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Scientific Program and Abstracts

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crystalline coarse-grained bioclastic limestones, compact-shell bioclasts and whole rudist shells can be recognized. Mostly hippuritids, some thick-shell radiolitids, and biradiolitids right and left valves are found in autochthonous and para-autochthonous position, some of them articulated. In situ shells are found grouped in a few visible places within the outcrop. More than 40 specimens of *Vaccinites* and *Hippurites* are collected. Considering recrystallization and broad ranges of typical "Senonian" benthic foraminifera, a Coniacian age of the lithosome is proposed according to finding of abundant specimens of relatively small *Vaccinites cornuvaccinum*.

In Adriatic-Dinaridic carbonate platform domain, solitary *Vaccinites* commonly inhabited upper slopes or deeper parts of prograding bioclastic banks developed during temporary open-platform conditions. Such environments are characterized by polispecific radiolitid abundance and high bioclastic carbonate production. Unfortunately, in the case studied, underlying and overlaying strata are not exposed and preserved, respectively. This fact, along with lack of detail lithostratigraphic map of the region, unable us to make a final conclusion about the depositional model and the prevalence of hippuritids over radiolitids in the Coniacian platform limestone of western Herzegovina.

THE FUNCTIONAL MORPHOLOGY OF *ANTILLOSARCOLITES* SP.

Ariel V. Guggino Rivera

Department of Geology, University of Puerto Rico,
Mayagüez Campus PO Box 9000,
Mayagüez PR 00681 <ariel.guggino@upr.edu>

POSTER

The oolitic grainstones facies of the Cotui Limestone formation is located in southwestern Puerto Rico [1], [2]. This facies contains complete specimens and fragments of the rudistid bivalves described [1] as *Antillosarcolites* sp. Two complete specimens showing good preservation were studied within a quadrangle of 15m by 10m to determine the functional morphology of *Antillosarcolites* sp. Many fragments of this rudist were found within the studied quadrangle. The rudist is not found at any other facies within the stratigraphic section area. The *Antillosarcolites* sp. has a morphology that is classified as recumbent with a coiled shell. The sinistral valve is much smaller than the dextral valve and had probably free movement for feeding. Each specimen studied extended outward forming

flanges that act as anchors that help the rudist maintain stability in the substrate. The morphology of the shell and the abundant fragments together with the facts that the rudist is not observed in any other facies of the Cotui Limestone suggest that the *Antillosarcolites* sp. shell was able to stand normal wave action but probably was not successful during storm waves.

The oolitic grainstone facies in which this rudist is located indicated high-energy, shallow waters, wave dominated environment [1]. By using the description of the Cotui Limestone provided by [1] and [2], it was determined that *Antillosarcolites* sp. may have lived within the shelf edge and was subjected to strong waves and currents. After observing the morphology of the rudist valves it was confirmed that *Antillosarcolites* sp. had the capacity to thrive in such high energy environment. However, when studying the rudist's mantle cavity oolites were observed within the convex tabulae from every collected sample. This may suggest that even though *Antillosarcolites* sp. was capable of living within the shelf edge it may not have been very resistant to storm waves that may have destroyed the shells. Also, these ooids could have entered the spaces of the mantle cavity after death of the organism.

[1] Santos 1999, Journal of Shellfish Research, 13(1): 243-267.

[2] Bonilla, 2007, Quercus, 188: 50-51.

SEDIMENTARY CHARACTERS OF LATE CENOMANIAN RUDIST-RICH CARBONATES IN CENTRAL AND SOUTHERN TUNISIA

Jalel Jaballah and Mohamed Hedi Negra

Tunis El Manar University, Faculté des Sciences
de Tunis, UR Pétrologie sédimentaire et
cristalline, Campus Universitaire, 2092, Manar II,
Tunis-Tunisia

POSTER

Late Cenomanian rudist-rich facies studied in Central Tunisia, along a North-South transect, starting from Jebel Kebar and reaching Jebel Berda through Jebel Meloussi, show varied compositions and are organised into varied morphologies.

In Jebel el Kebar, according to [1], the Gattar Member (upper part of the Late Cenomanian. Zebbag Formation) is formed of a "bioconstructed unit" containing *Durania arnaudi* (Choffat) and *Durania arnaudi* var. *intermedia* (Choffat).

Our recent observations show that the Gattar Member is composed of three units exhibiting varied geometries and compositions. From the base to the top, these units are:

- Bedded carbonates rich in fragmented rudists, organised into wackestones-packstones cycles.
- Massively bedded and lensoid lithosomes [2], [3] rich in joined and entire rudists represented by *Durania arnaudi* [1].
- Well thin-bedded carbonates, overlapping the convexed top of the lensoid rudist-rich carbonates, containing floating rudist debris.

To the South, in Jebel Meloussi, rudist-rich units, metric in thickness and showing joined entire rudists (to be determined) occur below the Gattar Member (within the C unit of the Zebbag Formation [4], [5]).

More to the South, in Jebel Berda, rudist-rich carbonates also occur below the Gattar Member (probably in the "D" carbonatic unit [5]. This rudist-rich unit contains scarce rudists (*Praeradiolites biskraensis*) associated to corals or/and sponges [6]. Above, the Gattar Member which is mainly constituted of fine-grained limestones contain floating entire rudists associated to other bivalves.

- [1] Razgallah, S., Philip, J., Thomel, G., Zaghib-Turki, D., Chaabani, F., Ben Haj Ali, N., M'Rabet, A. 1993. La limite Cénomanién-Turonien en Tunisie centrale et méridionale: biostratigraphie et paléoenvironnements.
- [2] Skelton, P.W., Gili, E. 1991. Palaeoecological classification of rudist morphotypes: 1st International Conference on Rudists, Serbian Geological Society, Special Publication 2, p. 71–86.
- [3] Skelton, P.W. 2003. Rudist evolution and extinction—a North African perspective, in Gili, E., Negra, M.H., Skelton, P. (eds.), North African Cretaceous Carbonate Platform systems.
- [4] Khessibi, M. 1978. Etudes géologiques du secteur de Maknassy-Mezzouna et du Djebel Kebar (Tunisie centrale). Unpublished thesis, de l'Université Claude Bernard, Lyon, 175 pp.
- [5] M'Rabet, A. 1983. Stratigraphie, sédimentation et diagenèse carbonatée des séries du Crétacé inférieur de Tunisie Centrale. Thèse Doctorat ès Sciences, Université de Paris-Sud centre d'Orsay, 540 pp.
- [6] Abdallah, H., Sassi, S., Meister, C., Souissi, R. 1999. Stratigraphie séquentielle et paléogéographie à la limite Cénomanién-Turonien dans la région de Gafsa-Chotts (Tunisie centrale).

LATE CRETACEOUS RUDIST LIMESTONES SYNCHRONIC WITH IGNEOUS ROCKS IN EAST OF IRAN, BIOSTRATIGRAPHICAL AND PALEOECOLOGICAL SIGNIFICANTS

Ahmadreza Khazaei, Gholamreza Mirab Shabestari, and Leila Saeipour Karamjavan

Dept. of Geology, University of Birjand, Birjand, IRAN <arkhazaei@birjand.ac.ir>
<gshabestari@birjand.ac.ir >

POSTER

Late Maastrichtian sedimentary successions of Sistan suture zone have been located near the eastern border of Iran. These series enclose some thin to medium bedded rudist limestone units, alternating with massive igneous rock units. Sedimentation of these deposits have been done due to the convergence of Lut and Afghan blocks in the Late Cretaceous, followed by shallowing of oceanic basin which has formed the shallow carbonate platforms as a replacement for the basins with flysch type deposits. Remarkable massive volcanic flows has been entered to this basin alternately until to the end of Cretaceous, when this complex has been covered completely by thick layers of Paleocene limestones.

In order to relative age determination of these successions and synchronic igneous rocks and paleoecological interpretations, Gazak and Tout sections situated in Doroh - Lahno region in the 180 Km east of Birjand have been measured and sampled. The studied sections begin with alternation of shale and sandstone layers which followed by igneous units and then overlies by an alternation of volcanic and rudist bearing limestones that ended by cliff forming Paleocene limestones. Carbonate units are including some scattered paucispecific rudist lithosomes and contain large benthic foraminifera fauna. Two genera of rudists have been determined from these units, *Osculigera (Vautrinia)* and *Ichthyosarcolithes*. Beside the rudists, the benthic foraminifera such as *Orbitoides*, *Siderolites* and *Omphalocyclus*, are significant fauna indicators of these layers. Late Maastrichtian age for these sedimentary units has been emphasized, based on comparing this faunal assemblage and three suggested biozones.

Microfacies investigation and paleoenvironment analysis has been led to a shallow carbonate platform in form of homoclinal ramp with four facies belts including: inner ramp, middle ramp, outer ramp and rudist mounds. Paleoecological study of elevator rudist morphotype and bouquet forms of rudist communities reveals a low energy environment with continuous sedimentation.