

# GEOLOGY AND PALEONTOLOGY OF THE PERI-ADRIATIC AREA

*A tribute to Rajka Radoičić*

5-6 May 2006 Napoli

Organized by:

*Dipartimento di Scienze della Terra - Università "Federico II", Napoli*  
*Istituto per l'Ambiente Marino Costiero - CNR, Napoli*

## Scientific Program and Abstracts

*edited by Mariano Parente*

*Halima radoičićae*  
SCHROEDER, 1985

*Halopora radoičićae*  
PRATURLON, 1964

*Halimella radoičićae*  
BRATTOLO, 1983

*Halobita rajkiae*  
DE CAPOA-BONARDI, 1980

*Diatemella radoičićae*  
PEJOVIĆ, 1979

*Trinocladus radoičićae*  
ELLIOTT, 1968

*Halopora radoičićae*  
DE CAPOA-BONARDI, 1980

*Genus Rajk.* MILOVANOVIĆ, 1984  
*Rajka spuma* MILOVANOVIĆ

*Diatemella radoičićae*  
BISTRICKY, 1976



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## Oligocene migration path across the Adriatic Sea for Apulia macromammals

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In the early nineties of the last century, a rich deposit of fossil vertebrate remains was discovered in the outskirts of Scontrone, a small village located in the Central Apennine at the southern border of the Abruzzi National Park (Rustioni *et al.*, 1992; Mazza and Rustioni, 1996). The vertebrate remains are embedded in Tortonian carbonates indicative of a coastal-lagoon/strand-plain system. The fossil assemblage shows close similarities with the large mammalian fauna of Gargano, which Freudenthal (1971, 1976) dated to the Late Miocene, and which De Giuli and Torre (1984) and De Giuli *et al.* (1986, 1987) referred to the latest Miocene-earliest Pliocene.

The marked endemic characters shared by the Scontrone and Gargano vertebrates indicate that they lived in prolonged isolation in a single, vast and secluded paleobiogeographic province. The pertinence of the two faunas to the same biogeographic province is also supported by the palinspastic relocation of the two areas in the same paleogeographic domain before the incorporation of the Scontrone realm in the Apennine thrust belt (fig. 1). Circumstances turned favourable to mammal colonization during the early Oligocene, at about 29 Ma, when an important drop in the global sea level caused the emergence of the Apulia Platform and of the greatest part of the central Adriatic region creating a filtering pathway from Dalmatia via Tremiti Islands. An extensive seismostratigraphic investigation of the Adriatic offshore showed that a landbridge connecting Dalmatia and Gargano was generated by three combined geological factors:

- Development, within the narrow basinal area created by the Jurassic extensional tectonics, of prominent structural highs between the Adriatic and the Apulia platforms. During part of the Jurassic and the whole Cretaceous, these submarine highs were seat of condensed pelagic sedimentation;
- Global sea level drop at the beginning of the Tertiary. During the subsequent transgression the lowered sea level allowed the deposition of Paleocene-Eocene shallow-marine carbonates in the marginal areas of the platforms and on top of the aforementioned intrabasinal highs. As a consequence, a prominent shallow-water plateau developed in the Central Adriatic area;
- Major global sea-level drop around 29 Ma, which caused the subaerial exposure of the shallow-water plateau and of the bulk of the Apulia and Adriatic platforms.

Through the Dalmatia-Gargano landbridge, representatives of the ancestor stock of the Hoplitomerycids, together with the forerunner of the giant insectivore *Deinogalerix*, spread into the Abruzzi-Apulia realm. During the late Langhian, a fast sea-level rise flooded the landbridge and wide portions of the Apulia Platform cutting out every connection with the Dalmatian mainland and leaving only a few residual islands where a small number of land taxa flourished, endemized and diversified. The isolation ended with the Messinian salinity crisis, when a new and wider landbridge re-emerged consenting several micromammalian taxa to colonize the Abruzzi-Apulia area.

The Scontrone site is an isolated, rich vertebrate fossil record related to the local occurrence of ephemeral coastal lagoons, which represent a highly dynamic environment where favourable conditions of life match with optimal conditions for fossilization. Coastal lagoon deposits, however, are a quite rare sedimentary record since they seldom survive the ravinement processes at the base of the marine transgression.

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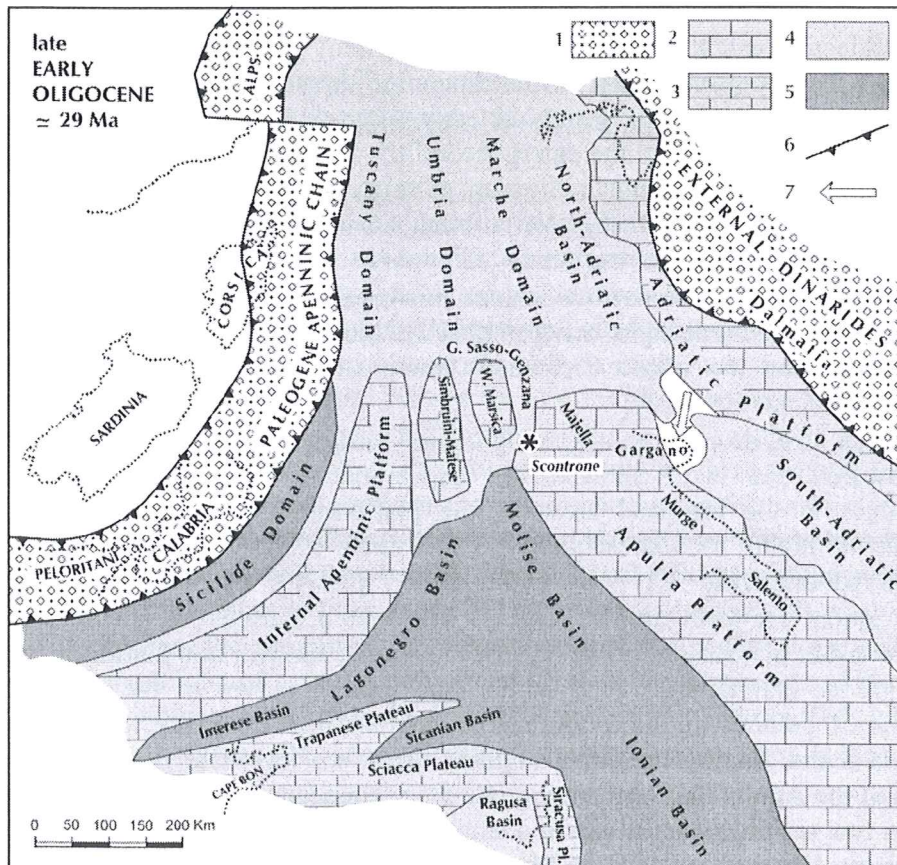


Figure 1. Late early Oligocene palinspastic restoration of the Apenninic domains showing the pathway followed by the Apulia macromammals. Modified after Patacca and Scandone (2004).

- 1 Paleogene mountain chains. 2 Shallow-water carbonate platforms: 3 Wide pelagic plateaux. 4 Basins and isolated structural highs. 5 Deep-water basins flooded by oceanic or thinned continental crust. 6 Front of the orogenic belts. 7 Dalmatia-Gargano landbridge followed by colonizing vertebrates.