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FIRST RECORD OF ALIEN SEASLUG *GODIVA QUADRICOLOR* (BARNARD, 1927) (GASTROPODA: NUDIBRANCHIA) IN THE EASTERN ADRIATIC SEA

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ABSTRACT

A specimen of the alien sea slug Godiva quadricolor (Barnard, 1927) was recorded in Rovinj (Croatia, Adriatic Sea) in February 2017. It was found on a rope at 0.5 m depth in the ACI marina. This is the first record of this sea slug species in the north-eastern Adriatic Sea.

Key words: alien sea slug, *Godiva quadricolor*, first record, north-eastern Adriatic Sea

PRIMO RITROVAMENTO DEL NUDIBRANCO ALIENO *GODIVA QUADRICOLOR* (BARNARD, 1927) (GASTROPODA: NUDIBRANCHIA) NELL'ADRIATICO ORIENTALE

SINTESI

Un esemplare del nudibranco alieno Godiva quadricolor (Barnard, 1927) è stato ritrovato a Rovigno (Croazia, mare Adriatico a febbraio del 2017. Il mollusco è stato trovato su una corda, a 0,5 m di profondità nella marina ACI. Questa è la prima segnalazione di questa specie di nudibranchi nell'Adriatico nord-orientale.

Parole chiave: nudibranco alieno, *Godiva quadricolor*, primo ritrovamento, Adriatico nord-orientale

INTRODUCTION

Recently, the nudibranchs and other sea slugs started to deserve increasing attention by malacologists. According to the last published survey of the opisthobranch fauna of the Adriatic Sea at least 223 species of seaslugs were up to date recorded, with some 163 species reported for the Croatian part (Zenetos *et al.*, 2016). In the same survey authors reported 7 seaslugs as non indigenous species (NIS), one as a probably NIS and 3 cryptogenic species. However, the number of sea slug species is probably much higher (J. Prkić, *pers. comm.*, unpublished data) in the Croatian part of the Adriatic Sea 265 species were up to date recorded, while in the Slovenian part 141 species were recently reported by Lipej *et al.* (2018).

MATERIAL AND METHODS

A specimen of a sea slug *Godiva quadricolor* (Barnard, 1927) (Fig. 2) was found on a rope at 0.5 m depth recorded on 16th February 2017 at Rovinj (Croatia, northern Adriatic) (Fig. 1). The specimen was delivered to lab aquarium and photographed with the camera Nikon D600. It was identified using the guide for identification of opisthobranch of Trainito & Doneddu (2014) and specialized web sites such as OPK-Opisthobranchs (Ballesteros *et al.*, 2013) and Sea Slug Forum (Australian Museum, 2010). The taxonomic nomenclature follows the nomenclature according to WoRMS (2018). The specimen was preserved in 70% alcohol solution and housed in the private malacological collection of the authors.

RESULTS AND DISCUSSION

This is the first record of *G. quadricolor* in the eastern Adriatic Sea. This is a small nudibranch species, generally 30 mm to 50 mm in total length, occasionally 70 mm. The body is slender with a long tail with the typical white band with bluish line. Oral tentacles are smooth, long and slender, whereas rhinophores are much shorter and annulated. Five groups of cerata are located on flanks, with the highest number in the first group (row). The foot is semitransparent with two parapodial tentacles in front. The head is orange. Two white bands are laterally extending from oral tentacles to rhinophores. Oral tentacles could be coloured with white, orange or blue pigments. Rhinophores are brown in the lower part and yellowish at the top. Cerata are brown at the base, while in the upper part are coloured with yellow, orange, brown or blue pigments (Barnard, 1927; Australian Museum, 2010; Ballesteros *et al.*, 2012-2018).

The specimen of *G. quadricolor* was found on a fouling community on a rope at 0.5 m depth in the ACI marina in Rovinj. It was found creeping on a bryozoan *Schizobrachiella sanguinea* (Norman, 1868). The specimen measured approximately 75 mm which is a little bit longer than the reported maximum length of 70 mm. In the aquarium the specimen laid the yellow orange spawn. It was also observed while preying on the eggs of the nudibranch *Doto cf. coronata*.

G. quadricolor was originally described from South Africa in the Cape Province where it is widespread. It was recorded along the eastern side of the African

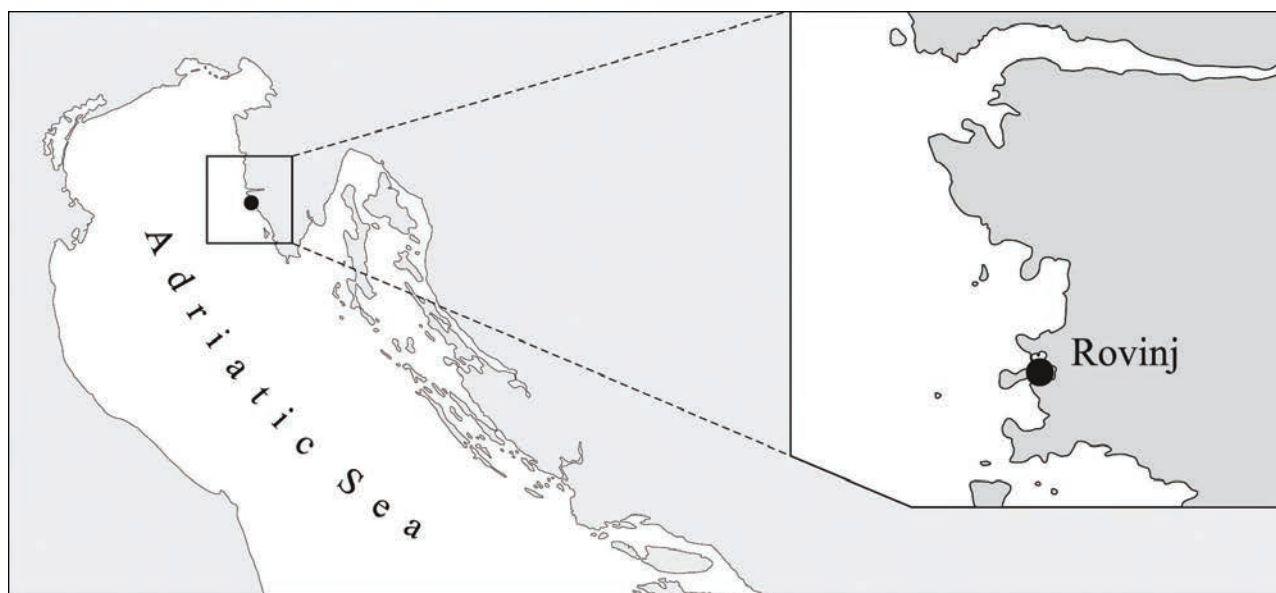


Fig. 1: Map of the studied area where the investigated specimen of *Godiva quadricolor* was collected.
Sl. 1: Zemljevid obravnavanega območja z lokacijo, kjer je bil najden primerek vrste *Godiva quadricolor*.

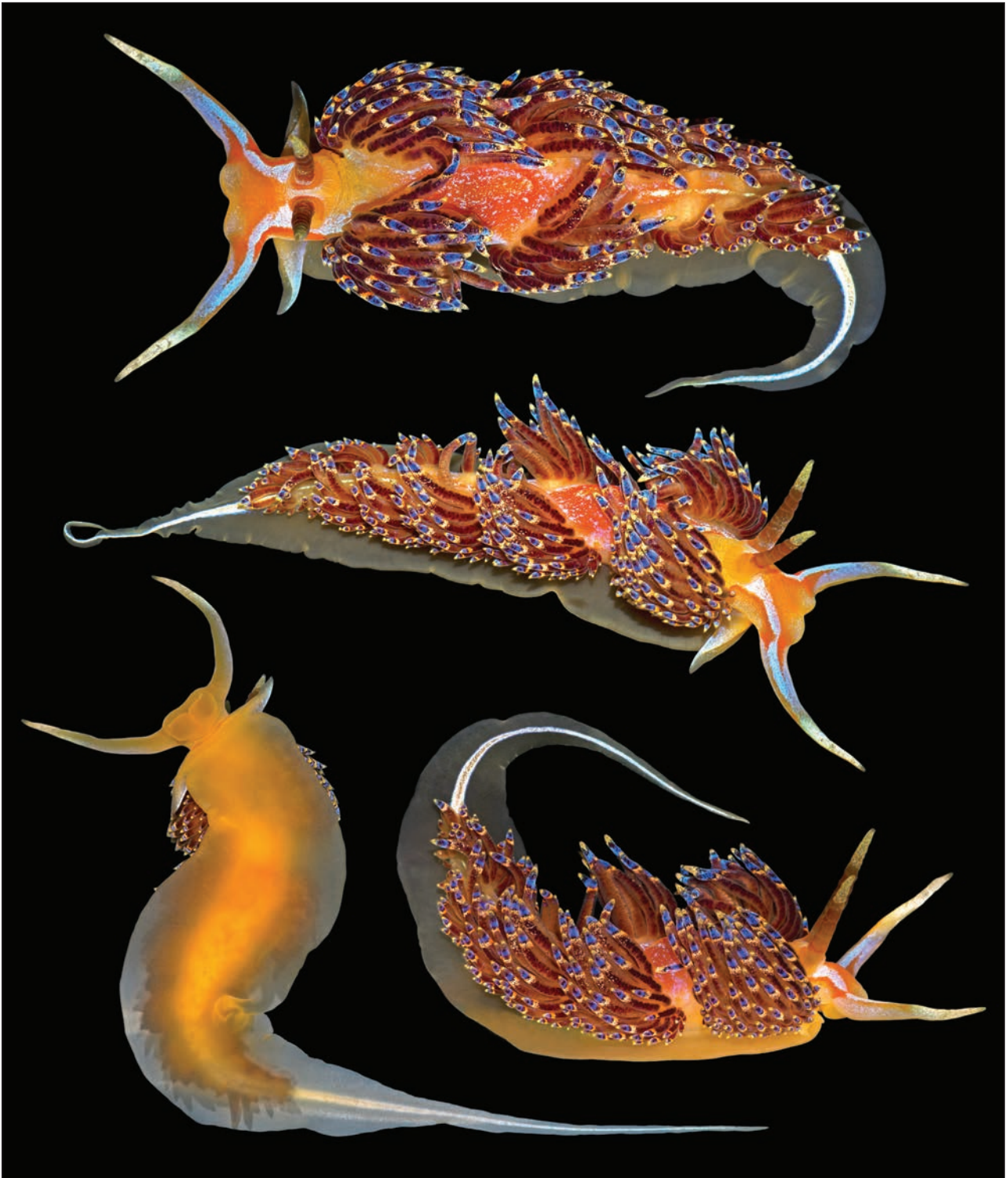


Fig. 2: Photographs of the studied specimen of *Godiva quadricolor* (Photo: L. Lanča).
Sl. 2.: Fotografski posnetki primerka vrste *Godiva quadricolor* (Photo: L. Lanča).

continent, north western Africa and in western Australia (Willan, 1987, 2004). It has also been recorded in Japan, the Mariana Islands, Singapore, the Philippines, Papua New Guinea, New Caledonia, northern and western Australia and other areas (Willan, 2004). In the Mediterranean it was firstly reported in Lake Fusaro near Napoli (Cervera, 2002). Subsequently, the species was found in the lagoon Pialassa della Baiona close to Ravenna (Ioni, Rimini). Another record originated from the Fondali Noli - Bergeggi SCI in the Ligurian Sea which represented the northernmost record of the species in the Mediterranean Sea (Betti *et al.*, 2015). Recently it was reported also from the lake Faro in Sicily (Furfaro *et al.*, 2018). In other Mediterranean areas it was discovered in the bay of Algeciras (Cervera *et al.*, 2010) and off the coast of France and Spain (Ballesteros *et al.*, 2012-2018).

Generally, it was found intertidally or in shallow areas. In many cases it was found in coastal lagoons due to its ability to withstand oscillations in salinity (Cervera *et al.*, 2010). Furfaro *et al.* (2018) pointed out the predation on alien bryozoans such as *Amathia verticillata* (delle Chiaje, 1822) and *Bugula neritina* (Linnaeus, 1758)

According to Zenetos *et al.* (2012) in the Mediter-

anean the majority of alien species are mollusks (215 species), whereas in the Adriatic Sea up to date 27 species were reported. More than half of them arrived through Suez channel from Indian Ocean. The arrival of alien species is however different since maritime traffic and mariculture are considered as the main factors (Zenetos *et al.*, 2016). In the Croatian part of the Adriatic Sea up to date 265 species of opisthobranchs were reported with 10 of them being aliens and additional 5 of them with doubtful zoogeographical identity (J. Prkić, *pers. comm.*). Most of the aliens were recorded also in other Adriatic countries (Zenetos *et al.*, 2016). To our knowledge at least 70 species of opisthobranchs were up to date recorded from the area of Rovinj and some of them are aliens. Due to the ongoing trend of increased scientific interest for the nudibranchs and rapid increase of alien species in the Mediterranean sea a similar trend could be expected also for the Adriatic Sea.

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PRVI ZAPIS O POJAVLJANJU TUJERODNEGA POLŽA ZAŠKRGARJA VRSTE *GODIVA QUADRICOLOR* (BARNARD, 1927) (GASTROPODA: NUDIBRANCHIA) V VZHODNEM JADRANU

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POVZETEK

Primerek tujerodnega polža zaškrjarja vrste Godiva quadricolor (Barnard, 1927) je bil februarja 2017 najden v Rovinju (Hrvaška, Jadransko morje). Našli so ga na vrveh na globini 0,5 m v ACI marini. Gre za prvi zapis o pojavljanju te vrste polža zaškrjarja v severovzhodnem Jadranu.

Ključne besede: tujerodni zaškrjar, *Godiva quadricolor*, prvi zapis, severovzhodni Jadran

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