ONE VASCULAR PLANT AND TEN INVERTEBRATE SPECIES NEW TO THE MARINE FLORA AND FAUNA OF MADEIRA

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The seagrass Cymodocea nodosa, the zoantharian Palythoa canariense, the opisthobranchs Dolabrifera dolabrifera, Elysia viridis, Marionia blainvillea, Thecacera pennigera, Polycera quadrilineata, Glossodoris edmundii, Discodoris fragilis, the pulmonate Onchidella cf. celtica, and the polychaete Lygdamis murata are recorded from the coastal waters of Madeira for the first time. For L. murata this is a southward extension of the known range. For P. canariense, D. dolabrifera, and D. fragilis, this is a northward extension of the known range. The nudibranch M. blainvillea had previously been considered endemic for the Mediterranean Sea. In the Eastern Atlantic, the coastal waters of Madeira are the northern limit of distribution for many tropical species.


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INTRODUCTION

During an ongoing survey of the larger marine invertebrates on the coast of Madeira (cf. WIRTZ 1994), several species that apparently had not yet been recorded from Madeira were encountered. Here 11 such cases are described. A large number of Hydrozoa, Nudibranchiata, Decapoda, and Mysidacea, all new for the marine fauna of Madeira and including undescribed species, will be treated in separate publications by experts for these groups.

MATERIAL AND METHODS

The survey of the larger marine invertebrates of the coasts of Madeira is carried out SCUBA-diving and is therefore limited to a depth range
down to about 60 m. Animals are photographed in the field. When it appears necessary, specimens are then collected for later identification. In most cases, preserved specimens are sent to specialists for identification or confirmation of identification (see Acknowledgements).

**Deposited material**

Museu Municipal do Funchal: *Palythoa canariense*; *Onchidella cf. celtica*; *Lygdamis murata*

Spain, University of Oviedo, Zoology Department: *Dolabrifera dolabrifera*; *Elysia viridis*; *Marionia blainvillea*; *Thecacera pennigera*; *Polycera quadrilineata*; *Glossodoris edmundii*; *Discodoris fragilis*.

**RESULTS**

**Plants**

* Cymodocea nodosa (Ucria) Asch.  
Seagrass meadows have not yet been recorded at Madeira. The occasional appearance of leaves of *Cymodocea* at the shores of the south coast already indicated the presence of this genus. Two seagrass beds consisting of *Cymodocea nodosa* have now been found. One, formed by only few plants per square meter, immediately to the southeast of the Clube Naval, Funchal, and a larger (at least 200 x 400 m) dense bed covering the eastern half of the bay of Machico. The latter starts at a depth of approximately 7-9 m and rather abruptly ends at a depth of 16 m.  
*Cymodocea nodosa* is known from the Mediterranean Sea and in the Eastern Atlantic from southern Spain to the tropic of cancer (CABIOC'H et al. 1992).

**Zoantharia**

*Palythoa canariense* (Haddon & Duerden, 1895)  
This species has been found at several places on the south coast of Madeira and on the island of Porto Santo, in tide pools (some colonies even drying out during low water spring tides) and down to a depth of at least 17 m. It grows in carpets that appear to be clones of the same individual. This species also occurs in Ilhas Desertas (den Hartog pers. comm). A colour photo of Madeiran individuals is printed in WIRTZ (1995, page 51).

Previously, the species has been considered a Canarian endemic (PÉREZ SÁNCHEZ & MORENEO BATET 1991); it probably reaches its northern limit at Porto Santo.

**Opisthobranchia**

*Dolabrifera dolabrifera* Cuvier, 1817  
This little, inconspicuous sea hare was found several times at Caniço de Baixo, southeastern coast of Madeira, below stones at depths of 6-10 m. A colour photo of an animal from Madeira is printed in WIRTZ (1995, page 159).

The species has a circumtropical distribution; in the Eastern Atlantic, the Canary Islands were previously considered its northern limit (ORTEA & MARTÍNEZ 1990, 1991; YONOW & HAYWARD 1991).

*Elysia viridis* (Montagu, 1804)  
The species was common on the green alga *Codium decorticatum* in about 5 m depth in the shallow and very protected bay of Reis Magos, southeastern coast of Madeira, end of May 1994. Six weeks later most of the *C. decorticatum* had disappeared and no *Elysia* could be found.

*Elysia viridis* is known from Norway to South Africa in the Eastern Atlantic and also from the Mediterranean Sea (GOSLINER 1987; THOMPSON 1988).

*Mariania blainvillea* (Risso, 1818)  
An adult animal of this species was found below a stone in 4 m depth at Cais do Porto Novo, southeastern coast of Madeira, in August 1993. The species has up to now been considered endemic for the Mediterranean Sea (SCHMEKEL & PORTMAN 1982).

*Thecacera pennigera* (Montagu, 1815)  
The north coast of Madeira is exposed to strong wave action and opportunities to dive there are rare. During one of those occasions, in June...
1994, a large number of the nudibranch *Thecacera pennigera* was encountered on large boulders in about 10m depth near Porto da Cruz. Several of the animals were associated with an unidentified small bryozoan and may have been feeding on it. A colour photo of an animal from Madeira is printed in WIRTZ (1995, page 171).

The species has a cosmopolitan distribution and in the Eastern Atlantic has been found from Britain to South Africa (GOSLINER 1987; THOMPSON 1988).

**Polycera quadrilineata** (Müller, 1776)

During the same dive in which *T. pennigera* was recorded (see above) and in the same area, a large number of *Polycera quadrilineata* was found. A colour photo of an animal from Madeira is printed in WIRTZ (1995, page 171). *P. quadrilineata* has been recorded from the Western Mediterranean Sea and in the Eastern Atlantic from Iceland to South Africa (GOSLINER 1987; THOMPSON 1988).

**Glossodoris edmundii** Cervera, Garcia-Gomez & Ortea, 1989

This magnificently coloured nudibranch (colour photo of Azorean animal in GOSLINER 1990, colour photo of Madeiran animal in WIRTZ, in press) was found twice on the south and north coasts of Madeira, in a depth range of 5 to 15 m. A colour photo of an animal from Madeira is printed in WIRTZ (1995, page 177).

The species has previously been recorded from the Canary Islands and from the Azores (CERVERA et al. 1989; GOSLINER 1990).

**Discodoris fragilis** (Alder & Hancock, 1864)

An individual of the nudibranch *Discodoris fragilis* was collected from below a stone at a depth of 24 m on a rock platform about 1 km to seaward of Caniço de Baixo, southeastern coast of Madeira, in June 1993. A colour photo of this animal is printed in WIRTZ (1995, page 181).

The species is widely distributed in the Indo-Pacific; in the Eastern Atlantic it has been found at Senegal and at the Canary Islands (ORTEA et al. 1981; GOSLINER 1987).

**Pulmonata**

**Onchidella cf. celtica**

A small population of *Onchidella* has been found at a rocky outcrop to seaward of Reis Magos, southeastern coast of Madeira. The animals were hidden in cracks and crevices at the upper mediolittoral level most of the time (where they can be extracted with hammer and chisel) and only rarely come out into the open. They differ slightly from *Onchidella celtica* in surface rugosity: *O. celtica* from the shores near Lisbon and from the Azores have many small warts covering the dorsal side, whereas in Madeiran animals those warts are fewer in number and larger in size.

*Onchidella* is not mentioned in WALDÉN (1984) even though the author explicitly includes littoral species. The systematics of the genus is confused, the geographical limits of the various species are unclear and there apparently is no living expert for this group.

**Polychaeta**

**Lygdamis murata** (Allen, 1904)

This species is very common all along the south shore of Madeira at the borderline of rocky and gravelly areas to sand, where it can reach densities of five animals per square meter. Live animals hold V-shaped antennae out of the opening of a tube, into which they withdraw when approached (cf. photo in WIRTZ 1995, p.81). The extraction of specimens proved to be a difficult task. The tube, which contains many small stones embedded in its walls, reaches several decimetres into the substrate, twists and often ends below a large boulder. Dead animals were easily identified. They do, however, look quite different from live ones (cf drawing in HAYWARD & RYLAND 1990, vol 1, p. 272).

This is the first record of a sabellariid polychaete from the coastal waters of Madeira. The family is not mentioned in, for instance, BELLAN (1969). The only other member of the family Sabellaridae know at Madeira,
Phalacrostemma elegans, has been caught at more than 4000 m depth (AMOUREUX 1986).

Lygdamis murata has previously been recorded from the Plymouth area (HAYWARD & RYLAND 1990). L. murata may well be a junior synonym of the Mediterranean Lygdamis indicus Kinberg, 1867, as suggested already by FAUVEL (1927), but this question apparently has still not been resolved (Zibrowius, pers. commn).

DISCUSSION

For Lygdamis murata the record at Madeira is an extension of the known range to the south. The nudibranch Marionia blainvillea has previously been considered endemic for the Mediterranean Sea. For Palythoa canariense, Dolabrifera dolabrifera, and Discodoris fragilis, this is an extension of the known range to the north. The other seven species have already been recorded both north and south of Madeira.

In a previous publication (WIRTZ in press), is mentioned a tropical species (the shrimp Thor amboinensis), which apparently has its northern limit at Madeira. In the present publication, are described three more such cases (Palythoa canariense, Dolabrifera dolabrifera, and Discodoris fragilis). Many similar cases are already known (the large anemone Telmatactis cricoides, the reef lobster Enoplometopus antillensis, the sea urchin Diadema antillarum, the puffer fish Canthigaster rostrata, to mention only a few examples) and this might indicate a general trend: In the Eastern Atlantic, the coastal waters of Madeira appear to be the northern limit of distribution for many tropical species.

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REFERENCES


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