

SHORT COMMUNICATION

TWO NEW RECORDS OF SEABREAMS (PISCES: SPARIDAE) FROM THE MADEIRA ARCHIPELAGO

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ALVES, F.M.A. & C.M.A. ALVES 2002. Two new records of seabreams (Pisces: Sparidae) from the Madeira Archipelago. *Arquipélago*. Life and Marine Science 19 A: 107-111.

Two Sparidae species, the gilthead seabream *Sparus aurata* and the striped seabream *Lithognathus mormyrus*, were recorded during an underwater visual census at Madeira Island between March and October 2000. Several individuals were subsequently caught to confirm the identification. This is the first record of *Sparus aurata* for Madeira. Escape from a recent open sea aquaculture unit in the area is the most likely explanation for its occurrence. Although current literature and fish databases refer to *L. mormyrus* as being absent in this Archipelago, it had been previously recorded in fishing-grounds of Madeira in the sixties, and this study confirms its occurrence in Madeiran waters.

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INTRODUCTION

The fishes of Madeira (32° 38'N 16° 54'W, located off the Moroccan coast) have been studied since the nineteenth century (see ANDRADE & ALBUQUERQUE 1995, WIRTZ 1998). These studies have dealt mainly with the taxonomy and include checklists of the fish fauna. However, new records of species continue to be reported for Madeira. For example, during the last 10 years, 12 fish species new to Madeira have been reported (BISCOITO & WIRTZ 1994; WIRTZ 1998; this paper). Most of these new species were coastal and not offshore/bathyal where it would be more natural to discover new species.

This paper reports the occurrence of two new species of Sparidae in the coastal waters of Madeira Archipelago.

MATERIAL AND METHODS

Field observations were carried out along the

southern coast of Madeira Island. All underwater observations were made using SCUBA, totalling around 25 hours. Underwater visual censuses were made between March and October 2000 along the coast between Caniçal and Ribeira Brava. A modified version of the strip transect method (BROCK 1954), was employed and consisted of the diver swimming, at a constant speed, a pre-defined transect (previously decided), while recording all the individuals observed. This allowed a wide coverage of the mobile species with minimum effort. A total of 20 transects (without replication) were made perpendicular to the coastline, each one from 25 m depth to the shore, in order to register most of the infra-littoral fish species. During transects the divers used a compass to follow the perpendicular line. All the individuals observed were counted and recorded on water proof sheets. The depth and substrate type were also noted.

Two specimens from each of the new species were obtained to confirm the identification. Local anglers caught four specimens: two individuals of *Sparus aurata* (Linnaeus, 1758) on Madeira, one

at Ponta do Pargo and the other at Machico; one individual of *Lithognathus mormyrus* (Linnaeus, 1758) to the south of Madeira at Ribeira Brava, and the other off Porto Santo Island. All the specimens are deposited in the Museu Municipal do Funchal (MMF) with the respective registration numbers MMF34350, 34351, 34348 and 34349.

RESULTS

During the underwater survey we recorded the occurrence of two new Sparid species. The gilthead seabream *Sparus aurata* was recorded in two different locations: two adults were sighted in the bay of Machico and a single adult at Ribeira Brava. The fishes were observed over rocky substrate between 10 and 12 m depth. The striped seabream *Lithognathus mormyrus* was recorded in the bay of Funchal, where a shoal of five adults was observed over sandy bottom at 15 m depth. The authors further observed a shoal of 15 individuals of *L. mormyrus* feeding over a sandy bottom, at about 7 m depth, while snorkelling in the Bay of Santa Cruz (southeast Madeira) in August 2002.

Concerning the four caught specimens, the laboratory identification revealed that all the specimens were males. The *S. aurata*, references MMF34350 and MMF34351, were 25.0 and 27.4 cm in total length, and the *L. mormyrus* references MMF34348 and MMF34349 were 23.2 and 33.5 cm in total length, respectively. The morphological characters, meristics and colour patterns of the material examined fitted those of BAUCHOT & HUREAU (1986).

COMMENTS

It is interesting that new occurrences of coastal fish species in an area extensively studied, like Madeira Island continue to be reported. Whilst *Sparus aurata* was probably introduced, the occurrence of *Lithognathus mormyrus* could be due to a greater sampling effort in recent years, or even as a result of climate changes (BIANCHI et al. 1998). Both species have continental characteristics, which explain why they were not

common in the Azores and Madeira. The occurrences in the area could also be due to rare colonization events that will not support a permanent population. However, the caught specimens were probably not the same as those observed underwater, and two specimens (one from each species) were caught on different locations (one at Ponta do Pargo and other on the Porto Santo Island) than where the underwater visual censuses were performed. This might mean that these species are not so rare locally.

An open sea aquaculture unit, for *S. aurata*, operating since 1997 in the Bay of Caniçal, appears to be the most likely cause for the occurrence in the area of this species. DEBELIUS (1997) predicted that it was just a matter of time before the first animal escaped from the structure into open water. The escape of *S. aurata* from cages in similar habitats has happened before, in the Canary Islands. However, *S. aurata* had already been recorded from the Canary Islands before the open sea aquaculture cages were installed. (BRITO 1991; GONZÁLEZ et al. 1994). Colonization of species following escape from cages has been reported worldwide (e.g. ORSI & AGOSTINHO 1999). The effects and impacts, like the adverse ecological consequences to the indigenous biota and surrounding environment that may arise have been studied (ARTHINGTON & BLUEHDORN 1996). The escape of this non-indigenous species at Madeira could have negative influences on the coastal marine fauna. If *S. aurata* reproduces successfully in Madeiran waters and the population increases, it could, in the long term, have negative impact on a closely ecologically related and economically important species like *Pagrus pagrus*. All these possibilities should have been taken in better consideration by the local authorities before allowing an open sea aquaculture with a non-indigenous species.

Lithognathus mormyrus had been previously recorded by CASTRO (1967) on fishing-grounds of Madeira. Current literature (e.g. BAUCHOT & HUREAU 1986; LLORIS et al. 1991; WIRTZ 1994; DEBELIUS 1997) and fish databases (e.g. FROESE & PAULY 2001) refer to this species as being absent from this Archipelago. Furthermore, studies on the occurrence and distribution of the ichthyofauna of Madeira (e.g. ANDRADE & ALBUQUERQUE 1995; WIRTZ 2001) do not

mention *L. mormyrus*. This study re-confirms its occurrence in Madeiran waters.

ACKNOWLEDGEMENTS

We would like to express our sincere thanks and appreciation to Jorge Alves for helping with the collection of specimens. Special thanks also go to Drumon (Direcção Regional de Pescas da Madeira) and Peter Wirtz for providing literature, Carla Correia (Universidade do Algarve) for assisting on species identification and to Natacha Carvalho (Departamento de Oceanografia e Pescas, Universidade dos Açores) for suggestions that have improved the paper.

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Accepted 8 November 2002.