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FIRST RECORD OF THE FAMILY CARISTIIDAE (Osteichthyes) FROM THE GULF OF MEXICO

The manefishes of the family Caristiidae are relatively rare, deep-living fishes. The taxonomy of the group is poorly known: although the family has traditionally been allied with the Beryciformes (Regan, 1912; Post, 1986), most current authors place it within the Perciformes on the basis of the pelvic-fin formula (I,5) and the occurrence of 17 principal caudal rays (Greenwood *et al.*, 1966; Scott *et al.*, 1970; Nelson, 1984; Johnson, 1984; Fujii, 1984; Heemstra, 1986). Intrafamilial relationships are also unclear. Nelson (1984) and Johnson (1984) recognize but one genus, *Caristius*, however, Post (1986) and others (Penrith, 1969; Parin and Golovan, 1976; Parin *et al.*, 1978) accept two: *Caristius* and *Platyberyx*. Four nominal species are currently recognized (*Caristius macropus* (Bellotti 1903), *C. groenlandicus* Jensen 1942, *C. maderensis* Maul 1949, and *Platyberyx opalescens* Zugmayer 1911), along with several undescribed forms (Parin *et al.*, 1977; Fujii, 1983, 1984; Heemstra, 1986). Most specimens have been collected in the Atlantic and Pacific, with only a few individuals taken from the Indian Ocean. Although adults are most frequently captured at mesopelagic depths, larvae and juveniles occur in more shallow waters. Collection sites are generally in the vicinity of continental margins or oceanic ridge systems (Gartner, Tolley and Leiby, unpubl. data); recent evidence suggests an association with mesopelagic siphonophores (Janssen *et al.*, 1989).

Two specimens identified as *Caristius* sp. were collected from the eastern Gulf of Mexico in September 1984 and April 1987. These fish represent the first reported occurrence of the family Caristiidae from the Gulf of Mexico. A third specimen was taken off the northeast coast of Florida in March of 1977. Owing to a number of morphological differences from previously described species, we present a description of these specimens. Since our specimens most closely resemble Maul's (1949) original description for *C. maderensis*, we compare them to the holotype. This species has not been previously reported from western Atlantic waters. Counts and measurements follow Hubbs and Lagler (1949), with additional morphometric data included. One of the larger specimens was cleared and double stained in order to examine osteology and facilitate meristic determinations.

Caristius sp. cf. *maderensis*

(Fig. 1)

Material examined. 3 specimens, 30.2-67.9 mm standard length: GCRL (Gulf Coast Research Laboratory) 17426, 29° 36′N, 80°11′W, depth 226 m, macro-epifaunal trawl, 3 March 1977; FDNR (Florida Department of Natural Resources) 17906, 27°N, 86°W, depth 0-600 m, 12′×6′ Tucker trawl, R/V **Suncoaster**, 17 September 1984; FDNR 17905, 28°15′N, 86°37′W, depth 0-900 m, 41′ semi-balloon Otter trawl, R/V **Cape Hatteras**, 24 April 1987.

Description. The following account compares data from our western Atlantic specimens with the holotype of *Caristius maderensis*. Values determined from a re-examination of the 247 mm SL holotype are given in parentheses. Ranges of meristics are as follows: dorsal 29-30 (26); anal 18-19 (15); principal caudal 17; procurrent 6-7 (6); pectoral 16-18 (16); pelvic I,5 (I,5); gill rakers 23, 7+1+15 (22, 6+1+15); branchiostegals 7 (7).

Morphometric data are presented as percent standard length, or percent head length (HL) when specified. Head length

34.3-38.4% (30.6%); body depth 62.9-72.2% (52.1%); predorsal length 12.2-17.9% (15.8%); preanal length 49.7-53.3% (56.2%); prepectoral length 35.7-40.4% (30.1%); prepelvic length 23.0-25.7% (31.5%); length of caudal peduncle 13.3-15.3% (8.0%); depth of caudal peduncle 13.2-15.3% (15.3%); dorsal origin to upper edge of orbit 15.0-18.5% (16.2%); dorsal origin to lower edge of orbit 29.6-36.4% (28.1%); dorsal origin to pectoral insertion 42.2-44.7% (32.6%); snout length 20.1-25.0% HL (7.1% HL); diameter of orbit 35.7-44.0% HL (42.1% HL); lower edge of orbit to ventral margin of premaxilla 21.9-22.4% HL (19.0% HL); snout to rear edge of orbit 53.1-58.6% HL (51.6% HL); length of upper jaw 38.0-44.0% HL (32.0% HL).

Body deep, compressed laterally; lateral line absent (Fig. 1). Eyes relatively large; nostrils double, second aperture approximately twice the size of the first. Dorsal fin origin above or just behind a vertical line through center of orbit. Dorsal fin folds into sheath extending length of fin base. Ventral sheath also present, from insertion of pelvics to posterior margin of anal fin. Anal fin origin beneath middle of dorsal fin base. Last ray of dorsal and anal fins deeply branched. Pectorals just below horizontal midline of body. Pelvics long, extending entire length of fish in the smallest specimen, and to midpoint of anal fin base in larger individuals; pelvics inserted in advance of pectorals and hind margin of preopercle.

Scales cycloid, highly variable in size. Lacrymal shield present, completely covering maxilla and most of premaxilla. Preopercle and lacrymal shield with extensive lateralis system; numerous additional pores located on head. Posterior margin of maxilla extending to vertical through center of orbit or slightly beyond, not reaching the rear margin of the orbit. Jaw teeth pointed, recurved, uniserial; teeth absent on tongue, vomer and palatines. Gill rakers in two rows: outer

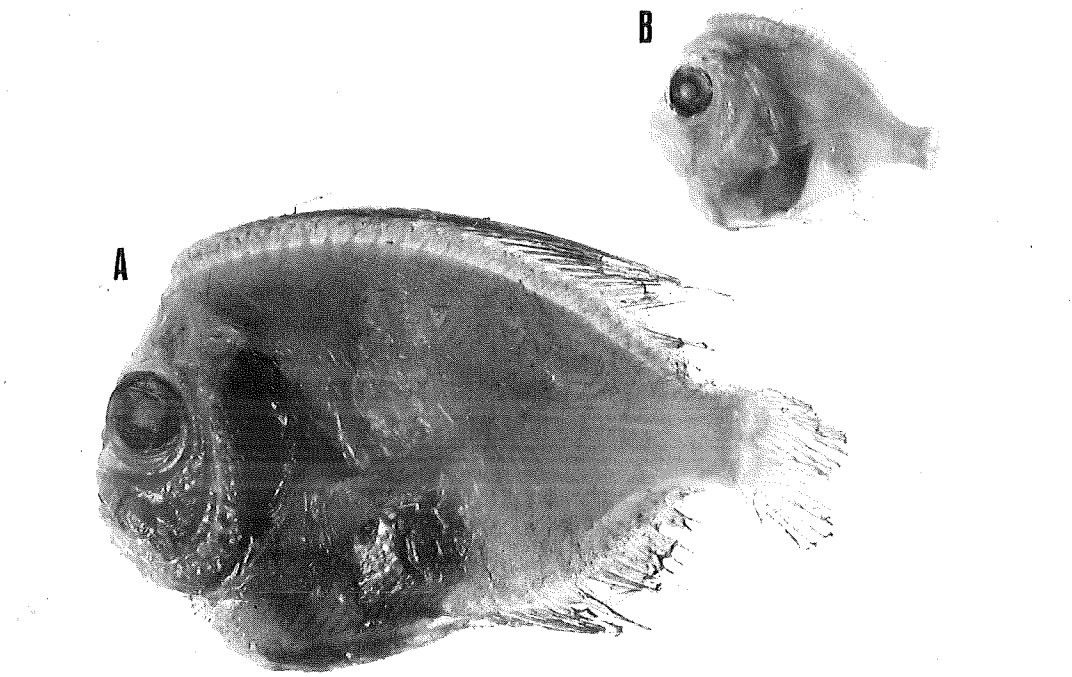

Figure 1. *Caristius* sp. cf. *maderensis*. A: FDNR 17906, 65.3 mm SL, from the eastern Gulf of Mexico. B: GCRL 17426, 30.2 mm SL, from the northeast coast of Florida.

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row relatively long, bladelike, numerous stout bristles on lateral surfaces; medial row club-like, bristles terminal.

Pigmentation in smallest specimen: three broad, vertical bars of brown, background lighter brown, numerous chromatophores present on head (Fig. 1). Larger specimens light brown (bars absent), operculum dark brown, visceral region intermediate, fin membranes darkly pigmented (Fig. 1).

Discussion. The characters of *Caristius* sp. collected from the western Atlantic and the eastern Gulf of Mexico are similar to those of the holotype of *C. maderensis* from the eastern Atlantic. The number of fin elements present overlaps between our specimens and those obtained from the holotype and the original description (Maul, 1949). Descriptions of pigmentation, fin size and placement, dentition and the occurrence of key characters such as the dorsal and anal fin sheaths and the lacrymal shield, are also in general agreement.

However, from both Maul's (1949) original description and our own reexamination of the holotype, we note the following discrepancies. The holotype possesses two rows of club-shaped gill rakers with rounded ends and terminal bristles. In our specimens, two raker structures were noted: a relatively slender, bladelike outer row, and a medial row of rakers similar to the holotype. The dorsal fin origin in our specimens is above the center of the orbit, although in the holotype, it occurs well behind the rear margin of the orbit. Maul also described the nostril of *Caristius maderensis* as being single, although a close inspection of the holotype indicates the presense of a second opening. Differences in morphometry also exist, most notably: snout length, length of the caudal peduncle, and the distance from the dorsal fin origin to the pectoral fin insertion.

As the holotype of *Caristius maderensis* (247 mm SL) is considerably larger than any of our specimens of *Caristius* sp. (30.2-67.9 mm SL), allometric growth may account for some morphological dissimilarities. However, a preliminary examination of a large number of caristiid specimens of varying sizes, obtained from all over the world, suggests that this group is much more taxonomically complex than previously thought. For these reasons, and because enough differences were found between our specimens and the holotype, we cannot assign a positive species identification at this time.

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