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THE CRETACEOUS PLATTENKALKS OF SOUTHERN ITALY AND THEIR CRUSTACEAN DECAPODS ASSEMBLAGES

Systematic observations by chronostratigraphic, sedimentological, palaeoenvironmental and palaeontological points of view, on the Meso-Cenozoic plattenkalk and platy dolomite facies in Southern Apennine, have been carried out in the recent years.

These facies frequently constitute some "fossil-lagerstätten", very rich in different organisms as plants, invertebrates and vertebrates.

Together with some well-known sites as the Pietraraja one, some new sites, ranging in age between Jurassic and Eocene, have been found in the provinces of Latina, Caserta and Salerno (Bravi & Schiattarella, 1986; Bravi, 1995, 1996).

The depositional environments of these fossil deposits are always represented by shallow lagoons with a scarce circulation of waters and subject to a sedimentation influenced by tidal rhythms. Some of the above environments show features that lead to hypothesize a position very close to lands (Bravi, 1996, 1997). Their time-position in the geological record seems to be not incidental, but probably connected to eustatic causes (Bravi, 1995, 1996; Bravi & Mega, 1999, in this volume).

The study of crustacean decapod faunistic assemblages, discovered in the famous Pietraraja outcrop (Benevento) and in Petina and Vesole Mount quarries (Salerno) recently studied by sedimentologic, stratigraphic and palaeoecologic points of view by Bravi *et al.* (1998a, b; 1999, in press), has pointed out the presence of polytypic (Pietraraja and Petina) and oligotypic faunae (Mount Vesole), very interesting for the carcinologic knowledge of the Cretaceous period, known to date only by few reports in the NE Italy (Vernasso e Torrente Cornappo, Udine; Trebiciano, Trieste – Garassino & Ferrari, 1992; Garassino & Teruzzi, 1995; Garassino, 1997a, Garassino, 1998).

Bravi & Garassino (1998a) described *Micropenaeus* nov. with *M. tenuirostris* n.sp. (infraorder Penaeidea de Haan, 1849, family Penaeidae Rafinesque, 1815); *Parvocaris* nov. with *P. samnitica* n.sp. belongs to the infraorder Caridea Dana, 1852, indeterminate family; *Huxleycaris* nov. with *H. beneventana* n.sp. (infraorder Anomura Milne-Edwards, 1832, family Axiidae Huxley, 1879) represents the first report of this family in the Cretaceous of Italy.

Bravi & Garassino (1998b) described *Alburnia* nov. with *A. petinensis* n.sp. (infraorder Caridea Dana, 1852, family Palaemonidae Rafinesque, 1815); few specimens were ascribed to *Palinurus* Weber, 1795 with *P. sp.* (infraorder Palinura Latreille, 1803, family Palinuridae Latreille, 1802), while one specimen was ascribed to the family Portunidae Rafinesque, 1815 (indeterminate genus and species).

Recently, Bravi *et al.* (in press) described the crustacean oligotypic fauna of the

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plattenkalk of Mount Vesole (Salerno), ascribing the studied specimens (one hundred in all) to *Palaemon* Weber, 1795 with *P. vesolensis* n.sp. (infraorder Caridea Dana, 1852, family Palaemonidae Rafinesque, 1815).

The carideans are particularly interesting because they are very rare in the fossil record and their morphological features are not well known since their poor state of preservation. The most ancient genera known to date, *Acanthinopus* Pinna, 1974 and *Leiothorax* Pinna, 1974, were discovered in Zorzino Limestone (Norian, Upper Triassic) of Bergamo Prealps (Cene, Seriana Valley – Bergamo, Northern Italy) (Pinna, 1974). Another form, *Pinnacaris* Garassino & Teruzzi, 1993, was described in the Argilliti di Riva di Solto (Sevastian, Upper Norian-Lower Rhaetian, Upper Triassic – depending on the authors) of Ponte Giurino (Imagna Valley – Bergamo, Northern Italy) (Garassino & Teruzzi, 1993).

Glaessner (1969) ascribed to Jurassic only *Udorella* Oppel, 1862 (family Udorellidae Van Straelen, 1924). The same author ascribed also three *incertae sedis* Jurassic genera to carideans: *Blaculla* Münster, 1839, *Hefriga* Münster, 1839 and *Udora* Münster, 1839.

Martins-Neto & Mezzalira (1991a) found a few specimens of carideans in the Crato Member of Santana Formation (Lower Cretaceous) of Brazil. The perfect state of preservation of these specimens allowed the authors to describe *Beurlenia* nov. (family Palaemonidae Rafinesque, 1815) with the species *B. araripensis* n.sp..

Roger (1946) described *Notostomus cretaceus* on a sample of five specimens found in the Santonian (Upper Cretaceous) of Sahel Alma (Lebanon). This species was the subject of a recent review by Garassino (1994), who ascribed the species by Roger to *Odontochelion* nov. (family Oplophoridae Dana, 1852).

Rabadà (1993) described *Delclosia* nov. with *D. martinelli* on a sample of 60 specimens of the Lower Barremian (Lower Cretaceous) of Las Hoyas (Cuenca, Spain). This genus was the subject of a recent review by Garassino (1997b).

Garassino (1998) have described on a sample of three specimens from the Lower Cretaceous of the Valley of Cornappo River (Udine, NE Italy), *Tonellocaris* nov. with *T. brevirostrata* n.sp. (family Oplophoridae Dana, 1852).

Only four genera of carideans are presently known in the Tertiary deposits.

Four species belong to *Bechleja* Hoüsa, 1956, a typical form of freshwater deposits: *B. rostrata* Feldmann *et al.*, 1981 from the Eocene of the Green River Formation (Wyoming, USA); *B. inopinata* Hoüsa, 1956 from the Oligocene of the Czechoslovakia; *B. bahiaensis* (Beurlen, 1950) and *B. robusta* Martins-Neto & Mezzalira, 1991 from the Oligocene of Brazil (Beurlen, 1950, Hoüsa, 1956, Feldmann *et al.*, 1981, Martins-Neto & Mezzalira, 1991b).

In the Miocene deposits of N Caucasus (Russia) *Palaemon* Weber, 1795, *Pasiphaea* Savigny, 1816 and *Bannikovia* Garassino & Teruzzi, 1996 were described with *P. mortuus* Smirnov, 1929, *P. mortua* Smirnov, 1929 and *B. maikopensis* Garassino & Teruzzi, 1996 respectively (Smirnov, 1926, Garassino & Teruzzi, 1996).

On the grounds of what described, *Palaemon vesolensis* Bravi *et al.*, in press, *Alburnia petinensis* Bravi & Garassino, 1998, *Parvocaris samnitica* Bravi & Garassino, 1998 and *Tonellocaris brevirostrata* Garassino, 1998 represent the only four species of Italian Cretaceous carideans known to date. Moreover, *P. vesolensis* Bravi *et al.*, in press, *Alburnia petinensis* Bravi & Garassino, 1998 and *Tonellocaris brevirostrata* Garassino, 1998 can be ascribed with certainty to a known family by some definite characters: the

first two to the family Palaemonidae Rafinesque, 1815 and the third to the family Ophiorhynchidae Dana, 1852.

These ascriptions are very important because the presence of Palaemonidae Rafinesque, 1815 in the Cretaceous layers of Southern Italy pulls back the stratigraphical range of this family, known to date only in the Oligocene of Europe, while the presence of Ophiorhynchidae Dana, 1852 pulls back the stratigraphical range of this family known to date only in the Upper Cretaceous of Lebanon.

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