



PROOF

SHORT PAPER

***Microcosmus polymorphus* Heller, 1877 (Tunicata: Ascidiacea: Pyuridae)- A new addition to the fauna of the Turkish coasts.**

Herdem Aslan Cihangir^{1,*}, Andres Izquierdo Muñoz², Maria A. Pancucci Papadopoulou³, A. Alfonso Ramos Esplá², Elif Can Yılmaz⁴

¹ Onsekiz Mart University, Gökceada School of Applied Sciences, Department of Fisheries Technology, Gökceada, Turkey.

² Ayuntamiento de Santa Pola-Universidad de Alicante, Centro de Investigación Marina de Santa Pola (CIMAR), 03130 Santa Pola, Alicante, Spain.

³ Hellenic Centre for Marine Research Institute of Oceanography, 19013, Anavissos, Attica, Greece.

⁴ Dokuz Eylül University, Institute of Marine Sciences and Technology, Haydar Aliyev Bul., No:32, İnciralti, İzmir, Turkey.

* Corresponding Author: Tel.: +90 530 315 99 13; Fax: +90 286 887 46 44;

Received 28 January 2010

E-mail: asherdem@comu.edu.tr

Accepted 27 September 2010

Abstract

Microcosmus polymorphus, an Atlanto-Mediterranean ascidian, is here recorded for the first time from the Turkish Seas. One specimen was obtained from Izmir Bay by trawling at the depth of 50 m in July 2007.

Keywords: *Microcosmus polymorphus*, Aegean Sea, Izmir Bay, new record

Türkiye Kıyı Faunasına Yeni Bir Katkı - (*Microcosmus polymorphus* Heller, 1877 (Tunicata: Ascidiacea: Pyuridae))

Özet

Bu çalışmada, Atlanto-Mediterranean bir tür olan *Microcosmus polymorphus*'un Türkiye kıyılarından ilk kaydı verilmektedir. Söz konusu tür sadece bir birey olarak İzmir Körfezi'nden Temmuz 2007'de 50 m derinlikte trol ile elde edilmiştir.

Anahtar Kelimeler: *Microcosmus polymorphus*, Ege Denizi, İzmir Körfezi, yeni kayıt

Introduction

More than 2500 Ascidiaceae species are known in the world seas, showing a large variation in form and colour. Ascidiaceae are benthic filter feeders, thus they can contribute to the decreasing bivalve production because of the competition for food (Petersen, 2007). They are found on every kind of substrate and are among the organisms responsible for fouling, often causing huge problems to aquaculture equipments. In addition, they can selectively accumulate heavy metals and hydrocarbons in their tissues and blood (Hickman *et al.*, 2000) from the marine environment and are considered good indicators for water quality monitoring.

142 Ascidiaceae species are known from the whole Mediterranean Sea, 14 of them non-indigenous (Izquierdo-Muñoz *et al.*, 2009). The genus *Microcosmus* belongs to the family Pyuridae and includes eight Mediterranean species (Koukouras, *et al.*, 1995, Izquierdo- Muñoz, *et al.*, 2009). Three species, namely *M. polymorphus*, *M. sabatieri* and *M.*

vulgaris are edible and commercially harvested in the Mediterranean since the 1st Century AD (Vafidis *et al.*, 2008). Nowadays, *M. polymorphus* is eaten in large quantities in France and Italy and consumed raw.

Adult *Microcosmus* spp. host symbiotic bacteria producing compounds with antibiotic and antitumor activity (Aassila *et al.*, 2003) as well as detoxifying heavy metals (Meziti *et al.*, 2007). Both secondary metabolites and inorganic acids have been hypothesized to protect adult ascidiaceae from predation, providing them with alternative defensive strategies (Pisut and Pawlik, 2002).

Materials and Methods

One specimen of *Microcosmus polymorphus* was found at 50 m depth by trawling on 28 July, 2007 from Izmir Bay (38° 54' N; 26° 76' E) in the Aegean Sea (Figure 1).

Results

M. polymorphus is a solitary ascidian. Its irregular body, 5-10 cm in size, has a thick and flexible tunic, not wrinkled, brownish cross, sometimes covered with sand (Figure 2). Coat is red with streaks of yellowish-white. Specific characters are seven branchial folds at each side (Figure 3) and short, blunt pigmented dark red siphonal spines, sometimes with thin bands (Figure 4). It occurs mainly in subtidal rocky substrata and among *Posidonia oceanica* meadows between 1-50 m depth. The examined specimen was obtained from coarse sediment (rocks with gravel) in an area where fishing is not allowed due to fish ground overexploitation.

Discussion

This is the first record of the species for the

whole Turkish seas. After a taxonomic study of Bozcada island ascidians (Aslan, 2006), giving also information on their distribution along the Turkish coasts, recent faunistic investigations by Çınar *et al.*, (2006a, 2006b, 2008) mentioned a few new Ascidian records for Turkish Seas. According to this literature, 23 Ascidian species are known from the coast of Turkey, but not a comprehensive check-list is nowadays available.

Microcosmus polymorphus is widely distributed in the Western Mediterranean Sea (Cornet and Ramos 1980, Mastrototaro and Tursi, 2009), and has been reported from the Atlantic coast of Portugal (Saldanha, 1974). In the Eastern Mediterranean Sea it was firstly recorded from the Greek Aegean Sea (Koukouras *et al.*, 1995). The present record confirms its presence and establishment in the Eastern Mediterranean.

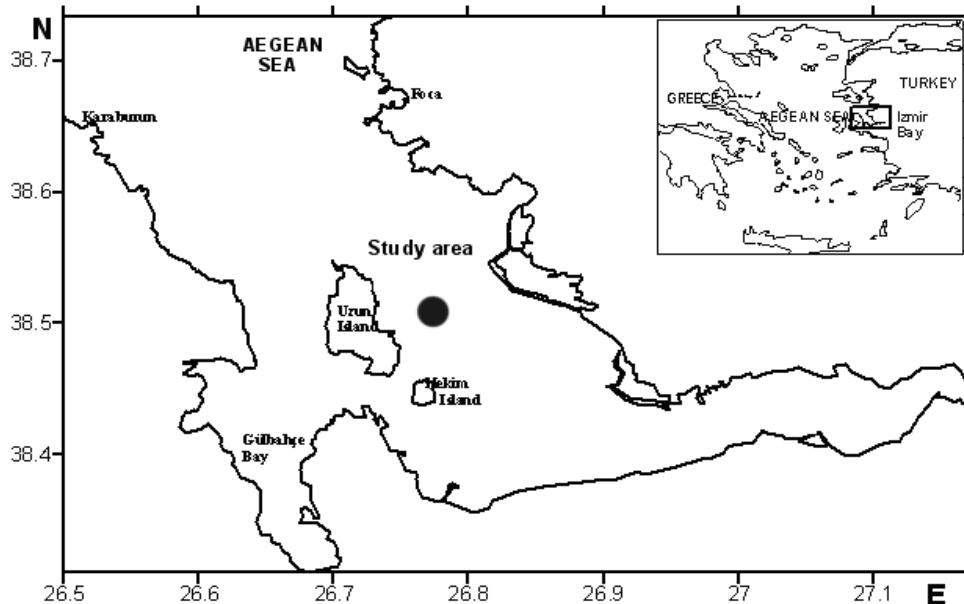


Figure 1. The investigation area.



Figure 2. Body of *M. polymorphus* and its tunic

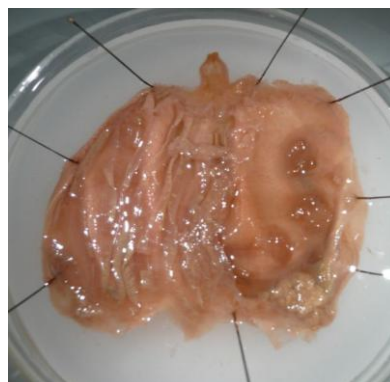


Figure 3. Aspect of the inside of *M. polymorphus* with branchial folds



Figure 4. Siphonal spines with thin bands.

Acknowledgements

The authors would like to thank staff of K. Piri Reis R/V and the project coordinator Dr. Aydın Unluoglu.

References

- Aassila, H., Bourguet-Kondracki, M.L., Rifai, S., Fassouane, A. and Guyot, M. 2003. Identification of Harman as the Antibiotic Compound Produced by a Tunicate-Associated Bacterium, *Mar. Biotechnol.*, 5: 163–166.
- Aslan, H. 2006. Ascidiolar ve Akdeniz Havzasındaki dağılımları. *E.U. Journal of Fisheries and Aquatic Sciences*, 23(1/1): 29-31.
- Çınar, M.E., Katağan, T., Öztürk, B., Egemen, Ö., Ergen, Z., Kocataş, A., Önen, M., Kırkım, F., Bakir, K., Kurt, G., Dağlı, E., Kaymakçı, A., Açıık, S., Doğan, A. and Özcan, T. 2006a. Temporal changes of soft-bottom zoobenthic communities in and around Alsancak harbour (Izmir Bay, Aegean Sea), with special attention to the autecology of exotic species. *Marine Ecology*, 27: 229–246.
- Çınar, M.E., Katağan, T., Koçak, F., Öztürk, B., Ergen, Z., Kocatas, A., Önen, M., Kırkım, F., Bakir, K., Kurt, G., Dağlı, E., Açıık, S., Doğan, A. and Özcan, T. 2008. Faunal assemblages of the mussel *Mytilus galloprovincialis* in and around Alsancak Harbour (Izmir Bay, eastern Mediterranean) with special emphasis on alien species. *Journal of Marine Systems*, 71: 1–17.
- Çınar, M.E., Bilecenoglu, M., Öztürk, B. and Can, A. 2006b. New record of alien species on the Levantine coast of Turkey. *Aquatic Invasions*, 1(2): 84-90.
- Cornet, C. and Ramos, A.A. 1980. Ascidiacea. In *Estudio sistemático y ecológico de las esponjas y ascidias del Mediterráneo Occidental Español*. Memoria Beca Fund. Juan March: 362-499.
- Hickman, C., Roberts, L. and Larson, A. 2000. *Integrated Principles of Zoology*, 11th Edition, Columbus, McGraw-Hill, 928 pp.
- Izquierdo-Muñoz, A., Díaz-Valdés, M. and Ramos-Esplá, R.R. 2009. Recent non-indigenous ascidians in the Mediterranean Sea. *Aquatic Invasions*, 4(1): 59-64
- Koukouras, A., Voultziadou-Koukoura, E., Kevrekidis, T. and Vafidis, D. 1995. Ascidian Fauna of the Aegean Sea with a check list of the Eastern Mediterranean and Black Sea species. *Paris. Ann. Ins. Oceanogr.*, 71(1): 19-34.
- Mastrotoaro and Tursi. 2009. Ascidiacea. In: *Revisione della Checklist della fauna marina italiana*. <http://www.sibm.unige.it/CHECKLIST/principalechecklist.htm> (accessed May 18, 2009).
- Meziti, A., Kormas, K.A.R, Pancucci-Papadopoulou, M.A. and Thessalou-Legaki, M. 2007. Bacterial phylotypes associated with the digestive tract of the sea urchin *Paracentrotus lividus* and the Ascidian *Microcosmus* sp. *Russian Journal of Marine Biology*, 33(2):84–91.
- Petersen, J.K. 2007. Ascidian suspension feeding. *Journal of Experimental Marine Biology and Ecology*, 342: 127-137.
- Pisut, D.P. and Pawlik, J.R. 2002. Anti-predatory Chemical Defense of Ascidiaceans: Secondary Metabolites or Inorganic Acids. *J. Exp. Mar. Biol. Ecol.*, 270: 203–214.
- Saldanha, L. 1974. Estudo do povoamento dos horizontes superiores de rocha litoral da costa de Arrabida (Portugal) *Arch. Mus. Bocage*. 2^o ser, 51(1): 173-194.
- Vafidis, D., Antoniadou, C. and Chintiroglou, C. 2008. Population dynamics, allometric relationships and reproductive status of *Microcosmus sabatieri* (Tunicata: Ascidiacea) in the Aegean Sea. *Journal of the Marine Biological Association of the United Kingdom*, 88(5): 1043-1051.