

# Report on the occurrence of the hydromedusa *Odessia maeotica* (Ostroumoff, 1896) in the northeastern Atlantic revealed by citizen science and integrative taxonomy\*

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\*Aquatic Ecology,  
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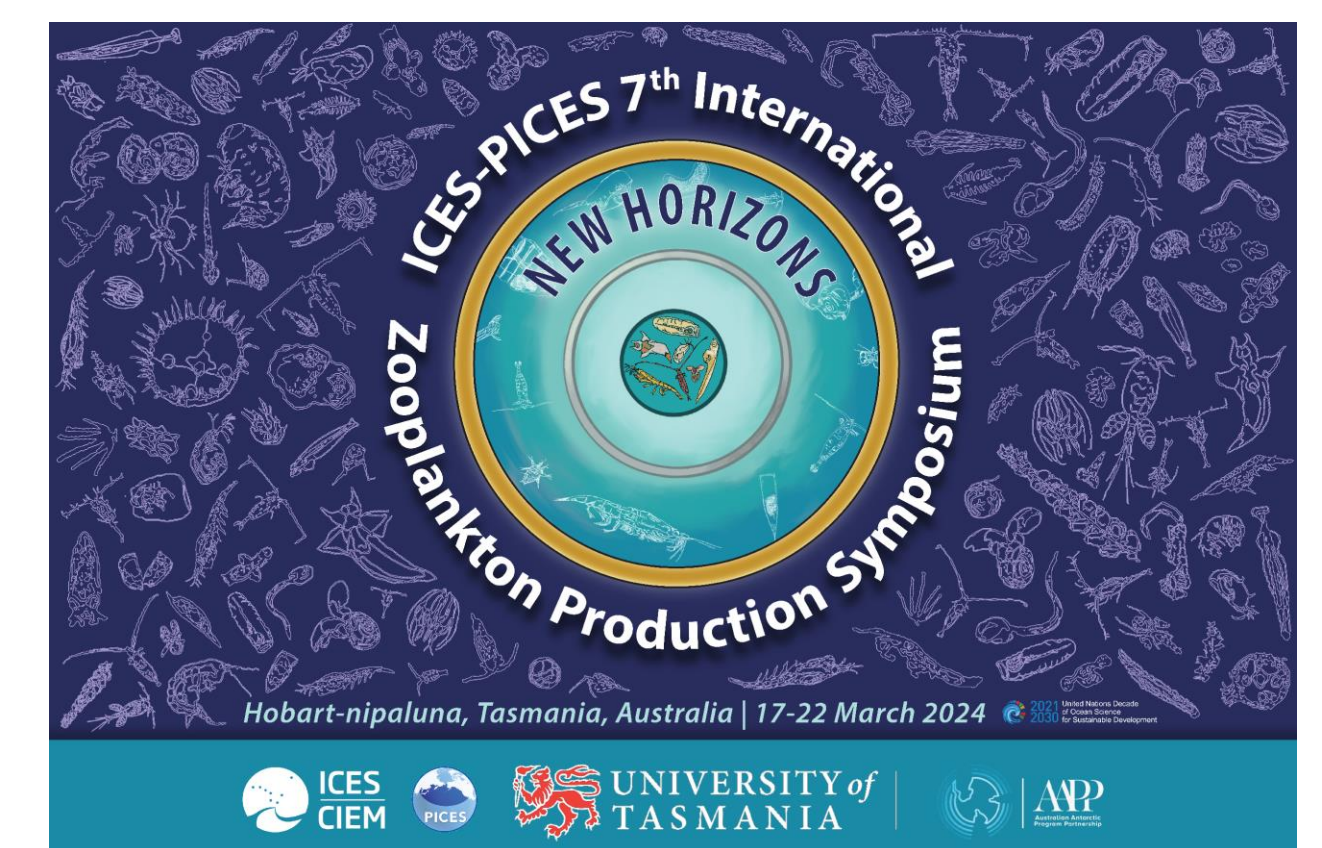


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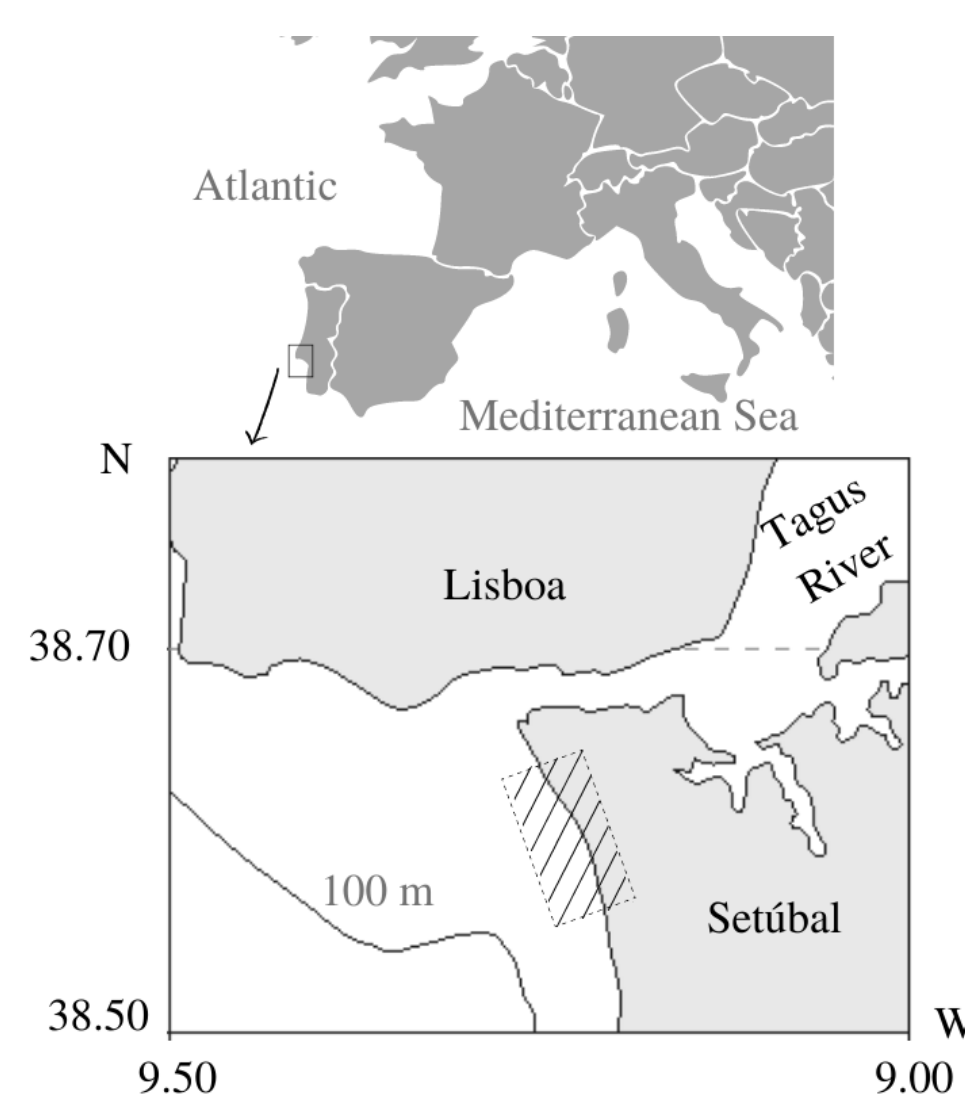


## INTRODUCTION

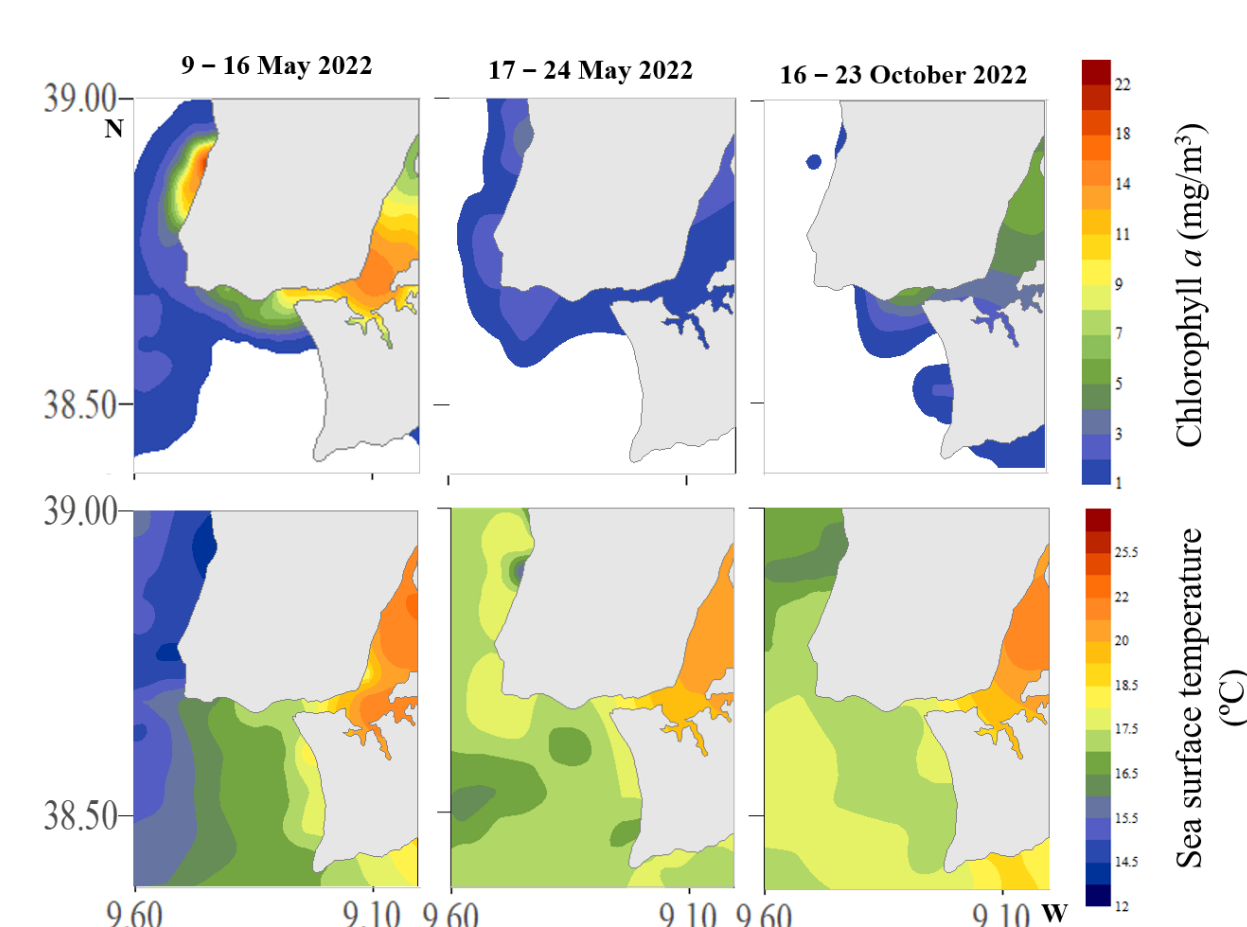
Gelatinous zooplankton are essential components of healthy ecosystems. Given their characteristic life cycle, ecological aspects, and adaptability to a variety of oceanic conditions, these organisms are considered indicators of climate change, having advantages relative to other taxa. Citizen science initiatives are becoming increasingly frequent, providing data that are otherwise difficult to collect and interesting results for different taxa worldwide, allowing for example the detection of new occurrences. The ongoing citizen science program GelAvista, running since 2016, gathers data reported by observers on jellyfish occurrences in Portuguese waters, in the northeastern Atlantic. The program has enhanced the knowledge of these organisms, providing data on biodiversity, and the dynamics of their distribution and abundance. Sightings of a specific hydromedusae were received through GelAvista for mainland Portugal, close to the Tagus River, in the Lisbon Bay region. The species was morphologically and molecularly identified as *Odessia maeotica*, comprising its first reported occurrence in the Lisbon Bay.

## RESULTS

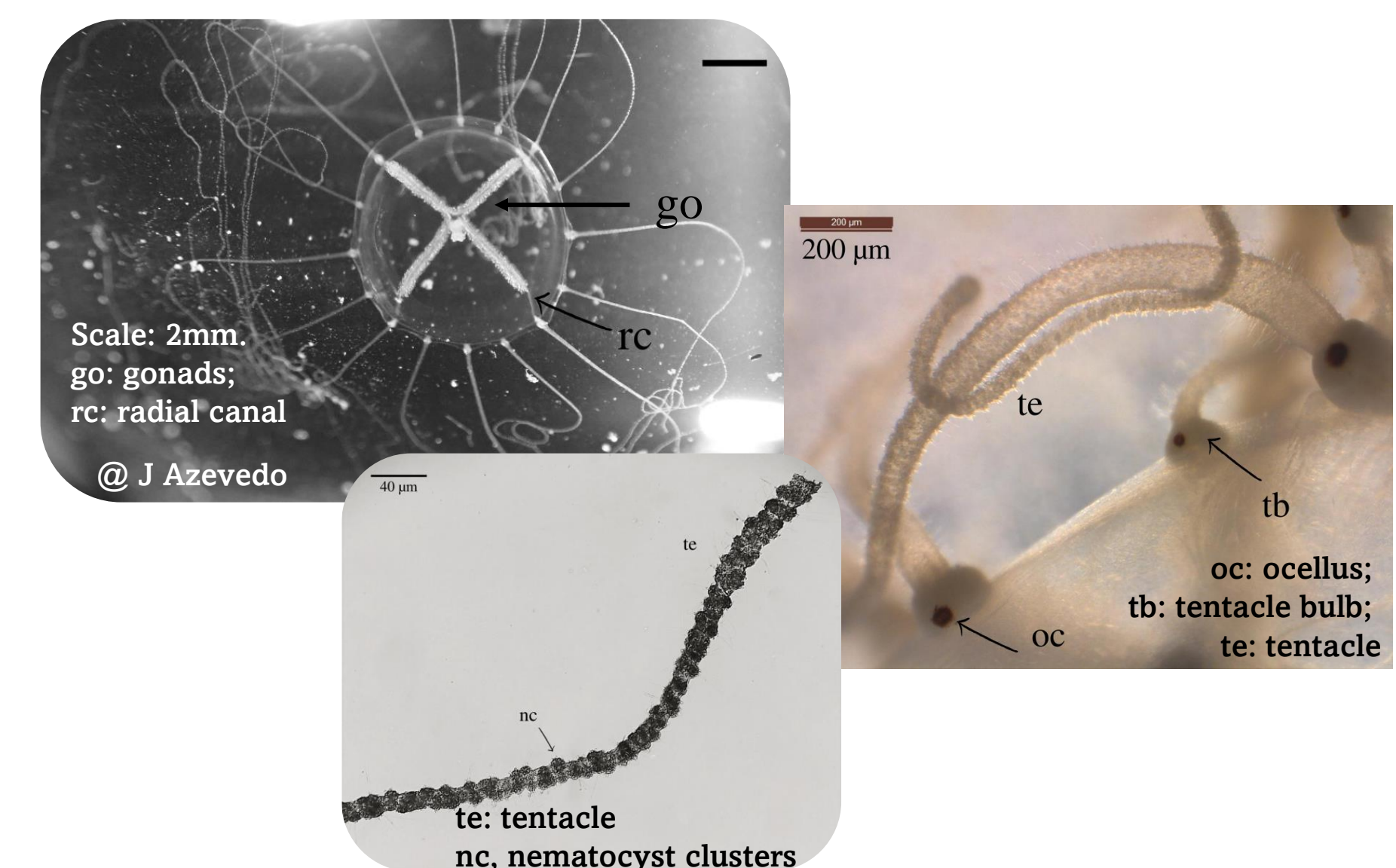
*Odessia maeotica* sightings (dashed box)



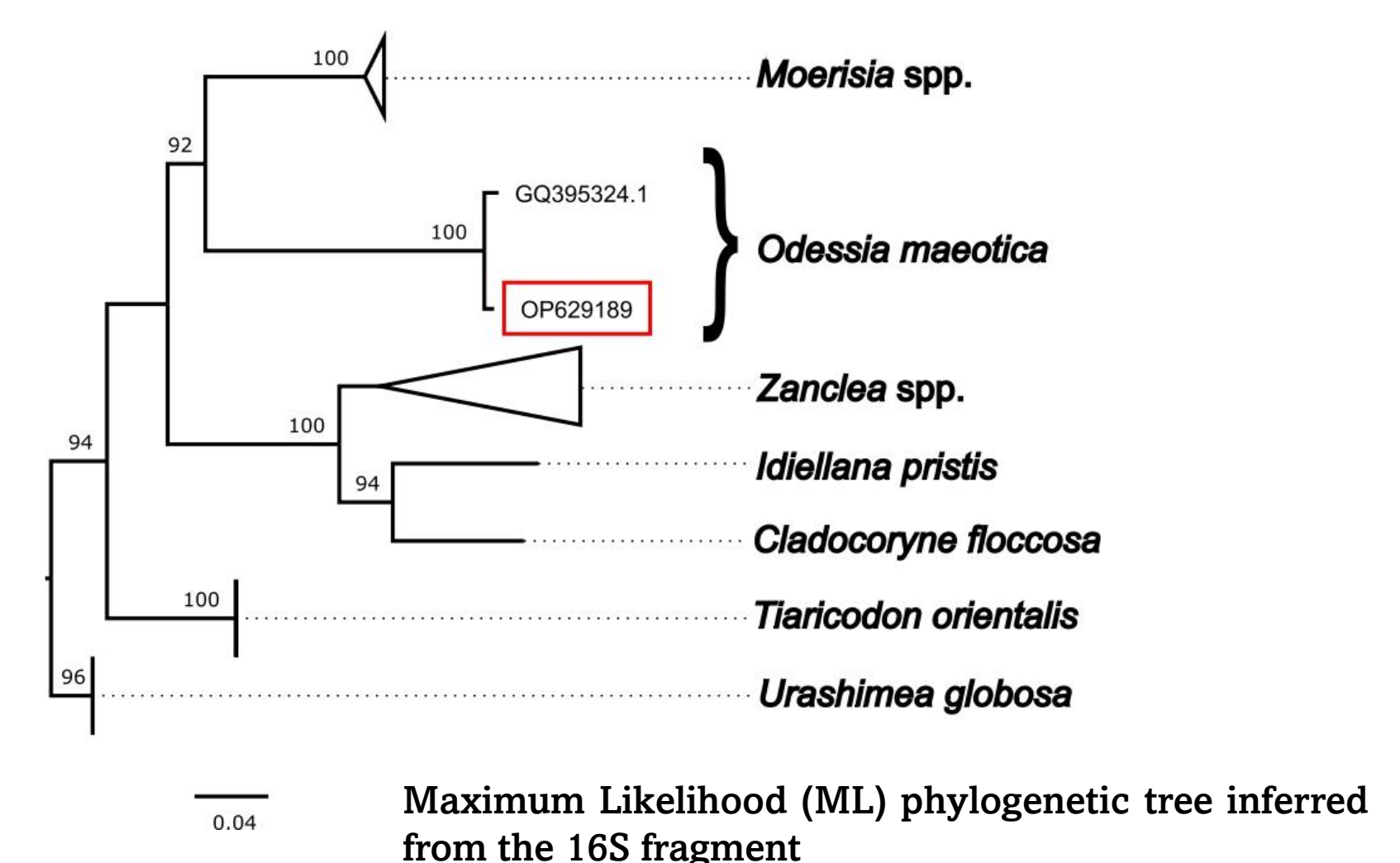
Chlorophyll *a* and sea surface temperature spatial fields (8-day averages) for *Odessia maeotica* occurrence periods



Morphological identification of *Odessia maeotica*



Molecular identification of *Odessia maeotica*



## REMARKS

*Odessia maeotica* is first reported for the Lisbon Bay.

The work presents the first sequencing of the mitochondrial cytochrome oxidase I (COI) gene for the species.

The specimens were sighted in an area under direct oceanic exposure, in periods of increased chlorophyll and water temperatures.

The proximity of the occurrences to the Tagus River mouth suggests that the medusae were transported from the Tagus estuary where it may be found.

May 2022 was the warmest and driest in 92 years, characterised by above-the-average air temperatures and low precipitation (IPMA 2022, <https://bit.ly/3wFPNSc>). October 2022 was similar, although the precipitation was relatively higher (IPMA 2022, <https://bit.ly/3uQcPp9>), which seemed to contribute to adequate conditions for the species development.

As follows, the presence of *O. maeotica* outside the Tagus estuary may have comprised an occasional or intermittent occurrence, driven by temporary changes in the water characteristics, pulses of nutrient inputs and freshwater flow variability.

The number of tentacles suggests that the specimens could correspond to young medusae, which reinforces the theory of an abrupt promotion of their reproduction.

The possibility of the species inhabiting the coastal area cannot be excluded, since there is no regular monitoring of the local zooplanktonic communities in the occurrence area. The species may also be expanding its distribution, driven by climatic changes.

The multidisciplinary nature of the present work is a good example of how the detection of species through citizen science can be incorporated into scientific studies.

Using both morphological and molecular techniques to accurately identify the species, ensures the precision in the detection of species, and advances the data available for barcoding of marine zooplankton towards enhanced assessments.