

FIRST RECORD OF THE SIPHONOPHORE *PHYSALIA PHYSALIS* (LINNAEUS, 1758) IN THE GULF OF TUNIS

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ملخص

أول تسجيل للكراڤيل البرتغالي *Physalia physalis* (Linnaeus, 1758) في خليج تونس: الكراڤيل البرتغالي أو البارجة البرتغالية والمصنف علمياً بـ *Physalia physalis* (Linnaeus, 1758)، هو حيوان بحري ينتمي إلى شعبة اللاسعات كثير التواجد في المياه الدافئة خاصة بالمناطق الاستوائية وشبه الاستوائية. تتناول هذه الدراسة، تسجيل أول ظهور للكراڤيل البرتغالي *P. physalis* بالسواحل التونسية بتاريخ 02 أفريل 2021. حيث تم العثور على إحدى هذه الحيوانات نافقة بشاطئ قرطاج أميلكار، تابعها جمع لثلاثة أحياء أخرى من عرض البحر أمام منطقتي رادس وحمام الأنف من قبل بعض الصيادين. تتميز العينات التي تم جمعها بعوامة غير متناظرة يتراوح طولها من 15 إلى 25 سم متكونة من حافة طولية مجعدة، ذات غشاء أرجواني شفاف يميل إلى الزرقة، وبمجسات يبلغ طولها من 50 إلى 130 سم. تجدر الإشارة إلى أن نفور *P. physalis* في خليج تونس تزامن مع نفور أعداد كبيرة من قنديل البحر *Velella velella*. نظراً للسمية المفرطة لهذا النوع من قناديل البحر للإنسان، فإنه يترتب إدراجه في شبكة المراقبة والمتابعة الساحلية.

كلمات مفاتيح: *P. physalis*، خليج تونس، أول تسجيل، البحر الأبيض المتوسط

RÉSUMÉ

Première signalisation de *Physalia physalis* (Linnaeus, 1758) dans le golfe de Tunis : La galère portugaise *Physalia physalis* (Linnaeus, 1758), est un cnidaire pleustonique fréquent dans les eaux chaudes des régions tropicales et subtropicales. Dans cette note, nous reportons pour la première fois la présence de quatre spécimens de *P. physalis* sur les côtes tunisiennes. Un premier observé en date de 02 avril 2021 au niveau de la plage de Carthage Amilcar. Trois autres ont été ramassés vivants par des pêcheurs en pleine mer en face de la région de Radés et de Hammam Lif. Les spécimens observés présentent un pneumatophore asymétrique de 15 à 25 cm de longueur avec une crête longitudinale ridée, formée d'une membrane transparente de couleur violet-bleuâtre. Les tentacules ont une longueur variable entre 50 et 130 cm. L'échouage de *P. physalis* dans le golfe de Tunis a coïncidé avec un échouage massif de la méduse *Velella velella* (Linnaeus, 1758). Vu la dangerosité de cette espèce pour l'homme, il devient nécessaire de l'inclure dans le réseau de surveillance et d'observation du littoral.

Mots clés : *P. physalis*, golfe de Tunis, première signalisation, Mer méditerranée

ABSTRACT

The Portuguese man-of-war *Physalia physalis* (Linnaeus, 1758), is a pleustonic cnidarian commonly found in the tropical and subtropical areas of the world's oceans. To date, and to our knowledge no signalization of *P. physalis* has been reported in Tunisia. In this note, we report for the first time, the presence of *P. physalis* in Tunisian coast on April 2, 2021. One colony was stranded at Carthage Amilcar beach. Three others were collected alive by fishermen in the open sea in front of Rades and Hammam Lif coasts. The specimens showed an unsymmetrical pneumatophore with a wrinkled longitudinal ridge consisting of a transparent purple-blue membrane, between 15 and 25 cm in length. The tentacles were approximately 50 to 130 cm in length. The presence of *P. physalis* in the Tunis gulf has coincided with the stranding of the jellyfish *Velella velella* (Linnaeus, 1758). Given the potential danger of this species for humans, it is essential to integrate it into the monitoring and observation network of the coastline.

Key words: *P. physalis*, gulf of Tunis, first record, Mediterranean Sea

INTRODUCTION

Physalia physalis (Linnaeus, 1758) is a pleustonic cnidarian colony of polypoid and medusoid organisms commonly called the Portuguese man-of-war, Portuguese galley, Blue bottle, or Sea bladder, belonging to the family Physaliidae of the order Siphonophora. *P. physalis* are dangerous marine

organisms with a particularly potent toxin that is potentially deadly to humans, common in the tropical and subtropical regions of the world's oceans, usually found between 40° S and 55° N (Araya et al. 2016). This species is a colonial hydrozoan composed of many polyps that cannot survive separately (Mapstone, 2014). It consist of four types of polyps: a pneumatophore composed of a float, digestive

(gastrozoid) and reproductive (gonozoid) polyps, and polyps in form of long tentacles (dactylozooids), which consists of nematocysts or stinging cells loaded with venom responsible for the defense against the predators, and capture of preys (Bardi and Marques 2007; Edwards and Hessinger, 2000). *P. physalis* feed on a wide variety of prey including fish, fish larvae, cephalopods, chaetognaths, and *leptocephalus* larvae. It is a specific predator of fish eggs and larvae and can have impacts on commercial fishing areas (Purcell 1989); however they are prey eaten by some fish, turtles and small nudibranchs (Thompson and Bennett 1969). While hunting, they stretch out the stinging tentacles to full length to act as a floating net (Johnsen, 2000). Although they are mostly transparent, their tentacles have pigmented regions that resemble larval fish, copepods, and small shrimp to lure prey into their stinging net (Johnsen 2000; 2001). *P. physalis* stranded on beaches are still capable of stinging if handled, even after several days of dehydration (Tibballs, 2006).

This species is known for its painful sting due to the hypnotoxin contained in its tentacles, which causes a series of symptoms, from local skin necrosis to neurological and cardiorespiratory problems, and may even cause death (Haddad et al. 2010, Labadie et al. 2012). A fatal case of Portuguese man of war envenomation occurred on the Florida Atlantic coast in 1987 (Stein et al. 1989).

In 2010, the Mediterranean basin experienced swarms of *P. physalis* with dramatic consequences, followed by a human death from a jellyfish sting recorded in

Sardinia Italy (Prieto et al. 2015). *P. physalis* is not a native species to the Mediterranean Sea where it is sporadically reported. In 2001, it was reported in Maltese waters (Calleja, 2009). In 2009, it was recorded along the Spanish coast (Coastal del Sol) (Prieto et al. 2015). It was reported also on the Mediterranean coast of Morocco on 2018 (Mghili et al. 2020). From the years 2011 until a recent date (2019), some colonies have started to be observed regular especially on certain Maltese and Italian coasts, indicating the invasive aspect that this species takes in the Mediterranean sea (Bo et al, 2020). The swarming of this species in the Mediterranean can pose a serious risk to tourism and the coastal economy.

In this note, we report for the first time, the occurrence of *P. physalis* in the Tunisian coast.

MATERIALS AND METHODS

Four specimens of *Physalia physalis* have been observed on April 2nd, 2021, in the bay of Tunis (Fig. 1). One colony was stranded on the Carthage Amilcar beach. Three other were observed and collected alive by fishermen in the open sea in front of Rades and Hamam Lif coasts. All the specimens were recovered and brought back to the laboratory. Identification was effectuated by using the manual edited by Piraino et al. (2016). Measurement was made with a ruler with smallest marks of 1 millimeter

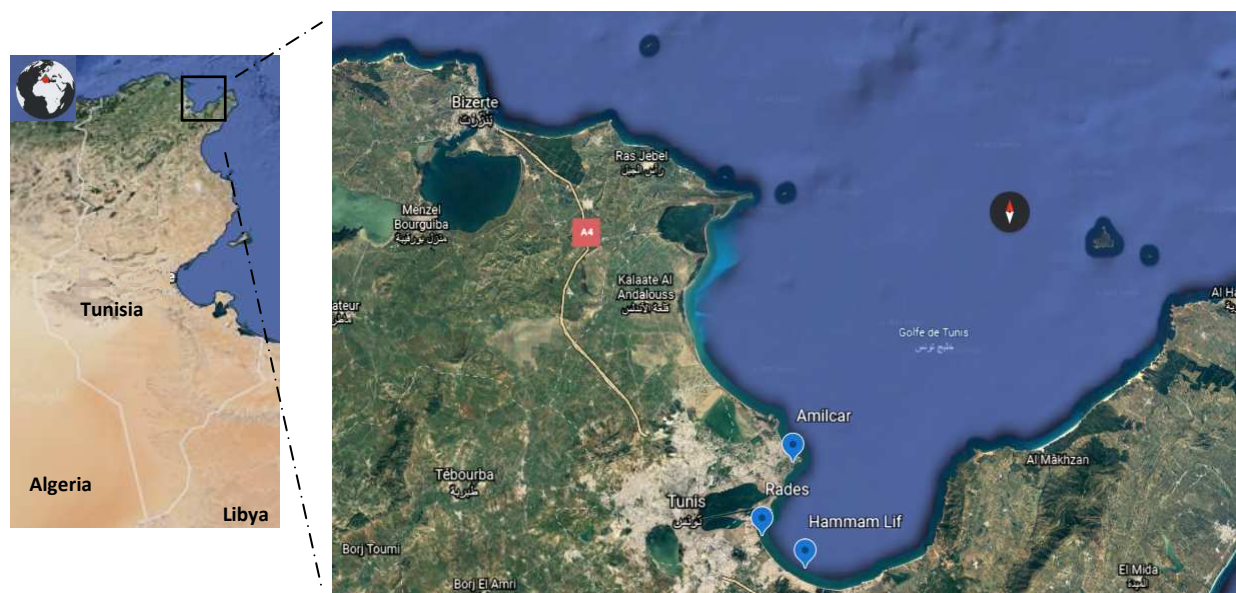


Fig. 1. Location of *Physalia physalis* occurrence in the bay of Tunis on April 02, 2021

RESULTS AND DISCUSSION

The observed colonies presented an asymmetric pneumatophore with a longitudinal wrinkled crest, formed purple-bluish transparent membrane, of 15 to 25 cm in length. The tentacles were about 50 to 130 cm in length (Fig. 2). The stranding of *P. physalis* in the Tunis gulf was coincided with the mass beaching of *Velella velella* (Linnaeus, 1758) (Fig.3). *P. physalis* is one of the 22 species of Siphonophora rescinded in Mediterranean Sea (Golo et al. 2016). This species has been recorded in many Mediterranean countries (Malta, France, Italy, Turkey, Morocco) (Kili et al. 2015, Bo et al. 2020, Mghili et al. 2020) and its presence seems to depend

primarily on the winds and secondarily on the current and tides (Prieto et al. 2015; Lopes et al. 2016; Ferrer and Pastor 2017). These factors combine together to push Atlantic colonies across the Strait of Gibraltar into the Mediterranean basin (Mghili et al. 2020). It is difficult for it to reach higher latitudes (Araya et al. 2016). Ferrer and Pastor (2017) simulated the drift of *P. physalis* in the Spanish Basque region and showed that the probable origin of these colonies was the northern part of the subtropical eddy of the North Atlantic. Prieto et al. (2015) reported that the invasion of *P. physalis* from the Atlantic Ocean to the Mediterranean Sea on 2010 was the result of the unusual combination of meteorology and oceanography during the previous winter.

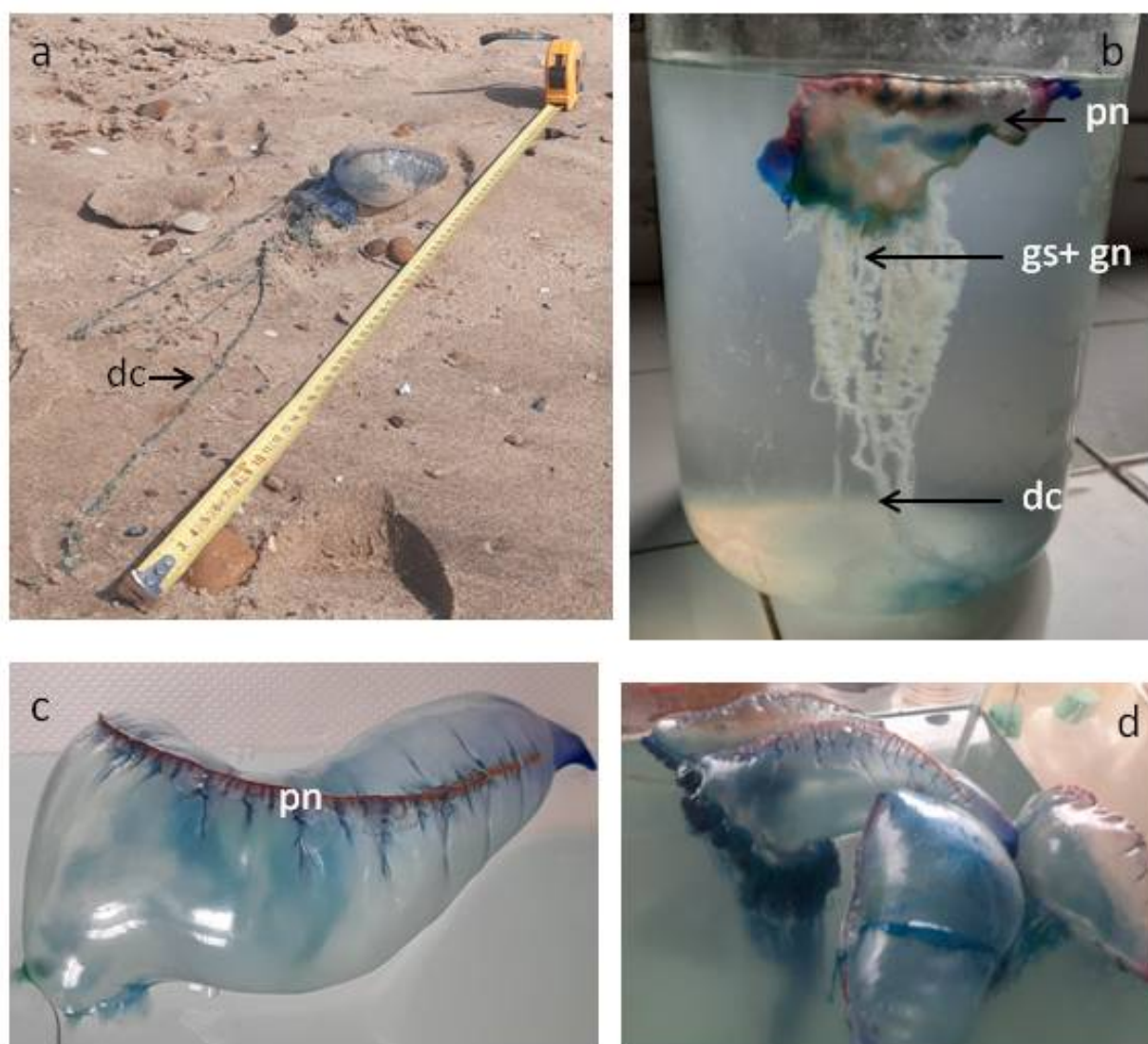


Fig 2. Specimens of *Physalia physalis* observed on April 2nd, 2021, in the bay of Tunis
a and **b**: 1 individual stranded on Amilcar beach; **c**: 1 individual collected by fisherman in open sea in front Rades; **d**: four specimens collected in the bay of Tunis ; **pn**: pneumatophore; **gs**: gastrozooids; **gn**: gonozooids; **dc**: dactylozooids



Fig 3. Massive stranding of *Verella velella* on April 2nd, 2021 in Amilcar beach

The strong westerly wind in winter favors the transport of these colonies to the Mediterranean basin. Bo et al. (2020) indicated that *P. physalis* encountered in the Mediterranean sea comes from Atlantic Ocean and also showed the existence of two months times interval between their appearance on the Atlantic coast (January-February) and in the Mediterranean sea (March-April-May). A possible reason for the presence of the Portuguese man-of-war in the Tunisian coast (Tunisian gulf) is that the particular climatic and oceanographic conditions favored the drift of this species in our coast. Canepa et al. (2020) demonstrated that the *P. physalis* strandings were affected by wind and temperature conditions. In fact, it also appears that the winds prevailed during this period were from the north and northwest (<https://www.meteomanz.com/index?>) had the major influence on this drift since they coincided with the stranding of *Verella velella*, which is a species influenced by the winds.

Although *P. physalis* is not native to the Mediterranean Sea where it is sporadically reported, monitoring protocols and early warning initiatives, as well as awareness campaigns should be carried out as has already been done for other pests, such as the toxic fish *Lagocephalus sceleratus* (Gmelin, 1789), to reduce the risk.

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