

The “Clymeniae Limestone” in the Corona Mizziu Sections

CARLO CORRADINI

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

LOCALITY	About 500 m. North-east of Villasalto village.
STRATIGRAPHIC UNIT	“Calcari a Clymeniae” (informal name)
AGE	Late Devonian (Famennian); Lower <i>crepida</i> - Lower <i>praesulcata</i> conodont zones

LOCATION

The Corona Mizziu Sections are located a few hundred meters north-east of the Villasalto village (Fig.1) and can be reached with a few minutes walk from the road to the old abandoned antimony Su Suergiu Mine. The name of the sections, Corona Mizziu I and II (CM I and CM II, respectively), is after the local name of this area.

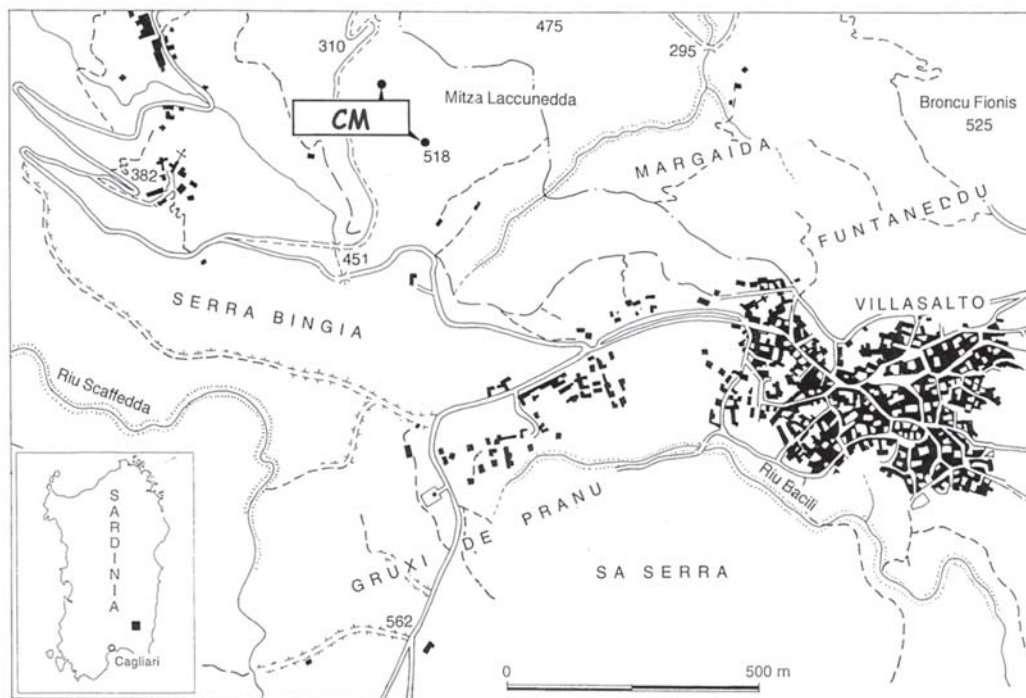


Fig. 1 - Location map of the Corona Mizziu Sections.

More than 30 m. of massive limestone are exposed only apparently in continuity, as the biostratigraphic study demonstrates that the strong tectonics of the area also affected the sections. The well known “Villasalto overthrust”, one of the major tectonic features of SE Sardinia separating the Sarrabus Tectonic Unit from the Gerrei Tectonic Unit, lies only a few dozen metres southward from the outcrops.

HISTORICAL OUTLINE

This locality has been well known for many years. Lovisato (1894) recorded the occurrence of clymenids and goniatites in limestones cropping out between the Su Suergiu Mine and the Villasalto village.

Furthermore, the first conodonts from Sardinia were recovered here (Pomesano Cherchi, 1963) and rich faunas from these outcrops have been studied by Olivieri (1965, 1970) and Corradini (1998a, b, c).

LITHOLOGY AND PALAEOLOGY

The calcareous sediments of Late Devonian age of South-eastern Sardinia are mainly represented by massive limestone. Such rocks are informally named “Clymeniae limestone”, because of the occurrence of ammonites in some levels. The Corona Mizziu I and II sections exposed about 18 and 30 meters of well stratified massive limestone, respectively.

Macrofossils are very rare in both the Corona Mizziu Sections, where only a few ammonites and rare crinoid stems occur in the central part of the CM I Section (layers from CM I 19 to CM I 23; Lower *trachytera* to Middle *expansa* Zone); it should be noted that ammonites are quite abundant only in the latter bed (Fig.3). In heavy fractions, beside conodonts, very rare brachiopods and fish teeth are present.

The microfacies is always represented by a “poorly fossiliferous micrite”, with a few fossil remains only in the ammonite-bearing beds. Here ostracodes, small shells



Fig. 2 – Panoramic view of the Corona Mizziu Sections. The CM I is located on the hill on the left; the CM II Section on the right one.

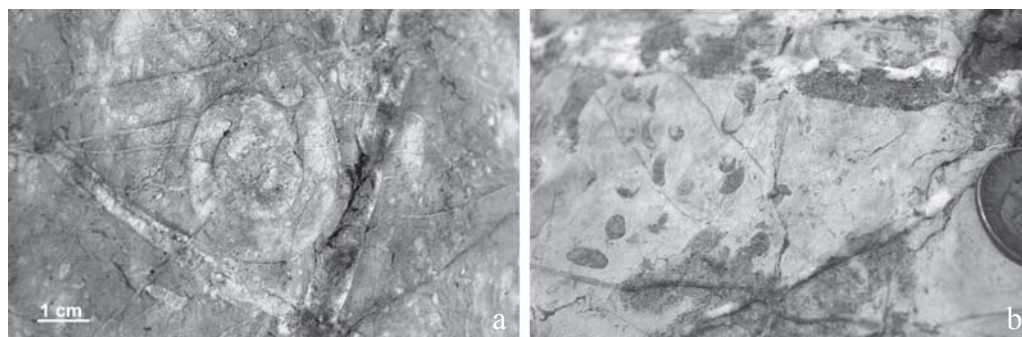


Fig. 3 – The ammonoid rich bed (CM I 23).

(brachiopods?, bivalves?), fragments of echinoderms and gastropods, as well as rare trilobites can be observed.

Conodonts are quite always abundant throughout the sections. Ninety-five taxa, belonging to twelve genera, have been recovered from this locality. The state of preservation is generally quite good, but in some layers specimens are sometime incomplete or deformed.

The conodont association is dominated by *Palmatolepis*, which in some layers represents more than 90% of the fauna; *Polygnathus* is always present, but is very abundant only in the upper part of the *postera* Zone, while the occurrence of bispathodids and icriodids is significant only in some levels.

A few taxa have their *Type-locality* in the Corona Mizziu I Section (Fig. 4): *Icriodus olivierii* Corradini, 1998 (level CM I 1), *Polygnathus serpaglii* Corradini, 1998 (level CM I 18C) and *Polygnathus villasalti* Corradini, 1998 (level CM I 22); furthermore, *Palmatolepis delicatolobata* Olivieri, 1970 come from this locality, too, but it is now impossible to recognise the *Stratum typicum*.

BIOSTRATIGRAPHY

Sixteen conodont zones in continuous sequence from the Lower *crepida* to the Lower *praesulcata* have been recognised in this locality. Only in the *postera* interval, it is impossible to split between the Early and Late *postera* Zone, because the marker of the latter is missing, as well as any other stratigraphically important taxon.

The Corona Mizziu I Section ranges from Lower *rhomboidea* to Lower *praesulcata* Zone (level CM I 26), but the upper part (CM I 27-36) is reversed, because of tectonics. Such deformation has been evidenced only by the biostratigraphic study of conodont fauna, which showed that the same conodont association occurs both at the base and at the top of the outcrop.

The Corona Mizziu II Section is slightly older: in fact, it ranges from the Lower *crepida* Zone to the Lower *trachytera* Zone; however the Uppermost *marginifera* Zone has not been documented, probably owing the lack of exposure between levels CM II 9 and CM II 10.

ENVIRONMENT

A pelagic environment may be supposed for these limestones, both on the basis of microfacies and absence of benthic fauna; furthermore, also the conodont biofacies indicate an off-shore environment.

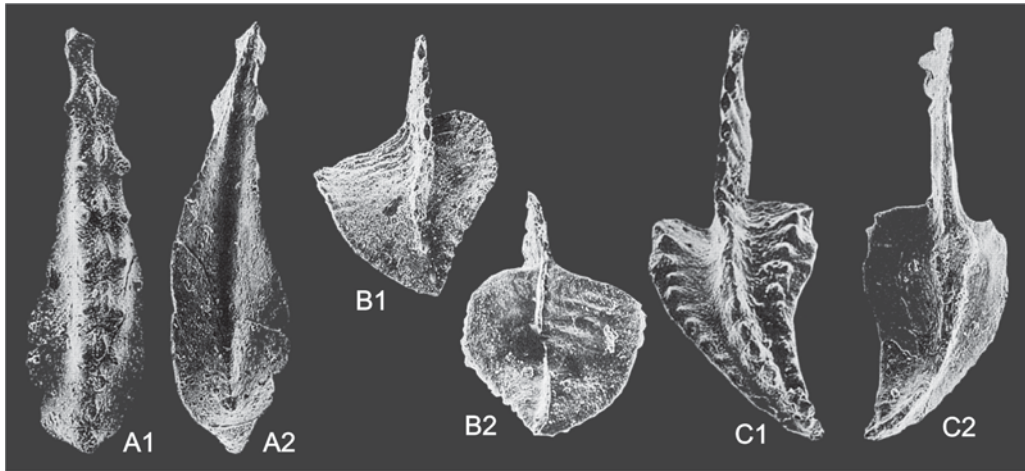


Fig. 4 – A. *Icriodus olivierii* Corradini, 1998; IPUM 25956; level CM I 1, Lower *rhomboidea* Zone; upper (A1) and lower (A2) views, x75 [Holotype refigured after Corradini (1998)]. B. *Polygnathus villasalti* Corradini, 1998; IPUM 25952; level CM I 22, Lower *expansa* Zone; upper (B1) and lower (B2) views, x90 [Holotype refigured after Corradini (1998)]. C. *Polygnathus serpaglii* Corradini, 1998; IPUM 25955; level CM I 18C, Lower *trachytera* Zone; upper (C1) and lower (C2) views, x75 [Holotype refigured after Corradini (1998)].

ACKNOWLEDGEMENTS

This paper is a contribution to IGCP Project n. 421, “North Gondwana Mid-Palaeozoic bioevent/biogeography patterns in relation to crustal dynamics”. Financial support was provided by grants from MURST (Cofin and ex 60%, resp. E. Serpagli).

REFERENCES

- CORRADINI, C., 1998a, Conodonti del Devoniano superiore dei “Calcarei a Clymeniae” di Villasalto (Sardegna Sud-Orientale): Tassonomia e Biostratigrafia: Unpubl. PhD Thesis, Università di Modena: 1-139.
- CORRADINI, C., 1998b, New Devonian (Famennian) taxa of Polygnathids and Icriodids (Conodonts) from Sardinia. In Serpagli, E. (Ed.), Sardinia Field Trip Guide-book, ECOS VII: Giorn. Geologia, 60, sp. issue: 89-92.
- CORRADINI, C., 1998c, Famennian conodonts from two sections near Villasalto. In Serpagli, E. (Ed.), Sardinia Field Trip Guide-book, ECOS VII: Giorn. Geologia, 60, sp. issue: 122-135.
- LOVISATO, D., 1894, Il Devoniano nel Gerrei (Sardegna): Atti R. Acc. Lincei, Rend. Cl. Sc. Fis. Mat. Nat., 3: 460-470.
- OLIVIERI, R., 1965, L’aspetto della fauna a Conodonti del Devoniano superiore del Gerrei (Sardegna): Boll. Soc. Paleont. Ital., 4 (1): 28-63.
- OLIVIERI, R., 1970, Conodonti e zonatura del Devoniano superiore e riconoscimento del Carbonifero inferiore nei calcari di Corona Mizziu (Gerrei, Sardegna): Boll. Soc. Paleont. Ital., 8 (2): 63-152.
- POMESANO CHERCHI, A., 1963, I primi conodonti della Sardegna nei calcari neodevonici del Gerrei: Ist. Geol. Paleont. Univ. Cagliari, 2 (7): 1-11.