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The Lower Devonian Upper Graptolitic Shales in the Sa Ruinosa Section (SE Sardinia)

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LOCALITY	about 100 m long exposure along the road SS 125, north of Villaputzu, at geographic coordinates 39°27'17"N, 9°34'16"E.
LITHOTRATIGRAPHIC UNIT	Upper Graptolitic Shales (informal unit).
AGE	Early Devonian (Lochkovian), <i>M. praehercynicus</i> Biozone.
WHAT TO SEE	siliceous black or pale-grey, bleached shales with flattened graptolite rhabdosomes; disarticulated columnals, stems, and calyces of crinoids.

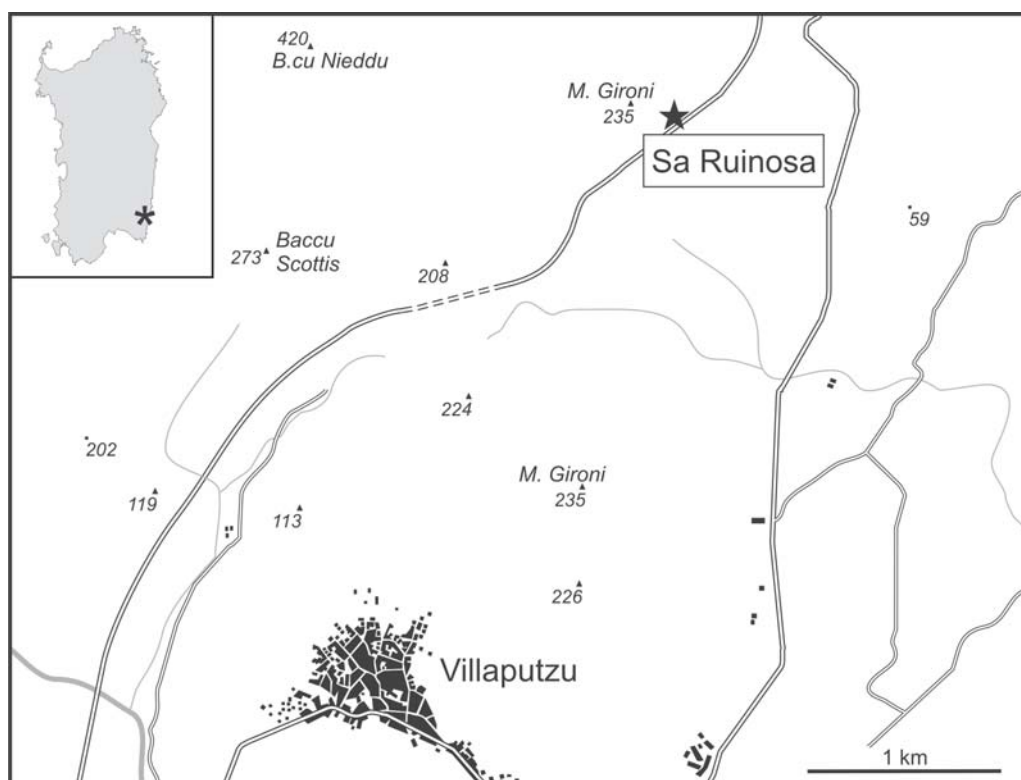


Fig. 1- Location map of the Sa Ruinosa Section.



Fig. 2 - General view of the Sa Ruinosa section.

HOW TO GET THERE

The “Sa Ruinosa” section is a large exposure located at the 52,6 km of the new road SS 125, north of Villaputzu, along the left side of the road (Fig.1).

HISTORICAL OUTLINE

The “Sa Ruinosa” section is a new exposure, discovered after the construction of the new road SS 125 that passes around the villages of San Vito and Villaputzu. In this area the graptolitic shales were documented for the first time by Helmcke (1973), Jaeger (1976, 1977) and Barca & Jaeger (1990) in the Baccu Scottis section, near the village of Villaputzu, not far from “Sa Ruinosa” locality. Systematic description of the graptolite fauna of Baccu Scottis section was published by Rickards et al. (1995).

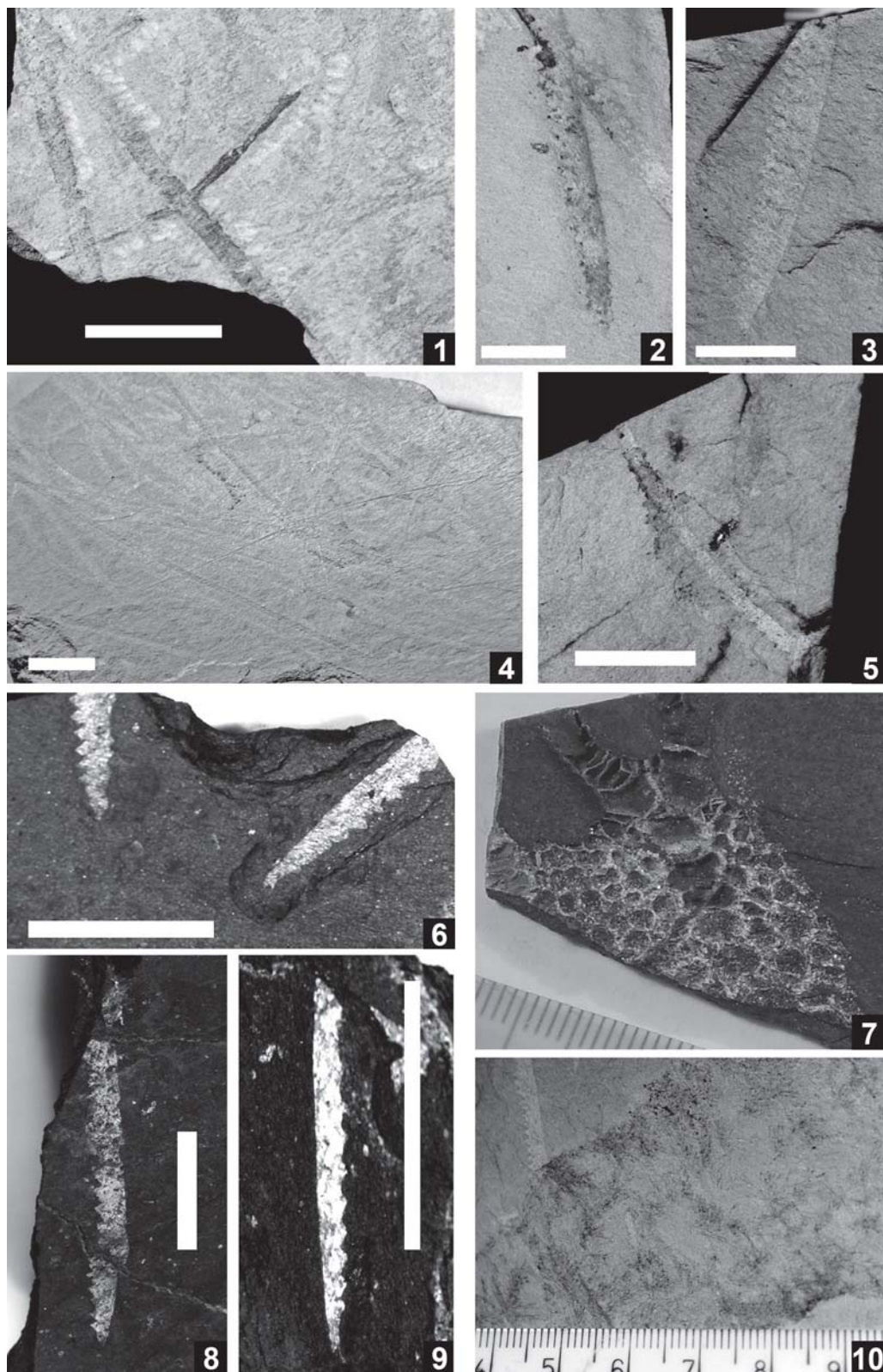
LITHOLOGY

The Sa Ruinosa section is composed by N-S oriented, about 30 m thick succession of black carbon-rich slates affected by cleavage, faulting and small-scale folding (Fig. 2). Black shale unit neighbours with southwards dipping body of massive Ockerkalk. Black shales succession deposited in a pelagic environment, under anoxic conditions. Original pyrite rich black shales (alum shales sensu Barca & Jaeger, 1990), have been transformed into cleaved chloritic slates markedly bleached by surface weathering processes. Prominent subcircular cavities, partly infilled by limonite, are present in the black-shale succession, mainly concentrated in distinct levels. Former limestone nodules are markedly associated with distinctive scyphocrinoid stems and may be interpreted, with some reservation, as scyphocrinoid loboliths.

Plate 1

- Fig. 1 - *Abiesgraptus multiramosus* Hundt, 1935.
Figs. 2-3 - *Monograptus praehercynicus* Jaeger, 1959.
Figs. 4-5 - *Linograptus posthumus* (Richter, 1875), general view (4); detailed view (5).
Figs. 6-8 - *Monograptus* sp. 1.
Fig. 9 - Calyces of a pelagic crinoid.
Fig. 10 - Colony of encrusting bryozoans on a probable cephalopod shell.

Scale bar = 1 cm.



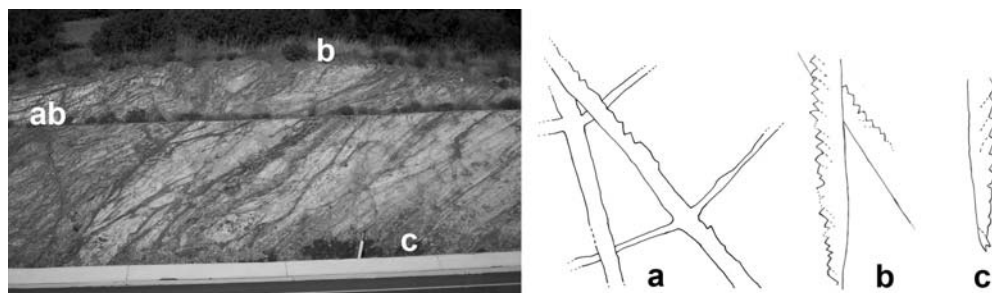


Fig. 3 - Occurrence of graptolite taxa in the Sa Ruinosa Section. a) *Abiesgraptus multiramosus* Hundt, 1935; b) *Monograptus praehercynicus* Jaeger, 1959; c) *Monograptus* sp. 1. (sketched drawings from Paschina, 2008).

FOSSIL CONTENT

In the Sa Ruinosa section uncommon graptolite finds were confined in several isolated places (Fig. 3). Elsewhere the delicate fossils were damaged due to prominent cleavage and alteration of the shale. Graptolite taxa so far recorded in the Sa Ruinosa section comprise: *Abiesgraptus multiramosus* Hundt, *Linograptus posthumus* (Richter) and *Monograptus praehercynicus* Jaeger, that are recorded in the *praehercynicus* Biozone in the Baccu Scottis section (Jaeger 1976, 1977). Rickards et al. (1995) correlate Jaeger's *praehercynicus* Zone with late *uniformis* and early *hercynicus* biozones of other authors. *Monograptus* sp.1 has been encountered only in one part of the section and, unfavourable preservation prevents more accurate determination of the species.

Other fauna is mainly represented by pelagic crinoids, preserved as stems, calyces and disarticulated columnals in all the section in uniform way. Moreover, possible encrusting bryozoans (Pl. 1 fig. 10) and one poorly preserved bivalve have been reported by Paschina (2008).

BIOSTRATIGRAPHY

The occurrence of *Monograptus praehercynicus* associated with *Abiesgraptus multiramosus* indicate *M. praehercynicus* Biozone of the Early Devonian age (Lochkovian).

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