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Araştırma Notu / Short Note

New Records for Marine Phytoplankton of Turkish Seas From Southern Black Sea Coasts

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Abstract: Six new records for Turkish Marine Phytoplankton are reported first time from southern Black Sea coastal waters. One of these taxa was from Zygnematophyceae, four were from Bacillariophyceae and one was from Fragilariophyceae.

Key Words: Black Sea, Samsun, New Record, Checklist, Phytoplankton, Turkey.

Özet: *Güney Karadeniz kıyısal sularında Türkiye denizleri fitoplanktonu için yeni kayıtlar.* Güney Karadeniz kıyısal sularında Türkiye denizleri fitoplanktonu için 6 yeni kayıt ilk kez rapor edilmiştir. Tanımlanan taksonlardan biri Zygnematophyceae, dördü Bacillariophyceae ve biri Fragilariophyceae sınıflarına aittir.

Anahtar Kelimeler: Karadeniz, Samsun, Yeni Kayıt, Kontrol Listesi, Fitoplankton, Türkiye.

Introduction

Although phytoplankton of the northern Black Sea was reported by many researchers, a little studies were reported for the Turkish coastal waters of southern Black Sea (Benli 1987; Tuncer and Feyzioğlu, 1989; Feyzioğlu and Tuncer, 1994; Uysal and Sur 1990; Türkoğlu and Koray, 2002). There are no records of taxa identified in this study previosly recorded in Turkish Seas (Koray, 2001).

The aim of this study is to add six taxa to check list of Turkish phytoplankton species.

Material and Methods

Study area is located in the southern Black Sea, Samsun coastal waters and exists between Yeşilırmak and Kızılırmak deltas. In addition, numbers of streams and some rivers are discharging into Samsun coastal region.

The samples collected from the southern Black Sea, Samsun coast of Turkey (lat. 41^0 15′ 52,3″ N and 41^0 22′ 24,5″ N, long. 36^0 22′ 55,3″ E and 36^0 13′ 35,5″ E) between October 2002 and October 2003. The location of the study area and sampling stations are shown in Figure 1. Samples were taken at five samling stations by Hydro-Bios standart plankton net and preserved in formaldehyde solution (final concentration %4).

Taxonomic observations were performed by using Prior Phase-contrast and Nikon Labophot-2 microscobes. Idendifications of the species and taxonomy were carried out according to Hustedt (1985), Krammer and Lange-Bertalot (1986, 1991a), Lange-Bertalot (2000), Koray (2001), John *et al*. (2003).

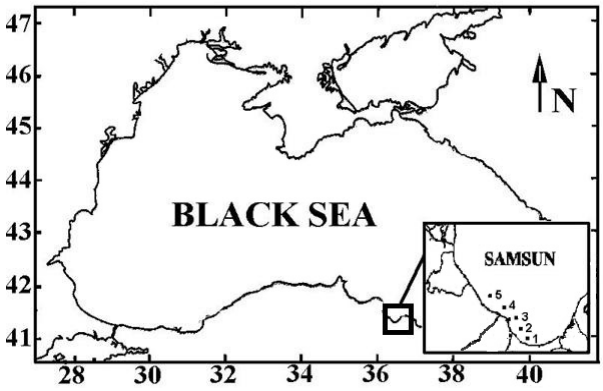

Figure1. Location of sampling stations in Samsun, southern Black Sea.

Results and Discussion

Classis: Zygnematophyceae C. van den Hoek *et al*. 1995
Ordo: Zygnematales Smith 1933
Genus: Cosmarium Corda ex Ralfs 1848
Cosmarium formosulum Hoffmann 1888

Cell 35 µm wide, 47 µm long; sinus deep, closed at outside, abrobtly rounded at basal angle, slightly inflated, sinus widened internally, lateral margins convex with 6 crenations bigranulate, apex truncate.

Classis: Bacillariophyceae Haeckel 1878 *emend* Mann in Round *et al*. 1990
Ordo: Naviculineae Hendey 1937
Familia: Cymbellaceae Greville 1833
Genus: Cymbella C.A. Agardh 1830
Cymbella cymbiformis C.A. Agardh 1830

Valves boat shaped, with convex dorsal margin and straight ventral margin, slightly inflated in the midlle, bluntly rounded on the ends, 90 µm long, 15 µm wide. Raphe eccentric, slightly arched towards the dorsal side, apical fissures directed dorsally. Axial area slender slightly widened around the central nodule. Transapical striae radial, 10 in 10 µm.

Cymbella inaequalis (Ehrenberg) Rabenhorst

Valves dorsaventral, dorsal and ventral convex shaped ; wide and lanceolat from linear to elliptic, ends of valve blunt-spheroid shaped and prolonged to front, 45 µm long, 15 µm wide. Raphe slightly ventral, central nodule large and spheroid. In the central area 10 stria in 10 µm.

Classis: Bacillariophyceae Haeckel 1878 *emend* Mann in Round *et al*. 1990
Ordo: Surirellales Mann in Round *et al*. 1990
Familia: Surirellaceae Kutzing 1844
Genus: Surirella Turpin 1828

Surirella ovalis Brébisson 1838: 17

Valve heteropolar, broadly lanceolate, 80 µm long, 35 µm broad. Structures of the valve concentrically arranged median area less lanceolate, transapical striae 12 in 10 µm.

Classis: Coscinodiscophyceae Round & Crawford in Round *et al*. 1990.
Ordo: Aulacoseirales Crawford in Round *et al*. 1990.
Familia: Aulacoseiraceae Crawford in Round *et al*. 1990.
Genus: Aulacoseira Thwaites 1848

Aulacoseira granulata (Ehrenberg) Simonsen 1979

Cells cylindiric shaped and tightly connected with each other, ends of cells straight and curved. Cell diatemeter 5 µm wide and 20 µm height, cell height / size proportion is grater from 0.8. Disc surface delicate and striae visible, 10 in 10 µm, cell chain are slightly sloped.

Classis: Fragilariophyceae Round in Round et al. 1990
Ordo: Fragilariales Silva 1962 sensu emend.
Familia: Fragilariaceae Greville 1833
Genus: Synedra Ehrenberg 1830

Synedra ulna (Nitzsch) Ehrenberg var. *danica* (Kützing) Grunow

Valve linear-lanceolate. Ends of valve swollen, somewhat capitate. Central area transverse, not reaching the margins of the valve. Striae paralel,10 in 10 µm. Length, 187.5 µm, breadth 7.5 µm.

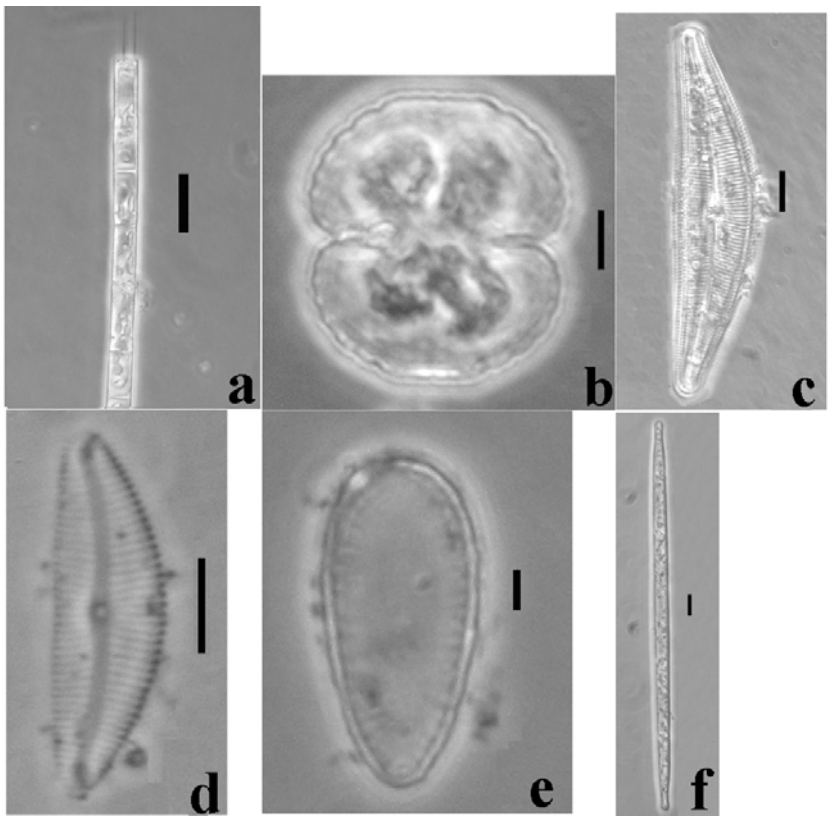

Figure 2. a) *Aulacoseira granulata* (Ehrenberg) Simonsen b)*Cosmarium formosulum* Hoffmann c) *Cymbella cymbi*formis Agardh d) *Cymbella inaequalis* (Ehrenberg) Rabenhorst e) *Surirella ovalis* Brébisson f) *Synedra ulna* (Nitzsch) Ehrenberg var. *danica* (Kützing) Grunow. Scales 10 µm.

The taxa identified in this study are usually found in freshwater phytoplankton of this region. Gönülol *et al*. (1996) reported these taxa in "A Checklist of the Freshwater Algae of Turkey" and suggested that they were determined in Bafra Balık Lakes, Kızılırmak, Yeşilırmak, Sarıkum Lake, Suat Uğurlu Dam Lake. However, *Synedra ulna* (Nitzsch) Ehrenberg var. *danica* (Kützing) Grunow, *Aulacoseira granulata* (Ehrenberg) Simonsen 1979, *Surirella ovalis* Brébisson 1838: 17, *Cymbella inaequalis* (Ehrenberg) Rabenhorst, *Cymbella cymbi*formis C.A. Agardh 1830,

Cosmarium formosulum Hoffmann 1888 are reported first time for marine phytoplankton of the Turkish seas. This condition may strongly be related to existing a number of streams and rivers discharging in to the study area.

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