

The “Ockerkalk” limestone in the Genna Ciuerciu Section

CARLO CORRADINI, ANNALISA FERRETTI and ENRICO SERPAGLI

C. Corradini - Dipartimento di Scienze della Terra, Università di Cagliari, via Trentino 51, I-09127 Cagliari (Italy); corradin@unica.it

A. Ferretti, E. Serpagli - Dipartimento del Museo di Paleobiologia e dell'Orto Botanico, Università di Modena e Reggio Emilia, via Università 4, I-41100 Modena (Italy); ferretti@unimo.it, serpagli@unimo.it

LOCALITY About 1 km from the Silius village, along the road to S. Andrea Frius.

STRATIGRAPHIC UNIT “Ockerkalk” (informal unit).

AGE Late Silurian (Ludlow-Pridoli); *P. siluricus* to *Oul. el. detortus* conodont zones.

LOCATION

The Genna Ciuerciu Section is located in the Silius area, just along the Sant'Andrea Frius-Silius road (Fig. 1). A continuous sequence of the “Ockerkalk” limestone of Late Silurian age is here exposed (Fig. 2). The Ludlow/Pridoli boundary is also visible in the section.

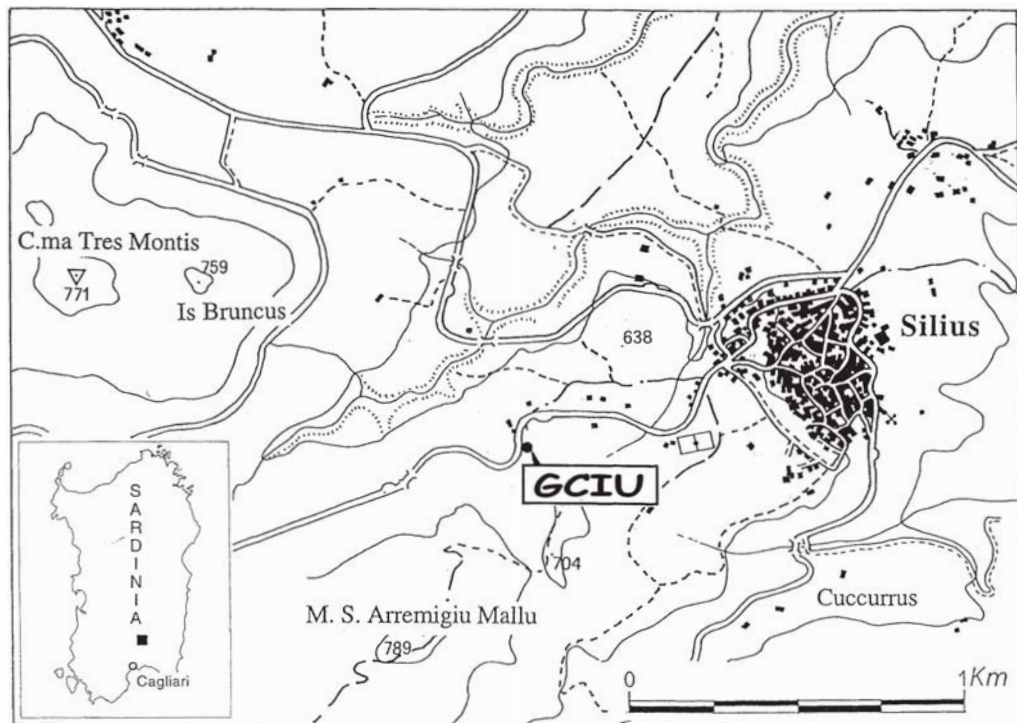


Fig. 1 - Location map of the Genna Ciuerciu Section.

HISTORICAL OUTLINE

This locality has been stratigraphically studied only quite recently (Barca *et al.*, 1994, 1995; Corradini *et al.*, 1998). Together with the nearby Silius I° Section, the Genna Ciuerciu Section is a reference section for the Sardinian “Ockerkalk”.

Both sections allowed the first precise stratigraphic assignment with conodonts of the “Ockerkalk”, formerly dated only on the basis of the graptolite content present below and above the unit.

The “Ockerkalk” limestone documented for the first time in Sardinia the *Pedavis latialata*, *Ozarkodina snajdri* and *Ozarkodina crispa* conodont biozones. The same biozones had not been recovered in the southwestern part of the island, where a calcareous unit, known to older authors as “*Orthoceras*” limestone for the abundant cephalopods there present, spans from late Llandovery to earliest Lochkovian.

LITHOLOGY

The “Ockerkalk” is an argillaceous limestone with a distinctive flaser-texture. Its blue-grey colour is frequently weathered to ochre, as also the name suggests. Over 25 metres of nodular limestone in typical “Ockerkalk” facies are exposed in the Genna Ciuerciu Section.

The section is continuous only up to the top of the hill (levels 0 to 24). As evidenced by the repetition of some conodont biozones, upper beds cropping out on the eastern slope of the hill (levels 25 to 33, for a thickness of about 10 metres) are separated from the lower part of the section by a local overthrust (Fig. 3).

PALAEOBIOLOGICAL CONTENT

Loboliths and crinoid stems, all parallel to bedding, are the only macrofossils clearly visible in the outcrop. Loboliths, with well-preserved local geopetal structures, occur



Fig. 2 - Panoramic view of the Genna Ciuerciu Section.

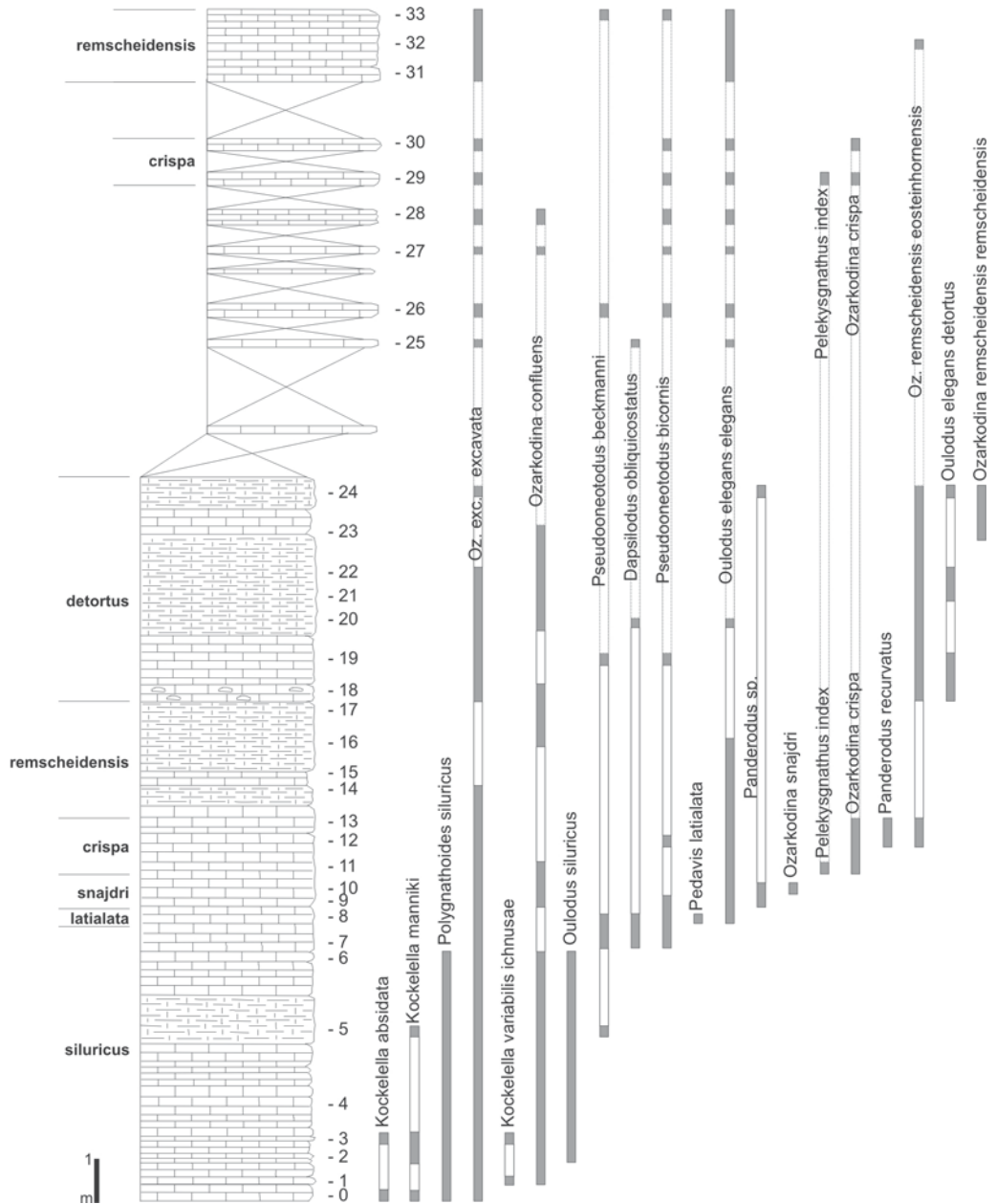


Fig. 3 - Lithostratigraphic column of the Genna Ciurciu Section. Conodont taxa range is reported on the right, conodont biozones on the left (after Corradini *et al.*, 1998).

with their typical ovoidal outline in level 18 (Fig. 4). The diameter of their bulbous holdfasts may be as much as 20 cm, in full agreement with other reports. Unfortunately, owing to matrix lithification, they can not be isolated differently from those found in the Fluminimaggiore area (Iglesiente; southwestern Sardinia) in a slightly younger horizon. The lobolith bearing horizon is assigned to the *Oul. el. detortus* conodont Zone in good stratigraphic agreement with other scyphocrinoid records in SE Sardinia (reported but



Fig. 4 - A lobolith from level 18. Scale bar = 2 cm.

not stratigraphically assigned by Jaeger, 1977 and Barca & Jaeger, 1990) and with the uppermost Silurian lobolith-horizon known in Europe and in North Africa (Haude, 1972, 1992).

The “Ockerkalk” is a micritic mudstone with sparse biotrititic concentrations of thin-shelled bivalves, ostracodes, brachiopods, gastropods, trilobites, crinoids, rare small cephalopods and sponge spiculae (Ferretti & Serpagli, 1996). A crinoidal content increase is observable in thin sections across levels 16 and 18 (Fig. 5), belonging to the bank which ends up in the lobolith-level.

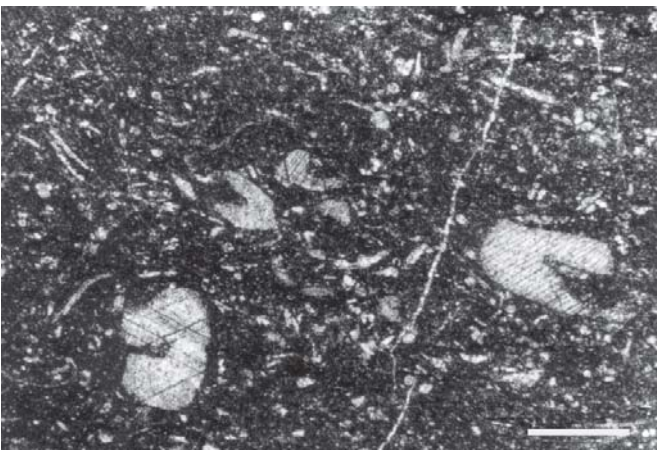


Fig. 5 - Crinoidal wackestone. Level 18. Scale bar = 5 mm.

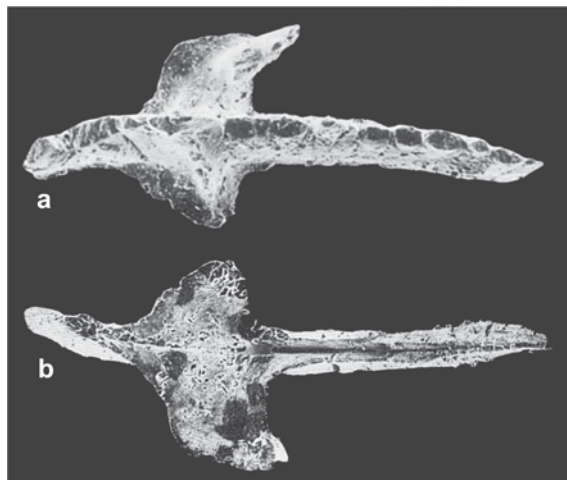


Fig. 6 - *Kockelella maenniki* Serpagli & Corradini, 1998; IPUM 25845; Level 3, *Pol. siluricus* Zone. a: upper view; b: lower view; x80 [Holotype refigured after Serpagli & Corradini (1998)].

Rare undetermined conodonts were reported in the Thuringian "Ockerkalk" (Jaeger, 1977). The unit had been, consequently, dated only with graptolites present in the underlying and overlying shales. The Genna Ciuerciu Section permitted, for the first time, a precise stratigraphic assignment of the "Ockerkalk" on the basis of conodonts. The rich conodont fauna (Fig. 3) includes twenty conodont apparatuses belonging to nine genera (Corradini *et al.*, 1998). The preservation is not particularly good, many specimens being texturally altered, either by regional metamorphism or diagenesis. The Color Alteration Index (CAI) of the studied samples is 4.5-5 which indicates heating in excess of 250-300°C, probably related to the close intrusive Hercynian mass of Mt. Settefratelli cropping out in the extreme southeastern part of the island. The occurrence rate is very variable, ranging from 5 to 120 elements per kg. Level 3, the richest for conodont productivity, is the *Stratum Typicum* of *Kockelella maenniki* Serpagli & Corradini, 1998 (Fig. 6), the most evolved species of Kockelellids.

BIOSTRATIGRAPHY

Six Late Silurian conodont zones have been reported from this section: *siluricus* (levels 0-7), *latialata* (level 8), *snajdri* (levels 9-10), *crispa* (levels 11-13 and 29-30), *remscheidensis* (levels 14-17 and 31-33) and *detortus* (levels 18-24).

In the Genna Ciuerciu Section the Ludlow-Pridoli boundary is located between levels 13 and 14.

PALAEOENVIRONMENT

A quiet pelagic environment below normal wave-base and with bioclastic input variable in time and probably in space, especially in the crinoidal fraction, was suggested (Barca *et al.*, 1995). Interestingly, it can be pointed out that the crinoidal enrichment is higher in the present section if compared to the nearby Silius I° Section (Corradini *et al.*, 1998).

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