



# Bryozoa Taxonomy and Palaeoecology in the Neogene of SE Asia ...an update...

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## Morphology and palaeobiogeography of *Retelepralia*, a distinctive cheilostome bryozoan new to the fossil record

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With 5 figures

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**Abstract:** A new species of ascophoran cheilostome bryozoan *Retelepralia macmonagleae* sp. nov. is described from Malaysian Borneo (Sabah). Dated as Late Oligocene, it is the oldest known and the first recognized fossil species of *Retelepralia*. A second fossil species of this genus, originally described as *Hippodiplosia voighti* DAVID, MONGEREAU & POUYET, 1972, occurs in the Miocene of France and Morocco. Synonymy of *H. voighti* with the Recent type species of *Retelepralia*, *Retelepralia mosaica* KIRKPATRICK, 1888, is tentatively proposed. Included in the Cheiloporinidae, *Retelepralia* is characterized by a lepralioid frontal shield with a distinctive median gymnocystal strip. The presence of two hypostegal coelomic compartments in living zooids is inferred, and the palaeobiogeography of *Retelepralia* is discussed.

**Key words:** Cenozoic, Ascophora, Cheiloporinidae, palaeobiogeography, morphology

### 1. Introduction

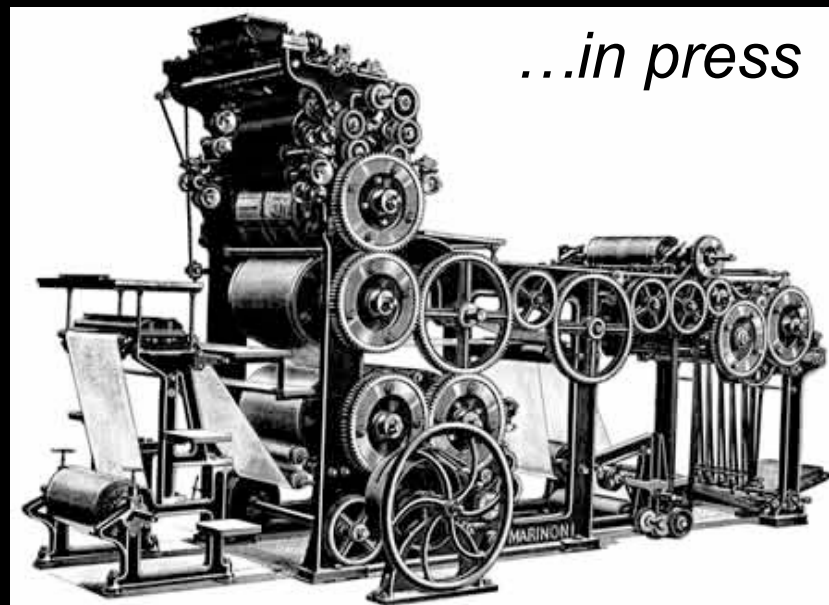
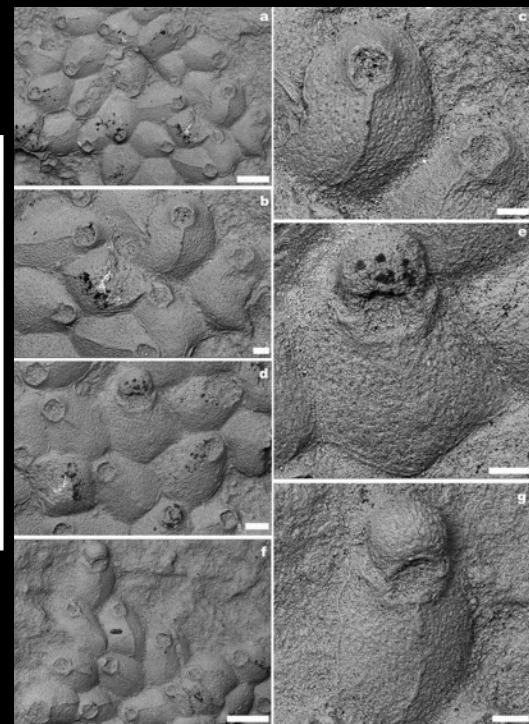
Modern bryozoan faunas are dominated by ascophoran cheilostomes. This polyphyletic subordinal group is characterized by zooids with calcified frontal shields overlying a sac (ascus) that fills with water to compensate for the lost volume when the tentacle crown is protruded. Ascophorans are the most skeletally complex of all bryozoans and have developed a wide variety of different colony forms. While many ascophoran genera are common, widespread both geographically and stratigraphically, and rich in numbers of species (e.g. *Schizoporella*, *Microporella*, *Metrarabdotos*, *Celleporaria*), others are more restricted in their distribution and diversity. This paper focuses on one of the latter genera, *Retelepralia* GORDON & ARNOLD, 1998, unusual in having autozooids with a distinctive median strip

of non-porous frontal shield separating two areas of pseudoporous frontal shield.

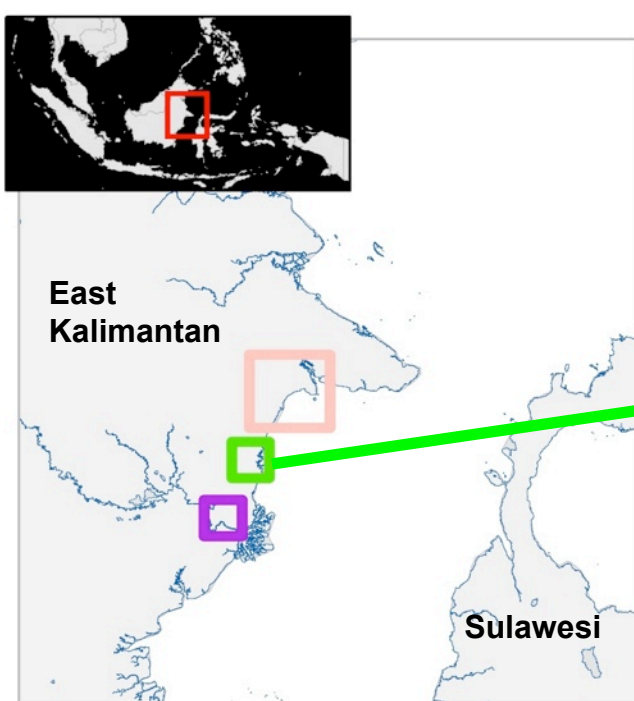
Here we revise *Retelepralia* based on the study of type and new material. We recognize the first fossil examples of the genus, extending its range from the Recent back to the Oligocene, discuss its palaeobiogeography, and interpret the significance of the median strip for soft part anatomy.

### 2. Material and methods

Material used in this study includes type and new specimens. Specimens of a new species of *Retelepralia* were collected by Laura B. McMonagle (University of Durham) from the eastern part of the Malaysian province of Sabah (NE Borneo) (Fig. 1), during two field seasons in 2006 and 2007 while making systematic collections of well-preserved Late Oligocene-Early



...in press



# Bontang

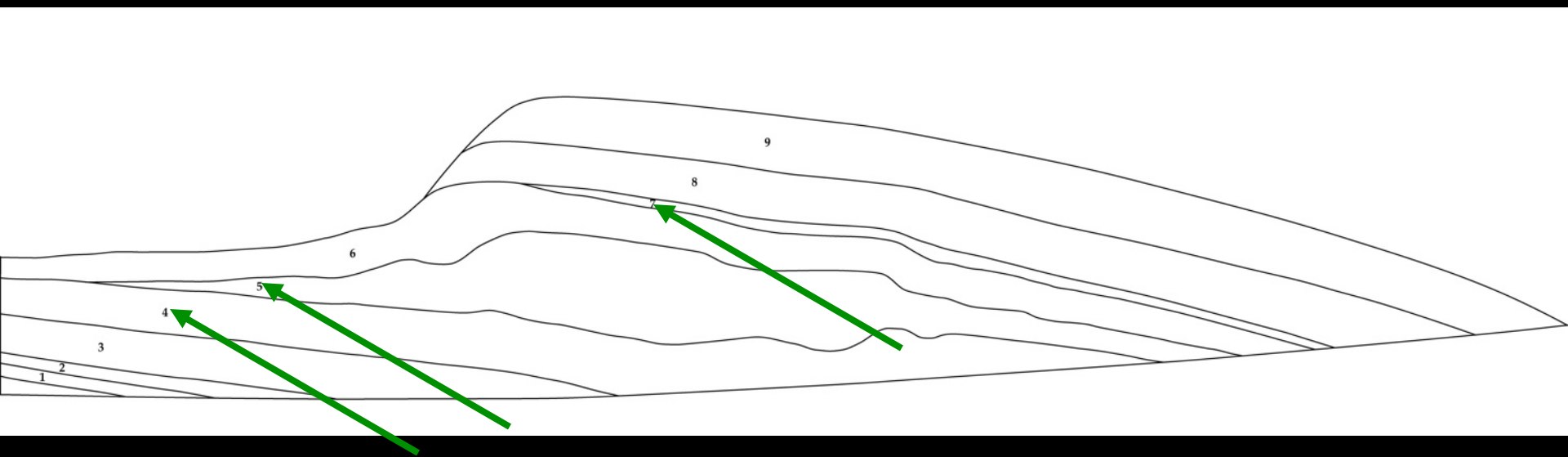


# Materials

3 bulk samples from Unit 5

3 bulk samples from Unit 7

Further samples from Unit 4 (collected for corals)



# Methods

- Samples were washed, sieved and dried in air.
- Bryozoans were discovered encrusting the bases of corals and as colony fragments picked from sediment fractions larger than 500  $\mu\text{m}$ .
- They were identified under a stereomicroscope to genus or family level, depending on preservational quality.
- Fossil corals encrusted by bryozoans were

# Preliminary Results

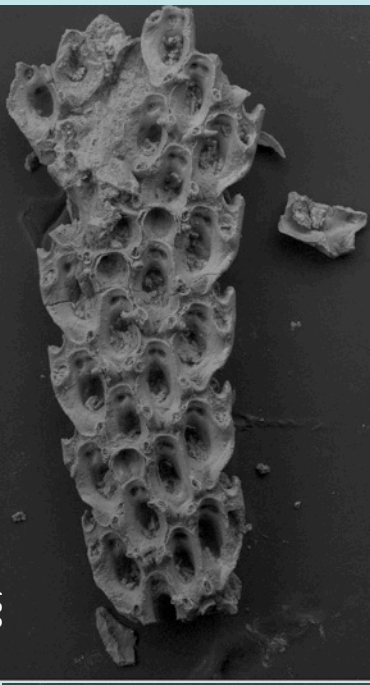
- 1) *Exidmonea* sp.1
- 2) *Filisparsa* sp.1
- 3) *Porina* sp.1
- 4) *Scrupocellaria* sp.1
- 5) *Caberea* sp.1
- 6) *Adeonella* sp.1
- 7) *Canda* sp.1
- 8) *Nellia* sp.1
- 9) *Nellia* sp.2
- 10) *Ditaxipora* cf. *pannonensis*
- 11) *Margaretta* sp.1
- 12) *Margaretta* sp.2
- 13) *Reteporella* sp.1
- 14) *Phidoloporidae* sp.1

Good preservation!

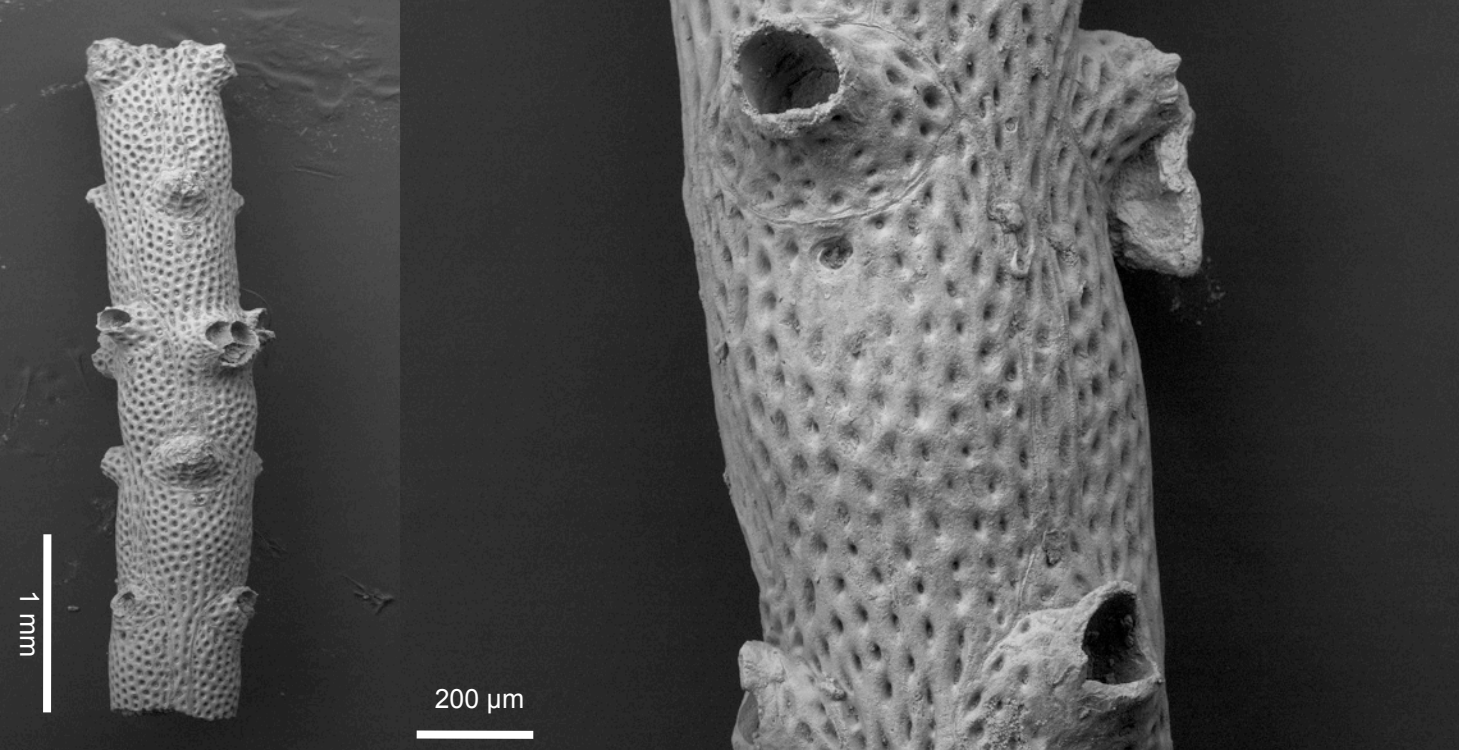
Large number of specimens!

15 erect species

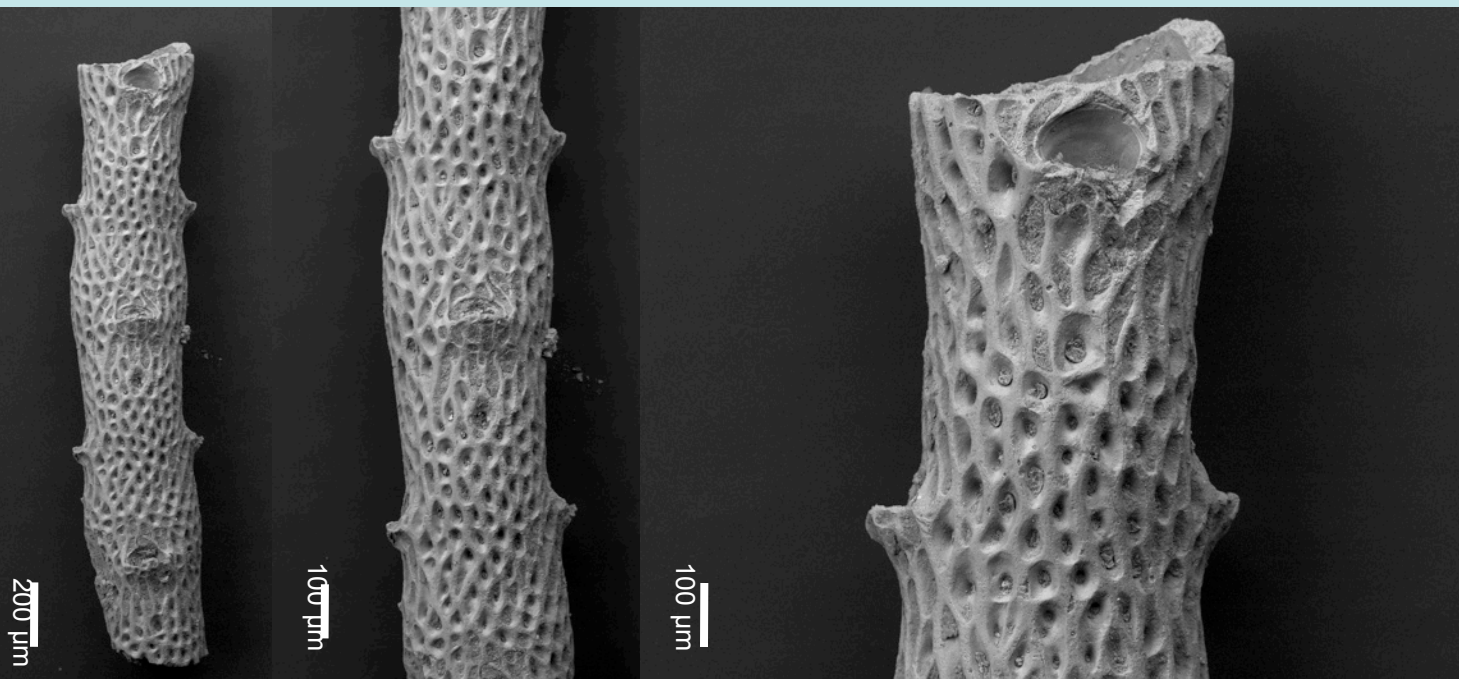
*Caberea* sp.1



*Margaretta* sp.1

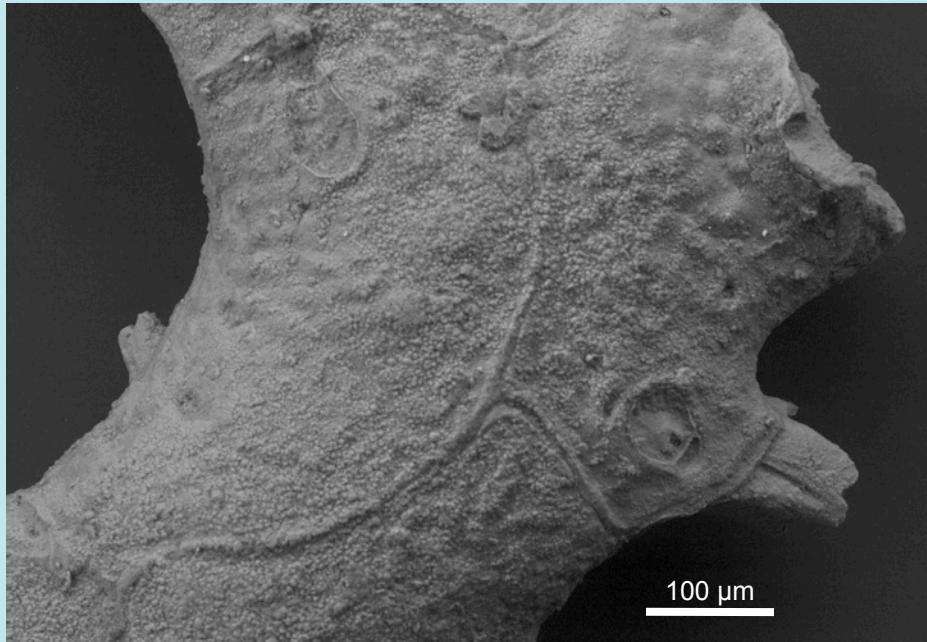
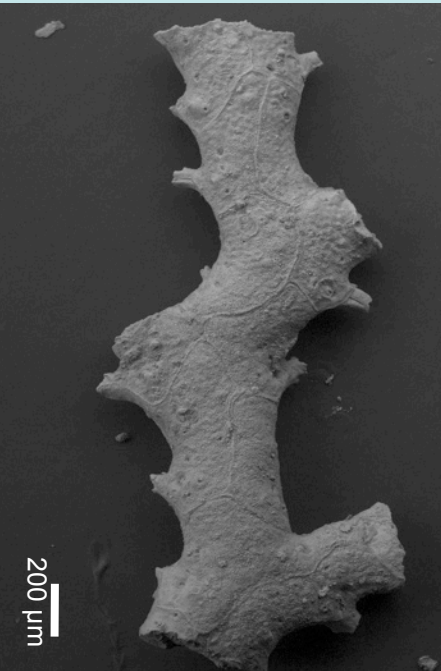
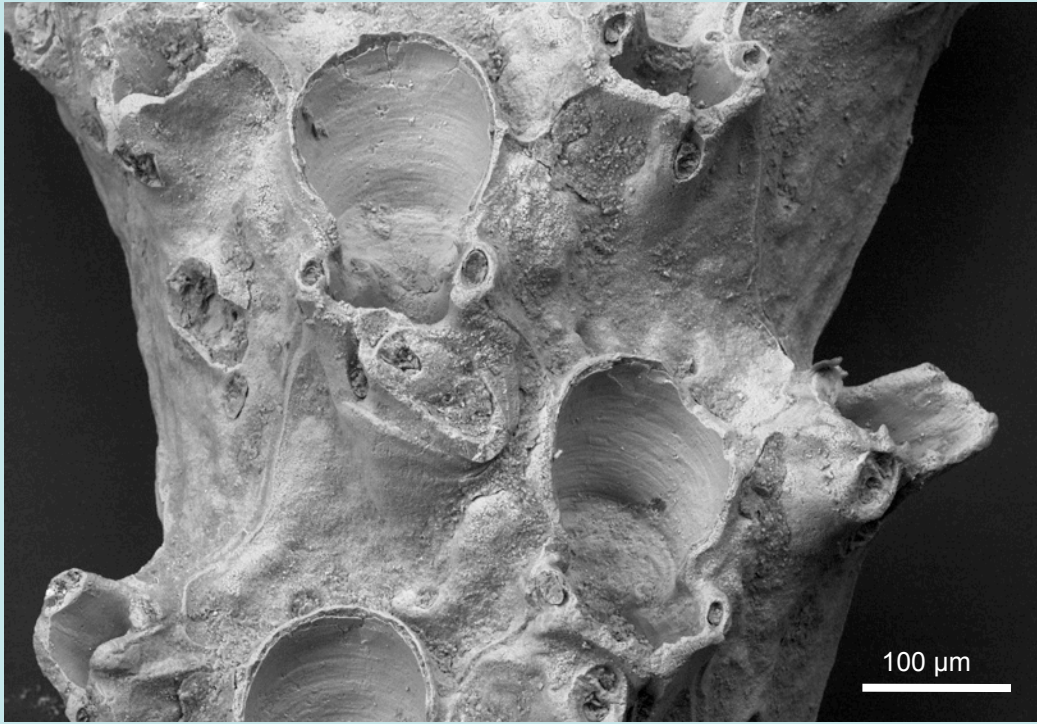
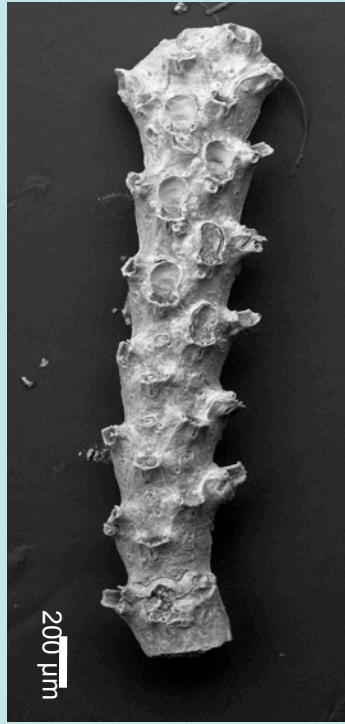


*Margaretta* sp.2

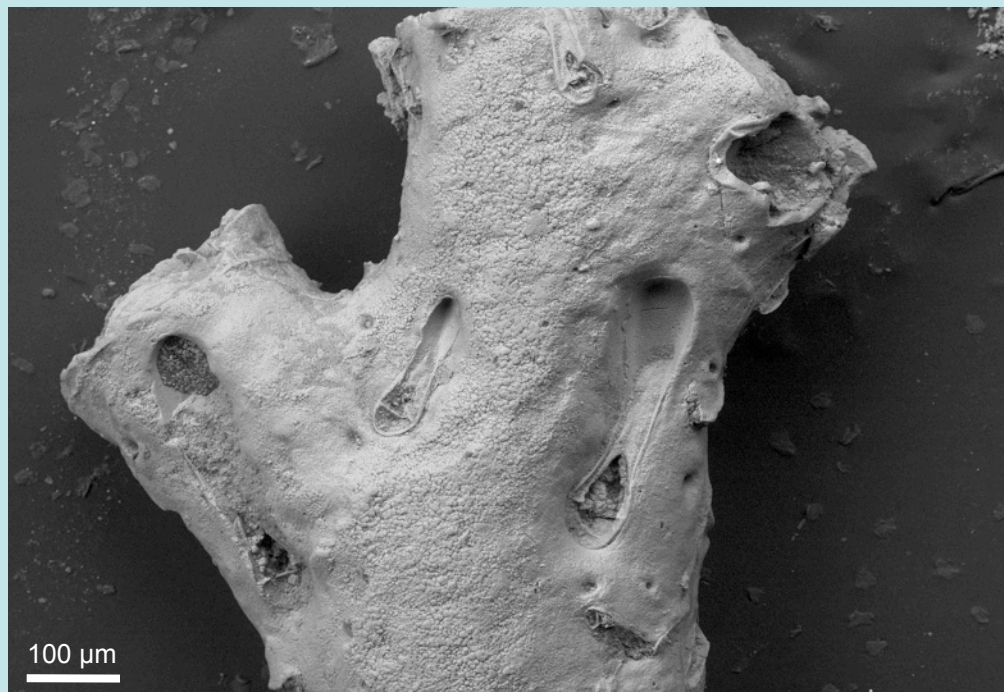
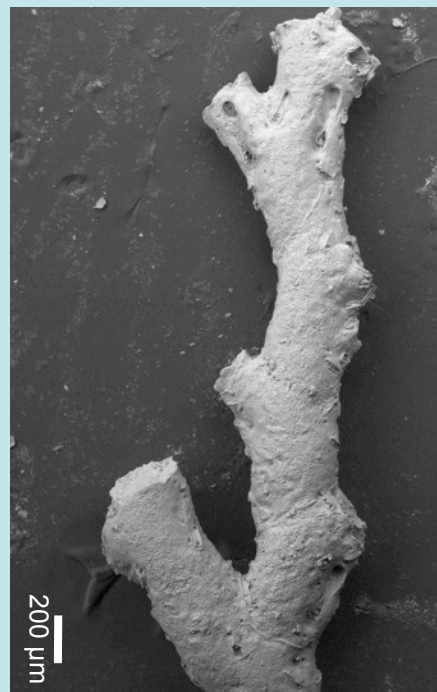
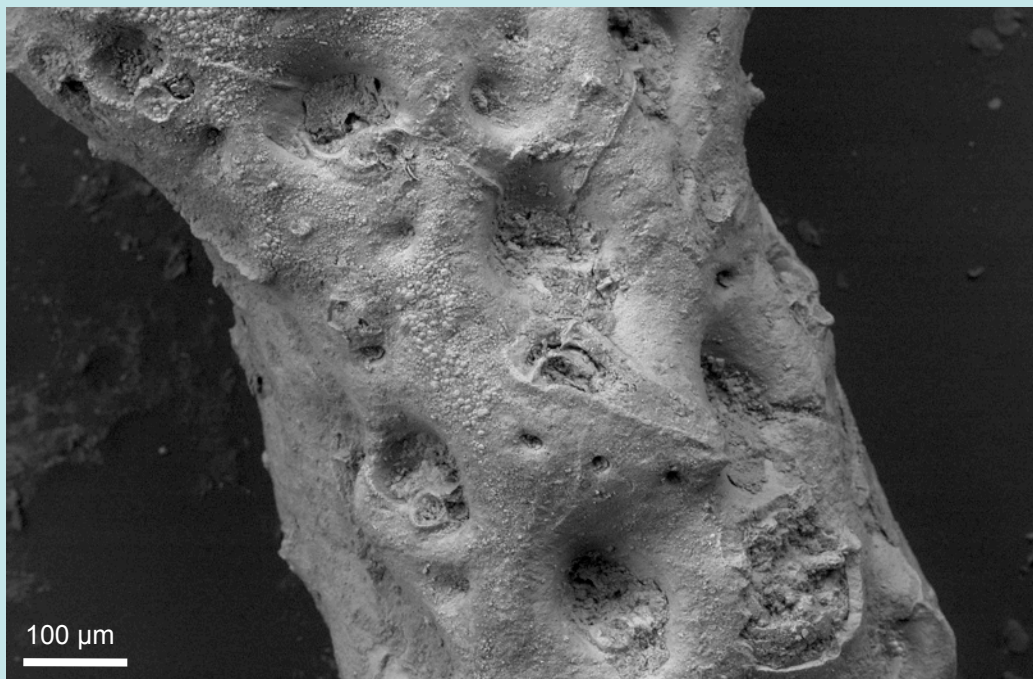
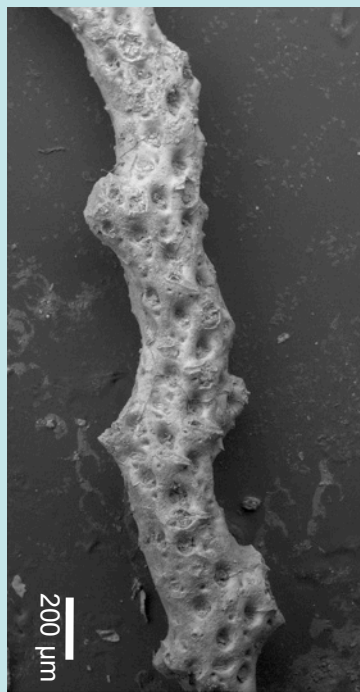




*Reteporella* sp.1



**Phidoloporidae sp.1**



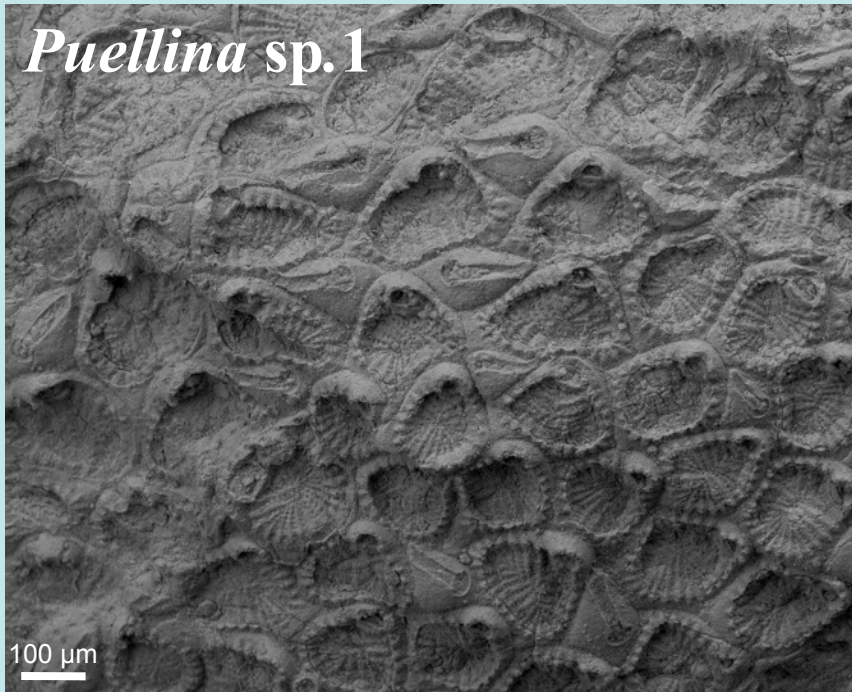
# Preliminary Results

- 1) *Stomatopora* sp.1
- 2) *Puellina* spp.
- 3) *Celleporidae* spp.
- 4) *Reptadeonella* cf. *cellulanus*
- 5) *Oncousoecia* sp.1
- 6) *Arthropoma* sp.1
- 7) *Plesiocleidochasma* cf. *normani*
- 8) *Lichenoporidae* spp.
- 9) ?*Herenthya* sp.1
- 10) ?*Setosinella* sp.1
- 11) *Steginoporella* sp.1
- 12) *Calyptotheca* sp.1
- 13) *Hippopodina* cf. *iririkiensis*
- 14) *Colatooeciidae* sp.1
- 15) *Rhynchozoon* sp.1
- 16) *Anasca* sp.1
- 17) *Cheilostome* sp.1

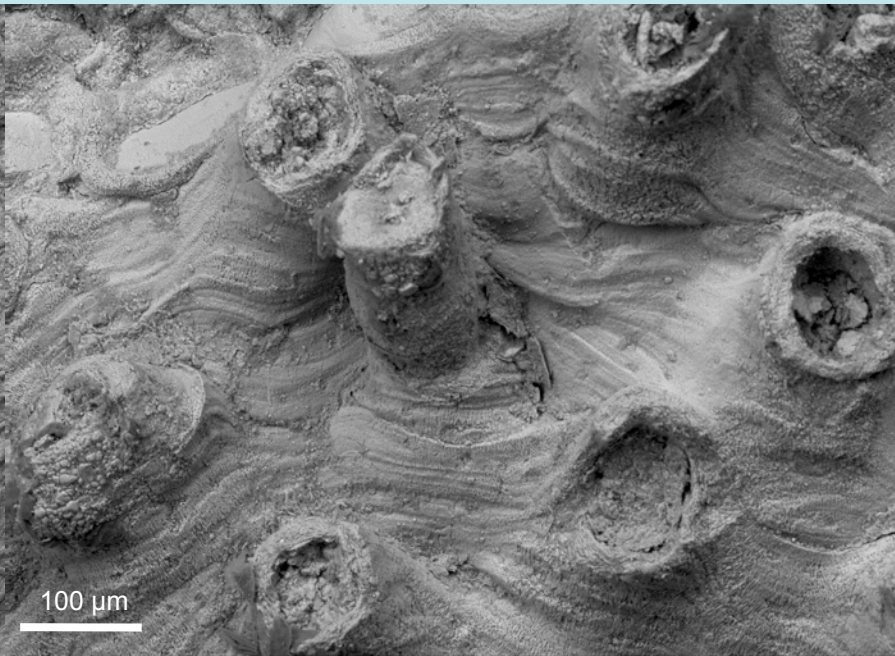
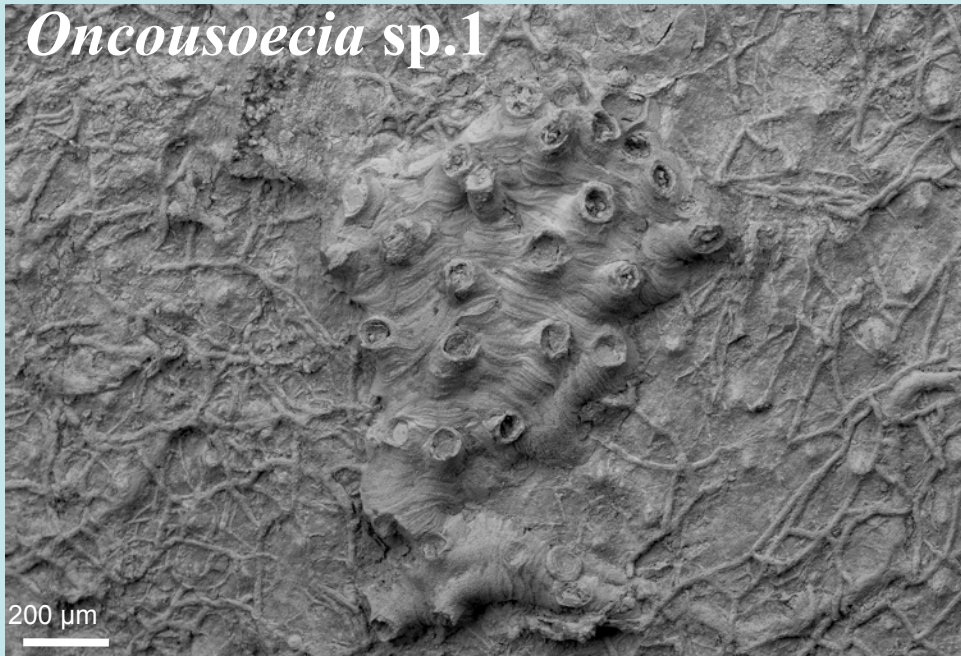
**Good preservation!**  
**Abundant!**

**19 encrusting species**

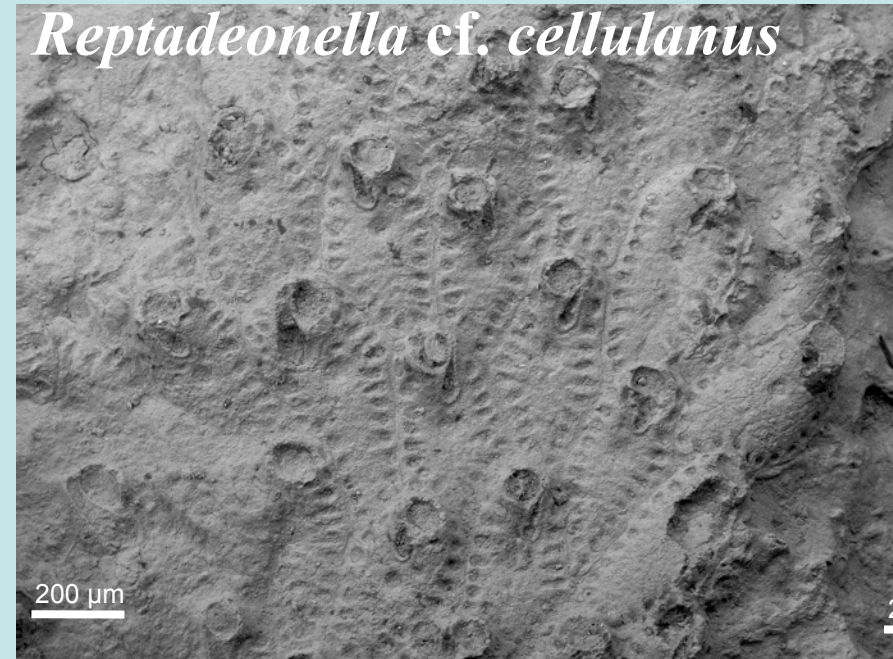
*Puellina* sp.1



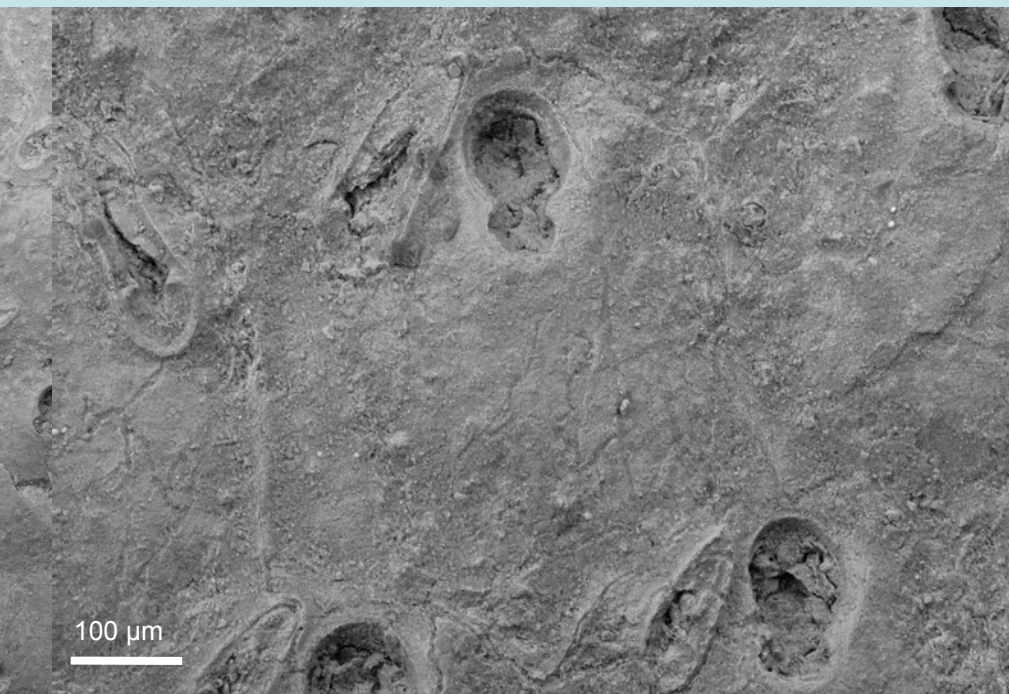
*Oncousoecia* sp.1



*Reptadeonella cf. cellulanus*



*Plesiocleidochasma cf. normani*



*Lichenoporidae* sp.

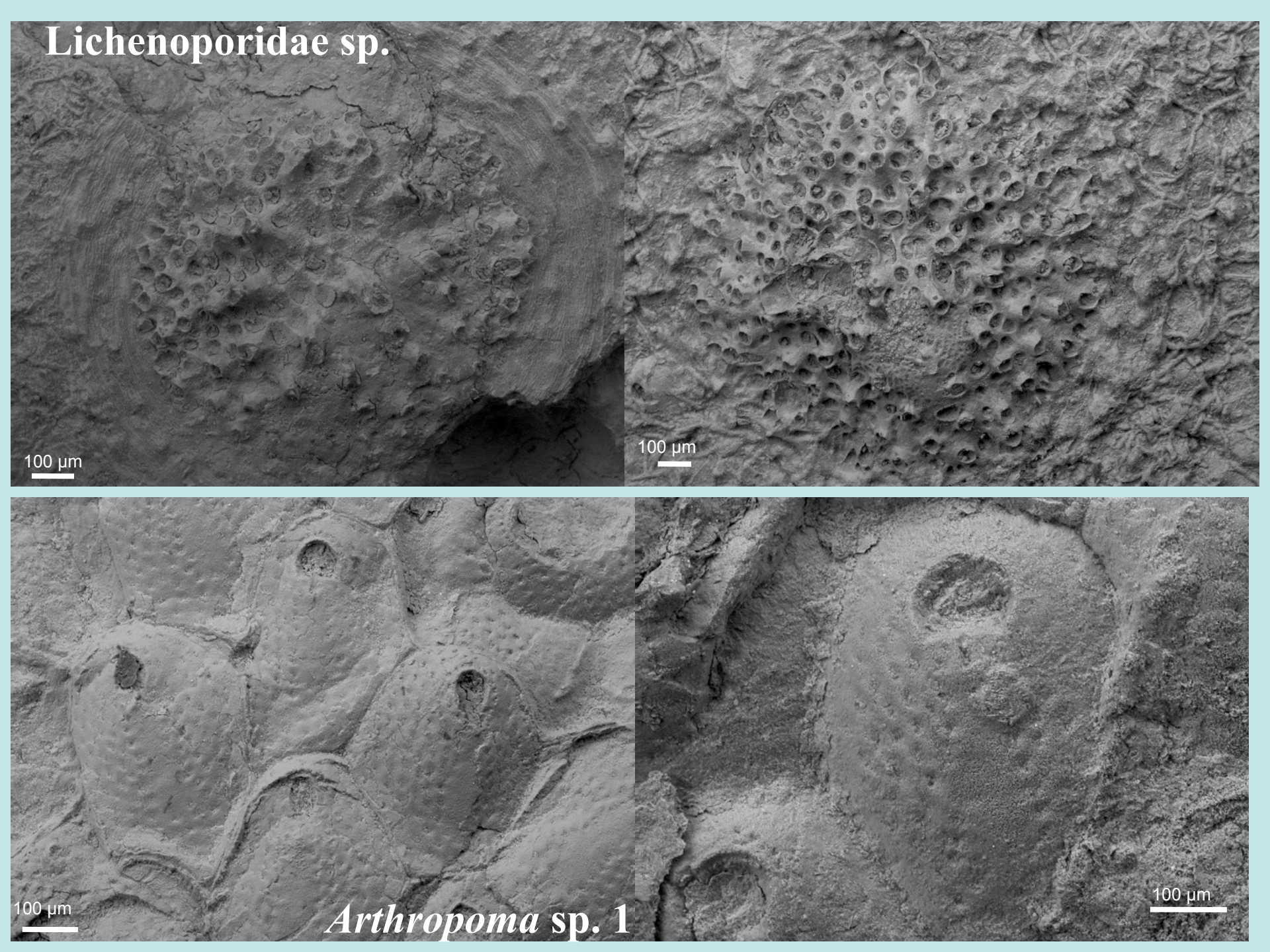
100  $\mu$ m

100  $\mu$ m

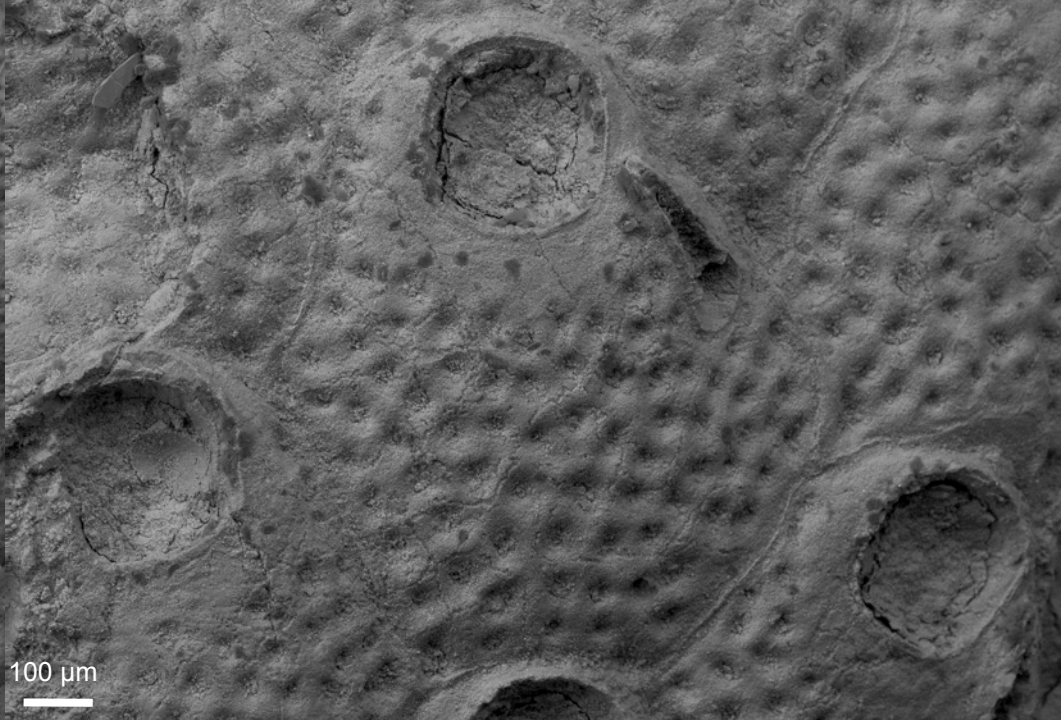
100  $\mu$ m

*Arthropoma* sp. 1

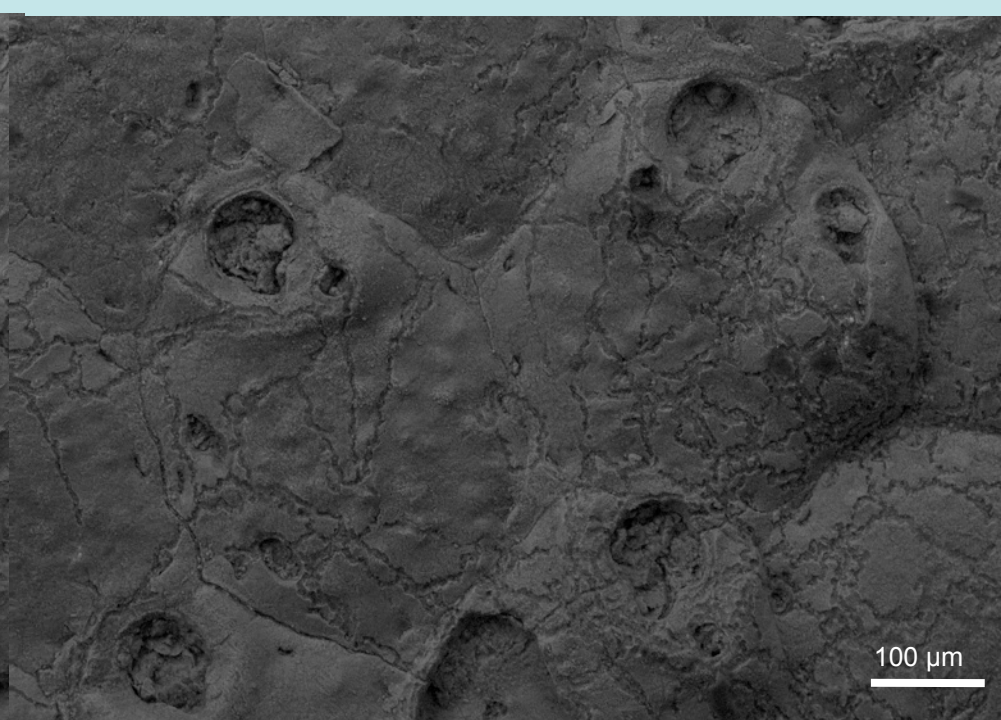
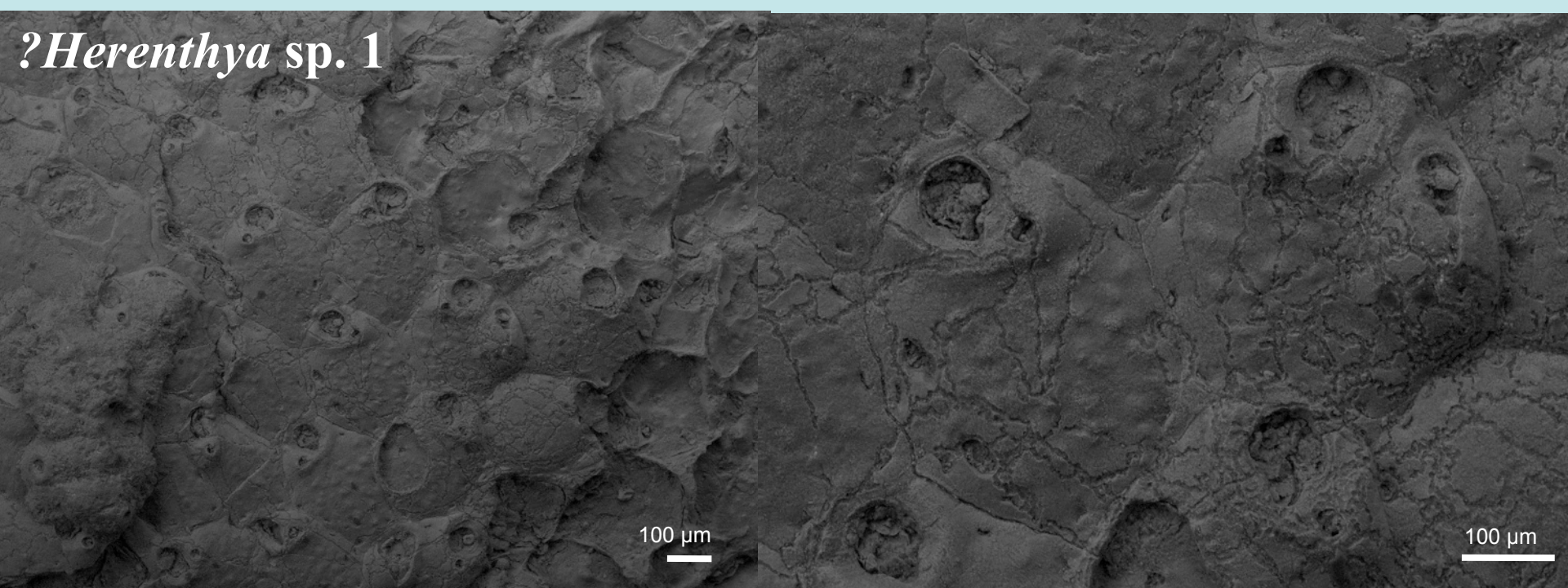
100  $\mu$ m



*Hippopodina cf. iririkiensis*



?*Herenthya* sp. 1



# Preliminary Results

- 1) *Margaretta* sp.1
- 2) *Nellia* sp.1
- 3) *Nellia* sp.2
- 4) *Canda* sp.1
- 5) Phidoloporidae spp.

- 1) *Skylonia* sp.1
- 2) *Actisecos* sp.1

5 erect

+

2 free living

+

- 1) *Plagioecia* sp.1
- 2) *Puellina* spp.
- 3) Celleporidae spp.
- 4) *Reptadeonella* cf. *cellulanus*
- 5) *Oncousoecia* sp.1
- 6) Onychocellidae sp.1
- 7) Cheilostome uniserial
- 8) Lichenoporidae spp.
- 9) ?*Herenthya* sp.1

- 10) *Monoporella* sp.1
- 11) *Steginoporella* sp.1
- 12) *Crepidacantha* sp.1
- 13) ?*Siphonoporella* cf. *ovalis*
- 14) Exechonellidae sp.1
- 15) Exechonellidae sp.2
- 16) *Cosciniopsis* sp.1
- 17) Ascophoran sp.1
- 18) Ascophoran sp.2

18 encrusting species

Bad preservation!!!

Few specimens!!!



# Preliminary Results

## Unit 4

- 1) *Margaretta* sp.1
- 2) *Nellia* sp.1
- 3) *Scrupocellaria* sp.1
- 4) Phidoloporidae spp.

- 1) *Semiflustrella* sp.1
- 2) *Puellina* spp.
- 3) Celleporidae spp.
- 4) *Reptadeonella* cf. *cellulanus*
- 5) Onychocellidae sp.1
- 6) Cheilostome sp.2
- 7) Lichenoporidae spp.

**Bad preservation!!!**

**4 erect**

**+**

**7 encrusting species**

**....but only one sample  
examined so far!**

# Conclusions

- 34 species so far in Unit 7
- 25 species so far in Unit 5
- 11 species so far in Unit 4
- 18 species in common between Unit 5 and Unit 7
- The most abundant taxa in Unit 7 are not present in Unit 5