Stop 10: Pulli cliff

Peep Männik

Location: Latitude 58°36´52˝N, longitude 22°57´20˝E; Saare County, Estonia.
Stratigraphy: Sheinwoodian, Paramaja Mb of the Jaani RS and the Kesselaid Mb of the Jaagarahu RS.
Status: Cliff is under protection; no hammering, but loose material may be collected.
More information: https://geoloogia.info/en/locality/10237

The following text is modified from Männik & Nestor (2014).

The Pulli (=Oiu) cliff (Figs 10.1, 10.2) is located in the northeastern corner of Saaremaa, about 10 km northwest of the Orissaare settlement. The outcrop was first described by Schmidt (1858) as the Ojo cliff. Based mainly on sedimentological reconstructions, Jürgenson & Nestor (1990) suggested that the boundary between the Jaani and Jaagarahu regional stages is exposed in this section. In the Pulli section, dolomitic marlstones of the Mustjala(?) Member (Jaani Formation) and stratified vuggy and massive reefal (mudmound) dolostone of the Kesselaid Member (Muhu Formation) are exposed. These two lithologies (members) are separated by a distinct, strongly wavy contact.

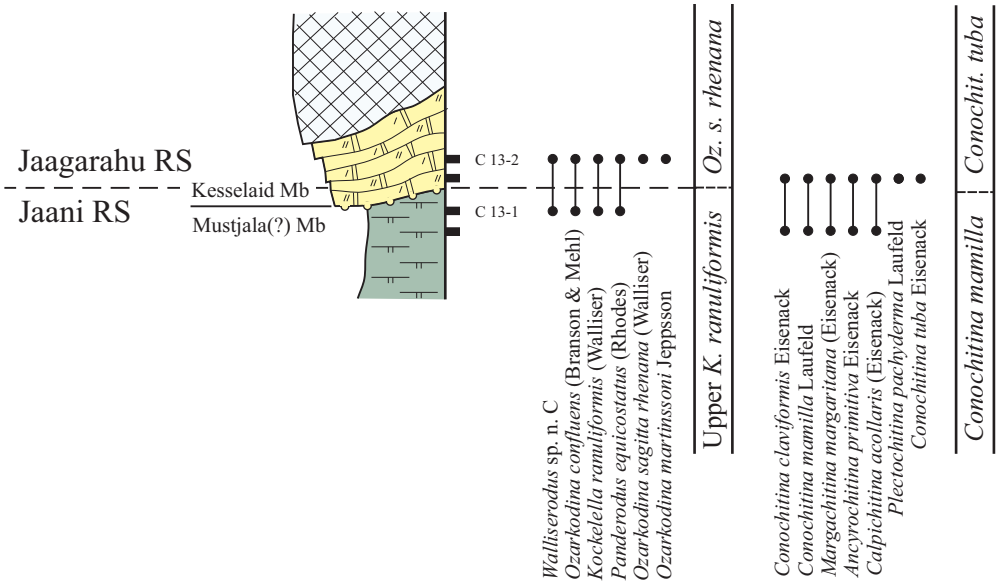

Fig. 10.1. The Pulli Cliff section. From left to right: regional stratigraphy, lithology; location of micropalaeontological samples; sample numbers; distribution of conodonts; conodont zones; distribution of chitinozoans; chitinozoan zones.

Description of the section

From the top:

Kesselaid Member, Jaagarahu Stage

The upper part of the section (up to 2 m) includes upward-expanding dolomitized mudmounds. They consist of fine- to microcrystalline vuggy dolostone with irregular structure and contain small irregular pockets of greenish argillaceous marlstone and brownish-grey dolostone. Mudmounds are underlain and laterally replaced by bluish- to greenish-grey medium-bedded fine-crystalline dolostone (thickness up to 1 m) with the relict texture of coarse-grained bioclastic grainstone, thin discontinuous argillaceous partings and abundant vugs of various sizes. The vugs were formed by the dissolution of calcitic shells of brachiopods, rugose corals, pelmatozoans and bryozoans. At the base of the Kesselaid dolostone, there is an intensely impregnated rusty discontinuity surface.

Mustjala(?) Member, Jaani Stage

1.05+ m – bluish-grey, in weathered state yellowish, argillaceous dolostone and dolomitic marlstone with rare pyritized fossil fragments (mainly brachiopods and trilobites), pyritic concretions and burrows.

Stratigraphy

Trilobites *Encrinurus punctatus* (Wahlenberg) and *Calymene blumenbachii* Brongniart have been identified from the marlstones of the Mustjala(?) Member. Two samples were processed for conodonts, one from the topmost Mustjala(?) Member and the other from the lowermost Kesselaid Member yielded similar faunas strongly dominated by *Panderodus equicostatus* (Rhodes). The appearance of *Ozarkodina sagitta rhenana* (Walliser) in the lowermost Kesselaid Member and its lack in the sample below indicates that the boundary between the Upper *Kockelella ranuliformis* (Walliser) and *O. s. rhenana* conodont zones, but also between the Jaani and Jaagarahu regional stages, lies close to the contact between the Mustjala(?) and Kesselaid members (Männik et al. 2024; Fig. 10.1). Similarly, the appearance of *Conochitina tuba* Eisenack in the lowermost Kesselaid Member suggests that the lower boundary of the *C. tuba* Chitinozoan Zone lies close to the same level.

Fig. 10.2. Pulli cliff. Photo: Gennadi Baranov, 2024.

References

Jürgenson, E., Nestor, H., 1990. Locality 5:2. Pulli cliff. In: *Field Meeting, Estonia 1990. An Excursion Guidebook* (Kaljo, D. & Nestor, E. eds). Estonian Academy of Sciences, Tallinn, Estonia, p. 159–160.

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