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Time and Life in the Silurian: a multidisciplinary approach

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Lowermost Silurian graptolites in Monte Cortoghiana Becciu (Genna Muxerru Formation, SW Sardinia)

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LOCALITY	about 150 m East of Monte Cortoghiana Becciu farm, at geographic coordinates 39°13'27.2" N, 8°30'07.2" E.
LITHOSTRATIGRAPHIC UNIT	Genna Muxerru Formation.
AGE	Early Rhuddanian (early Llandovery).
WHAT TO SEE	Well preserved flattened graptolites of the *Akidograptus ascensus-Parakidograptus acuminatus* Biozone are seen on almost every bedding plane of steeply dipping but little tectonized siliceous black shales.

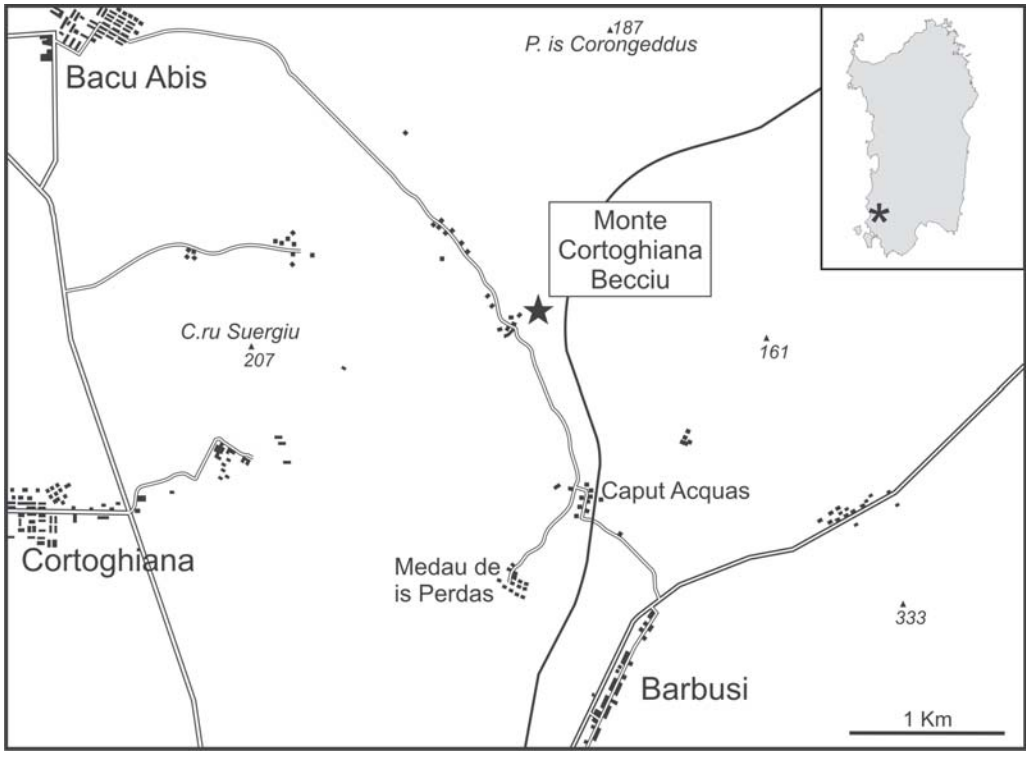


Fig. 1 - Location map of the Monte Cortoghiana Becciu outcrop.

Fig. 2 - The Monte Cortoghiana Becciu outcrop.

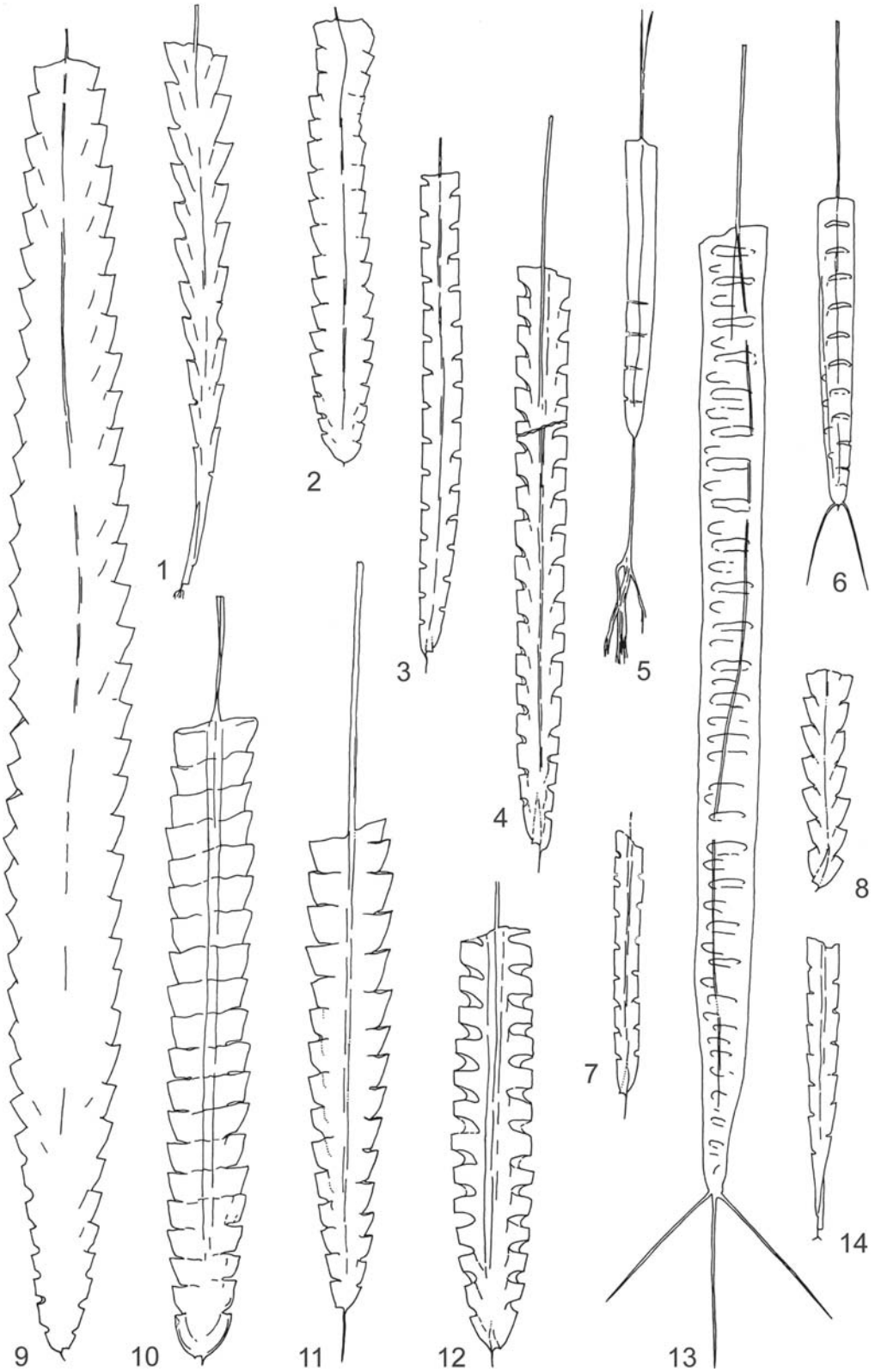
How to get there

The outcrop is located in a small eucalyptus grove near Monte Cortoghiana Becciu farm, about 1 Km to the South-East from Medau Brau village, between Bacu Abis and Caput Aquas. It will be reached with a short walk.

Plate 1

Graptolites from Monte Cortoghiana Becciu locality. All specimens from *ascensus* – *acuminatus* Biozone; all figs x 5.

Fig. 1 - *Parakidograptus acuminatus* (Nicholson, 1867), IPUM 22404.
Fig. 2 - *Neodiplograptus apographon* (Storch, 1983), IPUM 22464.
Fig. 3 - *Normalograptus angustus* (Perner, 1895), IPUM 22489.
Fig. 4 - *Normalograptus ajjeri* (Legrand, 1977), IPUM 22575.
Fig. 5 - *Normalograptus* sp. B, IPUM 22500a.
Fig. 6 - *Normalograptus longifilis* (Manck, 1924), IPUM 22482.
Fig. 7 - *Normalograptus* cf. *skeliphrus* Koren‘ & Melchin, 1993, IPUM 22580.
Fig. 8 - *Sudburigraptus*? *cortoghianensis* (Storch & Serpagli, 1993), IPUM 22586a.
Fig. 9 - *Neodiplograptus lanceolatus* Storch & Serpagli, 1993, IPUM 22477.
Fig. 10 - *Cystograptus ancestralis* Storch, 1985, IPUM 22490.
Fig. 11 - *Neodiplograptus parajanus* (Storch, 1983), IPUM 22473.
Fig. 12 - *Normalograptus crassus* Storch & Feist, 2008, IPUM 22588.
Fig. 13 - *Normalograptus trifilis* (Manck, 1923), IPUM 22402.
Fig. 14 - *Akidograptus ascensus* Davies, 1929, IPUM 22467.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Historical Outline

Well preserved and moderately diverse graptolites of the basal Silurian graptolite biozone have been encountered in several isolated exposures and subcrops in a dirt-road cutting and in the fields E and SE of Monte Cortoghiana Becciu (Gnoli et al., 1990). Four fossil sites (MCB 1-4) of nearly uniform age, all within *Akidograptus ascensus-Parakidograptus acuminatus* graptolite Biozone, were described by Storch & Serpagli (1993). The latter authors also provided systematic description of the graptolite fauna that was further discussed by Storch (1996) and Storch & Feist (2008). Present trench was situated at the subcrop, formerly designated as locality MCB 4 by Storch & Serpagli (1993).

Lithology

Thin-bedded black shale is locally partly bleached. Small, flat irregular vesicles remained from weathered pyrite lenticles.

Fossil content

Rich graptolite fauna comprises *Normalograptus angustus* (Perner), *Normalograptus ajjeri* (Legrand), *Normalograptus* cf. *skeliphrus* Koren‘ & Melchin, *Normalograptus* sp. B, *Normalograptus crassus* Storch & Feist (= *N. medius* of Storch & Serpagli, 1993)

Fig. 3 - Several rhabdosomes of the zonal index species *Parakidograptus acuminatus* (Nicholson) from Monte Cortoghiana Becciu locality. Scale bar = 5 mm.

– common in present trench, *Normalograptus trifilis* (Manck) – common, *Normalograptus longifilis* (= *N. trifilis* of Storch & Serpagli, 1993, Pl. 4, fig. 8, text-fig. 7H, I, K), *Neodiplograptus parajanus* (Storch), *Neodiplograptus lanceolatus* Storch & Serpagli (= *Diplograptus modestus* of Barca & Jaeger, 1990) – common in the lower part of the succession, *Neodiplograptus apographon* Storch – rare, *Cystograptus ancestralis* Storch (= *C. vesiculosus* of Jaeger, 1976 and Barca & Jaeger, 1990), *Sudburigraptus? cortoghianensis* (Storch & Serpagli) – rare, *Akidograptus ascensus* Davies and *Parakidograptus acuminatus* (Nicholson) – common in the trench. Some bedding planes are crowded by graptolite siculae.

Biostratigraphy

Akidograptus ascensus-Parakidograptus acuminatus graptolite Biozone. Hirnantian strata are missing in the neighborhood, adjacent succession belongs in Late Ordovician Domusnovas Formation (Leone et al., 1991). Biostratigraphic analysis of the graptolite assemblage carried out by Storch (1996) indicates that the lowermost and the uppermost parts of the *ascensus-acuminatus* Biozone are probably missing, presumably cut-off by tectonics.

Further Notes

Silurian black shales are several metres thick and tectonically bounded in Monte Cortoghiana Becciu. Thus, the complete thickness of the basal Silurian graptolite biozone, and the Ordovician-Silurian interface itself, remain unknown in southwestern Sardinia.

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