NEW RECORDS AND NOTES ON LITTLE KNOWN SHRIMPS (CRUSTACEA, DECAPODA) FROM AZOREAN WATERS

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Five species of shrimps (Crustacea, Decapoda) are recorded for the first time from the Azores: *Funchalia villosa* (Bouvier, 1905), *Parapasiphae sucatifrons* S.I. Smith, 1884 Heterocarpus ensifer A. Milne-Edwards, 1881, *Heterocarpus laevigatus* Bate, 1888 and *Plesionika williamsi* Forest, 1964. The variability of *Plesionika gigliolii* (Senna, 1903) and its relationship with *P. sindoi* (Rathbun, 1906) are discussed.

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INTRODUCTION

The information on the decapod crustaceans of the Azores is scattered throughout a large number of publications. BARROIS (1888) listed many species and correctly highlighted the Eastern Atlantic affinity of the Azores' decapod fauna. Since then, a large number of papers recording additional species have appeared. A recent book on European decapods (D'UDEKEM D'ACOZ 1999) partly summarizes this information but, in the last few years, the authors have made additional records. Part of these new observations are presented here.

MATERIAL AND METHODS

For the purpose of this paper, the area between 35º – 42º N and 20º - 35º W is considered. We have examined the specimens previously deposited in the collection of the Department of Oceanography and Fisheries of the University of the Azores at Horta (DOP), and added our new records. Material was collected by pelagic nets and deep baited traps. All preserved samples have been deposited in the collections of DOP. The illustration of *Plesionika gigliolii* was executed by the first author with a camera lucida mounted on an Aus Iena Technival 2 stereomicroscope.

RESULTS

Funchalia villosa (Bouvier, 1905)

Material examined: Menez Gwen hydrothermal vent, 37º49.13'N, 31º30.15'W, 50 m depth, 29/VI/1997: 1 specimen.
Remarks: This is the first record of *Funchalia villosa* for the Azores. This widely distributed species is known from the Atlantic and the Indopacific Oceans and from the Mediterranean Sea (D'UDEKEM D'ACOZ 1999). The previous northern limit in the Eastern Atlantic is Madeira Island but it was found farther north in the Western Atlantic and the Mediterranean Sea (GRIPPA 1987).

Parapasiphae sulcatifrons S.I. Smith, 1884

Material examined: Sample 189 CD99, Graciosa island, Praia, 9/VIII/1999: 1 ovigerous female;

Sample 200 CD99, Graciosa island, Praia, 10/VIII/1999: 1 specimen; Sample 224 CD99, Graciosa island, Praia, 14/VIII/1999: 1 specimen; Sample 105 CD99, Corvo island, 29/VII/1999: 1 specimen; Sample 127 CD99, Corvo island, 31/VII/1999: 2 or 3 specimens; Sample 128 CD99, Corvo island, 31/VIII/1999: 1 specimen; Sample 6 CD99, Santa Maria island, March 1999: 2 specimens; Sample 145 CD99, Santa Maria island, 5/VIII/1999: 1 specimen. All specimens come from the regurgitation of Cory's shearwater, *Calonectris diomedea*, a common seabird in the Azores.
Remarks: We know no previous record of *Parapasiphae sulcatifrons* in the Azores. However, its occurrence in the archipelago is not a surprise since it its a fairly common shrimp, which has been recorded in warm and temperate waters of all the oceans, and which has been found both north and south of the Azores in the Eastern Atlantic (D'UDEKEM D'ACOZ 1999). It is a pelagic species (CROSNIER & FOREST 1973) which has previously been collected between 438 m (KIKUCHI & OMORI 1985) and 5340 m (CROSNIER & FOREST 1973). It is very surprising to find this deepwater shrimp in the stomach regurgitation of the Cory's shearwater, a bird which feeds in shallow waters. Since there is no evidence that *P. sulcatifrons* migrates to the surface in normal conditions, it is possible that the shrimps are drifted to the surface in upwelling areas where they are picked up by the seabirds.

***Heterocarpus ensifer* A. Milne-Edwards, 1881**

Material examined: Princess Alice Bank, 37º59.96'N 29º20.03'W, 275 m depth, 17/III/1999: 8 specimens.
Remarks: This is the first record of *Heterocarpus ensifer* for the Azores. MARTINS & HARGREAVES (1991, p. 57) already noted that the species is likely to occur in the Azores, as it is common both in the Canary Islands and in Madeira.

***Heterocarpus grimaldii* A. Milne-Edwards & Bouvier, 1900**

Material examined: Channel between Pico and São Jorge, 1100-1200 m depth, 09/II/1997: 7 specimens; Menez Gwen hydrothermal vent, 37º50.70'N 31º31.20'W, 900-936 m depth, August 1997 and November 1997: 3 specimens in the same traps as *H. laevigatus*.
Remarks: The occurrence of this species previously recorded in the Azores by A. MILNE-EDWARDS & BOUVIER (1900) and MARTINS & HARGREAVES (1991) is here reconfirmed. The specimens from the channel between Pico and São Jorge come from the type locality of the species.

***Heterocarpus laevigatus* Bate, 1888**

Material examined: Menez Gwen hydrothermal vent, 37º50.70'N 31º31.20'W, 900 m depth, August 1997: 6 specimens; Menez Gwen hydrothermal vent, 37º50.40'N 31º31.20'W, 929-936 m depth, 11/XI 1997: 1 specimen.
Remarks: This is the first record of *Heterocarpus laevigatus* in the Azores. In the Eastern Atlantic the previous northernmost record of this widely distributed species was Madeira (FIGUEIRA 1957, 1958; BISCOITO 1993).

***Plesionika gigliolii* (Senna, 1903)**

Material examined: Pico Island, off Ribeiras, Sta. Cruz de Ribeiras, Set 4, 275 m depth, F/V PEROLA DO FAIAL, 24/II/1989: 1 female, DOP collection number CR 115; Pico Island, off Mistério de São João, 38º24.30'N, 28º23.40W, 23/IX/1999, 200 m depth: 1 female.
Remarks: The Northeastern Atlantic and Mediterranean shrimp *Plesionika gigliolii* had already been recorded in the Azores by MARTINS & HARGREAVES (1991). The specimens examined have a rostrum much longer and morphologically different from the *P. gigliolii* illustrated by SENNA (1903), ZARIQUIEY ALVAREZ (1968) and HOLTHUIS (1987), and looks closer to the *P. gigliolii* illustrated by GARCÍA RASO (1981): Fig. 1. They also look very similar to the Indo-Pacific species *Plesionika sindoi* (Rathbun, 1906) as characterized by CHACE (1985), as *Plesionika ocellus* (Bate, 1888) and CHAN & CROSNIER (1997). Furthermore, the colour pattern of the second specimen was still partly distinct when

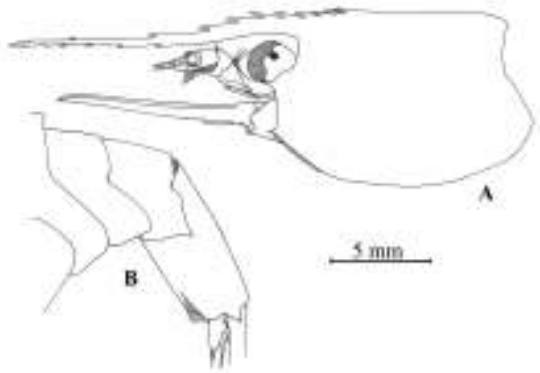

Fig. 1. *Plesionika gigliolii* (Senna, 1903), female, the Azores, Pico Island. A, anterior part of body; B, posterior part of body.

examined and showed features similar to *P. sindoi*: the rostrum tip and the antennal flagella showed alternate reddish and white transverse stripes. Unfortunately, the colour pattern of *P. gigliolii* has never been described.

Thus, it first appeared that two different species had possibly been confused in the literature under the name of *P. gigliolii* and that the Azorean specimens possibly were not true *P. gigliolii*. We therefore consulted Alain Crosnier (MNHN, Paris) and Charles Fransen (NNM, Leiden), and we sent them a copy of the figure published here. Alain Crosnier (pers. comm. to the first author) agreed with us that the Azorean *Plesionika* was very close to *P. sindoi*; since he not yet had the opportunity to study *P. gigliolii*, he could not give us further information. Charles Fransen wrote us (pers. comm. to the first author): "In our collection we have specimens of *P. gigliolii* from the Selvages, Morocco, Cape Verde Islands, and the Mediterranean coasts of Spain and Algeria. The 8 specimens from the Selvages range from 5 – 16 mm postorbital carapace length. The rostrum is relatively short in small specimens and long in larger specimens. The smallest specimen has the rostrum falling short of the scaphocerite (like in SENNA, 1903: pl. 16 fig. 5) while the largest specimen has the rostrum almost twice as long as the scaphocerite. The specimens described by SENNA (1903) have postorbital carapace length of 8 and 9 mm and must have been rather young specimens with relative short rostra. Your Azorean specimen falls within the range of rostra I have seen. … From your drawing I am inclined to identify the specimens as *P. gigliolii*, as it falls within the range I have seen in the Selvages specimens."

Thus, there is little doubt that the Azorean *Plesionika* really are *P. gigliolii* but the large variability in *P. gigliolii* now raises a new question: are *P. gigliolii* and *P. sindoi* really different species or not?

***Plesionika williamsi* Forest, 1964**

Material examined: Pico Island, off Mistério de São João, 38º24.40'N, 28º23.70W, 23/IX/1999, 600 m depth: 2 specimens.

Remarks: This species is recorded for the first time from the Azores. *P. williamsi* has a very wide distribution in warm and warm-temperate waters of the Indopacific and Atlantic oceans (D'UDEKEM D'ACOZ 1999). Its previous northernmost record in the Eastern Atlantic is southern Spain (GARCÍA RASO 1996). The two specimens examined agree perfectly well with the descriptions and figures of FOREST (1964), CROSNIER & FOREST (1973), and CHAN & CROSNIER (1997).

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