

NOTE/NOTA

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

PETER WIRTZ

ARQUIPÉLAGO



WIRTZ, PETER 1995. One vascular plant and ten invertebrate species new to the marine flora and fauna of Madeira. *Arquipélago*. Life and Marine Sciences 13A:119-123. Angra do Heroísmo. ISSN 0870-6581.

The seagrass *Cymodocea nodosa*, the zoantharian *Palythoa canariense*, the opisthobranchs *Dolabrifera dolabrifera*, *Elysia viridis*, *Marionia blainvillea*, *Thecacera pennigera*, *Polycera quadrilineata*, *Glossodoris edmundsii*, *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.

WIRTZ, PETER 1995. Uma planta vascular e dez espécies de invertebrados, novos para a flora e fauna marinha da Madeira. *Arquipélago*. Ciências Biológicas e Marinhas 13A: 119-123. Angra do Heroísmo. ISSN 0870-6581.

A planta marinha *Cymodocea nodosa*, o zoantário *Palythoa canariense*, os opistobrânquios *Dolabrifera dolabrifera*, *Elysia viridis*, *Marionia blainvillea*, *Thecacera pennigera*, *Polycera quadrilineata*, *Glossodoris edmundsii*, *Discodoris fragilis*, o gastrópode pulmonado *Onchidella* cf. *celtica*, e a poliqueta *Lygdamis murata* são registados pela primeira vez nas costas da Madeira. Para *Lygdamis murata* este facto corresponde a uma extensão da sua distribuição conhecida para o Sul. Nos casos de *P. canariense*, *D. dolabrifera*, e *D. fragilis*, este facto corresponde a uma extensão da sua distribuição conhecida para o Norte. O nudibrânquio *M. blainvillea* era considerada uma espécie endémica do mar Mediterrâneo. No Atlântico Este as águas costeiras da Madeira parecem ser o limite Norte para muitas espécies tropicais.

Peter Wirtz, Universidade da Madeira, Largo do Colégio, PT-9000 Funchal, Portugal.

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 edmundsii*; *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 (CABIÓCH 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 17m. 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 6-10m. 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).

Marionia 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 edmundsii 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 known 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 anillensis*, 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.

ACKNOWLEDGEMENTS

J.C. den Hartog, Nationaal Natuurhistorisch Museum Leiden, identified *Palythoa canariense*. J. Ortea and G. Rodriguez University of Oviedo, Spain, confirmed my identifications of opisthobranchs. J. Núñez Fraga, Universidad de La Laguna, Tenerife, confirmed my identification of *Lygdamis murata* and sent information and references on Madeiran polychaetes. Manfred Kaufmann pointed out to me *Glossodoris edmundsii* during a joint dive at Cais do Porto Novo. H.

Zibrowius, Station Marine d'Endoume, Marseille, continues to send information and photocopies of articles on many marine invertebrates, as well as a stream of encouraging letters. Many thanks to all of them. My interest in the zoogeography of macaronesian invertebrates started during a 6 months stay at the Department of Oceanography and Fisheries (DOF) of the University of the Azores. I am grateful to the Directorate of Fisheries and to the Directorate of Tourism and Environment of the Autonomous Region of the Azores, to Ricardo Serrão Santos, and to Helen Rost Martins for their generous support during this and during several subsequent visits.

REFERENCES

- AMOUREUX, L. 1986. Annélides Polychètes abyssaux de la campagne Abyplaine au large de Madère. *Bulletin du Musee national d'Histoire naturelle, Paris* 8(3): 591-615.
- BELLAN, G. 1969. Annélides Polychètes recueillies dans l'archipel de Madère, au cours de la campagne scientifique du navire océanographique "Jean Charcot" (Juillet 1966). *Cahiers Biologie Marine* 10(1): 35-57.
- CABIO'H, J., J.-Y. FLOC'H, A. TOQUIN, C.-F. BOUDOURESQUE, A. MEINESZ & M. VERLAQUE 1992 *Guide des Algues des Mers d'Europe*. Delachaux et Niestlé.
- CERVERA, J.L., J.C. GARCIA-GOMEZ & J.A. ORTEA 1989. On two rare chromodorid nudibranchs (Opisthobranchia: Chromodorididae) from the Eastern Atlantic, with description of a new species of *Glossodoris*. *Journal of Molluscan Studies* 55: 445-453.
- FAUVEL, P. 1927. *Faune de France 16. Polychètes Sédentaires*. Librairie de la Faculté des Sciences. 492pp.
- GOSLINER, T.M. 1987. *Nudibranchs of Southern Africa*. Sea Challengers, Monterey, California. 136 pp.
- GOSLINER, T.M. 1990. Opisthobranch molluscs from the Azores islands. I. Runcinidae and Chromodoridae. *Açoreana* 1990 Supplement: 135-166.
- HAYWARD, P.J. & J.S. RYLAND, 1990. *The marine fauna of the British Isles and North-West Europe* vol.1. Clarendon Press, Oxford. 627pp.
- ORTEA, J. & E. MARTÍNEZ 1990. Moluscos Opisthobranchios de Cabo Verde: Anaspidea (Aplysiomorpha). *Publicações Ocasionais da Sociedade Portuguesa de Malacologia* 5: 17-42.

- ORTEA, J. & E. MARTÍNEZ 1991 El orden Anaspidea (Mollusca: Opisthobranchia) en las Islas Canarias. *Revista da Academia Canariense de Ciencias* 3 (4): 87-107.
- ORTEA, J.A., J.J. BACALLADO & J.M. PÉREZ SANCHEZ, 1981. Sobre la presencia de *Discodoris fragilis* Alder & Hancock 1864) (Mollusca: Opisthobranchia: Doridacea) en las Islas Canarias. *Investigacion Pesquera* 45(1): 231-236.
- PÉREZ SANCHEZ, J.M. & E. MORENO BATET 1991. *Invertebrados Marinos de Canarias*. Ediciones del Cabildo Insular de Gran Canaria, Las Palmas de Gran Canaria, 335pp.
- SCHMEKEL L. & A. PORTMAN 1982. *Opisthobranchia des Mittelmeeres: Nudibranchia und Saccoglossa*. Springer-Verlag, Berlin. 410pp.
- THOMPSON, T. E. 1988 Molluscs: Benthic Opisthobranchs. *Synopses of the British Fauna (New series)* No. 8 (Second Edition), E.J. Brill, Leiden. 203pp.
- WALDÉN., H.W. 1984 On the origin, affinities, and evolution of the land mollusca of the mid-atlantic islands, with special reference to Madeira. *Boletim do Museu Municipal do Funchal* 36(158): 51-82.
- WIRTZ, P. 1995. *Unterwasserführer Madeira Kanaren Azoren Niedere Tiere - Underwater Guide Madeira Canary Islands Azores Invertebrates*. S. Naglschmid Verlag, Stuttgart. 248 pp.
- WIRTZ, P. 1994. Three shrimps, five nudibranchs, and two tunicates new for the marine fauna of Madeira. *Boletim do Museu Municipal do Funchal* 46 (257): 167-172.
- YONOW, N. & P.J. HAYWARD 1991 Opisthobranchs de l'île Maurice, avec la description de deux espèces nouvelles (Mollusca: Opisthobranchia). *Revue française de Aquariologie* 18: 1-30.

Accepted 29 November 1995.

