First record of the aeolid nudibranch *Trinchesia genovae* (O'Donoghue, 1926) in Brittany (France)

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Abstract

Described in Italy and considered as a Mediterranean species, the aeolid nudibranch *Trinchesia genovae* (O'Donoghue, 1926) is reported for the first time in Brittany (north-west coast of France) in a maerl sample. This record confirms the occurrence of this species between Ireland and the Bay of Arcachon (France), where *T. genovae* has been previously identified, filling an important biogeographical gap in the Atlantic waters.

Keywords: aeolid; Brittany (north-west coast of France); new record; Nudibranch; *Trinchesia genovae*

Premier signalement du nudibranche éolidien *Trinchesia genovae* (O'Donoghue, 1926) en Bretagne (France)

Résumé

Décrite en Italie et considérée comme une espèce méditerranéenne, le nudibranche éolidien *Trinchesia genovae* (O'Donoghue, 1926) est signalé pour la première fois en Bretagne (côte nord-ouest française) dans un échantillon de maërl. Ce signalement confirme la présence de cette espèce entre l'Irlande et le bassin d'Arcachon (France), où *T. genovae* avait été précédemment identifiée, comblant ainsi une importante lacune biogéographique dans les eaux de l'Atlantique.

Mots-clés : Bretagne (côte nord-ouest française) ; éolidien ; nouveau signalement ; Nudibranche ; *Trinchesia genovae*

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Introduction

Trinchesia genovae (O'Donoghue, 1926) is a nudibranch described from the Italian coast (O'Donoghue, 1926). It has been regarded as a Mediterranean species (Bouchet, 1976), until its discovery in the Arcachon Bay (Bachelet, Cazaux, *et al.,* 1980; Auby, 1993), Ireland (Wilson & Picton, 1983; Picton & Wilson, 1984; Nunn & Minchin, 1994), west Andalusia (Cervera & J. C. García, 1986), south Portugal (García-Gómez, Cervera, F. J. García, J. A. Ortea, *et al.,* 1991; Calado, Urgorri, *et al.,* 1999; Calado, Malaquias, *et al.,* 2003), Canary Islands (Moro *et al.,* 1995; Malaquias & Calado, 1997) and Cantabria (Cervera, Calado, *et al.,* 2004). The species also has been recorded in the Black Sea (Martynov *et al.,* 2007) and Caribbean Sea (Costa Rica; Espinosa & J. Ortea, 2001). Its distribution inside the Mediterranean Sea becomes also more accurate (e.g. Lipej *et al.,* 2015). But a large gap still exists between the Irish and the South Atlantic French records even if we can assume the presence of *T. genovae* in Brittany. The aim of this paper is to report the presence of this species in Brittany.

Materials and methods

One specimen of *Trinchesia genovae* (figure 1) has been collected in the Bay of Brest (48°18′58,71″N 4°23′27,99″W) on 20th July 2017 in a sample taken by a Smith-McIntyre grab (0.1 m^2) on a maerl bed with muddy sediment underneath (8.5 % organic matter). The sample of maerl was left to rest three days in sea water and all organisms at the surface were retrieved alive every 24 h. Among the animals retrieved, was the aeolid nudibranch *T. genovae* (figure 1).

Results

The individual measured 3.5 mm in length (specimen stretched out) and less than 1 mm in width. The coloration is fine and delicate with whitish background coloration. A patchy white spots occur on the dorsum, head and side of the specimen. From the middle of the head runs a yellow stripe, interrupted between the rhinophores, to the pericardium. Streaks and patches of orange coloration occur as two lateral lines between oral tentacles and rhinophores, on the dorsum after rhinophores and underneath the eyes and rhinophores. An orange band is clearly visible between the oral tentacles. Middorsally the orange stripes at the base of the first cerata are curving and connected near the pericardium. The rhinophores are semi-transparent with an orange coloration from the base to the middle and with an orange distal band. Yellow spots are present where no orange coloration occurs on the rhinophores. The oral tentacles are also semi-transparent with a slight orange coloration. There are 5 groups of cerata with 2 per group maximum. The cerata are short and inflated, semi-transparent with a slight orange distal band on the posterior ones. The duct of the digestive gland is granular with an orange-brown coloration and the cnidosacs are white.

In this study, *T. genovae* was found in a maerl bed. We can unfortunately not assume on which hydroid or another organism the specimen was feeding on because it has been collected on a fishing tray border.

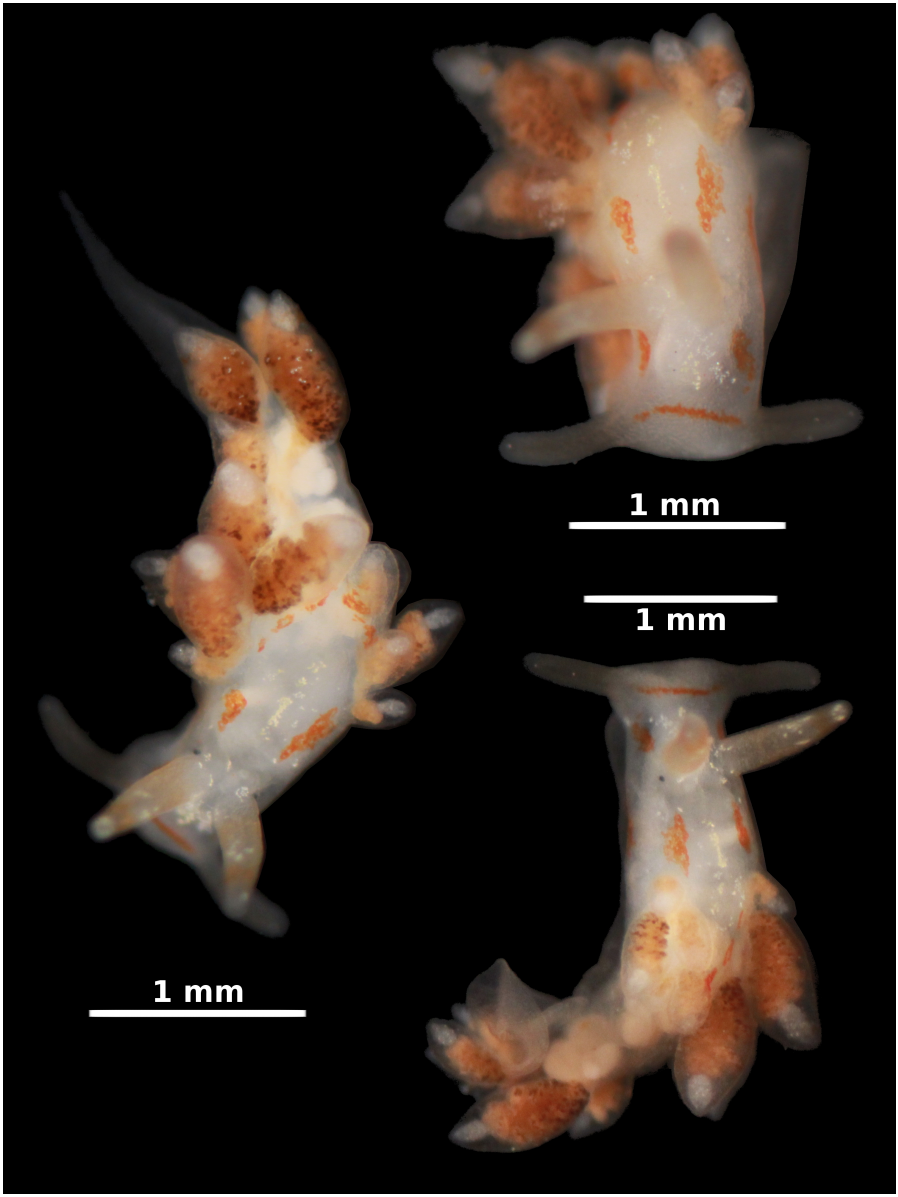

Figure 1: *Trinchesia genovae* (O'Donoghue, 1926) from the Bay of Brest sampled on a maerl bed the 20/07/2017.

Discussion

External morphology

Among the species of the genus *Trinchesia* Ihering, 1879, *T. genovae* can be easily mistaken for *T. foliata* (Forbes & Goodsir, 1839). Both species have a very similar colour pattern but the orange-red stripe between the oral tentacles (figure 1) and a fine patchy azure coloration crossed by a longitudinal yellow streak on the dorsum are diagnostic criteria to distinguish *T. genovae* (Bouchet, 1976; Cervera, García-Gómez, *et al.,* 2011). The latter is not obvious on the Bay of Brest specimen, probably due to its small size, while the orange-red stripe between the oral tentacles is clearly obvious (figure 1).

This aeolid is small with its length reaching up to 13 mm recorded (Cervera, García-Gómez, *et al.,* 2011). Most of the studies report smaller size ranging from 2 mm to 10 mm (Nunn & Minchin, 1994; Sammut & Perrone, 1998; Calado & Silva, 2012).

Ecology

Trinchesia genovae occurs mostly on hard substrates, like rocky walls (e.g. Cervera, García-Gómez, *et al.,* 2011), boulders (Sammut & Perrone, 1998), amongst polychaete tubes of *Serpula vermicularis* Linnaeus, 1767 (Picton & Wilson, 1984), on algae like *Halopteris* Kützing, 1843, *Jania* J.V. Lamouroux, 1812, *Cystoseira barbata* (Stackhouse) C. Agardh, 1820 (Moro *et al.,* 1995; Lipej *et al.,* 2015), algae with hydroids (Auby, 1993) but also near soft substrates like in the *Posidonia* König, 1805 beds either on leafs or rhizomes (Templado, 1982; Ballesteros, Alvarez, *et al.,* 1986; Sammut & Perrone, 1998; Cervera, García-Gómez, *et al.,* 2011). It also occurs on artificial substrates like fishing vessels hulls, on hydroids (*Aglaophenia* sp.) and ascidians (Picton & Wilson, 1984; Moro *et al.,* 1995) or "onions bags filled with monofilament mesh" (Nunn & Minchin, 1994). Mostly found on hard substrates, this note reports for the first time the occurrence of *T. genovae* on the maerl bed. Benthic communities of this habitat are composed by soft substrates communities and also by species which needs a support to be settled, supplied by the hard structure of the maerl (Grall, 2002).

Through the literature, few authors record its feeding habits, but like most of the aeolids species, *T. genovae* must be carnivorous (Miller, 1977) and we could presume it feeds on hydroids like some others *Trinchesia* species (Miller, 1961; Todd, 1981; Calado & Silva, 2012) by removing the individuals polyps leaving the hydrotheca elements emptied (Todd, 1981). Two works record its feeding habits on hydroids belonging to the genera *Dynamena* Lamouroux, 1812, *Obelia* Péron & Lesueur, 1810 and *Sertularella* Gray, 1848 (Schmekel & Portman, 1982; Moro *et al.,* 1995). With these informations *T. genovae* seems to be stenophagous as the majority of the aeolids species (Todd *et al.,* 2001). Some hydrozoans of the families of Campanulariidae Johnston, 1836 and Sertulariidae Lamouroux, 1812 occur on the maerl beds in the Bay of Brest but their identification are not generally made to the species or genus level, due to the lack of skilled taxonomists or experienced identifiers for this class in France. McDonald & Nybakken (1997) made a review of the nudibranchs food habits, in which several hydroids species are listed as food for *T. genovae*, although some were listed only because *T. genovae* were found in their vicinity without any proof of consumption. Indeed these authors hypothesize that *Ectopleura larynx* (Ellis & Solander, 1786) (cited as *Tubularia larynx*), *Halecium delicatulum* Coughtrey, 1876, *Halecium labrosum* Alder, 1859, *Salacia desmoides* (Torrey, 1902), *Scandia gigas* (Pieper, 1884) (Ballesteros, Alvarez, *et al.,*

1986; Ballesteros, 1991; Picton & Morrow, 1994), could be preys for *T. genovae*.

Among the quantitative studies dealing with opisthobranchs few report high abundance of *T. genovae* when it is present. So far, more than 30 specimens have been found only in Ireland (Wilson & Picton, 1983; Nunn & Minchin, 1994), Spain (Templado, 1982) and in Sardinia (Trainito & Doneddu, 2015). But like most studies report only a species list it must exists more areas where the species is common (e.g. Sammut & Perrone, 1998). Conversely, some studies reports a low abundance from 1 to 7 at each station (García-Gómez, 1983; Ballesteros, Alvarez, *et al.,* 1986; García-Gómez, Cervera, F. J. García & López de la Cuadra, 1989; García-Gómez, Cervera, F. J. García, J. A. Ortea, *et al.,* 1991; Moro *et al.,* 1995; Malaquias & Calado, 1997; Calado, Urgorri, *et al.,* 1999; Calado, Malaquias, *et al.,* 2003; Lipej *et al.,* 2015). Like most of them are made by scuba diving we can also assume that the abundance is underestimated due to the difficulties to find tiny species like *T. genovae* (Ballesteros, Madrenas, *et al.,* 2012–2017). And it is also the reason why few works report quantitative information. It seems that *T. genovae* could be considered as common, even if until now only one record is reported in Brittany. This species might be already encountered, but like most samples for the benthic studies are fixed with formaldehyde that make their identification difficult, even impossible, *T. genovae* has then been unnoticed.

Trinchesia genovae has a large range of distribution (Caribbean, Black and Mediterranean Seas, North-East Atlantic). Even at high latitudes, the species seems to occur in the environments reaching temperate-warm temperatures of 17 °C to 20 °C (Picton & Wilson, 1984; Kitching, 1987; Nunn & Minchin, 1994). In the Bay of Brest, a shallow sheltered bay (< 40 m), the temperature can reach 19 °C during the summer on the maerl bed (Grall, 2002). The few records where *T. genovae* was observed in the North-East Atlantic where the temperature are colder than in Mediterranean Sea during the winter, are all reported for bays (Lough Hyne, Salt Lake Co. Galway, Mulroy Bay in Ireland, Arcachon Bay, Bay of Brest in France). These particular environments can reach higher temperatures than the water offshore, due to their lower depths and a partial replacement of the sea water at each tide cycle in addition of the small tidal amplitude (Nunn & Minchin, 1994). Then the water reaches higher temperatures is suitable for southern species (Picton & Wilson, 1984). This is supported by a biogeographic study undertake in the Atlantic ocean on the Opisthobranchia which shows two groups of species : the first "with geographic ranges along cold-temperate water" species "and those that are not so tolerant to cold waters, which extend throughout temperate-warm waters" (F. J. García & Bertsch, 2009). According to these authors the limit between these two groups is the South-West end of the English Channel. *T. genovae* occurs in the second group but like mentioned above some bays can have similar environmental conditions than southern localities due to specific topography, then like the Irish and French bays. Moreover, between May/June to October the water on the maerl beds in the Bay of Brest are at or above 16 °C (Grall, 2002). Temperature from which the veligers larvae hatch and swim freely after 9–11 days (Schmekel & Portman, 1982).

Bachelet, Cazaux, *et al.* (1980) published a species list with several new records for the Arcachon Bay in France in which *T. genovae* is mentioned. Then, even if the findings of Wilson & Picton (1983) and Picton & Wilson (1984) increased considerably the range of distribution, their Irish records of *T. genovae* were not the first from outside the Mediterranean Sea as mentioned in these two previous publications.

Conclusion

Here we present the first record of *Trinchesia genovae* in Brittany (Bay of Brest). Furthermore, it is the first record of this species in a maerl bed. At the moment, only one individual was found.

No updated species list of opisthobranchs exists for the Brittany waters (Labbé, 1932; Cornet & Marche-Marchad, 1951). The more recent study is from Roscoff, 40 years ago (Bouchet & Moreteau, 1975) and with the increasing new macrofaunal records (e.g. Grall *et al.,* 2015) due to climate change, anthropogenic transports or possibly overlooked species, many new others are expected around Brittany. Some interesting data about nudibranchs can be found on internet made by passionate biologists or scuba-divers. All these scarce data could firstly be compiled to have a preliminary list of species. Secondly a scientific program can further be led by a research institute around Brittany to carry out an accurate species list especially for the smaller species in different habitats. A checklist could be useful for the knowledge of our waters and for any environmental management policies. The pressures which occur on all environments (terrestrial and freshwater) led to more than a third of the species in Brittany to be endangered or near to become endangered (Le Mao, 2017). The coastal seas are also under anthropogenic pressures. A checklist is then urgently needed and definitely not only for the nudibranchs but also for all others marine invertebrates.

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