

**SHORT COMMUNICATION**

***Cotylorhiza erythraea* Stiasny, 1920 (Scyphozoa:  
Rhizostomeae: Cepheidae): a new lessepsian jellyfish in  
the Lebanese waters, the eastern Mediterranean Sea**

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**Abstract**

The Indo-Pacific jellyfish *Cotylorhiza erythraea* Stiasny, 1920 is reported for the first time from the Lebanese waters. The species was observed and photographed by a professional diver on 28 July 2020 at a depth of 5 m in Tyre, south of Lebanon. The present note presents details about this observation.

**Keywords:** Indo-Pacific jellyfish, *Cotylorhiza erythraea*, Mediterranean Sea, Lebanese waters

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*Cotylorhiza erythraea* Stiasny, 1920, is an Indo-Pacific scyphozoan jellyfish, belonging to the genus *Cotylorhiza* Agassiz, 1862, which is represented by three species (Collins *et al.* 2020): *Cotylorhiza ambulacrata* Haeckel, 1880, *Cotylorhiza erythraea* Stiasny, 1920 and *Cotylorhiza tuberculata* (Macri, 1778). Only the last one is known to occur as an indigenous species in the Mediterranean Sea (Boero *et al.* 2016; Ozturk *et al.* 2018). However, the presence of *Cotylorhiza erythraea* has been confirmed, as a new alien jellyfish in the Mediterranean Sea, from the southern Levantine coast (Galil *et al.* 2017). It is worth noting that gelatinous Non-Indigenous Species (NIS) are recently well established in the Mediterranean Sea (Boero *et al.* 2016; Ozturk *et al.* 2018). Integrally, new NIS records continue to be reported as aliens from different localities to this area.

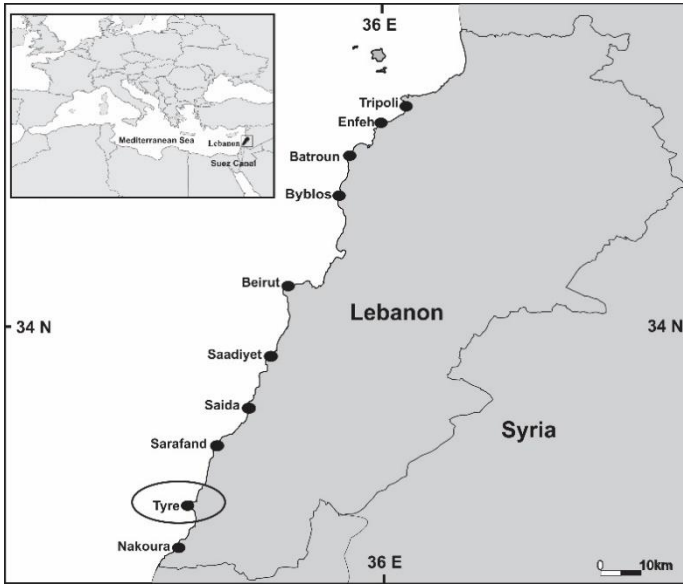
Until today, 18 NIS jellyfish were reported from the Mediterranean Sea (Zenetos *et al.* 2010; Turan *et al.* 2011; Brotz and Pauly 2012; Daly Yahia *et al.* 2013; Piraino *et al.* 2014; Mizrahi *et al.* 2015; Deidun *et al.* 2017; Galil *et al.* 2017; Scorrano *et al.* 2017; Yilmaz *et al.* 2017; Ozturk *et al.* 2018; Dragičević *et al.*

2019; Kousteni *et al.* 2019; Langeneck *et al.* 2019; Mamish *et al.* 2019; Mutlu *et al.* 2020). Those species are *Aequorea globosa* Eschscholtz, 1829, *Aequorea macrodactyla* (Brandt, 1835), *Aequorea vitrina* Gosse, 1853; *Cassiopea andromeda* (Forskål, 1775), *Cassiopea polypoides* (Keller, 1883); *Catostylus tagi* (Haeckel, 1869); *Cotylorhiza erythraea* Stiasny, 1920, *Marivagia stellata* Galil and Gershwin, 2010; *Chrysaora achlyos* Martin, Gershwin, Burnett, Cargo & Bloom, 1997, *Chrysaora pseudoocellata* Mutlu, Cagatay, Olguner & Yilmaz, 2020, *Mawia benovici* (Piraino, Aglieri, Scorrano, Boero, 2014); *Phacellophora camtschatica* Brandt, 1835; *Porpita porpita* (Linnaeus, 1758); *Rhopilema nomadica* Galil, Spanier & Ferguson, 1990; *Phyllorhiza punctata* von Lendenfeld, 1884; *Stomolophus meleagris* Agassiz, 1860; *Aurelia coerulea* von Lendenfeld, 1884, *Aurelia solida* Browne, 1905. The Levantine Sea is hosting nine alien jellyfish (Turan *et al.* 2011; Mizrahi *et al.* 2015; Galil *et al.* 2017; Yilmaz *et al.* 2017; Ozturk *et al.* 2018; Mamish *et al.* 2019; Mutlu *et al.* 2020) represented by four hydrozoans (i.e. *A. globosa*, *A. macrodactyla*, *A. vitrina*, and *P. porpita*) and five scyphozoans (i.e. *C. andromeda*, *C. erythraea*, *M. stellata*, *R. nomadica*, and *P. punctata*).

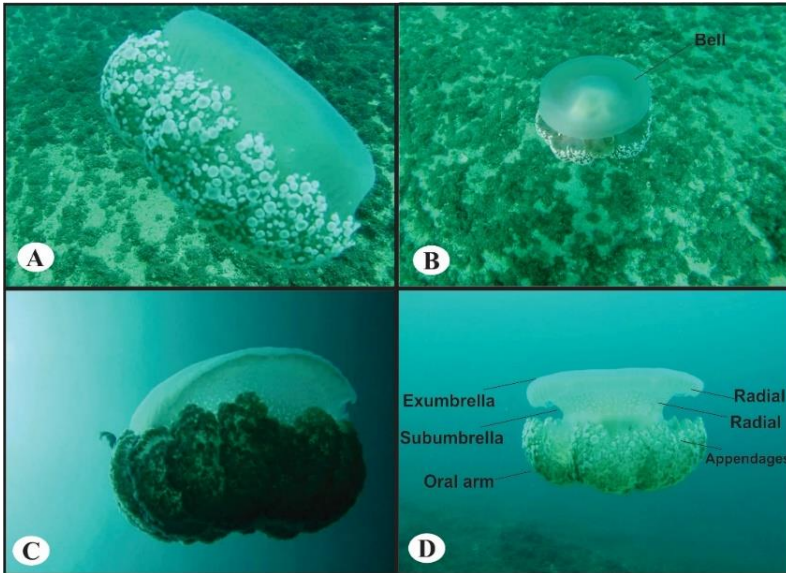
In the Lebanese waters, until today, four NIS jellyfish species have been recorded (Lakkis 2013; Dailianis *et al.* 2016; Bitar and Badreddine 2019): *Cassiopea andromeda*, *Marivagia stellata*, *Rhopilema nomadica* and *Phyllorhiza punctata*. Concerning the genus *Cotylorhiza*, only the native *C. tuberculata* is present in the Lebanese waters (Lakkis 2013; RAC/SPA-UNEP/MAP 2014). This note constitutes the first record of the non-indigenous *C. erythraea* in the Lebanese waters.

One specimen of *Cotylorhiza erythraea* was photographed at a depth of 5 m by a professional diver, on 28 July 2020, in Tyre (33°16'19.10"N, 35°11'24.07"E, Figure 1). He directly contacted one of us (AB) and shared with him the photos and videos.

The photographed specimen in the Lebanese waters (Figure 2A) was typically similar to the one described from the southern Levantine coast (Galil *et al.* 2017). It is characterized by its yellowish-white bell (Figure 2B), with a nearly flat exumbrella of about 160 mm in diameter and equipped in the base by peripheral radial gelatinous ridges. The subumbrella is entirely dominated by many fine radials (Figure 2D). The eight short oral arms are greenish-brown equipped by numerous pink-rimmed cupped appendages (Figure 2C) and 8 adradial canals in each octant completely anastomosed with the main canals. The alien *C. erythraea* can be easily distinguished from the native *C. tuberculata* which is characterized by a brown-yellowish flattened umbrella with a large central dark orange colored protuberance and 8 oral tentacles dominated in the end by appendages taking form of white or blue button-shaped (Piraino *et al.* 2016; Ozturk *et al.* 2018).



**Figure 1.** Tyre where *Cotylorhiza erythraea* was observed, on the Lebanese coast



**Figure 2.** The specimen of *Cotylorhiza erythraea* photographed in Tyre.  
**A, B:** Nearly flat bell, **C:** oral arms equipped with appendages, **2D:** exumbrella with the radials, subumbrella with the radials, the oral arms with appendages  
 (Photos: Hussein Nour Eddine)

Recently, new records of jellyfish species are increasing in the Mediterranean Sea (Ozturk *et al.* 2018; Langeneck *et al.* 2019; Mamish *et al.* 2019). It is worth noting that the majority of those new species records are generally introduced from the Indo-Pacific via the Suez Canal (Zenetos *et al.* 2010; Ozturk *et al.* 2018). *Cotylorhiza erythraea* was present in the Suez Canal since 1908 but it was not reported from the southern Levantine Sea until 2003 (Galil *et al.* 2017). This fact makes the spreading capacity of this new alien scyphozoan not clear until now.

In the Lebanese waters, new records of marine species are also continuously reported (Bitar and Badreddine 2019; Stern *et al.* 2019; Bariche and Fricke 2020). This fact is more related to the use of citizen science as an important monitoring tool to detect new species. It is also the case of *C. erythraea* reported here. It is worth noting that citizen science has been used also to survey existing jellies and detect new ones in many areas of the Mediterranean Sea (Boreo *et al.* 2009, 2016; Piraino *et al.* 2016; Douek *et al.* 2020). In this context and to guarantee a long-term monitoring, we have launched an awareness campaign on jellyfish along the Lebanese coast (see the poster, Figure 3) that allows to introduce the common jellies in the Lebanese waters to the public and especially sea-lovers.



**Figure 3.** Poster about common sea jelly species in the Lebanese waters published via social network (© Facebook) and distributed to the public along the Lebanese coast

Regionally speaking, the Lebanese waters, as the entire Levantine Sea, are exposed to the most extreme temperature (e.g. ocean warming) and salinity conditions, and to the high impact of anthropogenic activities (Badreddine 2018 and references therein), which is often associated with a continuous entrance of invasive species through the Suez Canal (Bitar and Badreddine 2019). Therefore, and from a protection and conservation point of view, it is highly necessary to survey the marine biota, especially the invasive ones in this region or in the Mediterranean Sea, to reduce the risk of the impacts on local communities and ecosystems.

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