SHORT COMMUNICATION

FOUR AMPHI-ATLANTIC SHRIMPS NEW FOR SÃO TOMÉ AND PRÍNCIPE (EASTERN CENTRAL ATLANTIC).

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WIRTZ, P. 2004. Four amphi-Atlantic shrimps new for São Tomé and Príncipe (eastern central Atlantic). *Arquipélago*. Life and Marine Science 21A: 83-85.

The shrimps *Thor amboinensis*, *Lysmata grabhami*, *Tuleariocaris neglecta*, and *Janicea antiguensis* are recorded from São Tomé and Príncipe for the first time.

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INTRODUCTION

During an expedition to the islands of São Tomé and Príncipe (Gulf of Guinea, eastern central Atlantic), marine invertebrates were photographed and collected in a depth range of 0-60 m. I here report on four amphi-Atlantic shrimp species not yet recorded from the area.

MATERIAL AND METHODS

All observations were made during an expedition to the islands of São Tomé and Príncipe in February and March 2004. The first part of the expedition was to the north coast of Príncipe. Seven dives during the night and 24 dives during daytime were made in the area of Bom Bom Island. In the second part of the expedition, one night dive and two dives during the day were made at the northern and north-eastern coasts of São Tomé Island.

The four species listed below were photographed in the field. Specimens of *Thor amboinensis* and *Janicea antiguensis* were also collected and are now in the Natural History Museum at Leiden (Naturalis), The Netherlands, with the registration RMNH D 50697 and RMNH D 50696.

RESULTS

Thor amboinensis (De Man, 1888)
This small shrimp was observed several times in the area of Bom Bom Island (01º41'N, 007º24'E), always in association with the sea anemone *Telmatactis cricoides* (Duchassaing, 1850). The species has been recorded in association with a large number of sea anemone and coral species from Madeira to the Cape Verde Islands in the Eastern Atlantic and in the tropical Western Atlantic and in the tropical Indo-Pacific (D´UDEKEM D´ACOZ 1999; WIRTZ 1997).

Lysmata grabhami (Gordon, 1935)
The cleaner shrimp *Lysmata grabhami* was repeatedly observed and photographed during dives at Bom Bom Island and Pedra da Galé, a small rocky outcrop about 4 km north of Bom Bom island (01º43'N, 007º22'E). Two individuals were seen close together in each case. This is not a surprise since it has previously been reported that the species usually occurs in pairs of two simultaneous hermaphrodites (WIRTZ 1997). *Lysmata grabhami* has been recorded from Madeira to Ascension Island in the Eastern Atlantic (Annobon Island being the closest previous record to Principe Island) and in the tropical western Atlantic (D´UDEKEM D´ACOZ 1999).

Tulеariocaris neglecta Chace, 1969
This shrimp was recorded twice, in the area of Bom Bom Island (01º41'N, 007º24'E), clinging to spines of the sea urchin *Diadema antillarum* Philippi, 1845. The species has been recorded, always in association with *Diadema antillarum*, from Madeira to the Canary Islands in the eastern Atlantic and in the tropical western Atlantic (D´UDEKEM D´ACOZ 1999, GONZÁLES PÉREZ & QUILES LUCAS 2003, WIRTZ et al. 1988).

Janicea antiguensis (Chace, 1972)
Santana Island is a small rocky cone off the north-eastern coast of São Tomé island (00°14' N, 006°46' E). It is bisected by a tunnel which has a small side-branch on its eastern side, in about 5 m depth. This side tunnel contained a large number of *Janicea antiguensis* and some *Cinetorhynchus rigens* (Gordon, 1936). A bythiid fish, *Grammonus longhursti* (Cohen, 1964), also captured in this tunnel regurgitated several *Janicea antiguensis* when brought to the surface. This shrimp has been recorded from the tropical western Atlantic and, in the eastern Atlantic, from the Cape Verde Islands (D´UDEKEM D´ACOZ 1999, 2000). A book on the marine life of the Canary Islands (HANQUET 2001, page 153) contains a photo of *Janicea antiguensis* labelled "Cleaner shrimp: undetermined". This suggests that in the eastern Atlantic, the range of *J. antiguensis* extends as far north as the Canarian archipelago.

DISCUSSION

The fact that amphi-Atlantic species in the subtropical and tropical eastern Atlantic are proportionally more common towards the equator than in temperate waters argues for a connection of the marine faunas of the eastern and western Atlantic by equatorial currents (WIRTZ & MARTINS 1993, and references therein). The Equatorial Undercurrent, flowing from west to east, appears to be the most likely candidate (SCHELTEMA 1971); see MUSS et al. (2001) for a map of the area and the main current patterns in it. I have therefore suggested (WIRTZ 2001) that records of amphi-Atlantic (sub)tropical species from the Canary Islands or from Madeira but not from further south are likely to be artefacts resulting of much lower collecting efforts in southern areas. In a previous publication on invertebrates from São Tomé Island (WIRTZ 2003), I already reported the amphi-Atlantic shrimp *Gnathophyllum americanum* Guérin-Méneville, 1855 and four other previously unrecorded amphi-Atlantic marine invertebrates. The four records of amphi-Atlantic shrimps described here provide further support for this hypothesis.

Even though planktonic larvae could cross the Atlantic in as little as 35 to 105 days in the Equatorial Undercurrent (SCHELTEMA 1971), it remains unclear if the western and eastern Atlantic populations of amphi-Atlantic species are still linked genetically today or if their crossing the Atlantic is an historic event, perhaps from the time when the Atlantic was narrower than now. A molecular genetic study of the fish *Ophioblennius atlanticus* (Valenciennes in Cuvier & Valenciennes, 1836) (MUSS et al. 2001) suggested that eastern and western Atlantic populations of this species have been genetically distinct for about 5.5 million years and should probably be considered sister species. In contrast, there appears to be ongoing gene flow between American and African populations of the sea urchin *Eucidaris tribuloides* (Lamarck, 1816) (LESSIOS et al. 1999).

ACKNOWLEDGEMENTS

I am very grateful to my travel– and diving-companion Karl Wittmann (who also carried a large part of the financial cost of this expedition) for all his help and his friendship. Many thanks also to Jannie and Cecilia Fourie, the managers of Bom Bom Resort, and their staff for their kindness and support. Jean Luis Testori made the dive at Santana Island possible. Jørgen Nielsen, Zoological Museum, Copenhagen, Denmark, identified *Grammonus longhursti*.

REFERENCES

GONZÁLEZ PÉREZ, J.A. & J.A. QUILES LUCAS 2003. Decapoda. Pp. 74-80 *in:* MORO, L., J.F. MARTÍN, M.J. GARRIDO, J. IZQUIERDO (Eds). *Lista de especies marinas de canarias*. Consejeria de

Politica territorial y medio ambiente del gobierno de Canarias, 250 pp.

HANQUET, S. 2001. *Diving in Canaries*. Santa Cruz de Tenerife, 272 pp.

LESSIOS, H.A., B.D. KESSING, D.R. ROBERTSON & G. PAULAY 1999. Phylogeography of the pantropical sea urchin Eucidaris in relation to land barriers and ocean currents. *Evolution* 53: 806-817.

MUSS, A., R. ROBERTSON , P. WIRTZ, B. BOWEN & C.A. STEPIEN 2001. Phylogeography of the genus *Ophioblennius*: the role of ocean currents and geography in reef fish evolution. *Evolution* 55: 561-572.

SCHELTEMA, R.S. 1971. The dispersal of the larvae of shoal-water benthic invertebrate species over long distances by ocean currents. Pp.7-28 *in:* CRISP, P.J. (Ed.). *Fourth European Marine Biology Symposium*. Cambridge: Cambridge University Press. 599 pp.

UDEKEM D'ACOZ, C. D' 1999. Inventaire et distribution des crustacés décapodes de l'Atlantique oriental, de la Mediterranée et des eaux continentales au nord de 258N. *Collection Patrimoines Naturels* 40 : 1-383.

UDEKEM D´ACOZ, C. D´ 2000. First record of *Janicea antiguensis* (Chace, 1972) from the Cape Verde Islands and in the eastern Atlantic (Decapoda, Caridea, Hippolytidae). *Crustaceana* 73/9: 1163-1166.

WIRTZ, P. 1997. Crustacean symbionts of the club-tipped sea anemone *Telmatactis cricoides* at Madeira and the Canary Islands. *Journal of Zoology* 242: 799-811

WIRTZ, P. 2001. New records of marine invertebrates from the Cape Verde Islands. *Arquipélago*. Life and Marine Sciences 18A: 81-84.

WIRTZ, P. 2003. New records of marine invertebrates from São Tomé Island. *Journal of the Marine Biological Association of the United Kingdom* 83: 735-736.

WIRTZ, P. & H. MARTINS 1993. Notes on some rare and little known marine invertebrates from the Azores, with a discussion of the zoogeography of the area. *Arquipélago.* Life and Marine Sciences 11A: 55-63.

WIRTZ, P., B. MÜLLER, P. NAHKE 1988. The Caribbean shrimp *Tulеariocaris neglecta* Chace 1969 found in association with *Diadema antillarum* at Madeira, and two new records of decapod crustaceans from the Cape Verde Islands. *Courier Forschungs Institut Senckenberg* 105: 169-171.

Accepted 15 October 2004.