

SARChI Chair: Shallow Water Ecosystems

Prof. Renzo Perissinotto

RESEARCH FOCUS AREAS

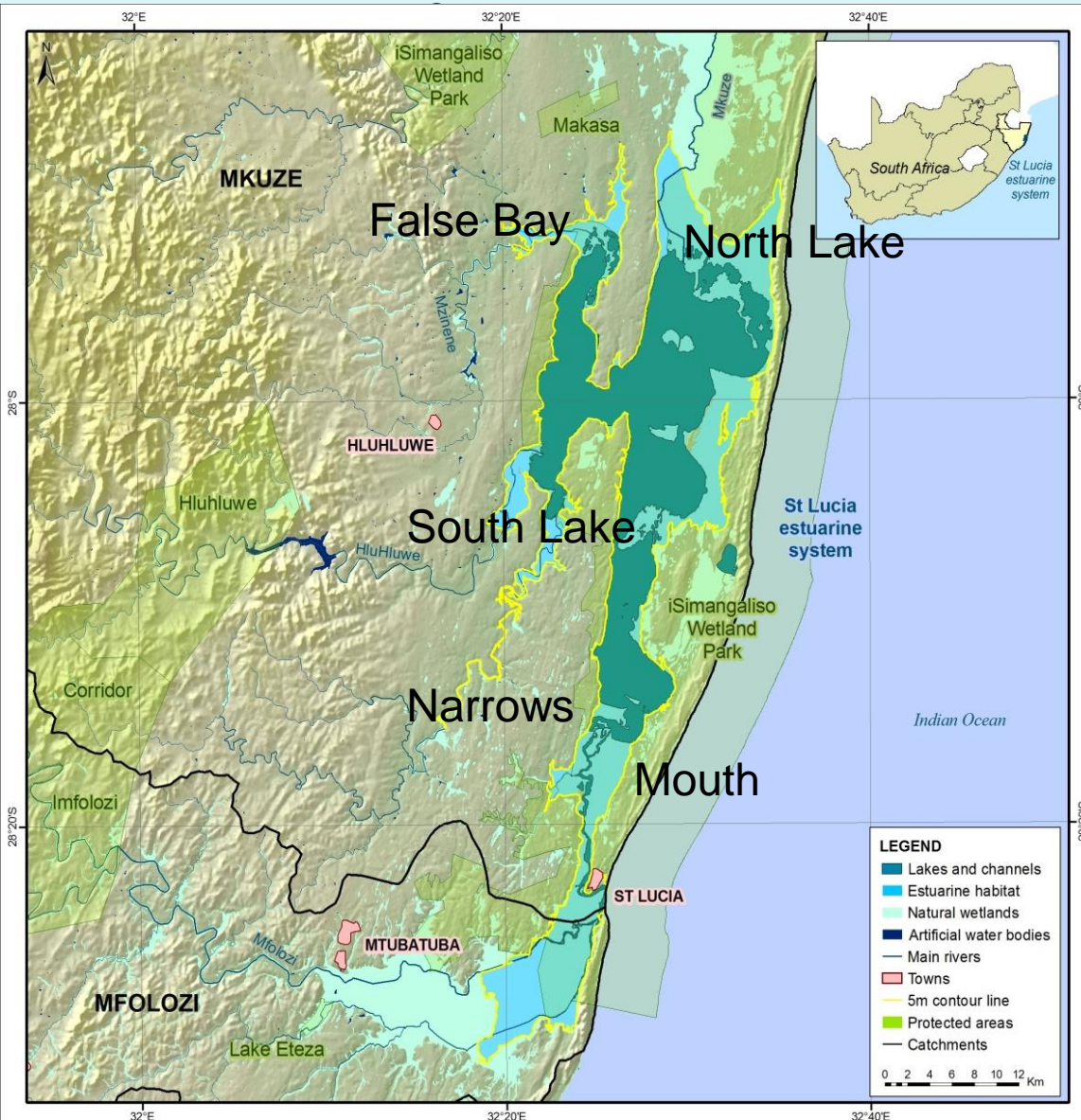


AIMS & OBJECTIVES:

“To investigate the structure and functioning of selected South African shallow-water ecosystems, with the following broad objectives.

- A) Generate new knowledge in this specific area and publish it in the primary peer-review literature;
- B) Provide Government management structures with scientifically-based information towards the sustainable use, and where necessary rehabilitation, of shallow water ecosystems;
- C) Enhance the training of postgraduates, in order to secure critical and scarce skills availability for the future well-being of the country”.

1) Biodiversity, ecological functioning & rehabilitation of Lake St Lucia, iSimangaliso Wetland Park (northern KZN)



▶ **Unprecedented droughts**

▶ **Mouth closed since July 2002**

▶ **80% lake area exposed: 2004-2007; 2015-2017**

▶ **Little seawater, no regular freshwater**

▶ **Hypersalinity, max 300‰**

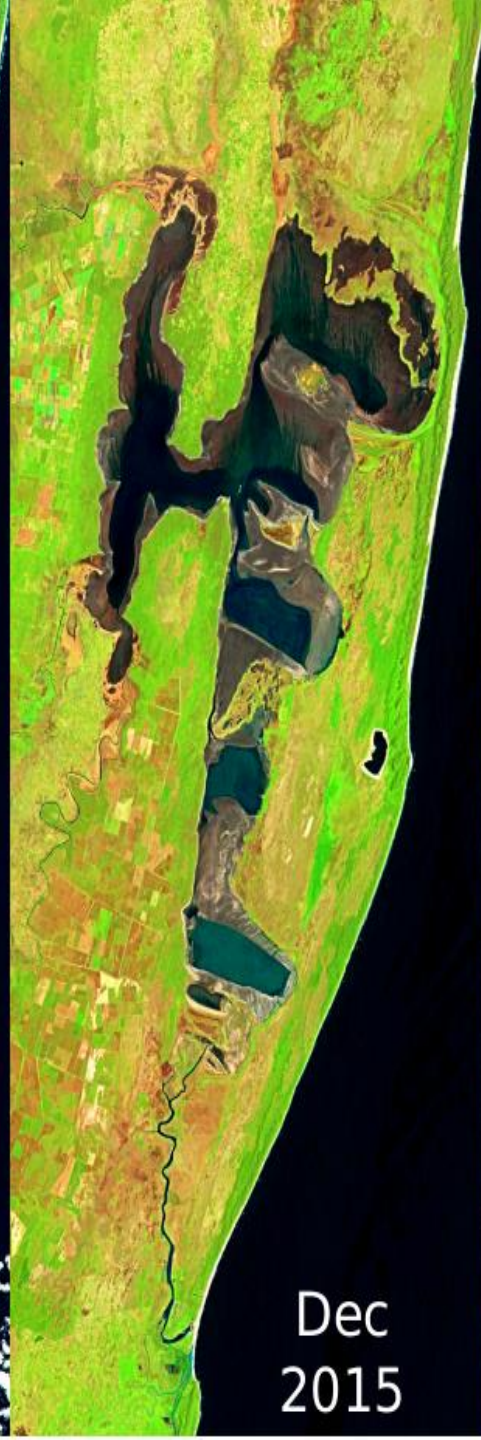
Landsat (Stretch pers. comm.)



Sep
2014



Aug
2015



Dec
2015



Feb
2016



Beach Spillway Mfolozi-St Lucia



Phase A and B of the dredge spoil removal: 1.2 M m³ soil, ZAR 62 M

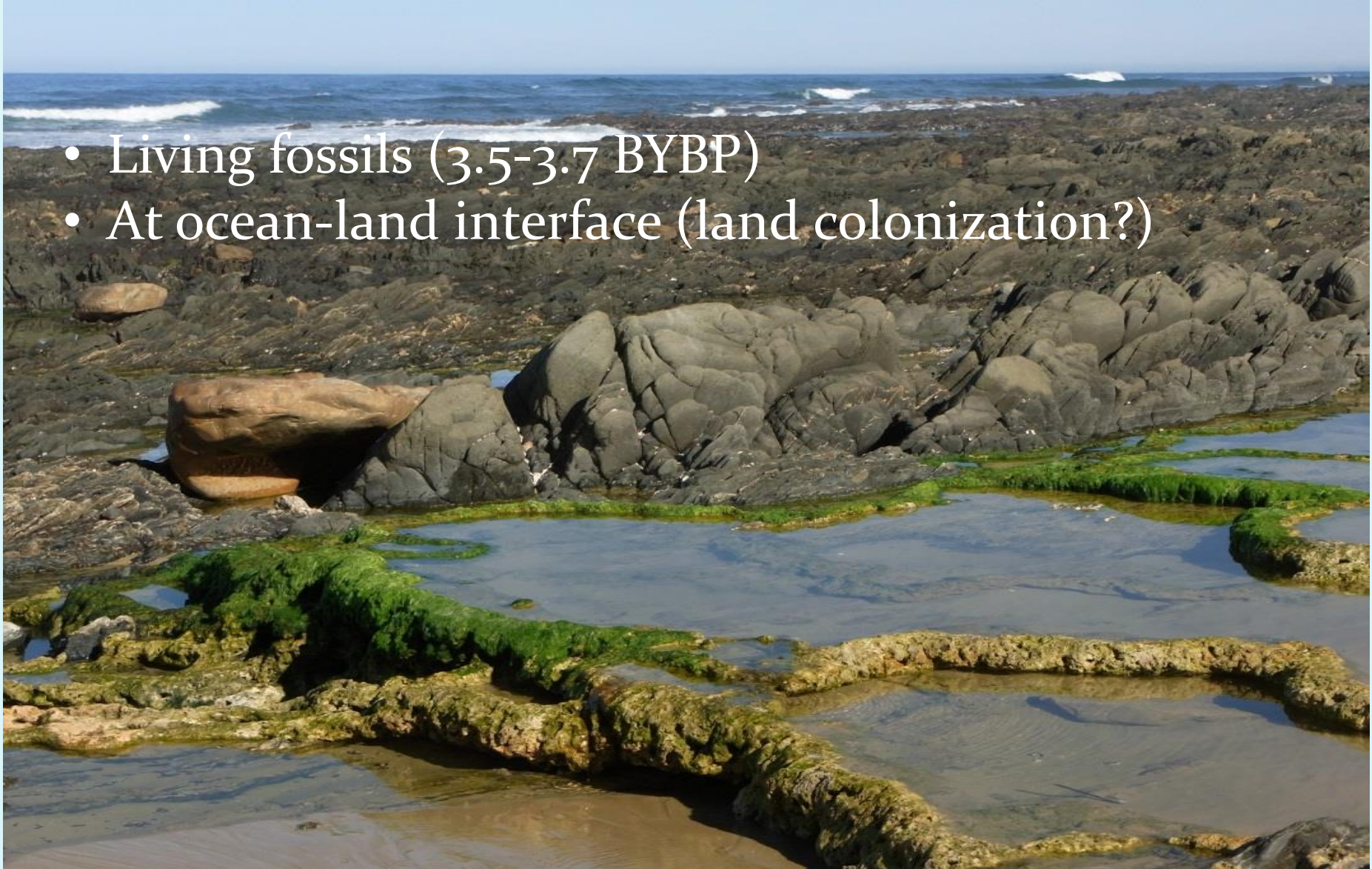


Current students/postdocs:

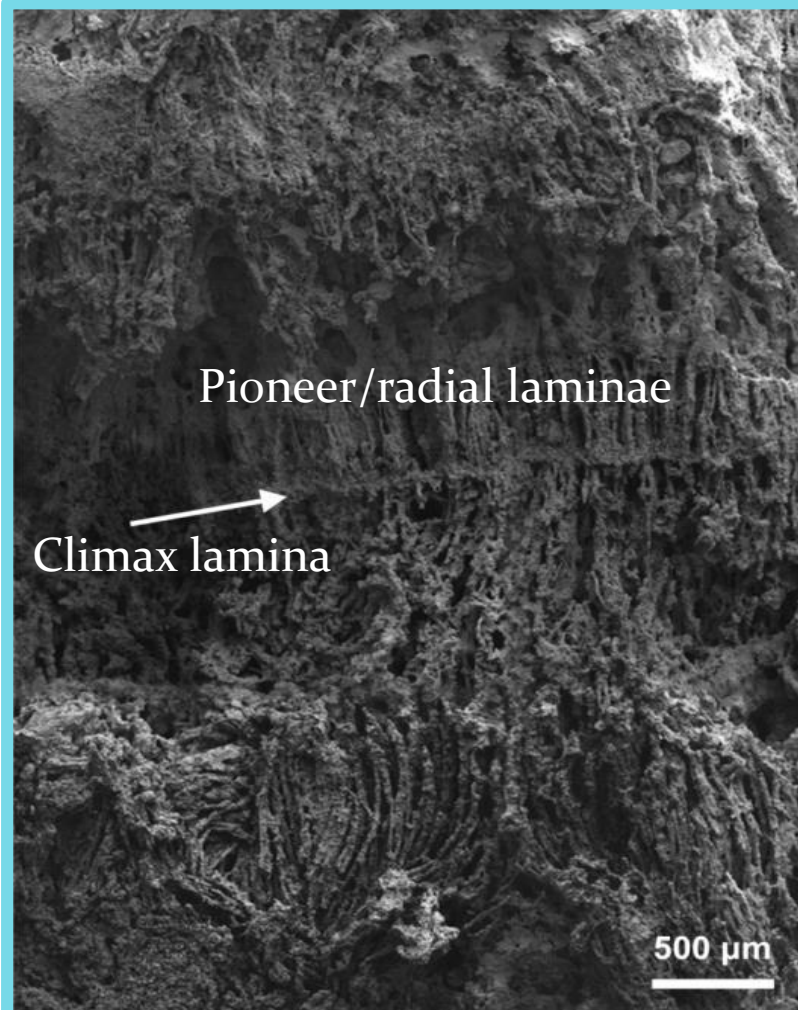
- 3 PhDs (Schlak du Plooy, Jackie Raw, NMMU; Salome Jones, UKZN)
- 2 Postdocs (Nelson Miranda, Nasreen Peer , NMMU)

2) Biogeochemistry of living peritidal stromatolites along the Eastern Cape coastline

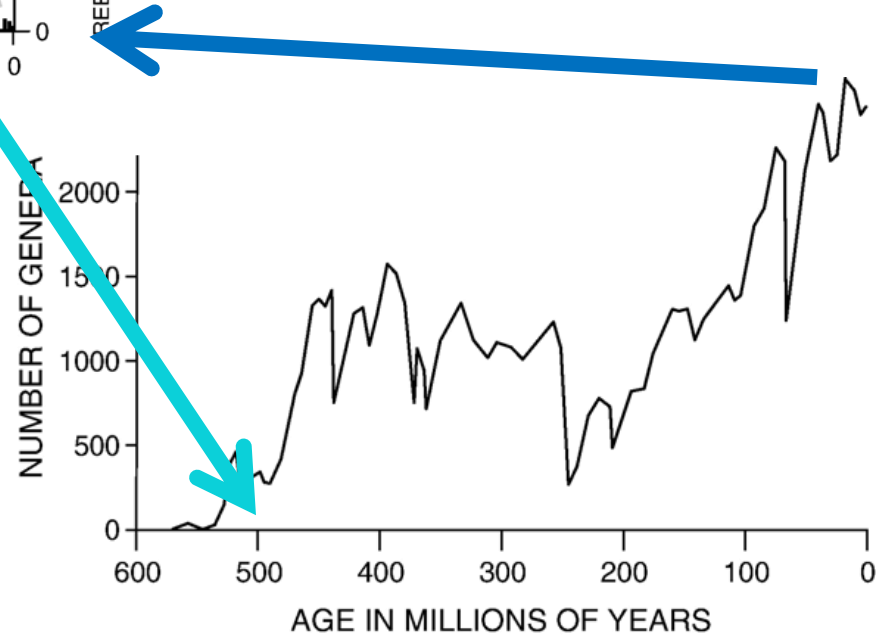
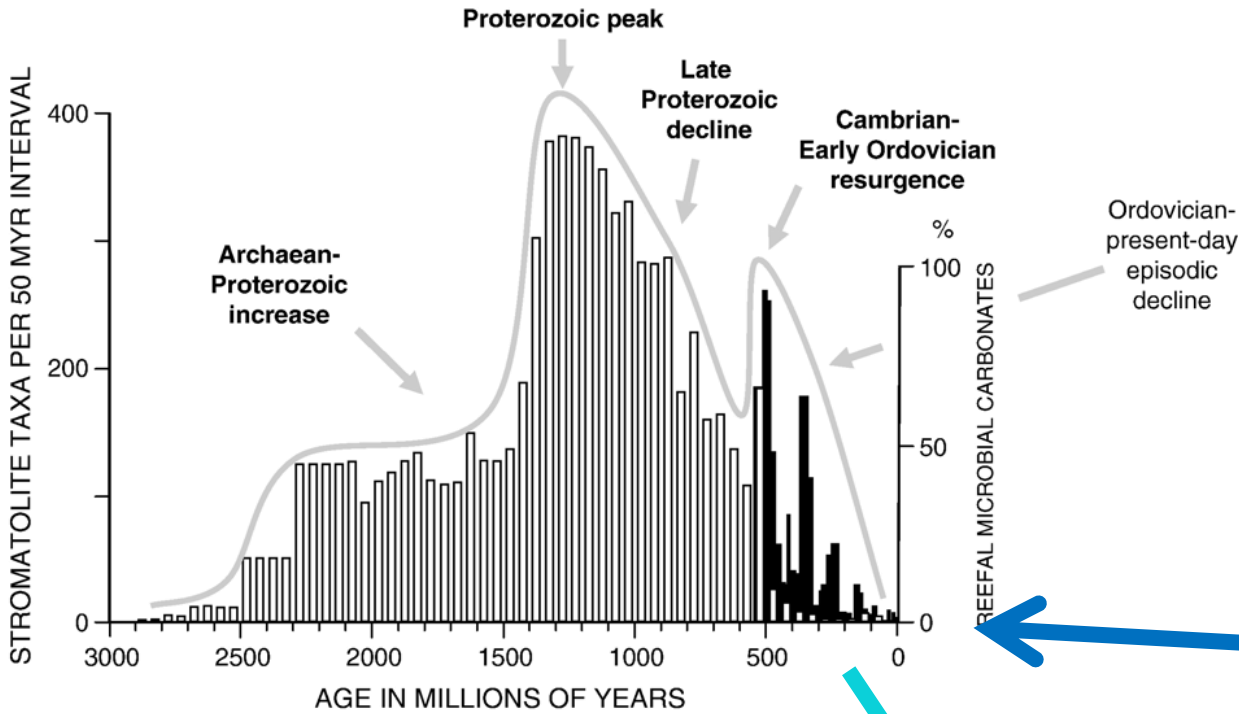
- Living fossils (3.5-3.7 BYBP)
- At ocean-land interface (land colonization?)



Microstructure: lamination



Stromatolite decline



RIDING, R (2006) Microbial carbonate abundance compared with fluctuations in metazoan diversity over geological time. *Sedimentary Geology* **185**: 229-238.



Bolttsia minuta (Amphipoda)

Original description from Lake Sibaya (Griffiths 1976)



Tuoba cf. *T. poseidonis* (Geophilomorpha)

First halophilic littoral chilopod (centipede) recorded in South Africa (Barber 2009)



Sinelobus sp. (Tanaidacea)

Suggested as a cosmopolitan species – very recent new species descriptions (Bamber 2014) – South African examples yet to be examined

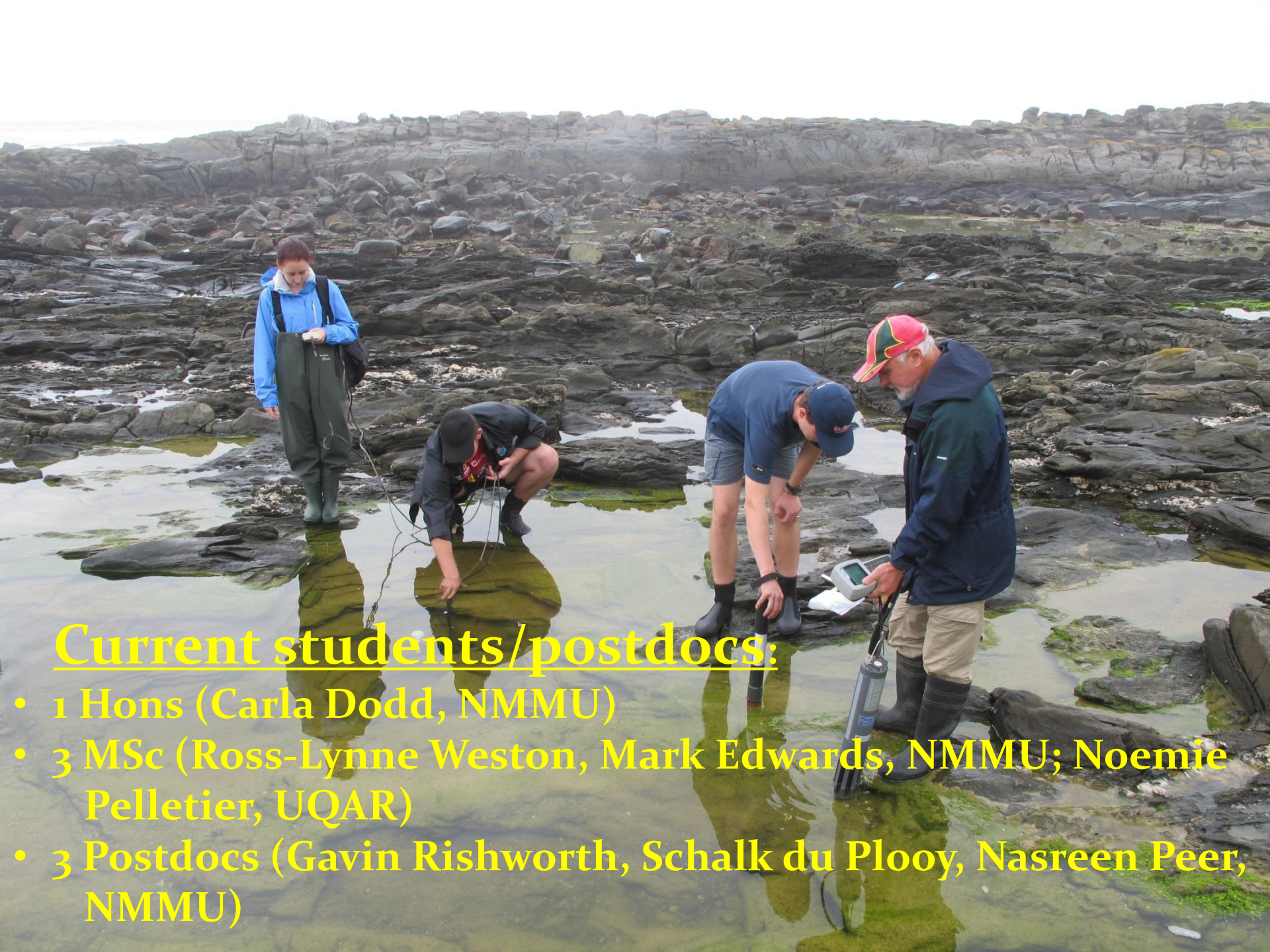
www.nature.com/scientificreports

SCIENTIFIC REPORTS

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

Received: 17 November 2016
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Current students/postdocs:

- 1 Hons (Carla Dodd, NMMU)
- 3 MSc (Ross-Lynne Weston, Mark Edwards, NMMU; Noemie Pelletier, UQAR)
- 3 Postdocs (Gavin Rishworth, Schalk du Plooy, Nasreen Peer, NMMU)

3) Eastern Cape Estuaries

- ① Nursery for estuarine-dependent marine species (e.g. Cape Stumpnose)
- ② Subject to land use and climate changes (> Temp, >Turb, < pH)
- ③ Affected by alien and invasive species (molluscs, annelids)



Swartkops Estuary

Response of *Rhabdosargus holubi* to changes in salinity, siltation and acidification



Current students:

- 1 MSc (Mfundo Mpinga, NMMU)
- 1 PhD (Yanasivan Kisten NMMU)

Characterization of micro-estuary systems along the eastern and southern Cape coast

- **Over 100 micro-inlets in SA: mostly unnamed**
- **Highly vulnerable: freshwater abstraction & land use change**
- **When do micro-inlets become estuaries?**



Current students/postdocs:

- 1 PhD (Mandla Magoro, NMMU-SANBI)
- 1 Postdoc (Nelson Miranda, NMMU)



4) Biodiversity and ecology of wetlands in the Karoo region earmarked for shale gas exploration (baseline study)

- Baseline survey of pristine conditions
- Surface wetlands: ephemeral water bodies



a) Characterization of surface waterbodies

b) Invertebrate & microalgae biodiversity census



Current students/postdocs:

- 1 MSc (Natasha Roussouw, NMMU)
- 1 PhD (Annah Mabidi, NMMU)

