

Some Reports of Paratethyan Ostracods from the Central Mediterranean Area

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Abstract

Uppermost Miocene stratigraphic sections have been sampled in Sicily and eastern Tunisia. Some of the stratigraphic levels contained in them are related to the continentalization phase ("Lago Mare") of the Mediterranean Basin, which occurred at the end of the Messinian Salinity Crisis. Within these levels, ostracod associations reflecting fresh or brackish water environments are reported here for the first time. Species considered to be Paratethyan in affinity lived in these environments. The discovery, both in Sicily and Tunisia, of species such as *C. agrigentina*, *A. propinqua*, and *M. punctate*, suggests that the Sicilian Channel did not prevent the migration of the non-marine fauna from NW to SE in the Paleomediterranean area during the Post Evaporitic Phase.

Keywords: Late Messinian; Lago Mare; Paratethys; Ostracods; Paleoenvironmental Evolution; Tunisia; Sicily

Introduction

The post evaporitic phase of the Late Messinian is characterized by intense continentalization of several parts of the Mediterranean Basin – the Lago Mare. Above the Messinian and pre-Messinian sequence, many large and shallow basins of fresh or brackish water formed. These environments were colonized by numerous organisms including ostracod species. Some of these species have a Paratethyan affinity, or rather; they are species that spread from the eastern Paratethyan Region to the western Paleomediterranean area [1]. This phenomenon was made possible by large and shallow water basins connecting with each other and with the large waterways of the Paratethyan region [2].

Materials and Methods

In order to verify the spread of paratethyan species in the central sector of the Mediterranean, we analyzed

ostracod assemblages from two Late Messinian sections in Tunisia (36°30'07" N 10°44'46"E and 35°24'18"N 11°00'12" E) and four sections in Sicily (38°14'02.42" N; 15°26'14.11" E; 43 m a.s.l., 37°09'20.11"N; 14° 42'33.81"E; 554 m a.s.l., 37°11'43.07"N; 14°42'04.90"E; 521 m a.s.l. and 37° 08'53.71"N; 14°41'38.81"E; 435 m a.s.l.). The biostratigraphic analysis, paleoecological interpretations and geographical distributions of the ostracofauna led us to identify different environmental conditions of Lago-Mare events in the Central Mediterranean Basin [3].

Results

Two contemporary Lago-Mare events have been identified in Eastern Tunisia. The first one is represented by sedimentary facies containing brackish/lagoon species: *Cyprideis agrigentina* Decima, 1964 and *Cyprideis torosa* the second one is characterized by freshwater ostracod assemblages where the main taxa are *Candona* spp., *Amnicythere propinqua*, *Ilyocypris gibba*,

Mediocytherideis (*Sylvestra*) *punctata* Ligios et al., 2008, and Charophyte gyrogonites represented by *Chara vulgaris* Linnaeus, 1753 and *Chara hispida* Linnaeus, 1753 [4].

In Sicily, the sedimentary facies belonging to the post evaporitic period are called "Congeria" strata (marls containing oligohaline faunas) and "Arenazzolo" (reddish arkosic sands containing brackish or freshwater ostracods). From these contemporary levels, which correspond to two different sedimentation environments, an oligotypic ostracod fauna was extracted consisting of species belonging to the genera *Tyrrhenocythere*, *Loxoconcha* and *Cyprideis*. Among them, *Loxoconcha muelleri* and *Cyprideis anlavauxensis* Carbonnel, 1979 are reported for the first time from Sicily here.

Discussion and Conclusion

Our study has shown that, during the Post Evaporitic Phase of the Late Messinian, analogous ostracod species were present in Sicily and Tunisia. These species reflect a shallow water marine-transitional environment (internal lagoon) characterized by salty, brackish oligohaline water, with the addition of fluvial lacustrine water [5-7].

Species that can be considered of Paratethyan origin lived in these environments. Indeed, the discovery, both in Sicily and Tunisia, of species such as *C. agrigentina*, *A. propinqua*, and *M. punctata*, suggests that the Sicilian Channel did not prevent the migration of the non-marine fauna from NW to SE in the Paleomediterranean area during the Post Evaporitic Phase (Figures 1-3).

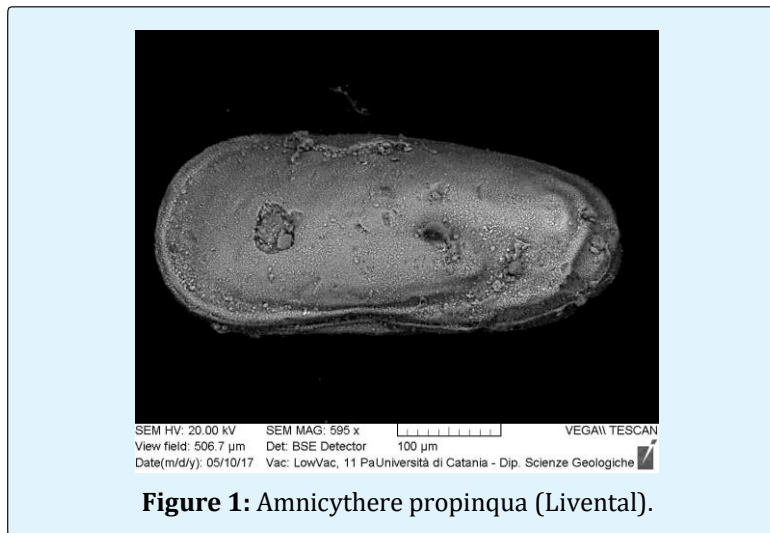


Figure 1: *Amnocythere propinqua* (Liventale).

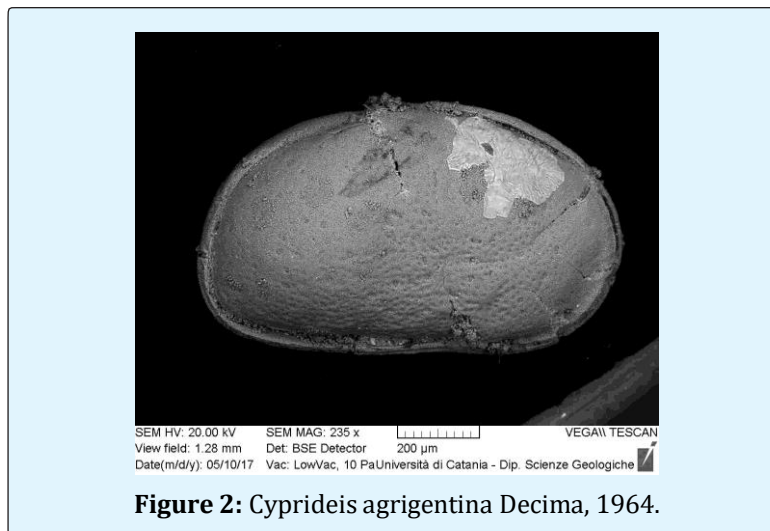


Figure 2: *Cyprideis agrigentina* Decima, 1964.

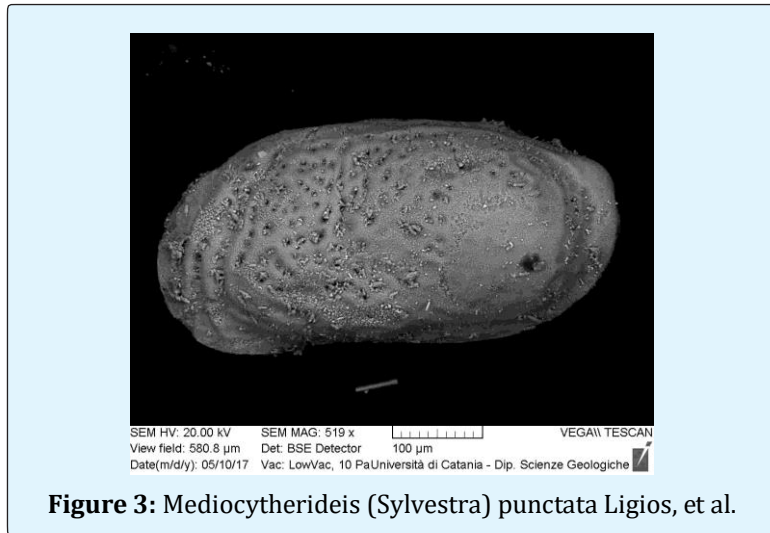


Figure 3: Mediocytherideis (*Sylvestra*) punctata Ligios, et al.

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