ISSN: 2458-8989

Natural and Engineering Sciences

NESciences, 2021, 6(2): 127-132

First Sighting of *Prostheceraeus roseus* Lang, 1884 and *Tylodina perversa* (Gmelin, 1791) in the Eastern Mediterranean, Turkey

Deniz Ergüden[1 *], Cemal Turan[1], Servet Ahmet Doğdu[1], Necdet Uyğur[2]

[1]Department of Marine Science, Faculty of Marine Sciences and Technology, University of Iskenderun Technical, TR-31220, Iskenderun, Hatay, Turkey
[2]Vocational School of Maritime, University of Iskenderun Technical, Iskenderun, Hatay, Turkey

Abstract

A single specimen of *Prostheceraeus roseus* was recorded for the first time on 25 April 2019 from the Cevlik coast, Iskenderun Bay (Eastern Mediterranean, Turkey). After, other a single specimen of *Tylodina perversa* was observed during Scuba diving from the Keldag located within Cevlik (Eastern Mediterranean), at a depth of 12 m on rocky habitat covered with algae. The present finding is the first occurrence of *Prostheceraeus roseus* and *Tylodina perversa* from the eastern Mediterranean, Turkey. Although these species are live in the Mediterranean Sea up to date no specimens of these species reported in this easternmost coast of Turkey.

Keywords:
Flatworm, Sea slug, Range extension, Iskenderun Bay, Turkey coast

Article history:
Received 26 January 2021, Accepted 19 February 2021, Available online 12 July 2021

Introduction

The phylum Platyhelminthes are generally hermaphroditic and native in the Mediterranean. This group is known as free-living and parasitic flatworms. However, the free-living species are formerly included into Turbellaria, which is mostly non-parasitic (Ehlers & Sopott-Ehlers, (1995). The only have parasitic species are Trematoda, Cestoda, and Monogenea (Çınar, 2014).

Nudibranchs and their relatives are also known as sea slugs. Nudibranchs belong to a larger group of gastropod mollusks called as Opisthobranchia (Gosliner et al., 2015). Nudibranch species

* *Corresponding Author: Deniz ERGÜDEN, E-mail: deniz.erguden@iste.edu.tr*

can be found in marine waters such as reefs and seagrass meadows, sand, and mud plain. Many nudibranch species appear to have close associations with the marine invertebrate species (Burn, 1989).

The genus *Prostheceraeus* Schmarda, 1859 is represented in the Mediterranean Sea, Turkey by three species: *Prostheceraeus roseus* Lang, 1884, *P. giesbrechtii* Lang, 1884, *P. vittatus* (Montagu, 1815), (Gözcelioğlu, 2011; Çınar, 2014). The pink flatworm, *P. roseus* is a marine polyclad flatworm belonging to the Euryleptidae family and it is commonly found in the eastern Atlantic and Mediterranean (Doris, 2010). It commonly lives on rocky areas in depths 5-50m. This species is previously reported from marine coastal waters of Turkey by Gözcelioğlu (2011) and Çınar (2014).

In the Mediterranean coast of Turkey, *Tylodina* genus is represented a single species as *Tylodina perversa* (Gmelin, 1791). *T. perversa* called as yellow tylodina or yellow umbrella slug, is known as a species of sea snail or false limpet, a marine opisthobranch gastropod mollusk in the family Tylodinidae. This specimen is well known in the both Atlantic and Mediterranean coast. Also this specimen was occurred in the Balearic island and Catalan coast (Templado & Villanueva, 2010). The specimen was identified for the first time Turkey coast from the Kargi adasi, Bodrum in October 2002 by Rudman (Rudman, 2003) and then it was reported from Adrasan and Datça (Türkmen & Demirsoy, 2009; Öztürk et al., 2014).

Although these two species are found in the Mediterranean marine waters of Turkey up to date no specimens of these species reported from the easternmost coast of Turkey. Thus, the present study is the first sighting of *Prostheceraeus roseus* and *Tylodina perversa* from the easternmost Mediterranean, Iskenderun Bay coast of Turkey.

Materials and Method

A single specimen of *Prostheceraeus roseus* was recorded for the first time on 25 April 2019 from the Cevlik coast, Iskenderun Bay (Eastern Mediterranean, Turkey) (36° 034'N, 35° 561'E), (Figure 1). This specimen was observed and photographed using a digital underwater camera at a depth of 15 m near the rock ground (Figure 2). The specimen was sighted on rocky bottoms partially covered with algae.

On 30 May 2019, a single specimen of *Tylodina perversa* was observed during Scuba diving from the Keldag located within Cevlik (Eastern Mediterranean) (Figure 3), at a depth of 12 m on rocky habitat covered with algae (36º 571'N, 35º 544'E). Its length was approximately 2-2,5 cm. The water temperature is 26 °C. This specimen was photographed with a limpet-shaped shell on it. After the underwater survey, the specimen was readily identified as Tylodinidae family member *T. perversa*.

Figure 1. Sampling area (●) in the Iskenderun Bay (Cevlik coast)

Figure 2. *Prostheceraeus roseus* from Cevlik coast (Eastern Mediterranean, Turkey)

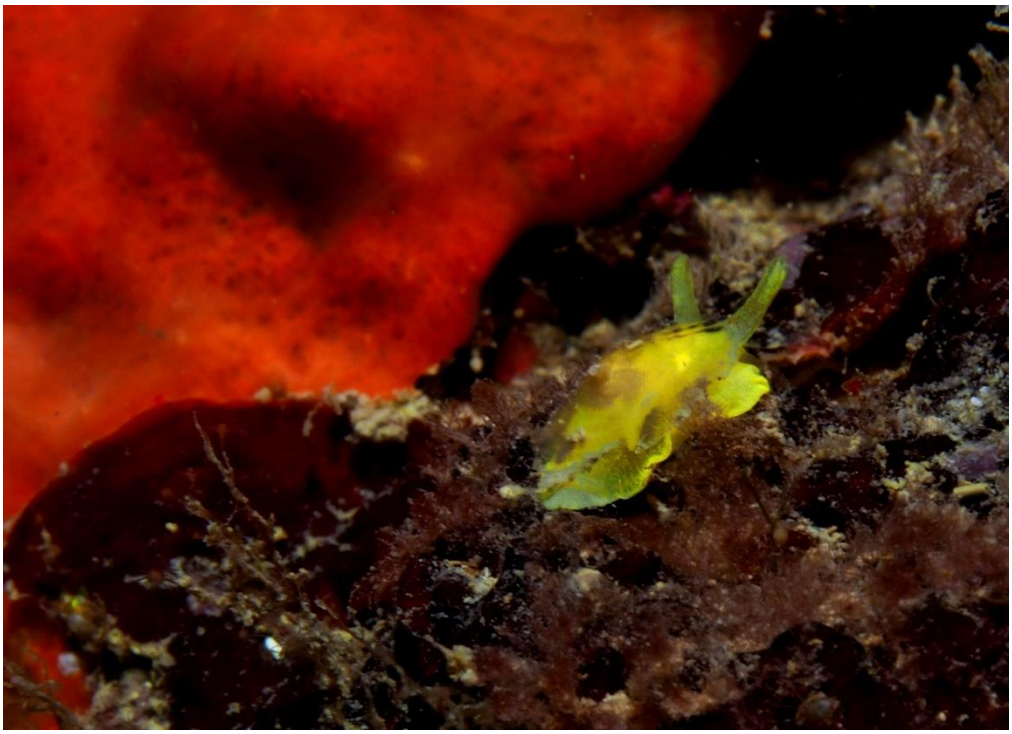

Figure 3. *Tylodina perversa* from Keldag, Cevlik coast (Eastern Mediterranean, Turkey)

Results and Discussion

The pink flatworm has a flat body, which is oval in shape. Its colour is dark pink to violet with irregular white stripes. There are found two extensions at the head end. *P. roseus* could reach up to 1.5 cm in body length and lives in many rocky habitats in depths 5- 50m (Doris, 2010). It can be found in reef habitats (Wood, 2015) and feeds on a variety of creatures (Faubel, 1984). *P. roseus* from other species is readily recognizable by its distinct pink to purple pigmentation with white longitudinal stripes and a white edge that runs along the entire body margin. Thus, this species can be easily distinguished from similar *Prostheceraeus giesbrechtii* thanks to color morph.

To date, 6 flatworm species (*Prostheceraeus giesbrechtii*, *P. roseus*, *P. vittatus*, *Stylostomum ellipse*, *Planocera* cf. *graffi*, and *Pseudoceros maximum*) on the marine coast of Turkey, have been reported from the Marmara Sea, from Mediterranean (Fethiye Bay and Kaş), and Aegean Sea (Gözcelioğlu, 2011; Çınar, 2014; Teker et al., 2017; Yapıcı and Türker, 2019). However, this species has not been previous reported from the eastern side of the Turkey coast (Iskenderun Bay).

Opisthobranchs are known to be excellent living animals for studying of evolutionary phenomena (Cimino & Ghiselin, 1999). Among them *Tylodina* genus is among the most primitive genera of all Opisthobranchia and members of this genus commonly feed on the family Aplysinellidae, sponges (Willan, 1984, 1987).

Yellow tylodina, *T. perversa* commonly found between 0 and 10-15 m and it feeds on the abundant cyonobacteria present in the tissues of the sponge. This species is very cryptic and also not easily locate it in the sponge. The body is high, and the mantle is not completely developed so

it is covered by the shell. The head has a pair of long rhinophores and thicker on the base. The color of the body is intense and uniform yellow (Templado & Villanueva, 2010).

In the last decades, Turkey's Mediterranean coast is one of the hotspots area of the Levantine basin in which is rich in new species that still waiting to be discovered. Besides, nudibranch diversity in this area can be evaluated act as a useful indicator of the diversity and health of a wide variety of other marine organisms.

The present finding is the first occurrence of *Prostheceraeus roseus* and *Tylodina perversa* from the eastern Mediterranean, Turkey. Although these species live in the Mediterranean Sea up to date no specimens of these species are reported in this easternmost coast of Turkey. Both species are hereby reported for the first time for Iskenderun Bay in Turkey.

Author Contributions

All authors contributed equally to the paper.

Conflict of Interest

The authors declare that they have no conflict of interest.

Ethical Approval

For this type of study, formal consent is not required.

References

Burn, R. (1989). *Opisthobranchs (Subclass Opisthobranchia)*. pp. 725-788. In: S. A. Shepherd, and I. M. Thomas, (Eds.), Marine Invertebrates of Southern Australia. Part II. South Australian Government Printing Division, Australia: Adelaide.

Cimino, G., & Ghiselin, M. T. (1999). Chemical Defense and Evolutionary Trends in Biosynthetic Capacity Among Dorid Nudibranchs (Mollusca: Gastropoda: Opisthobranchia). *Chemoecology,* 9, 187-207.

Çınar, M. (2014). Checklist of the phyla Platyhelminthes, Xenacoelomorpha, Nematoda, Acanthocephala, Myxozoa, Tardigrada, Cephalorhyncha, Nemertea, Echiura, Brachiopoda, Phoronida, Chaetognatha, and Chordata (Tunicata, Cephalochordata, and Hemichordata) from the Coasts of Turkey. *Turkish Journal of Zoology*, 38, 698-722. http://dx.doi.org/10.3906/zoo-1405-70.

Doris, (2010). *Données d'Observations pour la Reconnaissance et l'Identification de la Faune et la Flore Subaquatiques*. *Prostheceraeus roseus* Lang, 1884 (inc. sed.). http://doris.ffessm.fr/fiche2.asp?fiche_numero=338.

Ehlers, U., & Sopott-Ehlers, B. (1995). Plathelminthes or Platyhelminthes?. *Hydrobiologia*, 305, 1-2. http://dx.doi.org/10.1007/BF00036354.

Faubel, A. (1984). The Polycladida, Turbellaria; Proposal and Establishment of A New System. Part 2. The Cotylea. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institute*. 81, 189-259.

Gosliner, T. M., Valdes, A., & Behrens, D. W. (2015). *Nudibranch and Sea Slug Identification Indo-Pacific*. New World Publications Jacksonville Florida, USA.

Gözcelioğlu, B. (2011). *Denizlerimizin Sakinleri*. Gökçe Ofset Basım Yayın Sanayi, İstanbul, Turkey (in Turkish).

Öztürk, B., Doğan, A., Bitlis-Bakır, B., & Salman, A. (2014). Marine Molluscs of the Turkish Ccoasts: An Updated Checklist. *Turkish Journal of Zoology,* 38, 832-879. http://dx.doi.org/10.3906/zoo-1405-78.

Rudman, W. B. (2003). Comment on *Tylodina perversa* from Turkey by Ferda Buyukbaykal. [Message in] Sea Slug Forum. Australian Museum, Sydney. http://www.seaslugforum.net/find/8890.

Teker, S., Gökoğlu, M., & Julian, D. (2017). First Record of *Janthina globosa* Swainson, 1822 (Mollusca, Gastropoda) and *Prostheceraeus giesbrechtii* Lang, 1884 (Platyhelminthes) in the Gulf of Antalya. *Natural and Engineering Sciences,* 2 (1), 6-10. http://dx.doi.org/ 10.28978/nesciences.292337.

Templado, J., & Villanueva, R. (2010). Checklist of Phylum Mollusca. pp. 148-198. In: The biodiversity of the Mediterranean Sea: estimates, patterns, and threats. Coll, M. et al. (Eds.). PLoS ONE 5(8), 36.

Türkmen, A, & Demirsoy, A. (2009). Contribution to the Eastern Mediterranean Opisthobranchia (Mollusca: Gastropoda) Fauna of Turkey. *Turkish Journal of Zoology*, 33, 57-68. http://dx.doi.org/ 10.3906/zoo-0801-5.

Willan R. C. (1984). A Review of Diets in the Notaspidea (Mollusca: Opisthobranchia). *Journal of the Malacological Society of Australia* 6, 125-142.

Willan R. C. (1987). Phylogenetic Systematics of the Notaspidea (Opisthobranchia) with Reappraisal of Families and Genera. *American Malacological Bulletin,* 5, 215-241.

Wood, L. (2015). Sea Fishes of the Mediterranean Sea including Marine Invertebrates. Bloomsbury, UK.

Yapıcı, S., & Türker, A. (2019). *First and Northernmost Sighting of Prostheceraeus giesbrechtii in the Aegean Sea.* pp. 417-418. In: Stern, N., et al., (Eds.). New Mediterranean Biodiversity Records, July 2019. *Mediterranean Marine Science*, 20(2), 409-426.