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# Findings of *Notospermus geniculatus* (Delle Chiaje, 1828) (Nemertea, Heteronemertea, Lineidae) in the Mediterranean islands of Sicily and Rhodes

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## Abstract

*Findings of Notospermus geniculatus (Delle Chiaje, 1828) (Nemertea, Heteronemertea, Lineidae) in the Mediterranean islands of Sicily and Rhodes.* The findings of *Notospermus geniculatus* from Sicily in 2019 and 2020 and from Rhodes Island in 2008 are documented, extending knowledge concerning the distribution of this ribbon worm in the Mediterranean basin.

Key words: Nemertea, *Notospermus geniculatus*, Distribution, Sicily, Rhodes, Mediterranean Sea

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## Resumen

*Hallazgos de Notospermus geniculatus (Delle Chiaje, 1828) (Nemertea, Heteronemertea, Lineidae) en las islas mediterràneas de Sicilia y Rodas.* Se documentan los hallazgos de *Notospermus geniculatus* en Sicilia en 2019 y 2020 y en Rodas en 2008, ampliando el conocimiento sobre la distribución de este nemertino en la cuenca del Mediterráneo.

Palabras clave: Nemertea, *Notospermus geniculatus*, Distribución, Sicilia, Rodas, Mediterráneo

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## Resum

*Troballes de Notospermus geniculatus (Delle Chiaje, 1828) (Nemertea, Heteronemertea, Lineidae) a les illes mediterrànies de Sicilia i Rodos.* Es documenten les troballes de *Notospermus geniculatus* a Sicília el 2019 i el 2020 i a Rodos el 2008, ampliant així el coneixement sobre la distribució d'aquest nemertí a la conca del Mediterrani.

Paraules clau: Nemertea, *Notospermus geniculatus*, Distribució, Sicilia, Rodos, Mediterrani

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## Introduction

The nemertean *Notospermus geniculatus* (Delle Chiaje, 1828) is a marine non-segmented ribbon worm. Slightly flattened dorso-ventrally, it can reach up to 1 m in length and 15 mm in width, and it has the ability to contract (Coe, 1940; Jiang and Deng, 2018). This benthic worm lives in lower shore intertidal to sublittoral depths of 30 m or more, in kelp holdfasts, under stones and boulders on sand or muddy sand, and in crevices in rocks and corals (Gibson, 1995). Benthic nemerteans are basically carnivorous predators; they prey not only on various organisms, primarily polychaetes and crustaceans, using their rapidly everted proboscis and potent toxins, but also on recently dead organisms (McDermott and Roe, 1985; Thiel and Kruse, 2001).

The species was originally described from the marine region of Naples (Italy) as *Polia geniculata* Delle Chiaje, 1828 (Delle Chiaje, 1828), and redescribed as *Notospermus geniculatus* (Delle Chiaje, 1828) by Riser (1991). It has been reported under several synonymised names (Norenburg et al., 2019).

*Notospermus geniculatus* is a cosmopolitan species with a worldwide distribution comprehending: the Black Sea, the Mediterranean Sea, the Canary Islands, the Gulf of Guinea (West Africa), the Atlantic coasts of south Iberian Peninsula, western Pacific waters (Japan, Vietnam, Australia, New Zealand), and western coasts of tropical America (Gulf of California, Panama and Peru) (Riser, 1991; Gibson, 1995; Kajihara, 2007; Chernyshev, 2011; Herrera–Bachiller et al., 2015). In the Mediterranean Sea its occurrence is reported from the coasts of the Iberian Peninsula and Balearic Islands, Spain (Herrera–Bachiller et al., 2015; Fernández–Álvarez et al., 2017), from France, southern coasts and Corse (Ueda, 2020), from Italy (Relini, 2008; Natural History Museum, 2014; Ferranti et al., 2015; Tiscar, 2015; Orrell, 2019), from Croatia (Ueda, 2020), from Greece and Malta (Riser, 1991) (for Greece, see also Discussion), along the Levantine Sea and the Aegean Sea coasts of Turkey (Okuş, 2004; Yokeş and Demir, 2013; Çinar, 2014) and from Israel (Ramos–Esplá and Valle Pérez, 2004; Hoffman and Kajihara, 2020). A record from South Africa is of uncertain validity (Gibson, 1995).

As emphasized by Fernández–Álvarez et al. (2017), *N. geniculatus* is probably a common species in the Mediterranean basin but not widely recorded in taxonomic lists. In this work we report the findings of specimens of this ribbon worm from southern Sicily (Italy) and Rhodes Island (Greece).

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## Material and methods

One ribbon worm (specimen A) was collected on 02/10/2019 by hand, under a stone at Porto Ulisse, Ispica (Ragusa), southeast of Sicily (36.6961 °N, 14.9908 °E), at a depth of 2 m, in a sandy area with sparse *Posidonia oceanica* and *Caulerpa prolifera* meadows interrupted by rocks; this specimen A is stored in ethanol at the collection of the Museo Civico di Storia Naturale di Comiso (MSNC) (Ragusa), Italy, with catalogue number MSNC 4792. A second sample (specimen B) was captured on 27/03/2020, using the same method and at the same



Fig. 1. Live *Notospermus geniculatus* (specimen A) from Pozzallo, Sicily, Italy (length 49 cm).

Fig. 1. Ejemplar vivo de *Notospermus geniculatus* (espècimen A) hallado en Pozzallo, Sicilia, Italia (longitud 49 cm).

location as above; it was photographed, identified and measured at the MSNC and subsequently released. A third individual (specimen C) was collected by hand on 11/06/2008 at Faliraki, Rhodes Island, southeastern Aegean Sea, Greece (36.350 °N, 28.208 °E), buried on sand under a small rock, at a depth of 1 m; the specimen C is preserved in ethanol at the collection of the Hydrobiological Station of Rhodes (HSR), Hellenic Centre for Marine Research, Greece, with the catalogue number HSR145.

## Results

All three nemertean specimens were identified as *N. geniculatus* following Gibson and Sundberg (2001). The head region resembled a spatula. The opening of the alimentary canal and the opening of the proboscis apparatus (the rhynchopore, the opening of the rhynchocoel, where the proboscis is stored) were separate, as in all heteronemerteans. In specimens A and C, deposited at the MSNC and HSR collections, lateral horizontal cephalic slits were observed, while a caudal cirrus was not present at the posterior end. The coloration varied from dark green to dark brown with whitish transversal rings at quite regular distances, with the first ring complete and V shaped, on the head (fig. 1). The length of the fresh specimens A (fig. 1) and B was respectively 49 cm and 13 cm, while specimen C, in ethanol, measured 41 cm. Specimen A was a female, while the sex of specimen C was not determined.

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## Discussion

Although the ribbon worm *N. geniculatus* is widely distributed in Italian waters (Relini, 2008; Ferranti et al., 2015), its occurrence in Sicily was known only from the area of Trapani, at the northwest of the island (Huschke, 1830; Riser, 1991; Kajihara, 2007). The records reported in the present study from the southern waters of the island increase knowledge on its distribution.

The species is widely distributed from the south to the north of the Asia Minor Peninsula, along the Aegean coasts of Turkey (Okuş, 2004; Yokeş and Demir, 2013). In the Hellenic waters of the Aegean, Ionian and Levantine seas, the presence of the species is scarcely documented. Concerning the eastern Aegean Sea, an old sample, collected in 1965 from Chios Island, at the northeast of the basin, is deposited at the British Museum of Natural History London (Riser, 1991; Natural History Museum, 2014); another sample, collected on 10/08/2005, at a depth of 2 m from Symi Island, is deposited at the National Museum of Natural History, Smithsonian Institution (Orrell, 2019), while a specimen was observed in Lesvos Island in 2019 (Ueda, 2020). In the Ionian Sea, the presence of *N. geniculatus* was reported from Corfu Island in June 2015 (<https://www.facebook.com/pg/Corfu-Museum-420662671375619/posts/>). Although the finding from Rhodes could be expected, as the island is few miles south to the island of Symi, Greece, and to the Datça peninsula, Turkey, where it occurs frequently (Okuş, 2004), it adds knowledge to the poorly known occurrence of the species in the Hellenic waters.

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