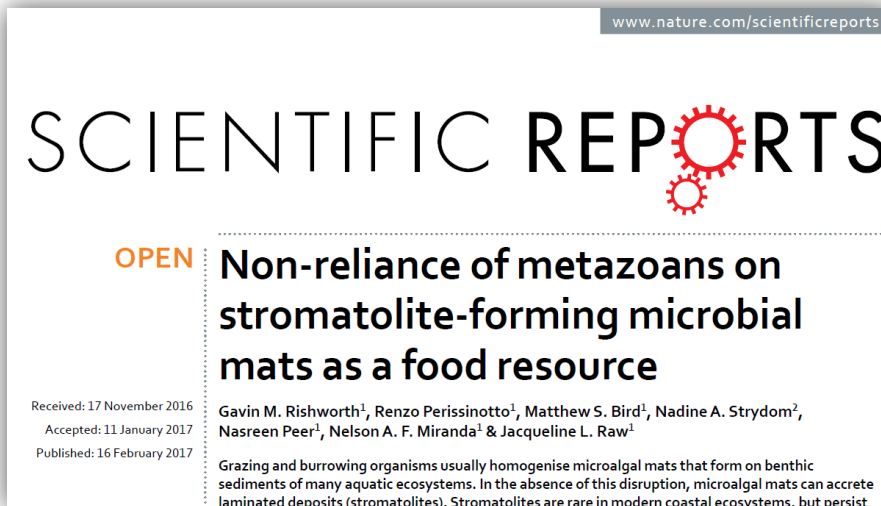
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Presentation based on:

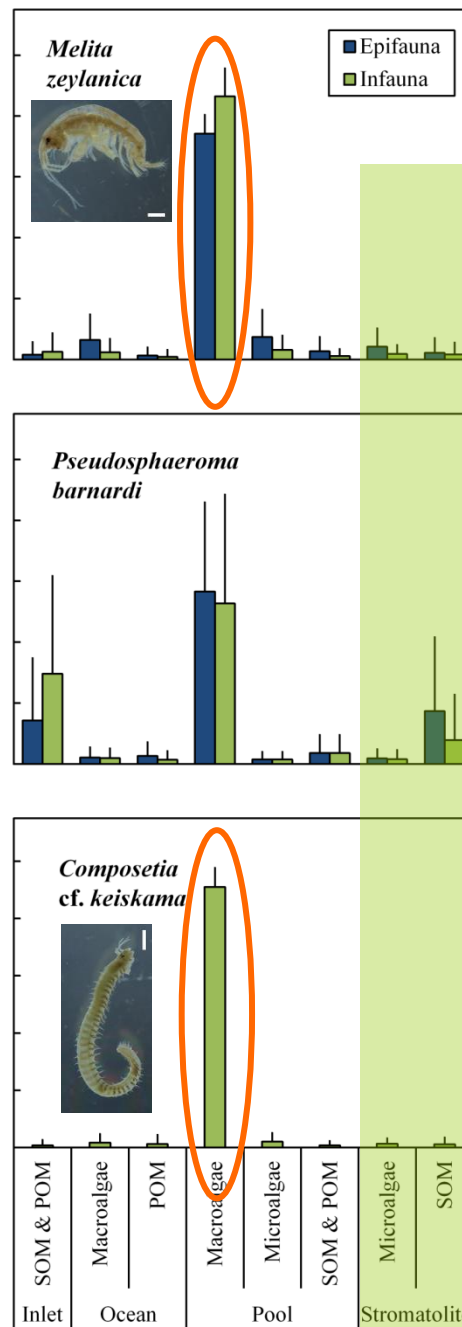
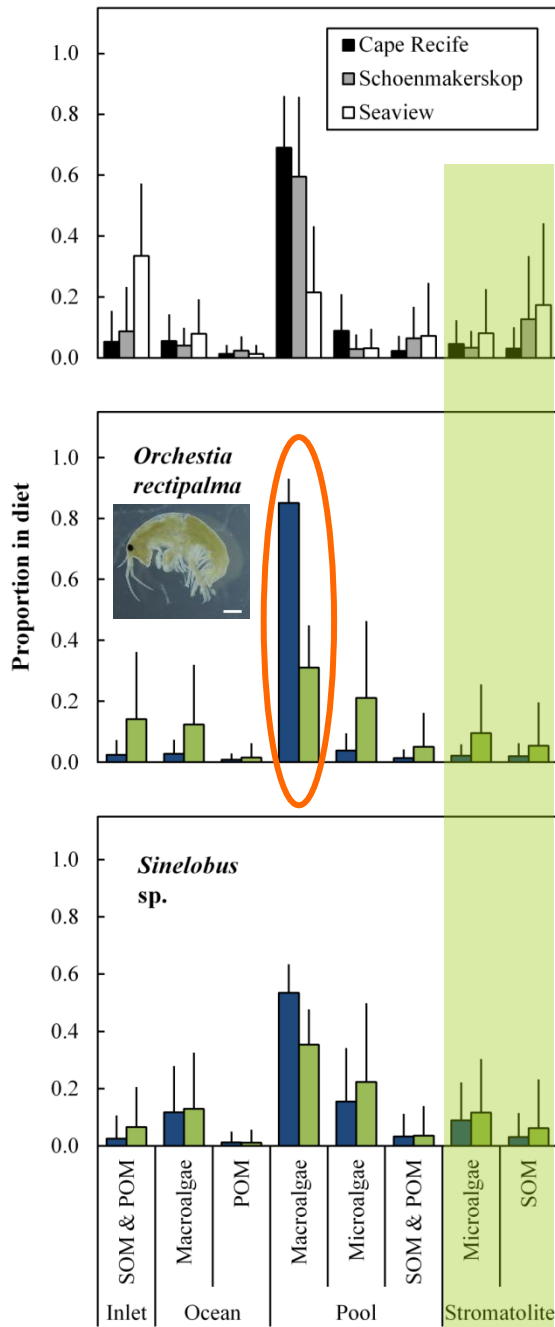
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Other key publications:

- Perissinotto, R, Bornman, T, Steyn, P-P, Miranda, NAF, Dorrington, RA, Matcher, GF *et al.* (2014) Tufa stromatolite ecosystems on the South African south coast. *South African Journal of Science* **110**: 89-96.
- Rishworth, GM, Perissinotto, R, & Bird, MS (2016) Coexisting living stromatolites and infaunal metazoans. *Oecologia* **182**: 539-545.
- Rishworth, GM, van Elden, S, Perissinotto, R, Miranda, NAF, Steyn, P-P, & Bornman, TG (2016) Environmental influences on living marine stromatolites: insights from benthic microalgal communities. *Environmental Microbiology* **18**: 503-513.
- Rishworth, GM, Perissinotto, R, & Bird, MS (2017) Patterns and drivers of benthic macrofaunal communities dwelling within extant peritidal stromatolites. *Limnology and Oceanography (in press)* doi:10.1002/lno.10563.
- Rishworth, GM, Perissinotto, R, Bornman, TG, & Lemley, DA (2017) Peritidal stromatolites at the convergence of groundwater seepage and marine incursion: patterns of salinity, temperature and nutrient variability. *Journal of Marine Systems* **167**: 68-77.
- Rishworth, GM, Perissinotto, R, Miranda, NAF, Bornman, TG, & Steyn, PP (2017) Phytoplankton community dynamics within peritidal pools associated with living stromatolites at the freshwater-marine interface. *Aquatic Sciences* **79**: 357-370.



Mixing model:
diet %

- Little/no stromatolite material
- Reliance on macroalgae

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SCIENTIFIC REPORTS

OPEN **Non-reliance of metazoans on stromatolite-forming microbial mats as a food resource**

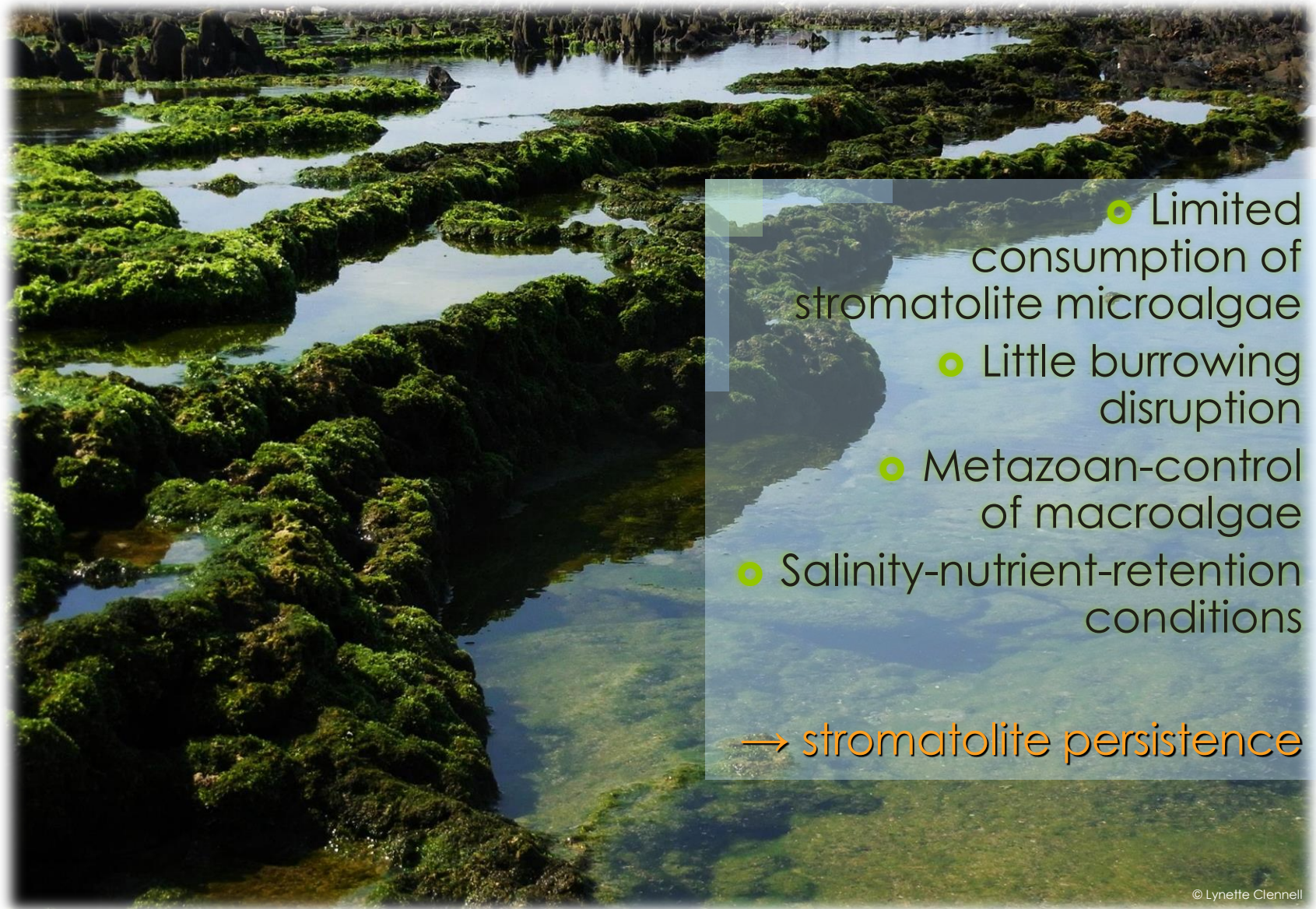
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Grazing and burrowing organisms usually homogenise microalgal mats that form on benthic sediments of many aquatic ecosystems. In the absence of this disruption, microalgal mats can accrete laminated deposits (stromatolites). Stromatolites are rare in modern coastal ecosystems, but persist



Conclusion The stromatolite ecosystem

- 
- Limited consumption of stromatolite microalgae
 - Little burrowing disruption
 - Metazoan-control of macroalgae
 - Salinity-nutrient-retention conditions

→ stromatolite persistence

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