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TAXONOMIC NOTE

***Mycteroperca profundorum* Cervigón, 2011, a junior synonym of *Mycteroperca bonaci* (Poey, 1860) (Teleostei: Epinephelidae)**

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Abstract

The grouper species *Mycteroperca profundorum* Cervigón, 2011 (Epinephelidae) was described based on examination of three specimens collected from deep-shelf waters adjacent to Isla Margarita, northeastern Venezuela, in the Caribbean Sea. This publication, which went largely unnoticed until recently, was brought to the attention of the authors by the IUCN Species Survival Commission Marine Biological Unit, which was seeking experts to assess the species for inclusion on the IUCN Red List. The species is listed as valid in Eschmeyer's Catalog of Fishes (Fricke, Eschmeyer & Van der Laan 2023) and WoRMS (<https://www.marinespecies.org/index.php> accessed 10/5/2023). The brevity of the original description of *M. profundorum* prompted the present review.

Cervigón (2011) described *M. profundorum* based on examination of two fluid-preserved museum specimens (MMM 1286) and one molded replica (MMM 1288) and compared it to the most similar species, *Mycteroperca bonaci* (Poey, 1860) (Fig. 1). He thought that *M. bonaci* was a smaller species restricted to shallow continental waters, while *M. profundorum* was a larger, deepwater, insular species. His diagnosis for *M. profundorum* relied upon 4 characteristics to distinguish it from *M. bonaci*: body size (maximum length); depth of collection; shape of the caudal fin; and color pattern.

Given that very large individuals are often not represented in fish collections, that body size typically has little phylogenetic importance, and that the maximum known size of *M. bonaci* (152 cm total length; Craig et al. 2011)

Key words: taxonomy, ichthyology, coral reef fishes, groupers, synonymy, Caribbean, Venezuela

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is equivalent to the maximum size of the type series of *M. profundorum* (102–154 cm total length), large body size can be excluded as a distinguishing character. Additionally, the known depth range of *M. bonaci* extends down to 250 m (Craig et al. 2011), spanning the capture depths of the type series of *M. profundorum* (165–275 m). This indicates that the capture depth of *M. profundorum* is also not a distinguishing character.

Cervigón's diagnosis of *M. profundorum* described its caudal fin as follows (translated from Spanish): "... [T]he posterior edge of the caudal fin is straight or nearly straight and it has two well-differentiated lobes located at both ends of the fin respectively." He distinguished this shape from what he described as the convex caudal fin of *M. bonaci* in Venezuela (Cervigón & Velasquez 1966, Cervigón 2011). In contrast, Heemstra & Randall (1993) and Craig et al. (2011) describe the caudal fin of *M. bonaci* as truncate to slightly emarginate if widely spread (see also Cervigón 1989: p. 344). As with many grouper species, particularly those of *Mycteroperca*, larger individuals tend to have elongated dorsal and ventral caudal-fin rays giving the fin a bilobed appearance (Fig. 2). This natural variation in caudal-fin shape, which includes the shape mentioned by Cervigón of *M. bonaci* indicates that putative shape differences are not a diagnostic character for *M. profundorum*.

Cervigón (2011) described the type specimens of *M. profundorum* as being uniform brown, usually with a dense covering of small yellow to yellow-brown spots and with a black-edged caudal fin. He contrasted this with the reticulated pattern commonly displayed by *M. bonaci*: (translated from Spanish) "*(M. bonaci)* have a convex caudal, lack the black tones of our examples (of *M. profundorum*), which, in turn, have no trace of the whitish or white reticulum separating the brownish broken rectangles that characterize the coloration of *M. bonaci*" (see also Cervigón & Velasquez 1966). However, *Mycteroperca bonaci* is well-known for displaying 4 distinct transient

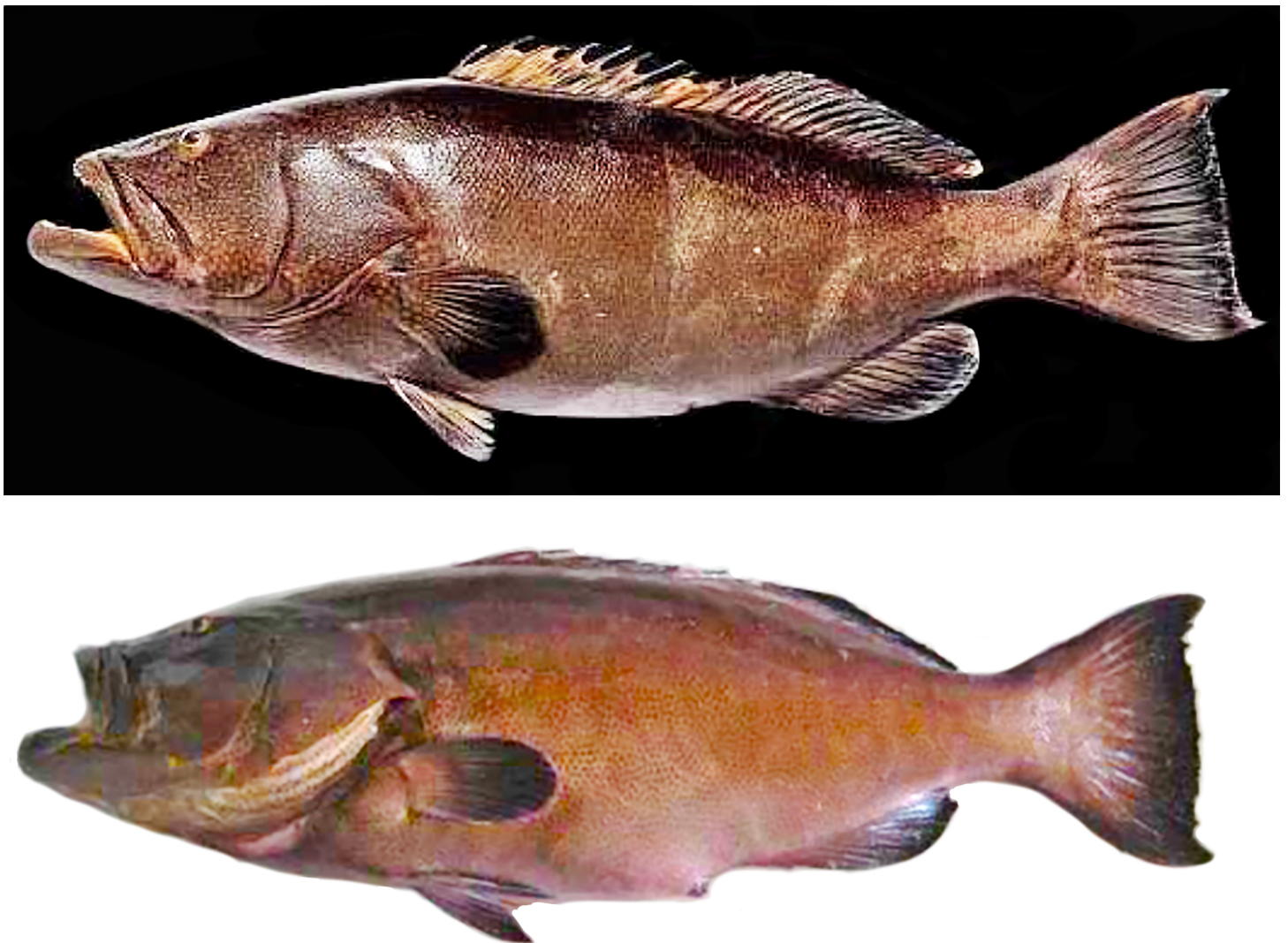


Figure 1. *Mycteroperca profundorum* Cervigón, 2011 holotype (upper) and paratype (lower). Images reproduced from Cervigón (2011).



Figure 2. Underwater photographs showing the diversity of color patterns in *Mycteroperca bonaci*, A: Cozumel, 20 m, (Richard Eaker); B: Cozumel, 20 m (Jim Lyle); C: Roatan, 10 m, (Luiz Rocha), note that both individuals are *M. bonaci*; D: Belize, 10 m (Brad Erisman). Note that the photo in B is the color morph described as “*Mycteroperca profundorum*” by Cervigón (2011).

color patterns (Fig. 2). In his revision of American groupers, Smith (1971, p. 179) commented on Poey’s original description of *M. bonaci* saying “Felipe Poey seems to have described *Mycteroperca bonaci* no less than 6 times and in doing so has recorded the momentary color changes to which this species is subject” (in fact, he described the species 8 times according to Ronald Fricke, pers. comm.). Cervigón (1989, p. 344) noted color change by individuals of *M. bonaci* living in aquaria, with the reticulated color pattern replaced by a uniform pale grey-brown color with faint orange spots on the head: it is odd that he seems to have not considered this for wild specimens.

Many published descriptions of *M. bonaci* note the presence of brown or bronze spots on the body and, in particular, on the head (Fig. 3), a character that Cervigón placed emphasis on as diagnostic of *M. profundorum*. For example, Smith’s 1971 diagnosis of *M. bonaci* states the following: “Lower part of body and, especially, the head with brassy spots separated by a blue reticulum.” Smith (1971) also noted that the holotype of *Mycteroperca bonaci xanthosticta* var. Jordan & Swain, 1884, is a large specimen with prominent brassy spots and considered that color pattern to carry no genetic significance.

Cervigón’s decision to describe *M. profundorum* appears to have also been influenced by a photograph taken by John Randall in 1965 at the island of St. Croix (where *M. bonaci* is known to occur: Smith-Vaniz & Jelks [2014]) of a fish that both he and Randall considered to be an undescribed insular species (Fig. 5 in Cervigón 2011). Although only a monochrome image of that photograph was reproduced in Cervigón (2011), it closely matches known color variation in *M. bonaci*.

Cervigón (2011) hypothesized that *M. bonaci* is restricted to continental waters, while insular locations are occupied by *M. profundorum*. However, there are numerous records of *M. bonaci*, including live photographs taken in shallow water, throughout the offshore islands of the entire Greater Caribbean (Robertson & Van Tassell 2023; as well as on GBIF: <https://www.gbif.org/species/2389013> [accessed 8 October 2023] and on the IUCN Redlist [Padovani-Ferreira et al. 2018]).



Figure 3. Underwater photographs of the head of *Mycteroperca bonaci* showing the differences in spotting patterns depending on color phase, left: Cozumel, 20 m (Richard Eaker); right: Brazil, 6 m (Luiz Rocha).

Based on the fact that *M. bonaci* displays all the characteristics considered diagnostic for *M. profundorum* and is sympatric with it we conclude that *Mycteroperca profundorum* Cervigón, 2011 is a junior synonym of *Mycteroperca bonaci* (Poey, 1860), which has nomenclatural priority.

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