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GENERAL DISTRIBUTION OF *PTERIGOCYTHEREIS JONESII* (BAIRD, 1850) and *PTERIGOCYTHEREIS CERATOPTERA* (BOSQUET, 1852) (OSTRACODA) IN THE SEA OF MARMARA

PTERIGOCYTHEREIS JONESII (BAIRD, 1850) ve *PTERIGOCYTHEREIS CERATOPTERA* (BOSQUET, 1852)'in Marmara Denizinde Genel Dağılımı

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Abstract

Genus ***Pterigocythereis*** and related species are known all around of the Mediterranean recently. ***Pterigocythereis jonesii*** and ***P. ceratoptera*** are important species which they observed for the first time with this study in the benthic ostracoda thanatocoenosis and biocoenosis of the Sea of Marmara. These species have been found in all of the locations of shallow water at depths between 20-60 m. and especially in near-shore throughout the Sea of Marmara coasts. Their habitat are exist different types of substrate, but they prefer commonly on sandy mud and silty mud bottom sediments.

Introduction

Sea of Marmara is an inland sea which is situated in the northwest Turkey and connected to Black Sea and Aegean Sea through (Figure 1). There are many ostracoda investigations and publications about Mediterranean (Sissingh, 1972; Bonaduce et.al. 1975; Bonaduce et.al. 1976; Yassini, 1979; Bonaduce et.al. 1983a, Bonaduce at.al. 1983b; Aranki, 1987; Oertli-ed., 1985, etc.). But few ostracoda investigations are at present in the Sea of Marmara (Nazik, 1996 and Tunoğlu, 1996). Over 60 species are determined in the Sea of Marmara. Distribution and frequency of two dominant and important species are given in this study. Hartmann & Puri (1974) classification are used. The description of the species are only based on the characters of the carapace. All of the samples have rich and abundant ostracoda, nannoplankton, benthic and planktonic foraminifera, micro and macro

gastropoda and pelecypoda, scaphopoda, coral, algea, bryozoa, spongea spicules, echinodermata and their spines.

The present study is based on 19 gravity corrers and 4 dredges and 3 graps and related to 149 samples, collected in 1994 by the researchship of MTA(General Directorate of Mineral Research and Exploration) named Sismik 1. This research is a substudy of National Marine Geological and Geophysical Programme which has the purpose to bring up the geology of the related seas in order to enlighten their origin, evolution, faunal and floral association and distribution, ecology and mineral potential.

Systematic

Subclass: OSTRACODA, Latreille, 1806
Order : MYODOCOPIDA Sars, 1866
Suborder: PODOCOPA Sars,1866
Family: TRACHYLEBERIDIDAE, Sylvester-Bradley, 1948
Tribe : PTERIGOCYTHEREIDINI, Puri, 1957
Genus: PTERIGOCYTHEREIS, Blake, 1933

Pterigocythereis jonesii (Baird, 1850)

Plate 1 Figs 1-5

1850 *Cythereis jonesii*, Baird, p.175, pl. 20, fig.1
1963 *Pterigocythereis jonesii* (Baird) Stancheva, pl.3, fig.10.
1971 *Pterigocythereis jonesii* (Baird), Keurs, pl.3, Fig. A1-3, A2-10, 3B-6.
1972 *Pterigocythereis (Pterigocythereis) jonesii*, (Baird) Sissingh, p.111, pl. 8, fig. 2.
1975 *Pterigocythereis jonesii* (Baird), Bonaduce, Ciampo, Masoli, p.54, pl. 29,figs.1,11
1979 *Pterigocythereis jonesii* (Baird), Yassini, p.381, pl.4, fig.1
1985 *Pterigocythereis jonesii* (Baird), Oertli (ed.) Atlas des ostracodes France, p.351, pl. 103, figs. 7,8.
1987 *Pterigocythereis jonesii* (Baird), Aranki, p. 62-63, pl.4, fig.3.
1990 *Pterigocythereis jonesii* (Baird), Guernet, p. 279-293, pl.2, figs.1-6.

Description: Carapace subrectangular or subquadrangular in the lateral view. Carapace is compressed anteriorly and posteriorly. Arrowhead shaped in dorsal view, anterior margin broadly rounded, both of anretior and posterior margin have denticulates and spinose. Dorsal margin is straight, ventral margin is covex. The shell surface is smooth and ornemented with spines, tubercules and ridges. Eye tubercule is very prominent. Spines generally located along the ventral and dorsal margin of valve. There is a strong spine or flange-like spine on the centra-ventral ridge on the valve.

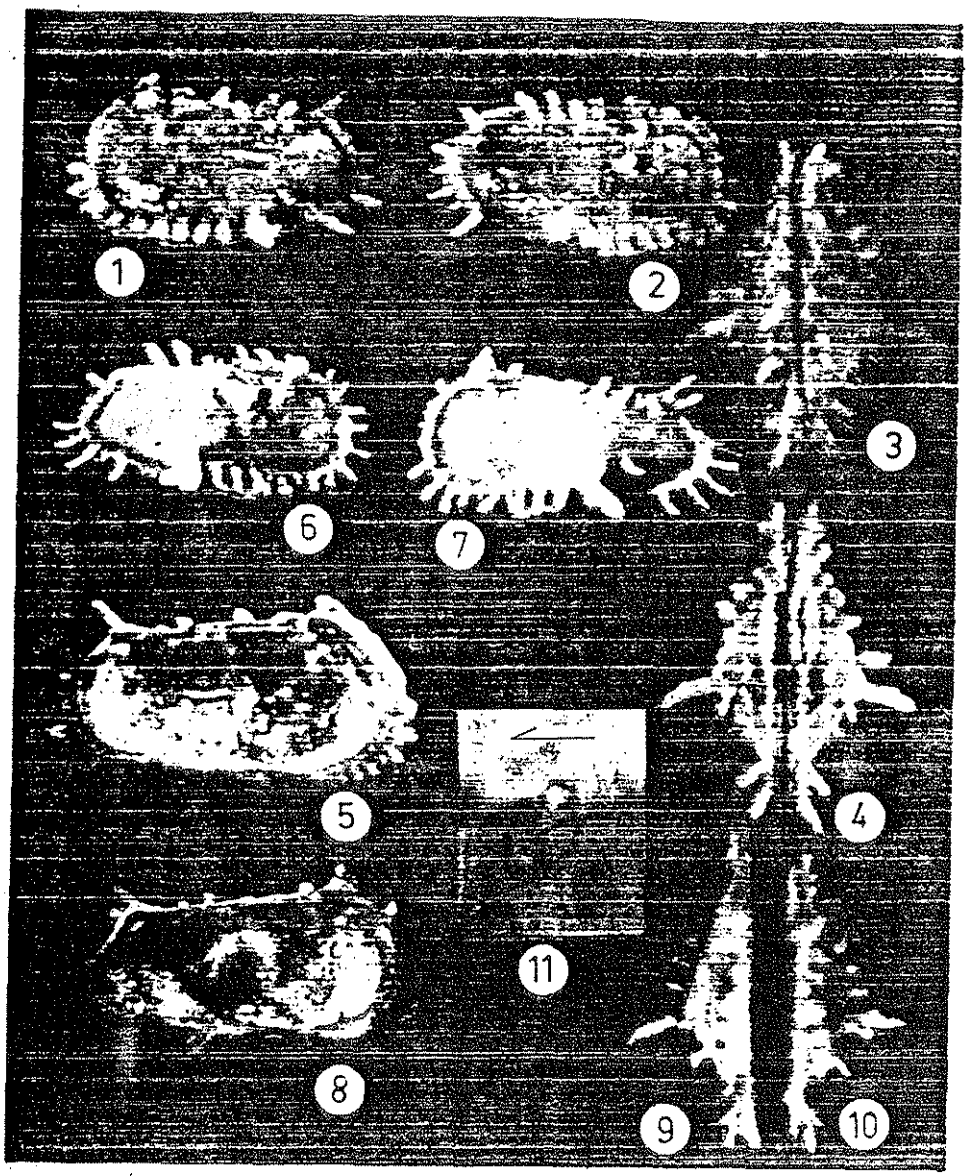

Plate 1. Different position photograps of carapace and shell of *P. jonesii* BAIRD and *P. ceratoptera* BOSQUET

Figure Plate Explanations

Figure 1. Location map of the investigation area and distribution and frequency of *P. jonesii* BAIRD and *P. ceratoptera* BOSQUET in the Sea of Marmara.

Figure 2. Distribution of *P. jonesii* BAIRD (✪) and *P. ceratoptera* BOSQUET (★) in the Mediterranean.

Plate 1. Different position photograps of carapace and shell of *P. jonesii* BAIRDand *P. ceratoptera* BOSQUET

Figure 1-5. ***Pterigocythereis jonesii*** BAIRD
Sea of Marmara. Offshore of Armutlu Peninsula. Sample No: 5 d3.
1. Left valve. external view. X55
2. Right valve. external view. X55
3. Carapace. dorsal view. X55
4. Carapace. dorsal view. X55
5. Left valve. internal view. X65

Figure 6-11. ***Pterigocythereis ceratoptera*** BOSQUET
Sea of Marmara. Offshore of south of Marmara Island. Sample No: 16 g2.
6. Right valve. external valve. X50
7. Left valve. external view. X50
8. Left valve. internal view. X60
9. Left valve. dorsal view. X50
10. Right valve. dorsal view. X50
11. Central muscle scars. X200

Dimensions: Lenght: 1.1 mm, Height: 0.5 mm, width: 0.3 mm

Material: 320 valves and 30 carapaces (All of the samples)

Geographic distribution: Bay of Naples, Adriatic Sea-Recent (Italy); Limski chanel, Aegean Sea, Evros Delta-Recent (Greece); Levant Sea-Recent (Cyprus) ; Sea of Marmara-Recent (Turkey); Bay of Bou-İsmail-Recent (Algeria); Golfe de Capbreton, Golfe de Gascogne -Recent and Holocene (France); Pleistocene: Algeria, Italy, Rhodos (Greece); Pliocene: Algeria, Italy,(Rhodos, Karpathos, Crete-Greece), Almayate (Spain); Early Miocene (Austria); Tortonian (MW Bulgaria).

Remarks: *P. fimriata* (Münster) closely similar with outer lateral view but it differs from posterior margin and with spines, otherwise the surface of *P. fimbriata* has very much small spines but *P. jonesii* has smooth surface.

Pterigocythereis ceratoptera (Bosquet, 1852)

Plate 1 Figs. 6-11

1852 *Cythere ceratoptera*, Bosquet 1852, p.114, pl.6, fig. 2
1972 *Pterigocythereis ceratoptera* (Bosquet) , Sissingh, p.111, plt.8, fig.1
1975 *Pterigocythereis ceratoptera* (Bosquet), Bonaduce, Ciampo & Masoli, p.53-54, pl.30, figs. 1-9.
1990 *Pterigocythereis ceratoptera* (Bosquet), Guernet, p.279-293, pl.3, figs. 8-10.
1995 *Pterigocythereis ceratoptera* (Bosquet), Zorn, pl. 1, fig.6

Description: Carapace is rectangular in the lateral view and arrowhead-shaped in dorsal view. Anterior end broadly rounded with spines. Posterior margin is angular and V shaped to the backward. The outer marginal rim of each wing has strong spines anteroventral and posterior marginal denticulations very prominenet. Marginal pore canals are straight, thin and simple, inner lamella moderately wide. Hinge amphidont/heterodont, central muscle scars are typical of the Trachyleberidinae, Eye spots large, and shiny.

Dimensions: Lenght: 1.1 mm, height: 0.5 mm Width: 0.25 mm
Material: 135 valve, 11 carapace (all of the samples)
Age: Recent
Remarks: *P. ceratoptera* differs from the *P. jonesii* with especially appearence of posterior margin. *P. ceratoptera* closely similar with *P. siveteri* and *P. coranata* is also similar. *P. ceratoptera* may be sinonimous with *P. siveteri* and *P. coranata.*

Geographic distribution: Originally described in Belgium and Paris Basin in the Miocene-Pliocene periods, but occurrence are in Gavdos, Crete, Rhodos, Lindos (Greece), Sea of Marmara (Turkey), Adritic Sea (Italy), Golfe de Gascogne, Pays Basque (France) in Recent.

Ecology of Pterigocythereis Jonesii and P. Ceratoptera

Both species have been found in all of the locations of shallow water at depths between 20-60 m. Bonaduce et al. (1975) recorded and mentioned that the depth range is different between *P. ceratoptera* and *P. jonesii*. *P. jonesii* shows a wider depth (from near-shore to 200 m.) while *P. ceratoptera* is present between 70 and 170 m. Water salinity* is generally 21-22 ‰ at the surface but generally 37-39 ‰ at the bottom or on the substrate. *Pterigocythereis jonesii* and *ceratoptera* prefer generally substrate of mudy and silty mud and sandy mud. The amount of dissolved oxygen is generally 0.24-7.03 mlt/lt in the Sea of Marmara but both species prefer high value oxygeneous environment. Temperature of the Sea of Marmara is generally between 24.5-16.6 °C (July 1993) and the bottom temperature is 11.5-14°C. However seasonal variations are not wide range in the Sea of Marmara. Density of the environment was recorded between 13-29 (Sig. T) which has generally has a wide density range between the sea level and the bottom, but one location has a very narrow range (Off shore of Mudanya). There is a positive correlation between density and salinity, Si, total N and PO_4-P values of the Sea of Marmara.

P. jonesii and P. ceratoptera are generally found all together with *Cytheridea neopolitana, Carinocythereis carinata, C. neulankampi, Falunia plicatula, Costa edwardsii, C. tricostata, Bythocythere reticulata, Bosquetina dentata*, and *Loxoconha agilis*.

Geographic and Stratigraphic Distribution of Both Species

Pterigocythereis jonesii and *P. ceratoptera* have been found throughout the Meditterranean area (Figure 2). Especially in the Adriatic Sea, Bonaduce et al. (1975) recorded a depth range between 80 and 170 m. and observed generally medium and fine sand, very sandy pelite and sandy silt but rare on silt and silty pelite. *Pterigocythereis jonesii* is recorded from the Bay of Bou-İsmail in Algeria (Yassini, 1979) and preferance is generally mudy substrate. *Pterigocythereis jonesii* has been recorded at Lower Pliocene deposits of Southern Spain By Aranki (1987) and South Aegean Islands (Greece) (Sissingh 1972), *Pterigocythereis ceratoptera* is known from Oligocene to Recenet but *P. jonesii* is known from Lower Pliocene to Recent(Guernet, 1990). Meanwhile, *P. jonesii* has also a broad geographic distribution outside Meditteranean. It has been known from the Holocene of Great Britain (Baird, 1850) and Norway (Sars, 1928).

Özet

Pterigocythereis cinsi ve türleri günümüzde tüm Akdeniz'de bilinmektedir. ***P. jonesii*** ve ***P. ceratoptera*** Marmara denizi ostrakoda tanatösönözü ve biyosönözünde, bu çalışma ile ilk kez ortaya konulmuş, önemli iki bentik türdür. Her iki tür Marmara kıyıları boyunca 20-60 m. arasındaki derinliklerde, sığ su ortamında bulunmaktadır. Yaygın olarak değişik deniz

* All of the ecologic and sea water parameters have been taken from METU(Middle East Technical University), Marine Science Institute ERDEMLİ/İÇEL

tabanı tiplerinde izlenirken, çamurlu, kumlu ve siltli çamurlu tabanda yaygın olarak gözlenmektedir.

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