

OCCURRENCE OF *MICROGOBIUS CARRI* FOWLER 1945 (TELEOSTEI:  
GOBIIDAE) IN THE COAST OF PARAÍBA, NORTHEASTERN BRAZIL,  
WITH NOTES ON ITS ECOLOGY

Bertran Miranda Feitoza<sup>1</sup>

Thelma Lúcia Pereira Dias<sup>2</sup>

Ricardo de Souza Rosa<sup>3</sup>

*Programa de Pós-Graduação em Ciências Biológicas e Departamento de Sistemática e Ecologia, Centro de Ciências Exatas e da Natureza, Universidade Federal da Paraíba, 58051-900 João Pessoa, PB, Brazil.*

### ABSTRACT

The genus *Microgobius* Poey 1876 is comprised of 14 species of gobies distributed in the western Atlantic and eastern Pacific. These fish species exhibit a wide range of habitat preferences from low salinity estuaries to reef environments. Collections and underwater observations made at an artificial reef off Paraíba coast represent the first record of *Microgobius carri* Fowler 1945 from northeastern Brazil. The species inhabits moderately deep water ranging from 5 to 32 m near reef environments and apparently is less tolerant of turbid waters and reduced salinities. The record of *M. carri* from northeastern Brazil suggests a continuous distribution of the species from North Carolina to southeastern Brazil.

**Keywords:** Teleostei, Gobiidae, *Microgobius*, distribution, northeastern Brazil, reef fishes.

**Descritores:** Teleostei, Gobiidae, *Microgobius*, distribuição, Nordeste do Brasil, peixes recifais.

### INTRODUCTION

The genus *Microgobius* is comprised of 14 species of gobies of the tribe Gobiosomini distributed in the western Atlantic and eastern Pacific. Six of them inhabit the western Atlantic and display a range of habitat preferences from low salinity estuaries to reef environments (BIRDSONG, 1981). Two species of the genus are recorded in Brazil, *M. carri* and *M. meeki*, the latter inhabiting estuarine environments (BIRDSONG, 1981; LOPES *et al.*, 1999).

In the northern part of the western Atlantic *Microgobius carri* is known from North Carolina, Gulf of Mexico and Florida to north, and Lesser Antilles to south, with no record to Bahamas (BIRDSONG, 1981; HUMANN, 1994). To the western south Atlantic, that species is only known from Angra dos Reis, Rio de Janeiro State, and Couves Island, São Paulo State, southeastern Brazil (MENEZES e FIGUEIREDO, 1985). The species inhabits moderately deep water ranging from 5 to 32 m near reef environments and is apparently less tolerant of turbid waters

<sup>1</sup> Endereço Eletrônico: bart@netwaybbs.com.br

<sup>2</sup> Endereço Eletrônico: thelma@dse.ufpb.br

<sup>3</sup> Endereço Eletrônico: rsrosa@dse.ufpb.br

and reduced salinities (BIRDSONG, 1981; MENEZES e FIGUEIREDO, *op. cit.*). Gobies generally live in direct contact with the substratum, but a few such as *Coryphopterus personatus* and *Microgobius carri* swim freely just off the bottom (RANDALL, 1996).

This paper reports the first record of *Microgobius carri* from northeastern Brazilian coast, and includes notes on the species ecology in the studied area.

## METHODS

This study was based in collections and underwater observations during SCUBA dives. The data were collected in the artificial reef Quelmao's wreck, about 17 m depth, and located at latitude S 07°05' and longitude W 034°44', João Pessoa city, Paraíba State.

Three dives were carried out between March 26 and April 22 of 2000, with a total of three hours of underwater observation. A specimen was collected and deposited at the Fish Collection of the Universidade Federal da Paraíba, João Pessoa, Brazil. The species identification was based in BIRDSONG (1981) and HUMANN (1994). Counts and measurements follow BIRDSONG (1981). Morphometric values are given in percent standard length. The abbreviations used in the diagnoses are: D<sub>2</sub> = second dorsal fin; A = anal fin; P = pectoral fins.

## RESULTS

**Diagnosis:** According to BIRDSONG (1981) - D<sub>2</sub> 15-18 (usually 15); A 16-18 (usually 16); P 20-24 (usually 21); lateral scales rows usually 50-62; interorbital width 4.1; eye diameter 7.2; head length 27.7; P long 28.9; pelvic-fin length 18.3; caudal-fin length 29.7. Measurements and counts of the specimen collected off Paraíba coast fell within the respective ranges indicated in BIRDSOG (*op.cit.*). They are as follows: D<sub>2</sub> 16; A 15; P 21; eye diameter 8.9; head length 28.6.

**Coloration:** According to BIRDSONG (*op. cit.*) the pigmentation of males and females based on life colors is similar. Our specimen presented a pale body with orange-yellow lateral stripe along midline extending to caudal fin, and two narrow pale yellow stripes above; body along anal fin base yellowish with small dark spot of pigment at insertion of each anal ray. Head pale below, yellowish between orbits and on snout; an elongate, iridescent blue line at posterodorsal corner of eye, another below eye extending to opercular margin, cheek and opercle each with a small spot of iridescent blue. These color characters agree with those indicated by BIRDSONG (*op. cit.*).

**Distribution:** Previously known from North Carolina, Gulf of Mexico, Florida, Lesser Antilles and southeastern Brazil, not reported from the Bahamae (BIRDSONG, *op. cit.*; HUMANN, 1994; MENEZES e FIGUEIREDO, *op. cit.*). The occurrence of *Microgobius carri* in the Paraíba coast is the first record of the species from the northeastern Brazil (Fig. 1).



**FIGURE 1** – Map showing known distribution of *Microgobius carri* and the new record (indicated by an arrow) for the western South Atlantic.

**Ecology:** Our observations on the ecology of the species are similar to those indicated for other parts of Brazil (MENEZES e FIGUEIREDO, 1985) and for the western north Atlantic (BIRDSONG, 1981). *Microgobius carri* occur in areas near reef environments. These fishes typically maintain position in the water column 30 to 60 cm above their burrows in the sandy bottom, into which they retreat when threatened (Fig. 2). It was observed that in a few seconds after a fish retreats into a burrow, it puts the head outside the burrow, as if checking if still there is danger. When safe, they return to the original position in the water column. According to BIRDSONG (1981), several fishes may occupy a single burrow, but often a pair, one male and one female will occupy a burrow. The same was observed on present study, where were found up to four individuals in a single burrow.





FIGURE 2 – *Microgobius carr* hovering above its burrow, in sandy bottom. Photo by B. M. Felício. Material examined - *Microgobius carr*, UFPE 4624

## DISCUSSION

The northeastern Brazilian coast offers satisfactory habitat to the occurrence of *Microgobius carr* whereas reef areas are common in this region. Unlike *Microgobius meeki*, which seems to prefer mangrove mud bottoms, *M. carr* inhabits preferably high salinity clear water in deeper areas of the continental shelf, close to reefs.

The record of *M. carr* from the northeastern Brazilian coast, suggests a continuous distribution of the species, from North Carolina to southeastern Brazil. According to BIRDSONG (1961), many of the apparent gaps in distribution are, no doubt, artifacts of collecting techniques and accessibility, even in well-sampled areas.

We consider that it is even possible that in the future, with sampling on virtually unsampled areas and utilization of appropriate collecting techniques, other species of the genus are recorded to western South Atlantic, and the zoogeography of the group may be better understood.

## RESUMO

**Ocorrência de *Microgobius carri* Fowler 1945 (Teleostei: Gobiidae) na costa de Paraíba, Nordeste do Brasil, com notas sobre a ecologia da espécie.** O gênero *Microgobius* Poey 1875 compreende 14 espécies de gobiídeos que se distribuem no Atlântico Ocidental e Pacífico Leste e mostram uma preferência de habitats que variam desde estuários de baixa salinidade a ambientes recifais. Coletas e observações subaquáticas realizadas em um recife artificial da costa da Paraíba permitiram registrar pela primeira vez a ocorrência de *Microgobius carri* Fowler 1945 para a costa nordeste do Brasil. A espécie habita águas moderadamente profundas, entre 5 e 32 m de profundidade em áreas adjacentes a recifes, e aparentemente é menos tolerante a águas turvas e salinidades reduzidas. O registro de *M. carri* para a costa nordeste do Brasil, sugere uma distribuição contínua para a espécie, desde a Carolina do Norte até a costa sudeste do Brasil.

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