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Pliocene Ostracofauna of the Altavilla section (Altavilla Milicia, Sicily). Systematic remarks

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KEY WORDS – *Ostracoda, Taxonomy, Biostratigraphy, Pliocene, Sicily.*

ABSTRACT – The studied Ostracofauna comes from a single level of the most classical Sicilian Pliocene section, located on the right bank of the Milicia River, in the surroundings of the town of Altavilla in the province of Palermo. The studied section is formed by a fifty metre thick sequence of yellow sands with *Amphistegina*, showing uneven stratification with some more cemented isolated sandstone layers.

Calcareous nannofossils have allowed referring the sampled level as MNN 16 b-17/-Discoaster pentaradiatus Zone, and dating it as upper Piacenzian.

The studied ostracofauna comprises abundant, well-preserved material corresponding to 150 species including 31 new taxa. Eighty species have been already described and illustrated in three former studies by the present authors. The remnant new species, corresponding to genera *Sagmatocythere*, *Paracytheridea*, *Cytherura*, *Semicytherura*, *Hemicytherura*, *Eucytherura*, *Cytheropteron*, and *Paradoxostoma*, are described for the first time in this paper.

The occurrence of some particular species in this sequence has some paleobathymetric implications. Several species of this association are typical of shallow marine environment with vegetation. Most of other species in turn are typical of more open marine conditions, in sub-littoral facies. Some 70% of described taxa belong to such genera as *Incongruella*, *Tegmenia*, *Ruggieria*, *Mutilus*, and *Paijenborchella*, which are no longer typical of Mediterranean Province.

RIASSUNTO – [Ostracofauna pliocenica della sezione di Altavilla (Altavilla Milicia, Sicilia). Osservazioni sulla sistematica] – Viene descritto lo studio degli ostracodi della sezione pliocenica di Altavilla Milicia, che affiora nei dintorni dell'omonima cittadina in provincia di Palermo. La sezione, che ha uno spessore di circa cinquanta metri, è costituita da sabbie gialle con *Amphistegina* aventi una stratificazione indistinta con sottili livelli cementati.

L'ostracofauna proviene da un unico livello che, grazie allo studio dei Nannofossili calcarei, è stato datato come Piacenziano superiore. L'ostracofauna è costituita da 150 taxa dei quali 31 nuovi. In tre precedenti lavori sono state descritte ed illustrate 80 specie, ed in questo contributo 16 specie sono descritte come nuove: *Palmconcha ialoteca* sp. nov., *P. spissiteca* sp. nov., *P. ruggieri* D'Arpa sp. nov., *P. tenuiteca* sp. nov., *Elofsonia obtusata* sp. nov., *Paracytheridea domus* sp. nov., *P. gibbera* sp. nov., *Cytherura calceolata* sp. nov., *C. problema* sp. nov., *C. burgioi* sp. nov., *Semicytherura bella* sp. nov., *S. flexicosta* sp. nov., *Eucytherura proflexa* sp. nov., *E. altavillae* sp. nov., *Cytheropteron biserratum* sp. nov., *Cytherois sicala* sp. nov.

Le indicazioni paleobatimetriche ottenute dallo studio dell'ostracofauna hanno evidenziato la presenza di numerose specie epifite caratteristiche di ambienti poco profondi; pertanto l'ostracofauna di Altavilla appare tipica di un fondale marino localizzato nella parte più bassa della zona infralitorale. Lo studio qualitativo dell'ostracofauna ha invece evidenziato la presenza di numerosi taxa pertinenti a generi quali *Incongruella*, *Tegmenia*, *Ruggieria*, *Mutilus* e *Paijenborchella* che non sono più tipici della Provincia mediterranea da molto tempo.

INTRODUCTION

First studies on Pliocene ostracods from Altavilla by the present authors go back over ten years ago as the main subject of MSc Thesis of one of us (C. D'Arpa) under the supervision of Prof. Giuliano Ruggieri. From the beginning, these ostracod associations appeared highly interesting by the large number of new taxa and, most of all, by their palaeobiogeographic value.

Preliminary results of that thesis were the subject of a short synthetic note in the journal: "*Il Naturalista Siciliano*" (1992) including a complete systematic list of ostracod associations and two new species (Ruggieri & D'Arpa, 1992). One year later (1993) the same authors presented a "first contribution" including the systematic study of the first 37 ostracod species from the published list and eight new proposed taxa, seven new species and one new subspecies. A second

systematic contribution followed four years later (Ruggieri & D'Arpa, 1997) on marine ostracods from Altavilla. This second study comprised the description of 41 species, including 4 new taxa.

From this point, the continuation of the study suffered some delay. However, it was never abandoned and the study of these Pliocene ostracod associations has been all the time a main matter of attention by Prof. Ruggieri. The recent palaeontological meeting held at Rimini to commemorate the person and work of Prof. Ruggieri as a prominent ostracod specialist, seemed the appropriate occasion to present the definitive results of the study and describe the remaining, still undescribed taxa.

THE PLIOCENE SECTION OF ALTAVILLA MILICIA

The small town of Altavilla Milicia is located in Western Sicily, in the eastern part of the province of

Palermo. The ostracofauna comes from one of the most famous Pliocene sections of Sicily; this locality is well known from 1800 and has been the subject of many paleontological and stratigraphical studies by numerous naturalists and geologists, among them Calcare (1841), Aradas (1846), Seguenza (1873-77), and De Gregorio (1883).

Most of referred monographs were not only concerned with fossiliferous outcrops but also with the many sections located around the town. The studied outcrop from which the ostracofauna comes is called Altavilla I. It is located on the right side of the Milicia River, under the village. Yellow sands, at times pebbly, or limestones with *Amphistegina* form the main facies of the studied Pliocene interval. Fossiliferous beds can be followed laterally for more than 50 metres. At some points, they tend to cement forming slightly protruding layers. These sands are gently dipping, about 10°, towards the Northeast. They are part of a monoclinical sequence in which the upper layers crop out on the left bank of Milicia River (Stazzzone).

Fossiliferous beds present a remarkably high content in such fossil groups as nannoplankton, microforaminifera, Ostracoda, Octocorals (Alcyonaria), Brachiopoda, and Mollusca. Fossil Mollusca were studied in depth by several authors, such as Ruggieri *et al.* (1959), Moroni & Paonita (1963), Ruggieri *et al.* (1967), and Ruggieri (1967, 1987a, b). Microforaminifera in turn, were studied in detail by Sprovieri (1971).

The studied Ostracofauna comes from samples located about one metre above the lowermost part of the section. The geographic coordinates of the section are 1°05'49" Longitude East of Mt. Mario (Rome), 38°02'42" Latitude North, and 18 m in altitude.

Precise dating of the level containing the ostracofauna, results from the data provided by nannoplankton. The study of calcareous nannofossils allows referring the sampled level as MNN 16b-17/-*Discoaster pentaradiatus* Zone (Rio *et al.*, 1990), and allows dating it as upper Piacenzian (Di Stefano E., personal communication).

THE OSTRACOFAUNA

The studied ostracofauna comprises some 150 species, well preserved, including numerous new taxa. Eighty species have been described and illustrated in the published studies (Ruggieri & D'Arpa, 1992, 1993, 1997).

Polycopa sp. ind.
Cytherella vulgata Ruggieri, 1962
Cytherella circumpunctata Ciampo, 1976 *decurtata* Ruggieri & D'Arpa, 1993
Cytherelloidea sp. ind.
Cytherelloidea beckmanni Barbeito-Gonzalez, 1971
Cytherelloidea creutzburgi Sissingh, 1972
Bairdia formosa Brady, 1868
Bairdia mediterranea G.W. Müller, 1894

Bairdia sp. ex gr. *oscura* G.W. Müller, 1894
Bairdia sp. ind.
Havanardia reticulata G.W. Müller, 1894
Triebelina (?) *ravipila* G.W. Müller, 1894
Triebelina sp. ind.
Propontocypris hazeli Ruggieri & D'Arpa, 1993
Propontocypris micropuntigera Ruggieri & D'Arpa, 1993
Ilyocypris sp. ind.
Eucythere sp. cf. *anglica* Brady, 1868
Callistocythere pallida G.W. Müller, 1894
Callistocythere attenuata Ruggieri & D'Arpa, 1993
Callistocythere protracta Ruggieri & D'Arpa, 1993
Callistocythere lobiancoi G.W. Müller, 1894
Callistocythere mediterranea G.W. Müller, 1894
Callistocythere parallela Aruta, 1986
Leptocythere subulata Ruggieri & D'Arpa, 1993
Leptocythere macallana (Brady & Robertson, 1869)
Leptocythere minuscula Ruggieri & D'Arpa, 1993
Miocyprideis italiana Moos, 1962
Neocytherideis cylindrica (Brady, 1869)
Neocytherideis sp. ind. aff. *subulata* Brady, 1868
Pontocythere sp. ind. cf. *tchernjanskii* Dubowsky, 1939
Parakrithe lata Ruggieri & D'Arpa, 1993
Bosquetina multirivina Ruggieri & D'Arpa, 1993
Carinivalva aquila Ruggieri, 1972
Carinivalva testudo Namias, 1900
Acanthocythereis hystrix (Reuss, 1849)
Carinocythereis whitei (Baird, 1850)
Cistacythereis hellenica Uliczny, 1969
Tegmenia rugosa (Costa, 1853)
Celtia quadridentata (Baird, 1850a)
Costa batei (Brady, 1866)
Costa edwardsii Roemer, 1838 *runcinata* Baird, 1850
Echinocythereis cribrata (Terquem, 1878)
Hiltermannicythere capsula (Uliczny, 1969)
Hiltermannicythere emaciata Brady, 1867 *decurtata* Ruggieri & D'Arpa, 1997
Buntonia (*Rectobuntonia*) *subulata subulata* (Ruggieri, 1954)
Basslerites decorticatus Ruggieri & D'Arpa, 1997
Basslerites aff. *berchoni* (Brady, 1869)
Basslerites coronata (Roemer, 1838)
Pterygocythereis jonesii (Baird, 1850)
Pterygocythereis (?) n. sp. Ruggieri & D'Arpa, 1997
Cytheretta striatopunctata (Terquem, 1878)
Cytheretta subradiosa (Roemer, 1838)
Protocytheretta obtusa Ruggieri, 1962
Mutilus (*Mutilus*) *elegantulus* Ruggieri & Sylvester-Bradley, 1975
Aurila (*Aurila*) *fialodes* Uliczny, 1969
Aurila (*Aurila*) *maculosa* Uliczny, 1969
Aurila (*Euaurila*) *lacryma* (Terquem, 1878)
Aurila (*Euaurila*) *inscripta* Ruggieri & D'Arpa, 1992
Aurila (*Euaurila*) *lanceaeformis* Uliczny, 1969
Aurila (*Euaurila*) aff. *plagia* Uliczny, 1969
Aurila (*Ulicznina*) *speyeri* (Brady, 1869b)
Aurila (*Ulicznina*) *diversipunctata* Ruggieri & D'Arpa, 1997
Cimbourila latisolea Ruggieri, 1975
Tenedocythere prava (Baird, 1850)
Tenedocythere salebrosa (Uliczny, 1969)
Caudites calceolatus (Costa, 1853)
Pachycaudites attenuata Ruggieri, 1980
Pachycaudites oertlii Yassini, 1980
Graptocythere intricata (Terquem, 1878)
Loxoconcha alata Brady, 1868
Loxoconcha dendritica Ruggieri & D'Arpa, 1997
Loxoconcha depressa Ruggieri & D'Arpa, 1997
Loxoconcha ovulata (Costa, 1853)
Loxoconcha sp. ex gr. *ovulata* (Costa, 1853)
Loxoconcha stellifera G.W. Müller, 1894
Loxoconcha sp. ind. aff. *stellifera* G.W. Müller, 1894
Loxoconcha aff. *gibberosa* Terquem, 1878
Palmoconcha bonaducei (Ciampo, 1971)
Sagmatocythere coelata (Ciampo, 1976)

Sagmatocythere sp.
Palmococoncha ialoteca n. sp.
Palmococoncha spissitica n. sp.
Palmococoncha ruggierii D'Arpa n. sp.
Palmococoncha tenuitica n. sp.
Sagmatocythere napoliana (Puri, 1963)
Sagmatocythere multiflora (Norman, 1865)
Elofsonia obtusata n. sp.
Nannocythere aff. *nana* Bonaduce, Ciampo & Masoli, 1975
Paracytheromorpha sp. 1
Phlyctocythere pellucida (G.W. Müller, 1894)
Phlyctocythere (?) sp. ind.
Hirschmannia sp. ind.
Paracytheridea triquetra (Reuss, 1850)
Paracytheridea domus n. sp.
Paracytheridea gibbera n. sp.
Paracytheridea exalpa Doruk, 1980
Pseudocytherura miliciae Ruggieri & D'Arpa, 1992
Cytherura calceolata n. sp.
Cytherura problema n. sp.
Cytherura burgioi n. sp.
Semicytherura acuminata (G.W. Müller, 1894)
Semicytherura acuticostata (Sars, 1866) *ventricosa* (G.W. Müller, 1894)
Semicytherura alifera (Ruggieri, 1959)
Semicytherura bella n. sp.
Semicytherura curta (Colalongo & Pasini, 1980)
Semicytherura flexicosta n. sp.
Semicytherura mediterranea (G.W. Müller, 1894)
Semicytherura tergestina Masoli, 1968
Semicytherura paradoxa (G.W. Müller, 1894)
Semicytherura aff. *acuminata* (G.W. Müller, 1894)
Semicytherura aff. *rarecostata* Bonaduce, Ciampo & Masoli, 1975
Semicytherura cf. *acuticostata* (Sars, 1860)
Semicytherura cf. *dispar* (G.W. Müller, 1894)
Semicytherura sp. ind. gr. *pellucida* Ruggieri, 1976
Semicytherura sp. ind.
Hemicytherura defiorei Ruggieri, 1953
Hemicytherura gracilicosta Ruggieri, 1953
Hemicytherura hellenica Sissingh, 1972
Hemicytherura videns (G.W. Müller, 1894)
Hemicytherura truncata Ciampo, 1976
Urocythereis sp. ind.
Kangarina abyssicola (G.W. Müller, 1894)
Eucytherura patercoli Mistretta, 1967
Eucytherura proflexa n. sp.
Eucytherura cf. *calabrica* Ciampo, 1988
Eucytherura altavillae n. sp.
Eucytherura mistrettai Sissingh, 1972
Eucytherura (?) sp. ind.
Tetracytherura irregularis Terquem, 1878
Microcytherura fulva (Brady & Robertson, 1874)
Microcytherura nigrescens (G.W. Müller, 1894)
Krommelbeinella biangulata (Terquem, 1878)
Paijenborchella solitaria Ruggieri, 1962
Cytheropteron biserratum n. sp.
Cytheropteron latum (G.W. Müller, 1894)
Cytheropteron monoceros Bonaduce, Ciampo & Masoli, 1975
Cytheropteron ruggierii Pucci, 1955
Cytheropteron cf. *crassum* Colalongo & Pasini, 1980
Cytheropteron sulcatum Bonaduce, Ciampo & Masoli, 1975
"Bythocythere" minima Bonaduce, Ciampo & Masoli, 1975
Bythocythere puncticulata Ruggieri, 1976
Sclerochilus levis (G.W. Müller, 1894)
Paradoxostoma sp. ind. aff. *acuminatum* (G.W. Müller, 1894)
Paradoxostoma sp. ind. aff. *tenuissimum*
Paradoxostoma sp. ind. (aff. *Paradoxostoma* sp. ind. aff. *versicolor*)
Paradoxostoma sp. ind.
Paradoxostoma sp. ind. 1
Paradoxostoma sp. ind. 2
Cytheroma sp. ind.
Cytherois sicula n. sp.

The remaining new species are described here. They belong to genera *Sagmatocythere*, *Paracytheridea*, *Cytherura*, *Semicytherura*, *Hemicytherura*, *Eucytherura*, *Cytheropteron*, and *Paradoxostoma*.

Among the studied species only 84 have been precisely determined and belonged to previously known taxa. Among the 70 remaining species, 29 are described as new species, and 41 are left in open nomenclature, as non-determined taxa, due to the inadequacy of the available material. Of this assemblage, only 48 species are currently living in the Mediterranean or Atlantic Sea; some ostracod species belong to genera no longer living in the Mediterranean Sea, such as *Incongruella*, *Tegmenia*, *Ruggieria*, *Mutilus*, and *Paijenborchella*. This would prove that 70% of the studied species are extinct, which confirms the old age of the ostracofauna.

The occurrence of some particular species in this succession has some paleobathymetric implications. A whole of 55 species (= ca. 35% of the studied association) are typically epiphytic forms, inhabiting shallow marine environment with abundant vegetation whilst many other species are typical of more open marine, neritic environment, of littoral facies.

Most genera have their bathymetric optimum between 0 and 70 metres. They include many epiphytic genera such as *Callistocythere*, *Basslerites*, *Aurila*, *Semicytherura*, and *Paradoxostoma*; such data allows, then concluding that this ostracofauna lived in a sea bottom located in the lowermost segment of the infra-littoral zone. This feature makes the Ostracofauna of Altavilla very particular; in fact, most of other studied lower Pliocene assemblages are typical of deeper marine conditions.

Taphonomic study of recorded associations of ostracods shows that re-elaboration (= taphonomic reworking) processes did not, or very rarely affect the component specimens. The recorded elements are generally preserved as complete valves or carapaces, showing no trace of remineralisation of shells. On the other hand, many species are represented by both juvenile and adult carapaces and valves, which would witness all stages of ontogenetic development. As a general rule, only few species are represented by isolated valves, the exception being the genus *Ilyocypris* sp. represented by a single fragmented valve, a typical freshwater form, which should be presumably transported to marine areas.

Among the known Pliocene ostracod associations, from Italy and outside, very few are typical of littoral environments. These would be:

The middle Pliocene associations from *Amphistegina* limestones of Capocolle near Forlì (Ruggieri, 1949).

Probably, a part of Pliocene ostracods studied by Capeder (1900).

According to that, the abundant ostracod associations from Altavilla, representing such particular palaeogeographic environment might stand as a reference point for future stratigraphic studies based on ostracods. The interest of this section would be

further enhanced by the low incidence of re-elaboration processes.

The Systematics chapter includes the so far undescribed species. They have all been described following a detailed systematic file scheme. Those forms already well known are only briefly referred, to indicate their stratigraphic and geographic distribution. For all the forms described, both the number of complete and fragmented specimens are carefully referred and noted, in order to provide a general idea of the relative frequency of each taxa and of their mode of preservation. Also, an inventory number is provided, corresponding to the general O.C.R. collection, where they are safely preserved, at the Geological Museum G.G. Gemmellaro, in the University of Palermo.

SYSTEMATICS

Family CYTHERIDAE

Subfamily LOXOCONCHINAE

Genus PALMOCONCHA Swain & Gilby, 1974

PALMOCONCHA SPISSITECA sp. nov.

Pl. 1, fig. 1

1992 *Palmoconcha spissiteca* n. sp. RUGGIERI & D'ARPA, p. 112 (*nomen nudum*).

Material – 6 loose valves.

Etymology – From Latin *spissus*, name derived from the special thickness of the shell.

Holotype – One female left valve (SI. 4640).

Paratype – Five loose valves (SI. 4641).

Size (mm) –

	L	H	W
Holotype	0.67	0.48	0.18
Paratype l.v.	0.64	0.43	0.16

Diagnosis – Species of short size representatives of genus *Palmoconcha* (similar to *P. turbida* G.W. Müller, 1912; *P. alta* Ruggieri, 1978) characterized by

ornamentation formed by mid-size foveolae, aligned along the margins and spread throughout the surface of the shell except for the anterior, ventral and posterior marginal bands, and showing a prominent subcentral swelling.

Description – Species of *Palmoconcha* characterized by a markedly short carapace ($h/l = 0.68$) and by the gradual transition from ornamented lateral surface to smooth marginal bands. Carapace subromboidal in lateral view, showing dorsal and ventral margins slightly convergent backwards, and the maximum height placed at the posterior third of the valve. Lateral surface uniformly inflated, the maximum convexity located around $3/5$ of the length, and the thickness roughly equating $1/2$ of the length.

Ornamentation constituted by small rounded foveolae concentrically disposed around the convex part of the valve. They show a trend to disappear towards the marginal area, with the exception of the postero-ventral area. Along the boundary between the central, convex area and the marginal band there are some sparse wide blunt conical pore canals, characteristically distributed as two in the anterior part and three in the posterior part of the shell.

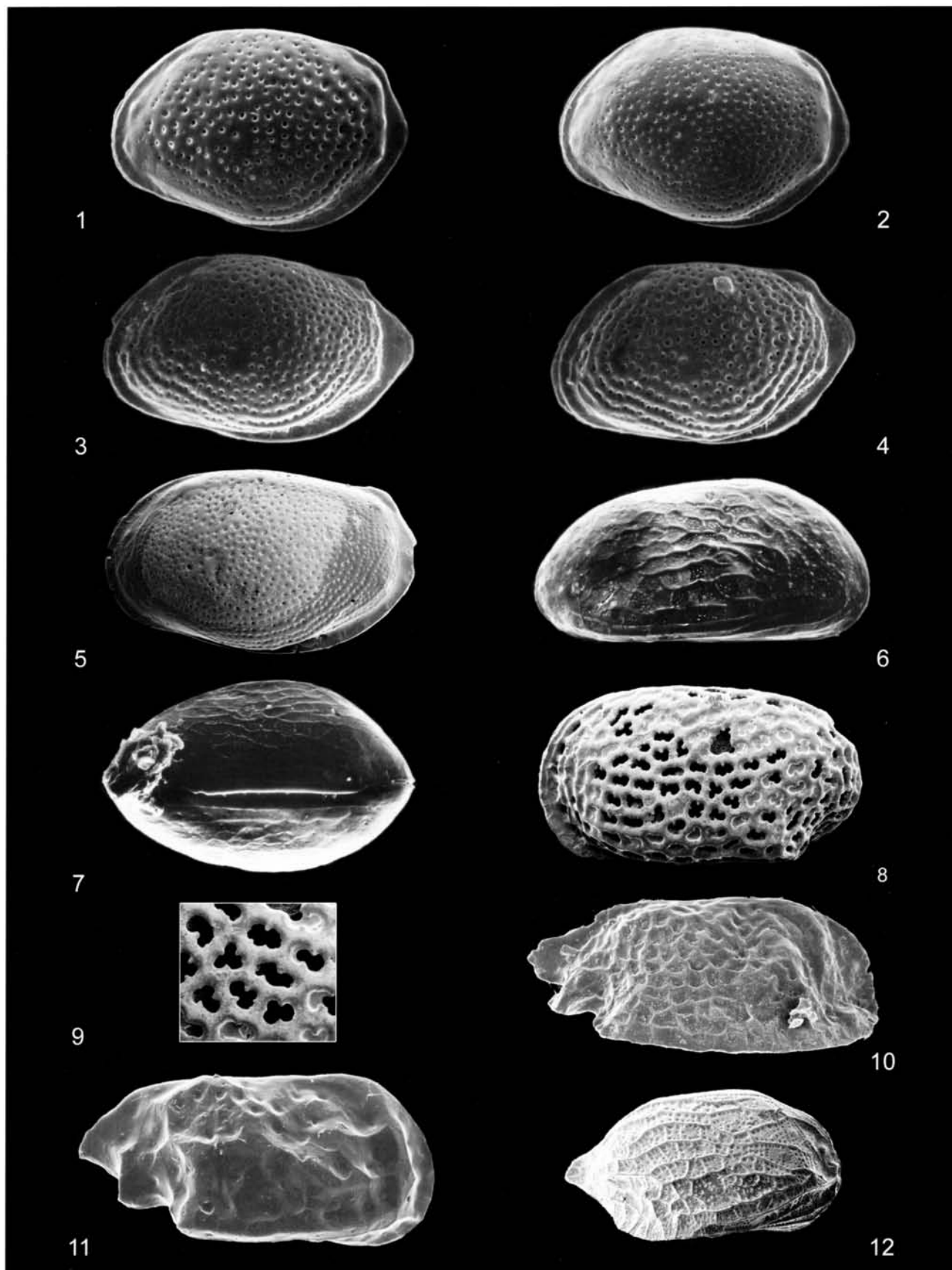
Remarks – This new species differs from the mediterranean Pliocene or Pleistocene form *P. turbida* (G.W. Müller, 1894) by showing a more uniform and thicker ornamentation, and wider smooth marginal bands, especially at the posteroventral area. It also shows a more inflated shape in dorsal view, the w/l ratio in this new species being close to 0.57 whilst in *P. turbida* it does not exceed 0.50.

P. alta (Ruggieri, 1978) from the lower Pleistocene of Faenza is an even closer species. The new species differs in showing a finer, punctuated ornamentation, limited to a central, dorso-ventral area, as well as a less inflated shell and more conspicuous sexual dimorphism. The w/l ratio in *P. alta* shows also lower values than the new form (0.54).

Geographic and stratigraphic distribution – This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

EXPLANATION OF PLATE 1

- Fig. 1 - *Palmoconcha spissiteca* sp. nov. Holotype, LV, O.C.R. 4640 (x 78).
 Fig. 2 - *Palmoconcha ruggierii* D'Arpa sp. nov. Holotype, LV, O.C.R. 4642 (x 75).
 Figs 3-4 - *Palmoconcha ialotoca* sp. nov. 3) Holotype, LV, O.C.R. 4644 (x 96); 4) Paratype, LV, O.C.R. 4645, (x 101).
 Fig. 5 - *Palmoconcha tenuiteca* sp. nov. Holotype, LV, O.C.R. 4647 (x 92).
 Figs 6-7 - *Elofsonia obtusata* sp. nov. 6) Holotype, RV, O.C.R. 4651 (x 158). 7) Paratype, CC, O.C.R. 4651 (x 128).
 Figs 8-9 - *Paracytheromorpha* sp. 1. 8) LV, O.C.R. 4653 (x 70); 9) LV, O.C.R. 4653, particular of foveolae (x 140).
 Fig. 10 - *Paracytheridea domus* sp. nov. Holotype, RV, O.C.R. 4656 (x 126).
 Fig. 11 - *Paracytheridea gibbera* sp. nov. Holotype, RV, O.C.R. 4657 (x 113).
 Fig. 12 - *Cytherura calceolata* sp. nov. Holotype, RV, O.C.R. 4660 (x 100).



PALMOCONCHA RUGGIERII D'Arpa sp. nov.
Pl. 1, fig. 2

1992 *Palmoconcha altavillae* n. sp. RUGGIERI & D'ARPA, p. 112
(*nomen nudum*).

Material – 60 specimens comprising 59 loose valves and 1 carapace.

Etymology – In Honour of Prof. Giuliano Ruggieri, the teacher of Italian ostracodologists.

Holotype – One female left valve (SI. 4642).

Paratype – 58 loose valves and 1 carapace (SI. 4643).

Size (mm) –

	L	H	(S)
Holotype l.v.	0.68	0.47	
Paratype l.v.	0.60	0.42	0.34

Diagnosis – Species similar to *Palmoconcha spissiteca*, except for the ornamentation, formed by smaller, punctuated foveolae and the inflated shape of the shell, extending further towards the periphery of the valve.

Description – The studied specimens show a remarkable morphological homogeneity on what concerns the inflated shape of the shell and the narrow, elongated and rounded shape of the outer margin. The shape of the valve in lateral and dorsal view seems almost identical to *P. spissiteca* except for male valves, which are longer than female in *P. ruggierii*. Ornamentation on lateral surface is formed by small, punctiform foveolae as in *P. spissiteca* but more numerous.

Remarks – The remarkable similarity of both forms, *P. ruggierii* and *P. spissiteca* concerns also aligned disposition of ornamental elements (foveolae) except for the different size, being markedly smaller in *P. ruggierii*. This would cast some doubts on the distinctness of both forms being regarded as separate taxa or rather as a single, strongly dimorphic species. In fact, the genus *Palmoconcha* is characterized by a wide variability in the ornamentation. This would be the case of *P. laevata* (Norman) from southern England, where specimens show a gradual transition from wholly punctuated to smooth shells. It is also the case of *P. guttata* (Norman), in which the specimens coming from southern England and the Gulf of Biscay show a densely ornamented (foveolae) surface whilst specimens from Scandinavian Peninsula (which are only minor in Britain) show a finely punctuated surface and have been long regarded as separate species, and described under the separate name *P. granulata* (Sars, 1866) until the recent work by Athersuch & Horne (1981). These authors demonstrated that both forms were in fact a

single biological species on the basis of anatomic data of soft parts.

Geographic and stratigraphic distribution – This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

PALMOCONCHA IALOTECA sp. nov.
Pl. 1, figs 3–4

1992 *Palmoconcha ialoteca* n. sp. RUGGIERI & D'ARPA, p. 112
(*nomen nudum*).

Material – 19 specimens comprising 18 loose valves and 1 carapace.

Etymology – From Latin *ialoteca*, name derived from the special transparency of the shell.

Holotype – One male left valve (SI. 4644).

Paratype – One female left valve (SI. 4645).

Size (mm) –

	L	H
Holotype	0.58	0.34
Paratype l.v.	0.54	0.32

Diagnosis – Species of *Palmoconcha* close to the group of *P. guttata* (Norman, 1865) characterized by a finely punctuated shell surface except for a smooth marginal, anterior and posterior band.

Description – The available material includes few sparse loose valves. The male left valve displays the dorsal and ventral margins slightly convergent forwards, the ventral margin being slightly sinuous. In the female valve in turn, it is more clearly straight. Lateral area appears also regularly inflated. The surface of the shell, except for marginal, anterior and posterior bands, is normally covered by minute punctuations, aligned in irregular rows parallel to the margins, except for the dorsal area. A non-punctuated area in the central part of the shell corresponds, in the internal surface of the shell the dorsal-ventral row of muscular scars. Some small pore-cones are observed on the margins of the punctuated area: two on the anterior and three on the posterior margin. The ocular region is only slightly punctuated and, generally, non-punctuated.

Remarks – *P. ialoteca* has some similarities with the observed specimens of *P. guttata* s.s. (Norman, 1865) in the ornamentation, formed by deep foveolae. This last form though, displays a much finer ornamentation than the described specimens from Altavilla. Also, the foveolae show a trend to expand in the central area, especially behind the muscular area. These features are not present in the specimens of *P. ialoteca*.

Geographic and stratigraphic distribution – This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

PALMOCONCHA TENUITECA sp. nov.
Pl. 1, fig. 5

1992 *Palmoconcha tenuiteca* n. sp. RUGGIERI & D'ARPA, p. 112 (*nomen nudum*).

Material – Only two loose valves.

Etymology – From Latin *tenuis*, name derived from the special thickness of the shell.

Holotype – One female left valve (SI. 4646).

Paratype – A male valve (SI. 4647).

Size (mm) –

	L	H	W
Holotype	0.61	0.37	0.18
Paratype l.v.	0.59	0.35	-

Diagnosis – A species of *Palmoconcha granulata* (Sars, 1866) group showing medium size; lateral surface strongly inflated and finely punctate.

Description – Female valve subrhomboidal in L.V. A narrow marginal band is gradually connected with lateral surface. A distinct obtuse caudal process is below two thirds of the height. Small, dense pits line up on the ventral and postero-ventral areas ornament lateral surface, beside dorsal area is smooth. Marginal bands are smooth. A large vestibulum in the inner side shows rare simple or double pore canals. Left male valve are less high than female proportionally.

In D.V. right valve is strongly convex with maximum on the mid-length.

Remarks – *P. tenuiteca* differs from *P. guttata* (Norman, 1865) *granulata* (Sars, 1866) by showing a more uniform and thinner ornamentation, and convex shape valves.

The new species *P. ialoteka*, here described, coming from the same level is an even closer species, but *P. tenuiteca* differs in showing larger size, more regular convexity of surface and thinner ornamentation which fades away on the dorsal area.

Geographic and stratigraphic distribution – This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

Genus *SAGMATOCYTHERE* Athersuch, 1976

SAGMATOCYTHERE MULTIFLORA (Norman, 1865)

1865 *Cythere multiflora* sp. nov. NORMAN, p. 18, pl. 6, figs 13-16.

1992 *Sagmatocythere communis* n. sp. RUGGIERI & D'ARPA, p. 112 (*nomen nudum*).

1992 *Sagmatocythere gigas* n. sp. RUGGIERI & D'ARPA, p. 113 (*nomen nudum*).

Material – 168 specimens comprising loose valves and carapaces (SI. 4648, 4649).

Geographic and stratigraphic distribution – This species is known from Pliocene to Recent of Mediterranean Sea.

SAGMATOCYTHERE NAPOLIANA (Puri, 1963)

1894 *Loxoconcha mediterranea* G.W. MÜLLER, p. 347, pl. 26, figs 33-42 (*nec L. avellana mediterranea* Seguenza, 1882-1886).

1963 *Loxoconcha napoliana* PURI, p. 5.

Material – 13 samples of loose valves and carapaces (SI. 4650).

Geographic and stratigraphic distribution – This species is known from Pliocene to Recent of Mediterranean Sea.

Genus *ELOFSONIA* Wagner, 1957

ELOFSONIA OBTUSATA sp. nov.
Pl. 1, figs 6-7

1992 *Microcytherura obtusata* n. sp. RUGGIERI & D'ARPA, p. 113 (*nomen nudum*).

Material – One right valve and one carapace (SI. 4651).

Etymology – From Latin *obtusata*, name derived from the special shape of the shell.

Holotype – One right valve.

Paratype – One carapace.

Size (mm) –

	L	H	S
Holotype	0.38	0.17	
Paratype	0.40	0.18	0.20

Diagnosis – A species of *Elofsonia* characterized by obtuse anterior and posterior margins, which confer a peculiar shape to the valves, and by ornamentation constituted by longitudinal fine ribs.

Description – In L.V. anterior and posterior margins of right valve broadly rounded on the dorsal angles and obtuse on the ventral angles; the ventral margin is straight and the dorsal margin is slightly convex; the valve has the maximum height after the anterior-dorsal angle and the greatest thickness is along the whole of the ventral margin. A rib, parallel to the ventral mar-

gin, is on the area of maximum swelling and it shows numerous pore canals.

The surface of the shell is ornamented by fine longitudinal ribs and by a fine punctuation, which becomes thicker throughout the central area.

In D.V. the carapace is rounded on the anterior part and acute on the posterior one; the maximum thickness is at 2/3 of the length.

Remarks – This species is very close to *Microcytherura fulva* (Brady & Robertson, 1874), but it differs in showing more obtuse posterior end and more rounded carapace in D.V.

Geographic and stratigraphic distribution – This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

Genus CYTHEROMORPHA Hirschmann, 1909

CYTHEROMORPHA aff. NANA Bonaduce, Ciampo & Masoli, 1975

Material – 4 loose valves (SI. 4652).

Remarks – The Altavilla specimens are very close to Bonaduce *et al.* species but differ in showing regularly inflated valves, the absence of few ribs and in the presence of a depression in the ventral area.

Genus PARACYTHEROMORPHA Maybury & Whatley, 1986

PARACYTHEROMORPHA sp. 1
Pl. 1, figs 8-9

1991 *Paracytheromorpha rimafossa* DUCASSE *et al.*, p. 454, pl. 3, figs 9-11; pl. 4, fig. 1; p. 455, pl. 3, figs 7-8; p. 456, pl. 4, figs 3-4 (*non Paracytheromorpha rimafossa* Maybury & Whatley, 1986).

1992 *Paracytheromorpha namiasi* n. sp. RUGGIERI & D'ARPA, p. 113 (*nomen nudum*).

Material – One left valve (SI. 4653).

Size (mm) –

	L	H
Left valve	0.82	0.45

Diagnosis – A subrectangular species characterized by the small ala on the ventro-dorsal area and by foveolae showing different shape on the surface of the valves.

Description – In L.V. the left valve has anterior and posterior margins broadly rounded and ventral and dorsal margins straight and parallel. A small ala is on the posterior-ventral area around the half length of

the shell. The ala expands covering the ventral margin shortly.

Ornamentation constituted by lengthened, subtriangular, and rarely quadrangular foveolae. The subrectangular foveolae are numerous on the anterior part, instead on the central-posterior area both shape of foveolae are present.

In D.V. the maximum thickness of the carapace is on the posterior area just where the ala is.

Remarks – The Altavilla specimen shows the same features of Ducasse *et al.* (1991) specimens, which are different from the Maybury & Whatley (1986) species. In spite of this, the Altavilla specimen has a great size (L = 0.82; H = 0.45 mm) compared with Ducasse *et al.* (1991) specimens (L = 0.31-0.49 mm; H = 0.17-0.27 mm). For this reason, we have preferred to postpone the institution of the new species waiting for the recovery of other specimens.

Geographic and stratigraphic distribution – This species is known from the upper part of Middle Pliocene of Altavilla and from the upper part of Oligocene to Burdigalian of the South-West of the France (?).

Genus PHLYCTOCYTHERE Keij, 1958

PHLYCTOCYTHERE PELLUCIDA (G.W. Müller, 1894)

1894 *Loxoconcha pellucida* G.W. MÜLLER, p. 345, pl. 27, figs 1-3, 6-7.

1963 *Phlyctocythere pellucida* MORKHOVEN, p. 392, fig. 657.

Material – Seven right valves (SI. 4654).

Size (mm) –

	L	H
r.v.	0.48	0.27

Geographic and stratigraphic distribution – This species is known from Pliocene to Recent of Mediterranean Sea.

Subfamily CYTHERURINAE

Genus PARACYTHERIDEA G.W. Müller, 1894

PARACYTHERIDEA TRIQUETRA (Reuss, 1850)

1992 *Paracytheridea ciampoi* RUGGIERI & D'ARPA, p. 113 (*nomen nudum*).

Material – 226 specimens comprising loose valves and carapaces (SI. 4655).

Size (mm) –

	L	H
l.v.	0.57	0.27

Remarks – The specimens of Altavilla show the some ornamentation features as *P. triquetra* (Reuss, 1850). In fact, the median rib is the principal element of ornamentation that forks in two secondary ribs, in the middle area, after doing the “anterior ring”. In the specimens of Nussdorf-Grüne Kreuze from the Badenian of Vienna (O.C.R. sl. n. 352/34b) these ribs carry on to the margins without interruptions, instead in the Altavilla specimens the ribs, which continue antero-posterior, show a small interruption.

At present, we consider this difference as too small to establish a new species.

Geographic and stratigraphic distribution – This species is known from Miocene to Recent of Mediterranean Sea.

PARACYTHERIDEA DOMUS sp. nov.
Pl. 1, fig. 10

1992 *Paracytheridea domus* RUGGIERI & D'ARPA, p. 113 (*nomen nudum*).

Material – Two loose valves.

Etymology – From Latin *domus*, name derived from the special shape of the shell.

Holotype – One right valve (SI. 4656).

Paratype – One right valve (SI. 4656).

Size (mm) –

	L	H	W
Holotype	0.49	0.22	0.20
Paratype l.v.	0.48	0.23	0.21

Diagnosis – Species of *Paracytheridea* characterized by the ventral ala jugged out parallel to the dorsal margin throughout the length of the valve. The surface of the ala is covered by numerous great foveolae.

Description – In L.V. right valve is subrectangular, dorsal margin almost straight and parallel to the ventral ala rib. This ventral rib is very developed with the outer margin flat and sharp. It is straight throughout the length of the valve forming a great swelling close to the anterior margin from where it begins. The anterior marginal area is strongly flattened and the lateral area is quite swelling.

Ornamentation constituted by oval foveolae in the anterior area. They show a trend to become greater and subquadrangular in the central-dorsal area.

In D.V. the outer margin of the ventral rib is very marked and it begins very swelling in the anterior part and becomes straight and parallel to the conjunction plane.

Geographic and stratigraphic distribution – This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

PARACYTHERIDEA GIBBERA sp. nov.
Pl. 1, fig. 11

1992 *Paracytheridea gibbera* RUGGIERI & D'ARPA, p. 113 (*nomen nudum*).

Material – Five loose valves.

Etymology – From Latin *gibbera*, name derived from the special swelling of the shell.

Holotype – One male right valve (SI. 4657).

Paratype – One male right valve and a female right valve (SI. 4658).

Size (mm) –

	L	H	W
Holotype	0.56	0.22	0.23
Paratype r.v.m.	0.52	0.22	0.24
Paratype r.v.f.	0.52	0.25	

Diagnosis – A species characterized by a broad swelling in the posterior-dorsal area and a marginal ventral rib bending towards the eye-spot on the anterior margin.

Description – In L.V. dorsal and ventral margins of male right valve are nearly straight, anterior margin broadly rounded and posterior margin shows an evident caudal process. The ventral ala rib is the principal element of the ornamentation; it is straight along the ventral margin and, near to anterior-ventral angle folds up the top, forming a right angle, and reaches the eye tubercle. A broad swelling in the posterior-dorsal area hides partially the dorsal margin on the posterior-cardinal angle. The swelling shows a concave depression delimited by a small rounded rib in the upper part. Another rib begins from this one towards the anterior part and around 1/3 of the length becomes parallel to the alar ventral rib.

Remarks – *P. gibbera* is very close to *P. depressa* (Müller, 1894) from which differs by showing the ventral rib which folds up the top and reaches the eye tubercle, and the broad swelling in the posterior-dorsal area.

Geographic and stratigraphic distribution – This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

PARACYTHERIDEA EXALPHA Doruk, 1980

1972 *Paracytheridea* sp. A UFFENORDE, p. 87, pl. 9, fig. 10, pl. 12, fig. 9.

- 1976 *Paracytheridea* sp. 6 BARBEITO-GONZALEZ, p. 305, pl. 30, figs 1a, 2a.
 1980 *Paracytheridea exalpa* DORUK, p. 147-149, pl. 148, figs 1-3, pl. 149, figs 1-3.

Material – 34 specimens comprising loose valves and carapaces (SI. 4659).

Size (mm) –

	L	H	(1/2) W
r.v.	0.65	0.26	0.26
l.v.	0.62	0.27	0.29

Geographic and stratigraphic distribution – This species is known from Pliocene to Recent of many localities: Altavilla (Pliocene), Turkey (Pleistocene), Greece and Adriatic Sea (Recent).

Genus CYTHERURA Sars, 1866

CYTHERURA CALCEOLATA sp. nov.

Pl. 1, fig. 12; Pl. 2, fig. 1

- 1992 *Cytherura calceolata* n. sp. RUGGIERI & D'ARPA, p. 113 (*nomen nudum*).
 1992 *Semicytherura* sp. 1 n. sp. RUGGIERI & D'ARPA, p. 113 (*nomen nudum*).

Material – 83 specimens comprising loose valves and carapaces.

Etymology – From Latin *calceolata*, name derived from the special shape of the shell.

Holotype – One female right valve (SI. 4660).

Paratype – One left valve (SI. 4661).

Size (mm) –

	L	H
Holotype	0.50	0.22
Paratype l.v.	0.53	0.26

Diagnosis – A medium *Cytherura* characterized by an expanded ala, which has a rib as edge, and by a

depression parallel to the ala on the posterior half of the shell.

Description – In L.V. the right valve is subrectangular, the posterior margin showing a not very evident caudal process around the half height of the shell. Lateral surface uniformly inflated with maximum convexity located on the posterior region. The alar expansion begins on the anterior margin, carries on the posterior area and finishes before reaching the posterior margin. The edge of the ala is defined by a small rib. A depression located on the posterior half begins around 1/2 of the length and continues parallel to the alar expansion. A small transversal depression is on the lateral region; it begins above the ala and finishes on the dorsal margin.

The lateral surface is ornamented by long longitudinal ribs crossed by short transversal ones, which defined subquadrangular areas; on the dorsal-lateral area, around half the length of the shell, the ribs converge in a precise point. The longitudinal and transversal ribs are finely punctuated on both sides such as the anterior marginal band.

Remarks – This new species differs from *S. inversa* Seguenza, 1880 (figured by Ruggieri, 1991) by showing the valve more lengthened and less high, the ala more expanded and delimited by a small rib, by showing a posterior swelling and a depression parallel to the ala expansion.

Geographic and stratigraphic distribution – This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

CYTHERURA PROBLEMA sp. nov.

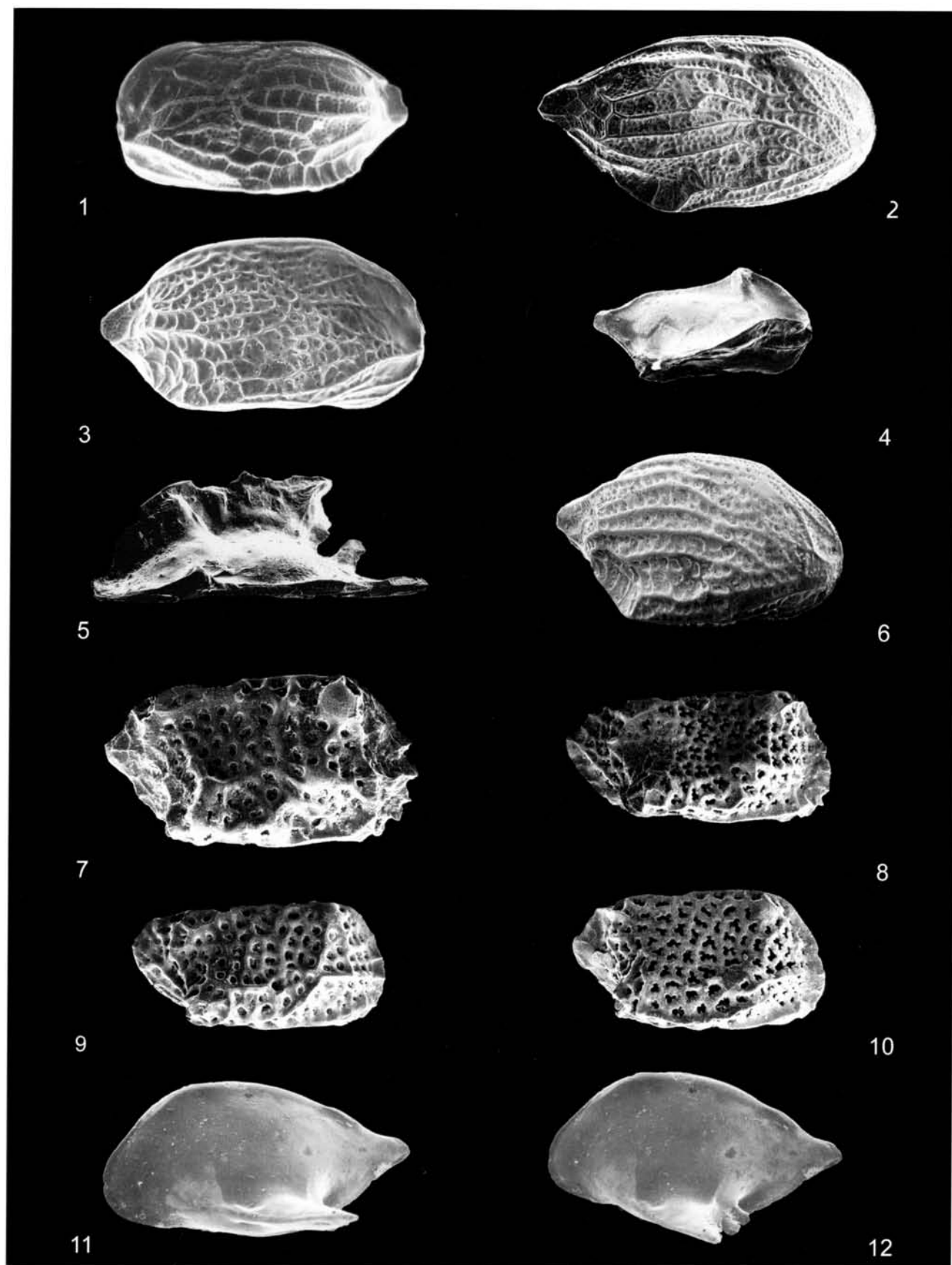
Pl. 2, fig. 2

- 1992 *Cytherura problema* n. sp. RUGGIERI & D'ARPA, p. 113 (*nomen nudum*).

Material – 60 specimens comprising loose valves and carapaces.

EXPLANATION OF PLATE 2

- Fig. 1 – *Cytherura calceolata* sp. nov. Paratype, LV, O.C.R. 4661 (x 100).
 Fig. 2 – *Cytherura problema* sp. nov. Holotype, RV, O.C.R. 4662 (x 125).
 Fig. 3 – *Cytherura burgioi* sp. nov. Holotype, RV, O.C.R. 4664 (x 112).
 Figs 4-5 – *Semicytherura bella* sp. nov. 4) Holotype, RV in lateral view, O.C.R. 4669 (x 74); 5) Paratype, RV in dorsal view, O.C.R. 4670 (x 130).
 Fig. 6 – *Semicytherura flexicosta* sp. nov. Holotype, RV, O.C.R. 4672 (x 106).
 Fig. 7 – *Eucytherura proflexa* sp. nov. Holotype, RV, O.C.R. 4688 (x 144).
 Fig. 8 – *Eucytherura* cf. *calabrica* Ciampo, 1988, RV, O.C.R. 4690 (x 120).
 Fig. 9 – *Eucytherura altavillae* sp. nov. Holotype, RV, O.C.R. 4691 (x 115).
 Fig. 10 – *Eucytherura mistrettai* Sissingh, 1972, RV, O.C.R. 4693 (x 122).
 Fig. 11-12 – *Cytheropteron biserratum* sp. nov. Holotype, LV, O.C.R. 4699 (x 86).



Etymology – From Latin *problema*, name derived from the difficult study of this species.

Holotype – One right valve (SI. 4662).

Paratype – One carapace and a left valve (SI. 4663).

Size (mm) –

	L	H	1/2 (S)
Holotype	0.48	0.31	0.14
Paratype c.	0.47	0.24	0.29
Paratype l.v.	0.45	0.25	0.13

Diagnosis – Species of *Cytherura* characterized by an evident depression on the posterior region and by another smaller on the lateral-dorsal area; Ornamentation constituted by numerous ribs which defined subquadrangular areas finely punctuated.

Description – In L.V. anterior margin of the right valve is closely rounded, dorsal margin slightly convex and posterior margin showing a caudal process around the half height of the shell; dorsal margin of the left valve is almost straight.

The alar expansion begins on the anterior margin, carries on the posterior area and, around 2/3 of the length of the valve, and finishes before reaching the posterior margin. The valve shows two depressions, the greater subcircular is on the posterior-ventral area between the alar expansion and the posterior margin; the smaller depression begins before the half length of the valve, just over the ala, and goes on transversally finishing before arriving to the dorsal margin.

Ornamentation constituted by longitudinal ribs sometimes crossed by transversal ones, which defined subquadrangular areas finely, punctuated. The longitudinal ribs begin irregular and unrecognizable close to the anterior margin. In the lateral-dorsal area, the longitudinal ribs go away forming a small smooth area defined by a finely circular punctuation.

In D.V. the outer margin of the ala is convex, then becomes parallel to the conjunction plane and finishes around 2/3 of the length of the valve before arriving to the posterior margin.

Remarks – *C. problema* differs from *C. inversa* Seguenza, 1880 (figured by Ruggieri 1991, fig. 11) by showing the lateral-dorsal deep and thicker punctuation.

Geographic and stratigraphic distribution – This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

CYTHERURA BURGIOI sp. nov.
Pl. 2, fig. 3

1992 *Cytherura* sp. 1 n. sp. RUGGIERI & D'ARPA, p. 113 (*nomen nudum*).

Material – 33 specimens comprising loose valves and carapaces.

Etymology – In Honour of Prof. Vincenzo Burgio, Curator of Geological Museum of Palermo "G.G. Gemmellaro".

Holotype – One right valve (SI. 4664).

Paratype – One left valve and one carapace (SI. 4665).

Size (mm) –

	L	H
Holotype	0.52	0.27
Paratype r.v.	0.50	0.23

Diagnosis – Species of medium size representatives of genus *Cytherura* characterized by ornamentation formed by sharp evident ribs converging in a point on the dorsal-lateral area.

Description – In L.V. anterior margin of the right valve is widely rounded, dorsal margin is straight and posterior margin showing a caudal process around the half height of the shell.

The small alar expansion begins after the anterior margin, carries on the posterior area as far as the posterior margin where it finishes. A small swelling and a longitudinal depression are on the posterior-dorsal area; they are separated by the alar expansion.

Ornamentation constituted by longitudinal parallel ribs, which converge confusedly on the latero-dorsal area before the half of the length. The area among the ribs is finely punctuated.

Remarks – This species differs from *C. calceolata* (here described) by showing bigger ribs and bigger punctuation among the ribs.

Geographic and stratigraphic distribution – This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

Genus SEMICYTHERURA Wagner, 1957

SEMICYTHERURA ACUMINATA (Müller, 1894)

1894 *Cytherura acuminata* MÜLLER, p. 291, pl. 18, figs 4, 16; pl. 19, fig. 15.

1972 *Semicytherura acuminata* - SISSINGH, p. 144, pl. 12, fig. 1.

1975 *Semicytherura acuminata* - BONADUCE, CIAMPO & MASOLI, p. 68, pl. 39, figs 1, 5.

1989 *Semicytherura acuminata* - MOSTAFAWI, pl. 2, fig. 39.

Material – 52 specimens comprising loose valves and carapaces (SI. 4666).

Size (mm) –

	L	H
r.v.	0.48	0.25
l.v.	0.50	0.24

Geographic and stratigraphic distribution – This species is known from Lower Pliocene to Recent of Mediterranean Sea.

SEMICYTHERURA ACUTICOSTATA (Sars, 1866)
VENTRICOSA (G.W. Müller, 1894)

Material – 248 specimens comprising loose valves and carapaces (SI. 4667).

Size (mm) –

	L	H
r.v.	0.47	0.22
l.v.	0.47	0.25

Geographic and stratigraphic distribution – *S. acuticostata* is known from Lower Pleistocene to Recent of the Mediterranean Sea.

SEMICYTHERURA ALIFERA Ruggieri, 1959

- 1894 *Cytherura alata* MÜLLER, p. 288, pl. 18, figs 1, 7, 8; pl. 19, fig. 9; nec *C. alata* Lienenklans, 1894.
1959 *Semicytherura alifera* RUGGIERI, p. 204.
1971 *Semicytherura alifera* - BARBEITO-GONZALEZ, pl. XXII, figs 1a, 2a, 3a.
1975 *Semicytherura alifera* - BONADUCE, CIAMPO & MASOLI, p. 70, pl. 44, figs 3, 9.

Material – 27 loose valves (SI. 4668).

Size (mm) –

	L	H
r.v.	0.52	0.29
l.v.	0.45	0.20

Geographic and stratigraphic distribution – *S. alifera* is known from the upper part of the Middle Pliocene of Altavilla and the Recent of Mediterranean Sea only.

SEMICYTHERURA BELLA sp. nov.
Pl. 2, figs 4-5; Text-fig. 1 b, c

- 1992 *Semicytherura bella* n. sp. RUGGIERI & D'ARPA, p. 113 (*nomen nudum*).

Material – 11 specimens comprising loose valves and carapaces.

Etymology – From Latin *bella*, name derived from the beautiful shape of the shell.

Holotype – One right valve (SI. 4669).

Paratype – One right and one left valve (SI. 4670).

Size (mm) –

	L	H
Holotype	0.54	0.27
Paratype r.v.	0.47	0.29
Paratype l.v.		

Diagnosis – A *Semicytherura* characterized by a much-expanded sturdy transparent ala and by a marginal dorsal rib.

Description – In L.V. the right valve shows anterior end rounded, dorsal margin slightly convex and posterior margin with an evident caudal process just under dorsal margin.

The valve is flattened on the anterior area and inflated on the posterior one; a depression is around the half of the length, just above the alar edge, it goes up and behind finishing against the dorsal margin. The very expanded and sharp ala begins on the anterior margin and goes on the posterior area; it shows a small concavity on the anterior area and carries on to the posterior margin, where it does a small concavity and a second small alar expansion, such as a spine, before finishing. A sturdy rib, parallel to the dorsal margin, begins on the anterior cardinal angle and finishes on the posterior one. Two pairs of thin, long, parallel canal pores are along the anterior margin.

The surface of the shell is smooth.

In D.V. the outer alar margin is very convex compared with the conjunction plane; it goes down around the 2/3 of the length, forming a small concavity followed by a small swelling, before finishing. Some canal pores are visible along the alar expansion.

Remarks – *S. bella* differs from *S. superba* Ciampo, 1985 by showing a depression around the half of the length and by the more expanded ala which has more pointed apex and a second great spine.

Geographic and stratigraphic distribution – *S. bella* is known from Pliocene of Altavilla Milicia only.

SEMICYTHERURA CURTA (Colalongo & Pasini, 1980)

- 1980 *Cytherura curta* COLALONGO & PASINI, p. 100, pl. 28, figs 9-11.

Material – Two loose valves (SI. 4671).

Geographic and stratigraphic distribution – This species is known from Pliocene of Altavilla and from Pleistocene of Vrica.

SEMICYTHERURA FLEXICOSTA sp. nov.
Pl. 2, fig. 6

- 1992 *Semicytherura flexicosta* n. sp. RUGGIERI & D'ARPA, p. 113 (*nomen nudum*).

Material – 26 loose valves.

Etymology – From Latin *flexicosta*, name derived from the special shape of the ribs.

Holotype – One female right valve (SI. 4672).

Paratype – One right valve and one left valve (SI. 4673).

Size (mm) –

	L	H
Holotype r.v.	0.48	0.27
Paratype l.v.	0.54	0.27
Paratype r.v.	0.52	0.31

Diagnosis – Species of *Semicytherura* characterized by a peculiar ornamentation made by anteroposterior ribs, which are flexuous in the middle area of the surface. The area among the ribs is covered by numerous great foveolae.

Although this species shows external shape very similar to *Cytherura* genus, the wider inner lamella, the long pore-canals and the hinge element allows us to refer it to *Semicytherura* genus.

Description – Right valve in L.V. with ellipse shape; acute anterior margin, slightly convex dorsal margin and ventral margin covered by alar prolongation. A caudal process is in the middle posterior end. A lengthened deep depression is on the ventral-posterior area between the alar prolongation and the caudal process.

Lateral surface is ornamented by anterior-posterior ribs, which become flexuous in the subcentral area and disappear in the marginal area. The central and posterior areas are interested by large foveolae, whereas fine pits are in the anterior area.

In D.V. the valve is truncated in the anterior area and acute in the posterior end, beside the carapace is uniformly inflated in the half part and depressed in the posterior half because of lengthen deep depression.

Remarks – This species is close to *S. aff. S. inversa* Bonaduce, Ciampo & Masoli, 1975, but differs in ellipse shape, in deeper depression of ventral-posterior area and in greater foveolae.

Geographic and stratigraphic distribution – *S. flexicosta* is known from Pliocene of Altavilla Milicia only.

SEMICYTHERURA MEDITERRANEA (G.W. Müller, 1894)

1894 *Cytherura mediterranea* G.W. MÜLLER, p. 289, pl. 18, figs 6, 9; pl. 19, fig. 18.

Material – 10 specimens comprising loose valves and carapaces (SI. 4674).

Geographic and stratigraphic distribution – This species is known from Pliocene to Recent of Mediterranean Sea.

SEMICYTHERURA TERGESTINA Masoli, 1968

1968 *Semicytherura tergestina* MASOLI, p. 46, pl. 3, fig. 28; pl. 11, figs 160, 161.

1972 *Semicytherura tergestina* - UFFENORDE, p. 93, pl. 11, figs 6, 7, 9, 11.

1992 *Sagmatocythere miliciae* n. sp. RUGGIERI & D'ARPA, p. 113 (*nomen nudum*).

Material – 57 specimens comprising loose valves and carapaces (SI. 4675).

Geographic and stratigraphic distribution – This species is known from Pliocene to Recent of Mediterranean Sea.

SEMICYTHERURA PARADOXA (Müller, 1894)

1894 *Cytherura paradoxa* MÜLLER, p. 294, pl. 17, figs 3, 9; pl. 19, fig. 12.

1953 *Semicytherura paradoxa* - RUGGIERI, p. 120, pl. 5, figs 45, 46.

1972 *Semicytherura paradoxa* - SISSINGH, p. 145, pl. 12, fig. 6.

Material – 30 loose valves (SI. 4676).

Size (mm) –

	L	H
r.v.	0.52	0.24
l.v.	0.52	0.24

Geographic and stratigraphic distribution – This species is known from Lower Pliocene to Recent of the Mediterranean Sea.

SEMICYTHERURA aff. ACUMINATA (Müller, 1894)

Material – 33 loose valves (SI. 4677).

Size (mm) –

	L	H
l.v.	0.45	0.19

Remarks – The Altavilla specimens are closer to Müller species but differ in showing small size, more evident ribs, less expanded ala and a smooth area among the ribs.

SEMICYTHERURA aff. RARECOSTATA Bonaduce, Ciampo & Masoli, 1975

1992 *Semicytherura* sp. nov. aff. *rara* RUGGIERI & D'ARPA, p. 113.

Material – 5 loose valves (SI. 4678).

Size (mm) –

	L	H	S
l.v.	0.35	0.17	
r.v.	0.38	0.18	0.20

Remarks – We report the Altavilla specimens to *S. rarecostata* dubitatively because they are badly preserved.

SEMICYTHERURA cf. ACUTICOSTATA (Sars, 1860)

1992 *Semicytherura* sp. nov. cf. *acuticostata* RUGGIERI & D'ARPA, p. 113.

Material – Three loose valves (SI. 4679).

Size (mm) –

	L	H	S
Holotype	0.38	0.17	
Paratype	0.40	0.18	0.20

Remarks – We report the Altavilla specimens to Sars' species dubitatively because they have the same ornamental features but a small alar expansion. If we could have more specimens, this feature could appear only an intraspecific characteristic; we preferred not to institute a new species.

Genus HEMICYTHERURA Elofson, 1941

HEMICYTHERURA DEFIOREI Ruggieri, 1953

1953 *Hemicytherura defiorei* RUGGIERI, p. 50, figs 8, 8a, 11, 12, 13.

1967 *Hemicytherura defiorei* - MISTRETTA, p. 9, pl. 1, figs 7, 8.

1975 *Hemicytherura defiorei* - BONADUCE, CIAMPO & MASOLI, p. 89, pl. 47, figs 8, 9.

Material – 7 loose valves (SI. 4680).

Size (mm) –

	L	H
r.v.	0.33	0.18

Geographic and stratigraphic distribution – *H. defiorei* is known from Tortonian to Recent of Mediterranean Sea.

HEMICYTHERURA GRACILICOSTA Ruggieri, 1953

1953 *Hemicytherura gracilicosta* RUGGIERI, p. 50, figs 5, 7.

1967 *Hemicytherura gracilicosta* MISTRETTA, p. 9, pl. 1, figs 11, 12.

1975 *Hemicytherura gracilicosta* BONADUCE, CIAMPO & MASOLI, p. 84, pl. 47, fig. 10.

1980 *Hemicytherura gracilicosta* COLALONGO & PASINI, pl. 21, fig. 10.

Material – 4 loose valves (SI. 4681).

Size (mm) –

	L	H
l.v.	0.37	0.20

Geographic and stratigraphic distribution – *H. gracilicosta* is known from Pliocene and Recent of Italy and Greece.

HEMICYTHERURA HELLENICA Sissingh, 1972

1972 *Hemicytherura hellenica* SISSINGH, p. 142, pl. 11, figs 11, 12.

Material – 3 loose valves (SI. 4682).

Size (mm) –

	L	H
l.v.	0.34	0.18

Geographic and stratigraphic distribution – This species is known only from Lower and Middle Pliocene of Crete and from Pliocene of Altavilla Milicia.

HEMICYTHERURA VIDENS (Müller, 1894)

1894 *Cytheropteron videns* MÜLLER, p. 303, pl. 20, figs 2, 8.

1953 *Hemicytherura videns* - RUGGIERI, p. 49, figs 4, 4a, 4b, 6, 6a.

1992 *Hemicytherura brevis* n. sp. RUGGIERI & D'ARPA, p. 113.

Material – 5 loose valves (SI. 4683).

Geographic and stratigraphic distribution – *H. videns* is known from Lower Pliocene to Recent of Mediterranean Sea.

HEMICYTHERURA TRUNCATA Ciampo, 1976

1976 *Hemicytherura truncata* CIAMPO, p. 12, pl. 4, figs 1-5; pl. 7, fig. 4.

Material – Two loose valves (SI. 4684).

Geographic and stratigraphic distribution – This species is known from Pliocene of Altavilla, Emiliano II of Cinisi (Ruggieri, 1976), and Pleistocene of Marina di Camerota, Salerno (Ciampo, 1976).

Genus KANGARINA Coryell & Fields, 1937

KANGARINA ABYSSICOLA (Müller, 1894)

1894 *Cytheropteron abyssicolum* MÜLLER, p. 302, pl. 20, figs 5, 11; pl. 21, figs 6, 9.

1953 *Kangarina abyssicola* - RUGGIERI, p. 53, text-fig. 15.

Material – 9 loose valves (SI. 4685).

Size (mm) –

	L	H
r.v.	0.36	0.22

Geographic and stratigraphic distribution – *K. abyssicola* is known from Pliocene to Recent of Mediterranean Sea.

Genus EUCYTHERURA G.W. Müller, 1894

EUCYTHERURA COMPLEXA (Brady, 1867)

1867 *Cythere complexa* BRADY, p. 210.

1894 *Eucytherura complexa* – MÜLLER, p. 306., pl. 20, figs 13, 17; pl. 21 figs 31, 32.

1980 *Eucytherura complexa* – YASSINI, p. 114, pl. 11, fig. 19.

Material – Only one right valve (SI. 4686).

Geographic and stratigraphic distribution – This species is known from Lower Pliocene to Recent of Mediterranean Sea.

EUCYTHERURA PATERCOLI Mistretta, 1967

1967 *Eucytherura patercoli* MISTRETTE, p. 6, pl. 1, fig. 2b.

1972 *Eucytherura patercoli* – SISSINGH, p. 141, pl. 11, fig. 9.

Material – 70 specimens comprising loose valves and carapaces (SI. 4687).

Size (mm) –

	L	H	1/2 (S)
l.v.	0.41	0.20	0.14

Geographic and stratigraphic distribution – *E. patercoli* is known from Lower Pliocene to Sicilian of Mediterranean Sea.

EUCYTHERURA PROFLEXA sp. nov.

Pl. 2, fig. 7

1992 *Eucytherura proflexa* sp. nov. RUGGIERI & D'ARPA, p. 114.

Material – 20 specimens comprising 14 loose valves and 6 carapaces.

Etymology – From Latin *proflexa*, name derived from the special shape.

Holotype – One right valve (SI. 4688).

Paratype – Two left valves and two right valves (SI. 4689).

Size (mm) –

	L	H
Holotype	0.39	0.22
l.v.	0.40	0.21

Diagnosis – Species representatives of genus *Eucytherura* characterized by an inflated tubercle on the lateral-ventral area, by a long anterior-ventral rib and a short posterior-dorsal rib. The surface is covered by simple foveolae.

Description – In L.V. anterior end is broadly rounded and shows marginal denticulation in the inferior half; ventral and dorsal outlines nearly straight, posterior end obliquely truncated below and connected by an obtuse angle to the dorsal margin.

A very inflated tubercle is on the lateral-ventral area just above the half height, around 1/3 of the length. A rib, parallel to the anterior margin, is before the tubercle, then it becomes parallel to the ventral margin on the anterior-ventral area. Another rib, parallel to the dorsal margin, begin after eye-spot and before the posterior cardinal angle it carries on the inferior and posterior area where it finishes.

The alar expansion begins on the lateral-ventral region around the half length and it goes on the posterior area forming a very inflated irregular expansion.

The surface of the shell is completely covered by simple foveolae ordered in lines sub-parallel to the anterior margin.

In D.V. the carapace is tapering on the anterior region and inflated on the posterior area. The edge of the alar expansion is visible after eye tubercle and it carries on obliquely as far as the 2/3 of the length where it forms a rounded apex. The posterior margin of the alar expansion goes down forming a small concavity and a small swelling, and then it goes down straight.

Remarks – *E. gibbera* Müller, 1894 is an even closer species. The new species differs in showing the anterior swelling of the ventral-marginal rib, the less irregular alar expansion and the small postero-ventral rib.

Geographic and stratigraphic distribution – This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

EUCYTHERURA CALABRICA Ciampo, 1988

Pl. 2, fig. 8

1988 *Eucytherura calabrica* CIAMPO, p. 316, pl. 2, figs 6-7.

1992 *Eucytherura* sp. 1 sp. nov. RUGGIERI & D'ARPA, p. 114.

Material – Two loose valves (SI. 4690).

Geographic and stratigraphic distribution – This species is known from the Pliocene of Calabria and the upper part of Middle Pliocene of Altavilla.

EUCYTHERURA ALTAVILLAE sp. nov.

Pl. 2, fig. 9

1992 *Eucytherura* sp. 2 sp. nov. RUGGIERI & D'ARPA, p. 114.

Material – 15 loose valves.

Etymology – From Latin *Altavilla*, the town where the holotype comes from.

Holotype – One right valve (SI. 4691).

Paratype – Two left valves and two right valves (SI. 4692).

Size (mm) –

	L	H
Holotype	0.39	0.19
Paratype	0.38	0.19

Diagnosis – A subrectangular species characterized by sharp ribs and by an alar expansion which finishes in a inflated tubercle. Ornamentation constituted by simple foveolae adapted to the position of the ribs.

Description – In L.V. anterior margin is broadly rounded, ventral and dorsal edges straight. The posterior margin is connected by an acute angle to the dorsal margin and goes down obliquely to the ventral margin.

The alar expansion begins as a sharp rib on the anterior edge and carries on longitudinally for a short stretch; then it expands and goes on obliquely to the ventral edge, but becomes parallel to the ventral margin, around the half length. The final edge of the alar expansion is characterized by a very inflated tubercle.

Two small ribs start from eye-spot and go away finishing against the ala. A short rib is on the lateral area, around the half of the length.

Large, simple foveolae cover the surface of the shell; they form regular rows that are adapted to the ribs.

Remarks – This species has peculiar features, which differentiate it from the other species. *Eucytherura patercoli* Mistretta, 1967 is a closer species from which differs in showing the absence of the very inflated tubercle on the final edge of the alar expansion, the absence of two small ribs and the shape of the foveolae.

Geographic and stratigraphic distribution – This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

EUCYTHERURA MISTRETTAI Sissingh, 1972
Pl. 2, fig. 10

1967 *Eucytherura ruggieri* MISTRETTA, p. 6, text-fig. 2d, pl. 1, fig. 6 (non *Eucytherura?* *ruggieri* van den Bold, 1958).

1972 *Eucytherura mistrettai* n. nov. SISSINGH, p. 140.

1992 *Eucytherura* sp. 3 sp. nov. RUGGIERI & D'ARPA, p. 114.

Material – 19 loose valves (SI. 4693).

Geographic and stratigraphic distribution – This species is known from the Pliocene of Crete, Capocolle (Forlì-Cesena Province), from Sicilian of Ficarazzi and Oreto river (Palermo), and from Recent of Adriatic Sea (Bonaduce et al., 1975).

Genus TETRACYTHERURA Ruggieri, 1952

TETRACYTHERURA IRREGULARIS (Terquem, 1878)

1878 *Cythere irregularis* TERQUEM, p. 101, pl. 11, fig. 10.

Material – Ten loose valves (SI. 4694).

Geographic and stratigraphic distribution – This species is known from several locality of Pliocene and Lower Pleistocene of Mediterranean Sea.

Genus MICROCYTHERURA G.W. Müller, 1894

MICROCYTHERURA FULVA (Brady & Robertson, 1874)

1874 *Cytherura fulva* BRADY & ROBERTSON, p. 116, pl. 4, figs 1-5.

1980 *Microcytherura fulva* - YASSINI, p. 116, pl. 1, fig. 14.

Material – One left valve (SI. 4695).

Size (mm) –

	L	H
l.v.	0.34	0.15

Geographic and stratigraphic distribution – From the upper part of the Lower Pliocene to the Recent of the Mediterranean Sea.

MICROCYTHERURA NIGRESCENS Müller, 1894

1894 *Microcytherura nigrescens* MÜLLER, p. 383, pl. 39, figs 2, 25, 39, 49, 56.

Material – 23 loose valves (SI. 4696).

Size (mm) –

	L	H
r.v.	0.41	0.20
l.v.	0.38	0.18

Geographic and stratigraphic distribution – From Pliocene to Recent of the Mediterranean Sea.

Genus KROMMELBEINELLA Mostafawi, 1983

KROMMELBEINELLA BIANGULATA (Terquem, 1878)

1878 *Cythere biangulata* TERQUEM, p. 104, pl. XII, figs 2a - d.

1989 *Krommelbeinella biangulata* - MOSTAFAWI, p. 128, pl. 2, fig. 29.

Material – 32 specimens comprising loose valves and carapaces (SI. 4697).

Size (mm) –

	L	H
r.v.	0.65	0.34
l.v.	0.48	0.27

Geographic and stratigraphic distribution – From Upper Pliocene to Lower Pleistocene of Rhodes Island.

Genus PAIJENBORCHELLA Kingma, 1948

PAIJENBORCHELLA SOLITARIA Ruggieri, 1962

1962 *Paijenborchella solitaria* RUGGIERI, p. 54, pl. 16, fig. 9.

Material – 4 loose valves (SI. 4698).

Size (mm) –

	L	H	1/2 (S)
l.v.	0.56	0.22	0.24

Geographic and stratigraphic distribution – This species is known from Tortonian to Recent of the Mediterranean Sea and Recent from South China.

Genus CYTHEROPTERON Sars, 1855

CYTHEROPTERON BISERRATUM sp. nov.
Pl. 2, figs 11-12

1992 *Cytheropteron biserratum* RUGGIERI & D'ARPA, p. 114 (*nomen nudum*).

Material – 11 loose valves.

Etymology – From Latin *biserratum*, name derived from the two rows of the serrated lines along the outer margin of the ala.

Holotype – One left valve (SI. 4699).

Paratypes – 10 valves (SI. 4700).

Size (mm) –

	L	H	1/2 (S)
Holotype	0.64	0.33	0.35

Diagnosis – Species of *Cytheropteron* characterized by a great and sturdy ala, which has two crenulated ridges on the posterior margin and two great subrectangular spines.

Description – In L.V. the anterior margin is acutely rounded on the antero-ventral angle, dorsal margin broadly convex, ventral margin is covered by the alar

prolongation; an evident caudal process is on the posterior area.

The thin calcareous valve is transparent and shows a large vestibulum in the anterior area and a little vestibulum in the posterior area. Both vestibula show inner lamella parallel to the outer margin. Twelve marginal pore canals are in anterior vestibulum and five in posterior one. The sturdy ala is on the ventrolateral area and it disappears reaching anterior and posterior margins. Lateral surface of valve is smooth.

The valve has triangular shape in D.V.; the edge of great, sturdy ala is broadly convex as to the end, compared with junction plan. The ala has a small spine directed towards at the top. The posterior ala margin is concave and shows two crenulated ribs followed by two subrectangular big spines, the anterior being thicker than posterior.

Remarks – This new species differs from *C. agile* Colalongo & Pasini, 1980 by showing a small alar spine directed at the top and by two subrectangular big spines on the posterior alar margin.

Geographic and stratigraphic distribution – This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

CYTHEROPTERON LATUM Müller, 1894

1894 *Cytheropteron latum* MÜLLER, p. 300, pl. 20, figs 3, 9; pl. 21, figs 10, 14.

Material – 28 specimens comprising loose valves and carapaces (SI. 4701).

Size (mm) –

	L	H
r.v.	0.42	0.28
l.v.	0.41	0.24

Geographic and stratigraphic distribution – *C. latum* is known from the lower-middle Pliocene to Recent of the Mediterranean Sea.

CYTHEROPTERON MONOCEROS Bonaduce, Ciampo & Masoli, 1975

1975 *Cytheropteron monoceros* BONADUCE, CIAMPO & MASOLI, p. 95, pl. 56, figs 1-7.

Material – One loose valve (SI. 4702).

Geographic and stratigraphic distribution – This species is known from Pliocene to Recent.

CYTHEROPTERON RUGGIERII Pucci, 1955

1955 *Cytheropteron ruggierii* PUCCI, p. 170, pl. 1, figs 5, 6; text-fig. 2.

1975 *Cytheropteron ruggierii* - BONADUCE, CIAMPO & MASOLI, p. 97, pl. 55, figs 1, 6.

Material - 91 specimens comprising loose valves and carapaces (SI. 4703).

Size (mm) -

	L	H
r.v.	0.50	0.26
l.v.	0.51	0.25

Geographic and stratigraphic distribution - *C. ruggierii* is known from the lower-middle Pliocene to Recent of the Mediterranean Sea.

CYTHROPTERON cf. CRASSUM Colalongo & Pasini, 1980

1992 *Cytheropteron sequenzianum* n. sp. RUGGIERI & D'ARPA, p. 114 (*nomen nudum*).

Material - Two loose valves (SI. 4704).

Remarks - Altavilla specimens show size and features very similar to Colalongo & Pasini (1980) species. Still, the denticulations and the sculpture, on the posterior area of the ala, have induced us to wait for the recovery of other specimens.

CYTHROPTERON SULCATUM Bonaduce Ciampo & Masoli, 1975

1975 *Cytheropteron sulcatum* BONADUCE, CIAMPO & MASOLI, p. 97, pl. 57, figs 1, 8; text-fig. 37

1980 *Cytheropteron sulcatum* - CIAMPO, pl. 13, fig. 8.

Material - One left valve badly preserved (SI. 4705).

Size (mm) -

	L	H
l.v.	0.45	0.23

Geographic and stratigraphic distribution - *C. sulcatum* is known from Tortonian to Recent of Mediterranean Sea.

Subfamily BYTHOCYThERINAE
Genus BYTHOCYThERE Sars, 1866

"BYTHOCYThERE" MINIMA Bonaduce, Ciampo & Masoli, 1975

1975 "*Bythocythere*" minima BONADUCE, CIAMPO & MASOLI, p. 114, pl. 68, figs 7-11.

Material - Two loose valves (SI. 4706).

Geographic and stratigraphic distribution - This species is known from the Altavilla Pliocene and Recent of the Adriatic Sea (Bonaduce *et al.*, 1975).

BYTHOCYThERE PUNCTICULATA Ruggieri, 1976

1976 *Bythocythere minima* BREMAN, pl. 12, figs 180 a-c (*nec* Bonaduce, Ciampo & Masoli, 1975).

1976 *Bythocythere puncticulata* Ruggieri, p. 101, fig. 13.

Material - One left male valve (SI. 4707).

Size (mm) -

	L	H	1/2 (S)
l.v.	0.83	0.48	0.24

Remarks - *B. puncticulata* is very close to *B. turgida* but differs in showing small size, punctuation more evident, swelling less evident, and ribs which go up in *B. puncticulata* while in *B. turgida* are parallel to the ventral margin.

Geographic and stratigraphic distribution - *B. puncticulata* is known from the Altavilla Pliocene, the Santernian of Valle del Belice (Sicily), Emilian of Cinisi, Sciacca (Sicily) and Brindisi (Puglia), Sicilian of Palermo, and Recent of Adriatic Sea.

Genus CYThEROIS G.W. Müller, 1884

CYThEROIS SICULA sp. nov.
Text-fig. 1a

1992 *Cytherois sicula* n. sp. RUGGIERI & D'ARPA, p. 112 (*nomen nudum*).

Material - 15 specimens comprising 13 loose valves and 2 carapaces.

Etymology - From Latin *sicula*, name derived from the region of the Altavilla locality.

Holotype - One left valve (SI. 4709).

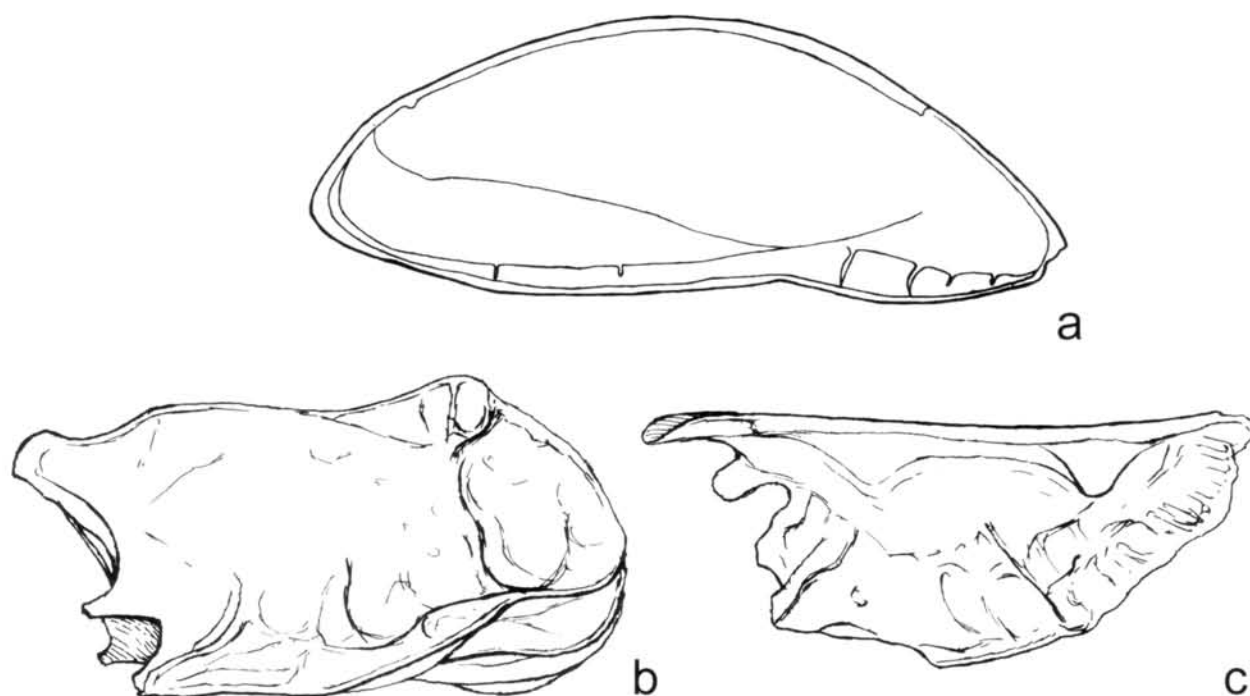
Paratype - Two loose valves (SI. 4710).

Size (mm) -

	L	H	1/2 (S)
l.v.	0.71	0.26	0.18
r.v.	0.60	0.26	0.16

Diagnosis - A *Cytherois* species characterized by the lengthened shape, acute anterior edge and sinuous ventral edge. The surface is smooth.

Description - In L.V. the anterior end is closely rounded, dorsal margin is convex and posterior margin is rounded on the posterior-ventral area. The sinuous



Text-fig. 1 - a - *Cytherois sicula* sp. nov., Holotype, LV, O.C.R. 4709 (x 137).
b, c - *Semicytherura bella* sp. nov. b) Holotype, RV in lateral view, O.C.R. 4669 (x 147); c) Holotype, RV in dorsal view, O.C.R. 4669 (x 147).

ventral margin is slightly convex on the posterior region and it shows a large concavity around 1/3 of the length. The maximum of the height is after the half of the length.

The surface of the shell is smooth and it is possible to observe few thin pore canals only along the ventral margin.

In L.V. the inner lamella is distant from the outer margin excepting for a short wile along the concavity of the ventral margin.

In D.V. the valve is uniformly inflated and the maximum thickness is after half of the length.

Remarks - *Cytherois* sp. B of Uffenorde, 1972 (pl. 4, fig. 8-9) is an even closer species. The Altavilla species differs in showing greater size, more lengthened valves, anterior margin sharper, and ventral edge more sinuous.

Geographic and stratigraphic distribution - This new species is known so far only from the upper part of Middle Pliocene of Altavilla.

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