FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG
FACULTY OF SCIENCES

What is boring? - Arctic reef structures as a habitat for boring organisms

Ines Pyko[1], Axel Munnecke[1], Christian Schulbert[1], Max Wisshak[2], Sebastian Teichert[1]

[1] GeoZentrum Nordbayern, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Loewenichstraße 28, D-91054, Germany
[2] Senckenberg am Meer, Abteilung Meeresforschung, Willhelmshaven, Südstrand 40, D-26382, Germany

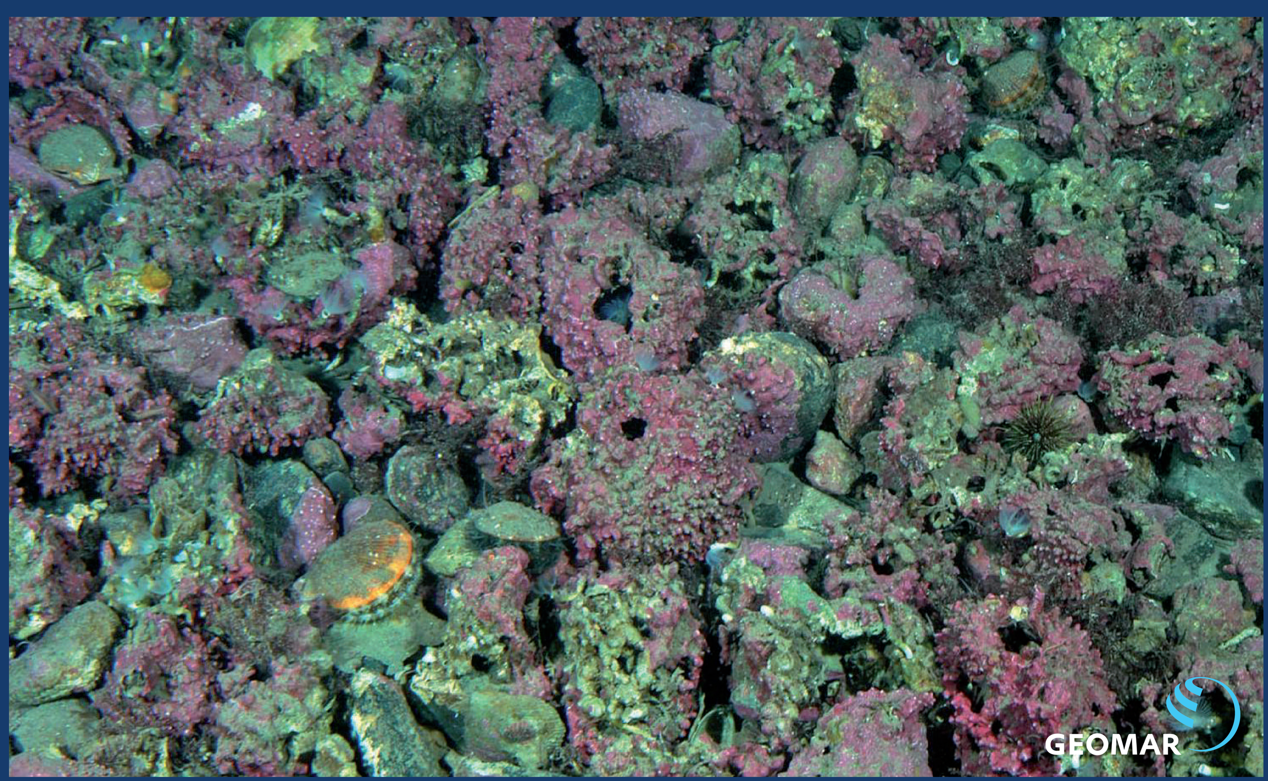
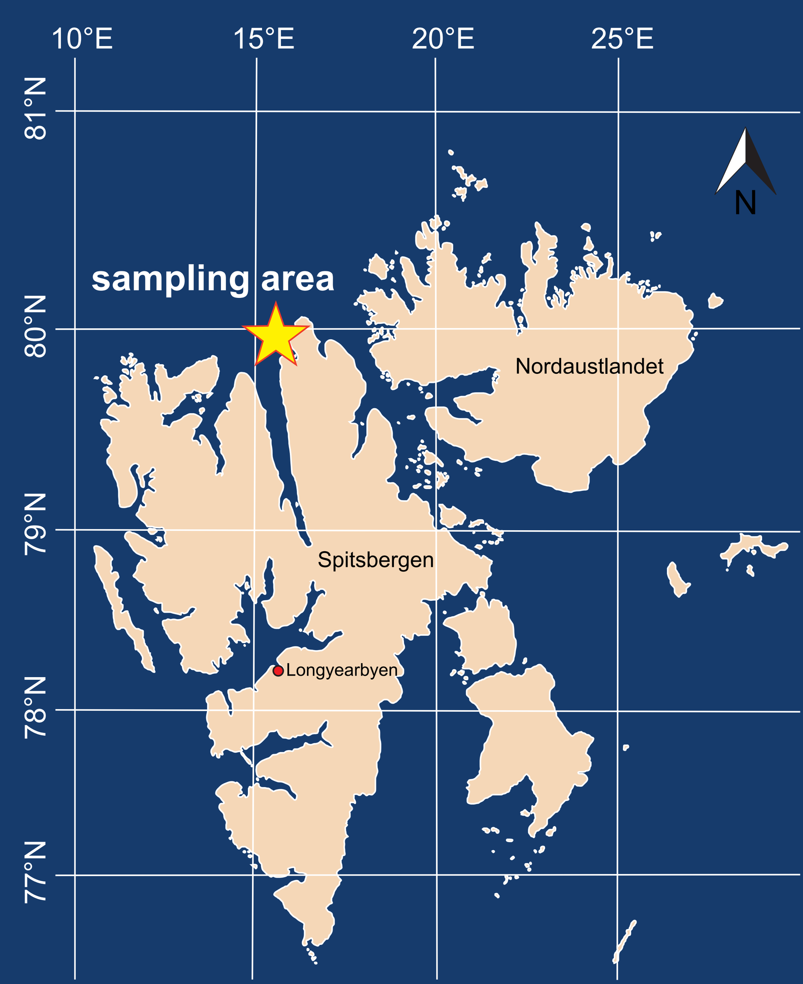


Fig. 1. Areas of the Svalbard shelf, which are covered by rhodolith provide an important habitat for many different organisms.

The coralline red algal species *Lithothamnion glaciale* forms rigid frameworks of magnesium calcite. These so called rhodoliths cover large areas of the Svalbard shelf (Fig. 1). Drilled by boring mussels, many rhodoliths become hollow ecospheres and their interior is intensely colonized by benthic macro- and megafauna.

But is the calcified skeleton of Arctic rhodoliths itself also a habitat for endolithic microorganisms?



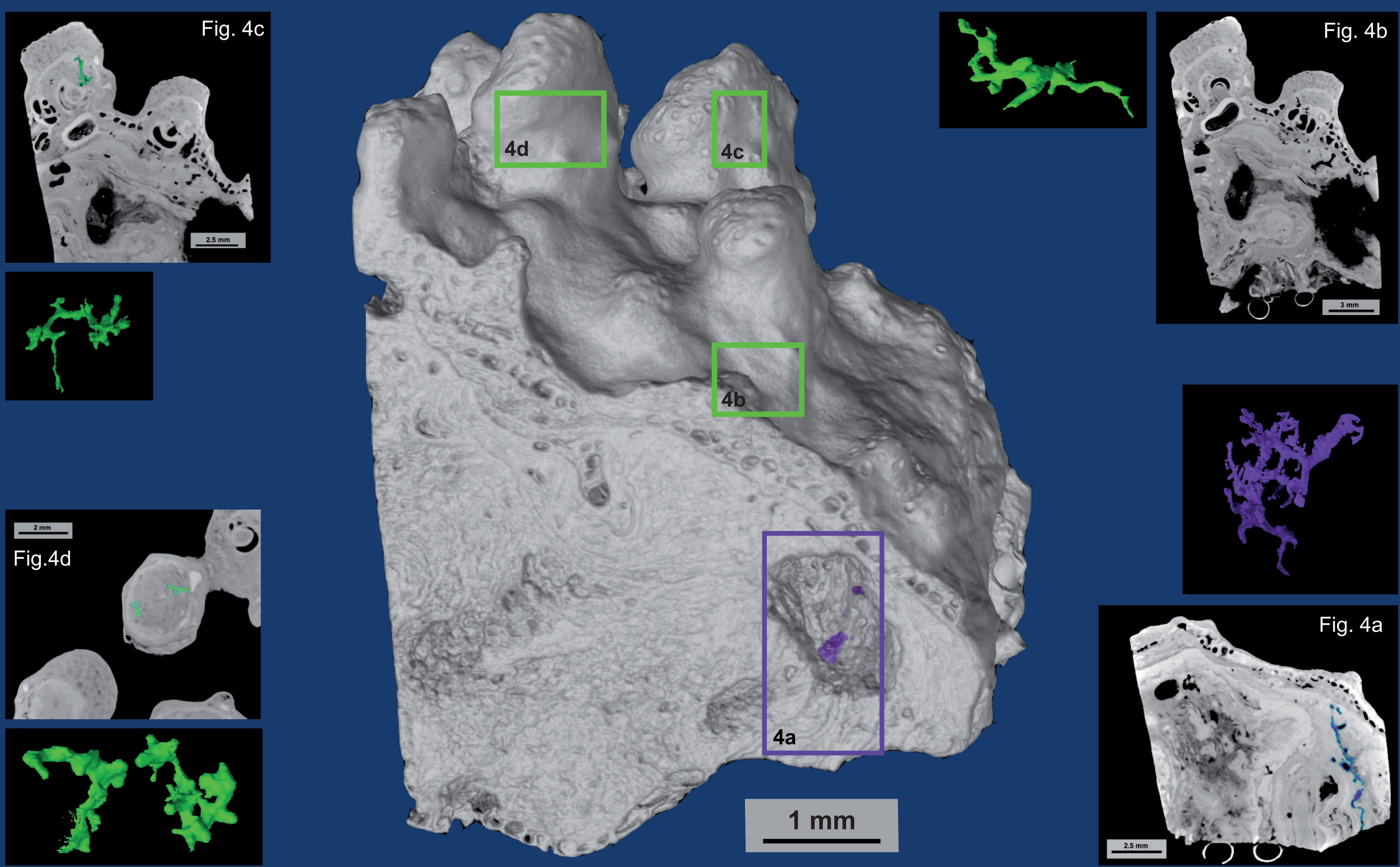


Fig. 4. µCT Scan (front view) of the sampled rhodolith from 25 m water depth. The coloured squares mark the position and approximate size of the detected microborings. a) Cross-section and the 3D model of the detected microboring in purple. *Pyrodendrina* were found in the dead part of the rhodolith sample. b-d) Cross-sections and 3D model of the detected microborings *Pyrodendrina* (green) in the living part of the sample.

Fig.2. Prepared samples were scanned with the institue own micro-computed tomography. With this method samples are not destroyed and can be used for subsequent analyses.

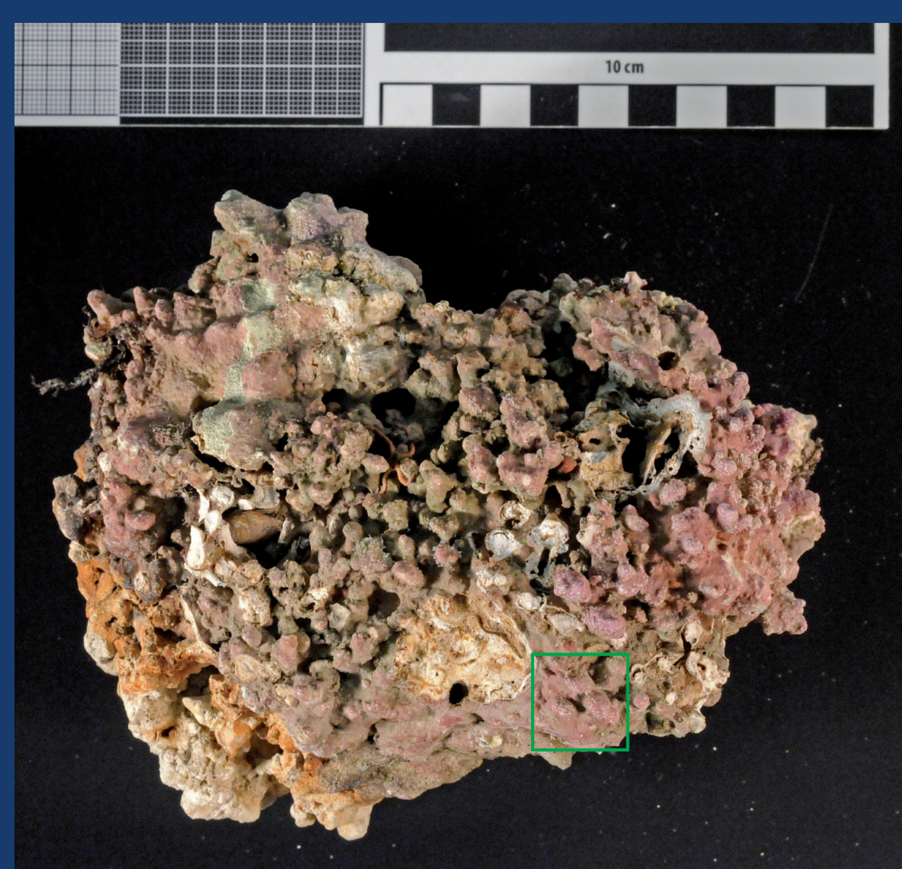


Fig. 3. The selected rhodolith from a water depth of 25m was sampled in the green square. Samples were choosen to contain both dead skeletal parts and living tissue of the rhodolith.

Based on a non-destructive 3D visualization via µCT (Fig. 2) we investigate rhodoliths from different water depths. Therefore, sampels are cut off from choosen rhodoliths with a diamond rock saw (Fig. 3). So far, we found two different dendritic microborings in the dead parts as well as in the living tissue of a rhodolith sampled in 25 m water depth (Fig. 4). The morphology of these microborings matches with the ichnogenera *Pyrodendrina arctica* and *Pyrodendrina villosa* (first described by Wisshak 2017 for cold waters). These results highlight the importance of the rhodolith dominated ecosystems in the Svalbard shelf area as a substrate for the Arctic microboring community.

References : Wisshak, M. (2017): Taming an ichnotaxonomical Pandora's box: revision of dendritic and rosetted microborings (ichnofamily: Dendrinidae), European Journal of Taxonomy 390: 1–99.