

SHORT COMMUNICATION

**First record of *Marivagia stellata* Galil and Gershwin, 2010 (Scyphozoa: Rhizostomeae: Cepheidae) from the Lebanese waters in the eastern Mediterranean Sea**

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**Abstract**

*Marivagia stellata* Galil and Gershwin, 2010 was reported for the first time from the Lebanese waters in the eastern Mediterranean Sea. This Indo-Pacific jellyfish was observed in 2015 during a field work. The present note reports its details in the Lebanese waters.

**Keywords:** Indo-Pacific jellyfish, *Marivagia stellata*, Lebanese waters

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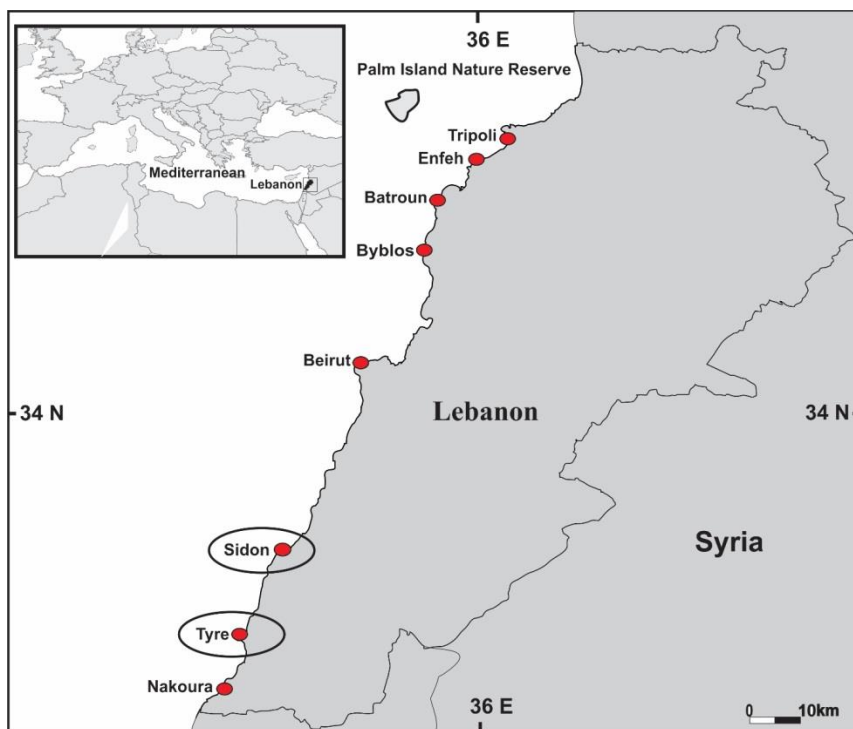
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The Mediterranean Sea is severely affected by alien species: 986 exotic species are recorded in this basin, representing 6% of the total number of species. Interestingly, 775 of them are established in the eastern basin, mostly (88.4 %) from the Indo-Pacific and tropical Atlantic, and 108 are considered as invasive (Zenetos *et al.* 2010; 2012). In particular, new invasions of jellyfish are increasingly reported in the Mediterranean Sea in recent years: 13 invasive species which represent 3% of the known jellyfish species in the Mediterranean Sea were reported (Brotz and Pauly 2012; Mizrahi *et al.* 2015; Oztürk *et al.* 2018; Mamish *et al.* 2019). Since the opening of the Suez Canal, the Lebanese waters have been colonized by many exotic species, especially from the Red Sea. Concerning jellyfish, two lessepsian species have been recorded in the Lebanese waters (Lakkis 2013): *Rhopilema nomadica* (Brotz and Pauly 2012) and *Cassiopea andromeda* (Forsskål, 1775).

*Marivagia stellata* belongs to the class Scyphozoa (Götte, 1887) which is the most conspicuous taxon of marine gelatinous organisms (Mariottini *et al.* 2008; Mariottini and Pane 2010; Boero, 2013; 2014). It is distributed in the Indo-Pacific Oceans (Galil *et al.* 2013) and in the Arabian Sea (Gull *et al.* 2014 and

references therein). In the Mediterranean Sea, *M. stellata* was recorded first from the Israeli coast (Galil *et al.* 2010) and it is the only species of the genus *Marivagia* (Galil and Gershwin, 2010). Recently it has been reported along the Syrian coasts (Mamish *et al.* 2016).

On 7 October 2010, a non-identified jellyfish with a photo of the specimen was reported in an electronic paper news (Zaatari 2010), in Sidon (33°34'21.43" N, 35°22'06" E, Figure 1), south of Lebanon. However, we can now confirmed that this non-identified jellyfish is the Indo-Pacific *Marivagia stellata*. On 23 July 2015, another specimen of *M. stellata* (Figure 2) was observed and photographed, by one of the authors (G.B.), during a field work in Tyre (33°16'19.10"N, 35°11'24.07"E, Figure 1), south Lebanon. However, *M. stellata* is not established in the Lebanese waters.



**Figure 1.** Locations where *Marivagia stellata* was observed and photographed in Sidon and Tyre (names are circled), Lebanon

The morphological description of *M. stellata* in the Lebanese waters is in agreement with the specimens reported along the Syrian and Israeli coasts (Galil *et al.* 2010; Mamish *et al.* 2016). The photographed specimen is characterized

by a bell 200 mm in diameter, a translucent bluish-white color with dots clustered in the center third of the exumbrella.



**Figure 2.** *Marivagia stellata* observed in Tyre (photographed by Ghazi Bitar)

The occurrence of non-indigenous jellyfish species in the Lebanese waters may be related to the introduction of Indo-Pacific origin species into the Mediterranean Sea via the Suez Canal (Zenetos *et al.* 2010; 2012). However, the way of introduction of *M. stellata* in the Lebanese Mediterranean Sea may be due to ship-mediated transport. *M. stellata* is usually spotted as individual and is one of the venomous Mediterranean jellyfish (Mariottini *et al.* 2008; Mariottini and Pane 2010).

The Lebanese waters, as the entire Levantine Sea, are exposed to the most extreme temperature (e.g. ocean warming, Abboud-Abi Saab *et al.* 2013) and salinity (Abboud-Abi Saab *et al.* 2005) conditions, and to the high impact of anthropogenic activities such as coastal development (MOE/UNDP/ECODIT 2011), fishery (Lteif 2015) and pollution (Abboud-Abi Saab *et al.* 2008), often associated with a continuous entrance of invasive species through the Suez Canal (Harmelin *et al.* 2016; Bitar *et al.* 2017).

In this context, a monitoring program of alien species along the Lebanese coast would allow to reduce the risk of the impacts of invasions on local communities and ecosystems.

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