

# First record of *Porpita porpita* LINNAEUS, 1758 (Cnidaria, Hydrozoa) on the Syrian coast of the eastern Mediterranean Sea

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## Abstract

The new hydrozoa species *Porpita porpita* Linnaeus, 1758 was observed stranded along the southern shore of Lattakia city, the eastern Mediterranean Sea, for the first time on 23 March 2019. This record will extend the global distribution and region limits of the above species.

**Keywords** - *Porpita porpita*, Blue bottom jellyfish, Hydrozoa, Syrian coast, Mediterranean Sea, Levantine Sea.

## INTRODUCTION

The Mediterranean Sea is threatened by several anthropogenic stressors such as urbanization, climatic change, pollution, over fishing, eutrophication, aquaculture, maritime traffic and shipping. Such stressors constitute proper conditions for both tropical and temperate non-indigenous species (NIS) enabling them to move to new locations and establish thriving populations, which have significant environmental, socio-economic and human health impacts ([1], [2], [3]).

The Hydrozoa class contains approximately 3800 species worldwide, while the Mediterranean hydrozoa comprises about 457 species, which represents about 12% of the worldwide Hydrozoa species ([4], [5], [6], [7]). The biodiversity of the Mediterranean hydrozoa is changing dramatically, and many new species have been noticed and documented in recent years, especially, in the eastern Mediterranean Sea (Levantine) ([8], [9], [10], [11], [12], [13], [14], [15]).

*Porpita porpita* (Linnaeus, 1758), commonly known as the blue button jellyfish, is the most familiar member of the family Porpitiidae, within the class Hydrozoa ([16], [17], [18]). *P. porpita* is a relatively small, dark blue disc-like shaped, a free-floating carnivorous colony of hydrozoan polyps without sail, measuring about 30 mm in diameter, mostly smaller, and live at the surface of the open ocean. They typically move with the winds, sea currents and tides, and usually wash ashore on beaches during windy days ([19], [20], [21]).

*P. porpita* has nematocysts, whose sting is not powerful for humans, but may cause irritation ([22], [23]). *P. porpita* was found throughout the tropical and sub-tropical Indian, Pacific, and Atlantic oceans ([16], [20], [18], [23], [21]).

The Syrian coastal waters (eastern Mediterranean Sea) are affected significantly by alien jellyfish of the following species *Rhopilema nomadica*, *Phyllorhiza punctata*, *Aequorea globosa*, *Cassiopea andromeda*, and *Marivagia stellate*. They have been recently recorded, and they are mostly of Indo-Pacific and Red Sea origin, introduced through the Suez Canal ([24], [9], [25], [26], [27]). Here, we describe the first record of another alien jellyfish *Porpita porpita* Linnaeus, 1758 off the Syrian coast.

## I. METHODS AND MATERIALS

A few specimens of non-native small, dark blue jellyfish species, were observed for the first time, stranded along the southern shore of Lattakia city (35°30'23.49"N, 35°47'10.06"E), about 2 km north of the Al-Kaber Al-Shamali river estuary, and about 4 km eastern Lattakia port, on 23 March 2019 (Figure 1) after stormy days, with troubled sea. The temperature and salinity at the observed time were 17.8 °C and 37‰ respectively.

The specimens were damaged, except only for one specimen found in an appropriate shape. This specimen was handled by hand for further investigation in the laboratory of marine biology, High Institute of Marine Research, Tishreen University, Lattakia.

## II. RESULTS AND DISCUSSION

The new species was identified as *Porpita porpita* Linnaeus, 1758 (Class Hydrozoa Owen, 1843; Order Anthoathecata Cornelius, 1992; Family Porpitiidae Goldfuss, 1818; Genus *Porpita* Lamarck, 1801) by its unique combination of remarkable morphological features based on relevant characters as defined by Calder, 1988 ([28]) and Schuchert, 2010 ([29]) (Figure 2).



Fig 1: Location of the observed *P. porpita* species on the Syrian Coast

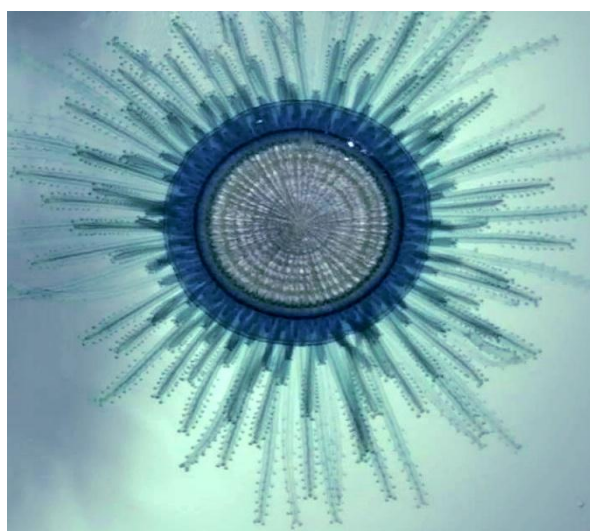


Fig 2: Aboral view of the first hydrozoa specimen *P. porpita* Linnaeus, 1758, was collected on the shore of Lattakia city, Syria, on 23.3.2019, size about 28 mm in diameter.

Briefly, *P. porpita* is a hydroid colony, without sail, about 28 mm in diameter; it has two main body structures, the float, and the zooids colony. The float is a small, dark blue round disc-like shape mantle, about 12 mm in diameter, with a flexible soft margin. The golden brown central region is slightly convex, firm due to it being reinforced by a chitin-like material, and is chambered in cross-section with a central pore and numerous stigmata. The apparent golden brown colour is due to the trapped gas or to the underlying tissue shining through yellow to brown. In live condition, the gaseous body allows it to float on the surface of the sea. The second part of the structure is a zooids colony, which is bright blue polymorphic polyps, they radiate from the central disc, on to the underside, and they are similar to jellyfish tentacles, but in fact, they are individual zooids. Each one is specialized for a particular function, such as digestion, prey capture, or reproduction, and has numerous branchlets, which end in knobs of nematocysts, whose sting is not harmful to humans, but may cause irritation ([22], [23]).

*P. porpita* is a passive drifter carnivore, and it is part of the neustonic food web, prey mainly on zooplankton such as copepods, fish eggs, and some marine organism larvae. The gaseous body allows it to float on the surface of the sea, and they easily wash ashore, primarily by the force of wind and water currents ([30], [20], [21]).

*P. porpita* was found throughout the tropical and sub-tropical Indian, Pacific, and Atlantic oceans ([31], [32], [33], [34], [30], [35], [16], [20], [18], [23], [21]). In the Mediterranean Sea, *P. porpita* was rarely reported in the western basin ([36], [33]), while the first occurrence in the Levantine Sea was recorded recently on the coast of Turkey ([15]). Here, we have described the first record of *Porpita porpita* (Linnaeus, 1758) off the Syrian coast.

The reason for the sudden appearance of mature specimens of the new non-native species *P. porpita* stranded together at the same time along the southern shore of the Lattakia city, is unknown, and may be attributed to the fact that it has been already established local populations. Alternatively, *P. porpita* can be carried off from the Turkish coastal waters to the Syrian coast by strong winds and currents that prevail during winter and early spring seasons, as observed in other places ([37], [21]). The other hypothesis regarding the presence of *P. porpita* off the Syrian coast may be related to higher water temperature and salinity trend of the eastern Mediterranean Sea resulting from global warming ([38]). Such conditions enabled the transportation and settlement of the species medusa (young 0.3 mm, and adult up to 2.5 mm) via ballast water ([29], [39]). The ballast water enabled such migration of the species from areas in which water temperatures resemble those of the Indo-Pacific, taken into consideration that the observed location was very closed to the Lattakia port. This suggestion is based on the case of the new alien hydrozoan species *Aequorea globosa*, which arrived to the Syrian coast recently ([9]). During the last decades, new arrivals and establishment of non-indigenous jellyfish species in the Mediterranean Sea were mostly of Indo-Pacific and Red Sea origin ([40]).

### III. CONCLUSION

The present study documented the first time occurrence of *P. porpita* on the Syrian coast (the eastern Mediterranean Sea). The spatial distribution of *P. porpita* is of importance as an indicator of climate change in the eastern Mediterranean marine environment. The new arrival of alien jellyfish may have a significant impact on fisheries resources and coastal ecosystems.

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