

Monte Vaccargiu: Bajocian fresh water/brackish deposits with marine intercalations

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LOCALITY About 3 km north-west of Fertilia, at the foot of the Monte Vaccargiu massif.

AGE Bajocian.

LOCATION

Abandoned quarry on N-E slope of height 185, between Monte Vaccargiu and Monte Istidu (Fig.1). This quarry is situated immediately south-west of a large reservoir.

HISTORICAL OUTLINE

A preliminary description of the exposed beds was given by Cherchi & Schroeder (*in* Ashraf *et al.*, 1984, p. 2-4). In that paper Ashraf described a rich and well preserved microflora (22 genera, resp. 30 species). The ostracods collected in some levels were studied by Malz (*in* Malz *et al.*, 1985). On the occasion of the 19th European Micropaleontological Colloquium, Cherchi & Schroeder (1985b) published a detailed description of the outcrop.

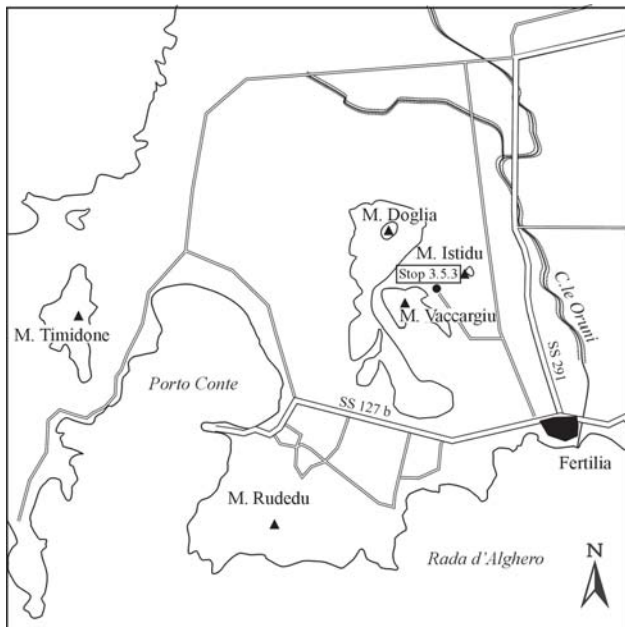


Fig. 1 - Location map.

LITHOLOGY

On the west side of the quarry, the section (Fig. 2) begins with an alternation of beige peloidal and/or algal laminites and muddy sediments with ostracods and more or less dissolved mollusc fragments. Some very thin dark-grey clay intercalations comprise brackish to fresh water ostracods.

A second interval is characterised by clayish and/or muddy levels with intercalated calcarenitic banks. The first of these banks contains large lumps with ostracods showing intensively bioeroded edges, and large bioclasts (hydrozoans and molluscs) with a thick micritic envelope, caused by perforating thallophytes.

At a level of 6.3 m to 7.3 m above the base of the exposure, an alternance of oolitic – microoncolitic layers and muddy intervals contain rich larger foraminiferal assemblages (*Amijiella amiji* horizon).

This latter alternance is followed by beige muddy sediments, locally very rich in corals and gastropods. 3.40 m above the *Amijiella* horizon, a thin intercalation (10-20 cm) of carbonaceous clays yields a rich microflora described by Ashraf (in Ashraf *et al.*, 1984).

PALAEOBIOLOGICAL CONTENT

One of the clay intercalations with brackish to fresh water ostracods, situated about 1 m above the base of the exposure, contains a rich monotypic assemblage of *Fabanella sarda* Malz (= sample VII-1 in Malz *et al.*, 1985).

A sample taken in the uppermost part of the *Amijiella* horizon (Fig. 2) contains the foraminifera *Mesoendothyra croatica* Gusic, *Amijiella amiji* (Henson), “*Siphovalvulina*” sp. *sensu* Septfontaine, as well as sponge spicules (sterrasters), fragments of gastropods, ostracods, and the problematicum *Aeolisaccus* sp..

A small band (10 to 15 cm) of greyish clays, situated immediately above the last *Amijiella* bank, is the type horizon of *Fabanella sarda* Malz. This species is associated with the charophyte *Porochara* sp. (det. M. Feist and M. Grambast - Fessard).

A thin layer of carbonaceous clays with intercalated lenses of lime muds, situated about 3.20 m above the top of the type level of *Fabanella sarda*, contains a rich microflora, which was studied by Ashraf (in Ashraf *et al.*, 1984):

Obtusisporis convexus Pocock, *Cyathidites australis* Couper, *Cyathidites mesozoicus* (Thiergart) Potonié, *Cyathidites minor* Couper, *Dictyophyllidites mortoni* (De Jersey) Playford & Dettmann, *Todisporites minor* Couper, *Concavissimisporites southeyensis* Pocock, *Concavissimisporites subgranulosus* (Couper) Pocock, *Trilites luebbenensis* (Schulz) Ashraf, *Trilites tuberculiformis* (Cookson) Dettmann, *Verrucosisporites eastendensis* Pocock, *Baculatisporites primarius* (Wolff) Thomson & Pflug, *Neoraistrickia gristhorpensis* (Couper) Tralau, *Neoraistrickia samuelssoni* Tralau, *Ischyosporites variegatus* (Couper) Schulz, *Staplinisporites caminus* (Balme) Pocock, *Staplinisporites jurassicus* Pocock, *Lycopodiacidites frankonense* Achilles, *Lycopodiacidites rugulatus* (Couper) Schulz, *Lycopodiacidites schweitzeri* Ashraf, *Petrotrilites rugulatus* Couper, *Densoisporites velatus* Weyland & Krieger, *Sestrosporites pseudoalveolatus* (Couper) Dettmann, *Laevigatosporites ovatus* Wilson & Webster, *Tuberculatosporites aberdarensis* De Jersey, *Tsugaepollenites dampieri* (Balme) Dettmann, *Callialasporites (Inaperturopollenites) turbatus* (Balme), *Cerebropollenites macroverrucosus* (Thiergart) Schulz, *Classopollis torosus* (Reissinger) Morbey, *Gingkokycadophytus nitidus* (Balme) De Jersey.

In the upper part of the quarry (inaccessible; ca. 7-8 m above the carbonaceous clay layer), some beds containing *Pholadomya* sp. (= *Pholadomya exaltata* Agassiz, in Oosterbaan, 1936) and nerineids occur.

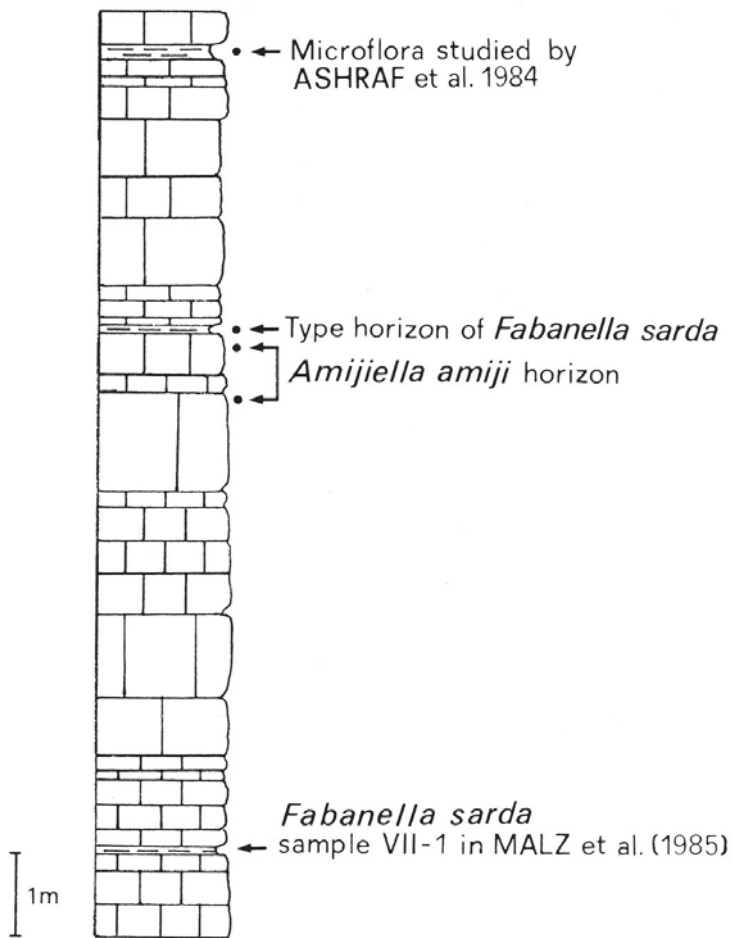


Fig. 2 - Stratigraphic column.

PALAEOENVIRONMENT

Mainly the lower part of the sequence documents a cyclic sedimentation in fresh water and/or brackish environments (coastal lake system) from subtidal (ostracod clays, gastropod calcilutites) to low intertidal (pellets and algal laminites with shrinkage pores).

Episodic, more evidently marine intercalations, characterized by bioclastic fragments (gastropods, hydrozoans, etc.) become more frequent in the upper part of the sequence and lead to a strongly marine environment showing the characteristics of a protected lagoon.

AGE

According to Ashraf (*in* Ashraf *et al.*, 1984), the microflora of the carbonaceous clays indicates a Bajocian – Bathonian age. The presence of *Pholadomya* – bearing layers in the upper part of the quarry and being characteristic of the Unit 5 within the preliminar subdivision of the Jurassic of the Nurra (Cherchi & Schroeder, 1985a) indicates that the sequence studied can be assigned to the lowermost part of this unit (= upper Bajocian).

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