

# ***Tritoniopsis cincta* (Pruvot-Fol, 1937) (Gastropoda, Nudibranchia): first record for the Sardinian sea (Italy) and new additional notes on its distribution and diet**

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## **ABSTRACT**

A single specimen of *Tritoniopsis cincta* was found and collected in the Marine Protected Area Tavolara Punta Coda Cavallo on the stolon of a colony of the alcyonacean *Sarcodictyon catenatum* (Forbes, 1847). This is the first finding of this rare nudibranch in the seas surrounding Sardinia (Italy). New acquisitions from unpublished data but available on the web greatly expand the distribution of the species, previously considered endemic to the Mediterranean Sea and limited to the western basin.

**Keywords:** *Tritoniopsis cincta*, Nudibranchia, Adriatic, Mediterranean, Atlantic, *Sarcodictyon catenatum*

## **INTRODUCTION**

On the 21th December 2018, during a scuba dive, one individual of *Tritoniopsis cincta* was found on the line of a buoy in locality Secca Angelo in the MPA Tavolara Punta Coda Cavallo (NE Sardinia, Italy). The individual was photographed in situ and collected for further investigation.

## **MATERIALS AND METHODS**

During a scientific scuba dive, the individual here reported was found and photographed in situ with a mirrorless Sony A6000 camera in Sea & Sea housing equipped with two Inon S2000 strobes. Subsequently, the living specimen was photographed in laboratory with a Nikon D3X camera and dedicated strobe. Post production on photos

has been performed with Photoshop CS 6 and Camera Raw. The specimen was then preserved in Ethanol 96% and it is temporarily deposited at Department of Science, Roma Tre University (voucher RM3 1776) for further morphological and molecular investigations. Sampling was authorized by MPA Tavolara Punta Coda Cavallo.

## RESULTS

The Sardinian individual of *Tritoniopsis cincta* here reported (Fig. 1) was found feeding

on the coenenchima of a colony of the stolonifer *Sarcoditcyon catenatum* (Forbes, 1847). It was in proximity of its probable egg coils, in simpatry with one individual of *Tritonia manicata* (Deshayes, 1853) (Fig. 2). The nudibranch was 13 millimeters in length and it matches with the peculiar morphology proposed by Pruvot-Fol in the original description and in the subsequent redescription by Schmekel & Portmann (1982). The egg coils also correspond in dimension and shape to those depicted in Abb.7.39 by Schmekel & Portmann (1982).



Figure 1. *Tritoniopsis cincta* (voucher RM3 1776) from AMP Tavolara, Sardinia, Italy - 13 mm



## DISCUSSION

The record of *Tritoniopsis cincta*, here described, is the first for the waters of Sardinia and has to be considered as very rare since it has been found only in 7 localities in the

Mediterranean Sea with single specimens, with the exception of the Gulf of Naples where Luise Schmekel (Schmekel & Portmann, 1982) collected 43 specimens.

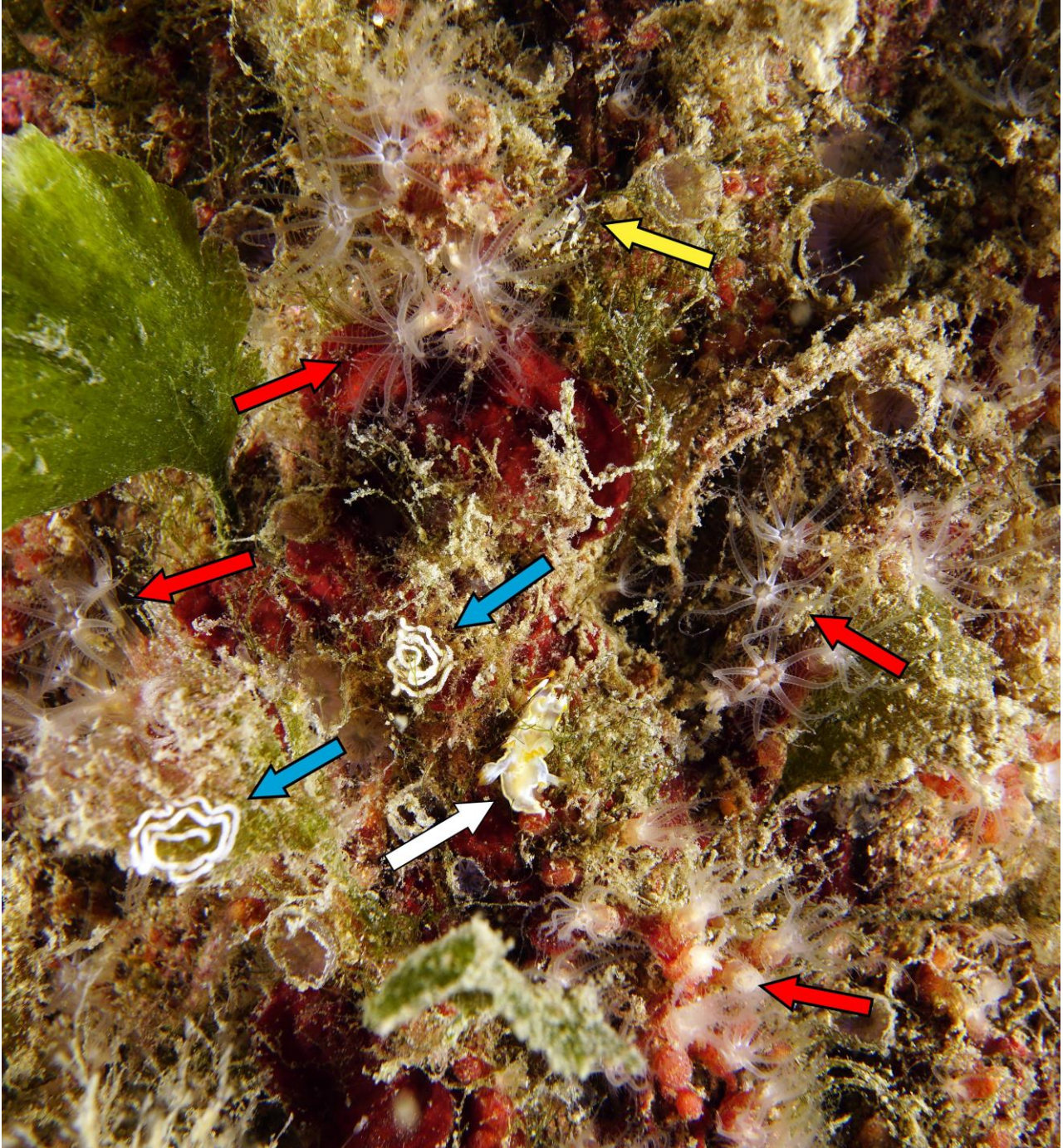


Figure 2. White arrow: *Tritoniopsis cincta*; Blue arrows: egg coils; Red arrows: *Sarcodictyon catenatum*; Yellow arrow: *Tritonia manicata*.



*Tritoniopsis cincta* was described on a single specimen from Banyuls sur Mer (Occitanie, France) as *Tritonia cincta*. In the recent literature the genus *Tritoniopsis* Eliot 1905 is universally accepted for this species: this is not obvious, since even in its description there were several doubts. In the original description Pruvot-Fol (1937) wrote: “il sera peut-être utile par la suite de créer un sous-genre nouveau. Ne possédant qu'un seul individu, je m'abstiens pour le moment”. And indeed subsequently she attributed *T. cincta* to *Tritonidoxa* (Pruvot-Fol, 1954). Afterwards, Odhner suggested to attribute the species to the genus *Duvaucelia* Risso, 1866, on the basis of its reduced external habitus, the anus situated well in front of the middle of the body and the genital pore below or even in front of the first branchial tuft (Odhner, 1963). Eveline Marcus agreed with Odhner in attributing *T. cincta* to the genus *Duvaucelia*, by reason of the genital aperture in front of the first gill (du Bois-Reymond Marcus, 1983). Schmekel & Portmann (1982) however, opted for the genus *Tritoniopsis* since the radular formula, anus position and flagelliform penis are consistent with *Tritoniopsis brucei* (type species). But the radular pattern of *T. cincta* does not seem to match uniquely with a single genus: it has the first lateral tooth undifferentiated as in *Tritoniopsis*, the jaw plates as in *Tritonia (Candiella) dubia* Bergh, 1888 and the rhachidian tooth as in *Tritonia griegi* Odhner, 1922 (du Bois-Reymond Marcus, 1983). Therefore, a future investigation is needed to obtain a less uncertain taxonomic position.

At the time of the finding of the individual of *T. cincta* here described, in the scientific literature the species was known only from the type locality Banyuls sur Mer, from the promontory of Portofino (Barletta & Melone, 1976), from the Gulf of Naples (Schmekel, 1968; Schmekel & Portmann,

1982), from Bajo de Fuera (Cabo de Palos, Murcia, Spain) (Templado et al., 1988) and from Cabo de Gata (Almería, Andalucía, Spain) (Moreno Lampreave & Barrajon Domenech, 2012). The records from Banyuls, Portofino and Spain referred to single individuals, and, although the individuals collected in the Gulf of Naples were 43, the species was considered very rare. Its rarity is still confirmed if we consider that also on the web the reports of findings are very few. A single specimen was found in Argentario (Delle Fratte, 2012) and, in 2016, the known distribution of the species was greatly expanded by the finding of a single specimen in Donostia (Atlantic Spain) (Cerviño Pousada, 2016) so that the nudibranch that was considered endemic to the Mediterranean (Cattaneo-Vietti & Giovine, 2008) should be considered Atlanto-Mediterranean. In 2017 the finding of an individual at Monte Conero in the Adriatic Sea (Boncompagni, 2017) further amplifies the distribution range of the species. The figure 3 shows the currently known distribution of *Tritoniopsis cincta*. The Sardinian finding here described, whereas must be considered coherent with the other finds in the Tyrrhenian Sea, adds informations on the ecology of the species and in all probability provides a clue to the reasons for its rarity. The individual was found hidden in the dense turf of algae and invertebrates, which in turn renders the stolons of *Sarcodictyon catenatum* hardly visible and identifiable only by the presence of polyps of the cnidarian when they are expanded. *Tritoniopsis cincta* was generically considered to feed on cnidarians (Cattaneo-Vietti et al, 1990) and therefore the finding here described expands the knowledge on its diet: *Sarcodictyon catenatum* was previously known as a component of the diet of *Tritonia lineata* Alder & Hancock, 1848 (as *Sarcodictyon catenata* (in Brown & Picton,

1979; Todd, 1981; Thompson & Brown, 1984; Thompson, 1988; Picton & Morrow, 1994) confirming that different species of Tritoniidae Lamarck, 1809 may share the same preys (McDonald & Nybakken, 2014).

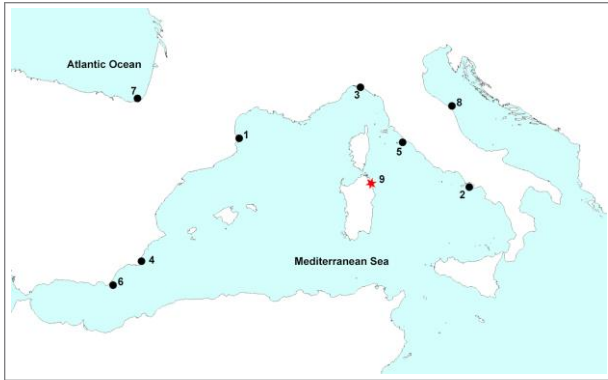


Figure 3. Distribution of *Tritoniopsis cincta* 1. Banyuls sur mer; 2. Gulf of Naples; 3. Portofino; 4. Cabo de Palos; 5. Argentario; 6. Cabo de Gata; 7. Donostia; 8. Monte Conero; 9. AMP Tavolara.

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## REFERENCES

- Barletta, G. & G. Melone (1976): Nudibranchi del Promontorio di Portofino (Genova) (Gastropoda Nudibranchia). *Natura, Società Italiana di Scienze Naturali e Acquario Civico, Milano*, 67(3-4):203-236.
- Boncompagni, M. (2017): Available at: [http://www.marcoBoncompagni.it/48\\_tritoniopsis-cincta\\_du1\\_5608/](http://www.marcoBoncompagni.it/48_tritoniopsis-cincta_du1_5608/)
- Brown, G. H. & B. E. Picton (1979): *Nudibranchs of the British Isles - a colour guide*. Produced for the Underwater Conservation Society, Manchester, by R. Earll, 30 pp.
- Cattaneo-Vietti, R., R. Chemello & R. Giannuzzi-Savelli (1990): *Atlas of Mediterranean Nudibranchs*. Editrice La Conchiglia, 264 pp.
- Cattaneo-Vietti, R. & F. Giovine (2008): *Opisthobranchia*. In: Relini, G. (Ed): *Checklist della flora e della fauna dei mari italiani (Parte I)*. *Biol. Mar. Mediterr.* 15 (suppl.1): 279-295.
- Cerviño Pousada, J.M. in Pontes, M., M. Ballesteros & E. Madrinhas (2012-2019) “*Tritoniopsis cincta*” in *OPK Opistobranquis*, published 01/11/2016, accessed 11/01/2016.
- Delle Fratte, A. (2012): Available at: [https://www.naturamediterraneo.com/forum/topic.asp?TOPIC\\_ID=176870](https://www.naturamediterraneo.com/forum/topic.asp?TOPIC_ID=176870)
- McDonald, G.R. & J.W. Nybakken (2014): Available at: <https://cloudfront.escholarship.org/dist/prd/content/qt0g75h1q3/qt0g75h1q3.pdf>.
- Du Bois-Reymond Marcus, E. (1983): *The Western Atlantic Tritoniidae*. *Bolm. Zool., Univ. S. Paulo* 6: 177-214.
- Moreno Lampreave, D. & A. Barrajon Domenech (2012): *Primera cita de Tritoniopsis cincta (Pruvot-Fol, 1937) (Gastropoda: Opisthobranchia: Tritoniidae) en Andalucía, Sur de la Península Ibérica*. *Noticiario de la Sociedad Española de Malacología* n 57: 77-78.
- Odhner, N. H. (1963): *On the Taxonomy of the Family Tritoniidae*. *Veliger* 6: 48—52.

- Picton, B. E., & C. Morrow (1994): A field guide to the nudibranchs of the British Isles, 143 pp. Immel Publishing.
- Pruvot-Fol, A. (1937): Etude des opisthobranches des côtes Nord de la Méditerranée provenant en majeure partie de Banyuls avec adjonction d'échantillon récoltés à Villefranche ainsi que dans quelques autres localités. Archives du Muséum National d'Histoire Naturelle, Paris, (6) 14: 35-74.
- Pruvot-Fol, A. (1954): Mollusques opisthobranches. Faune de France 58: 1-460.
- Schmeckel, L. (1968): Ascoglossa, Notaspidea und Nudibranchia im Litoral des Golfes von Neapel. Rev. Suisse de Zool., 75: 103-155.
- Schmeckel, L. & Portmann, A. (1982): Opisthobranchia des Mittelmeeres. Springer Verlag. Berlin, 410 pp.
- Templado, J., A. Luque & Moreno D. (1988): Nuevas aportaciones al conocimiento de los opistobranquios (Gastropoda: Opisthobranchia) del sureste español. Iberus, 8 (1): 15-23.
- Thompson, T. E. (1988): Molluscs: benthic opisthobranchs (Mollusca: Gastropoda) keys and notes for the identification of the species. Synopses of the British fauna (new series) no. 8, 2nd edition, v + 356 pp. Linnean Society of London & the Estuarine & Brackish-water Sciences Association; E. J. Brill.
- Thompson, T. E., & G. H. Brown (1984): Biology of opisthobranch molluscs, vol. 2, 229 pp., 41 pls. Ray Society, no. 156.
- Todd, C. D. (1981): The ecology of nudibranch molluscs. Oceanography & Marine Biology Annual Review 19:141-234.

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# **Tritoniopsis cincta (Pruvot-Fol, 1937) (Gastropoda, Nudibranchia): prvi nalaz za Sardiniju (Italija) i novi dodatni podaci o rasprostranjenju i ishrani**

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## **SAŽETAK**

Jedan primjerak *Tritoniopsis cincta* je nađen i sakupljen u Zaštićenom području u moru Tavolara Punta Coda Cavallo, na stolonu kolonije alcyonacea (mekani korali) *Sarcodictyon catenatum* (Forbes, 1847). To je prvi nalaz ove rijetke vrste puževa golaća u vodama oko Sardinije (Italija). Nova saznanja iz neobjavljenih, ali podataka dostupnih na internetu, značajno proširuju rasprostranjenost vrste koja je ranije smatrana endemičnom za Sredozemlje i ograničenom za zapadni bazen.

**Ključne riječi:** *Tritoniopsis cincta*, Nudibranchia, Jadran, Sredozemlje, Atlantik, *Sarcodictyon catenatum*