



Revista de Biología Marina y Oceanografía

ISSN: 0717-3326

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Universidad de Valparaíso

Chile

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Revista de Biología Marina y Oceanografía, vol. 48, núm. 1, abril, 2013, pp. 203-206
Universidad de Valparaíso
Viña del Mar, Chile

Available in: <http://www.redalyc.org/articulo.oa?id=47926382015>

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First record of albinism in gafftopsail catfish *Bagre marinus* (Pisces: Ariidae) from southeast Mexico

Primer registro de albinismo en el bagre bandera *Bagre marinus*
(Pisces: Ariidae) del sureste de México

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Abstract. This paper describes the first record of albinism in the gafftopsail catfish, *Bagre marinus*, on the coast of Tabasco, Mexico. The standard length of the albino specimen was 311 mm and the gutted weight was 962 g. It is not only the first record of albinism of the *Bagre* genus, but of any kind of fish in the southeastern Gulf of Mexico.

Key words: Abnormalities, pigmentation, Tabasco

INTRODUCTION

Albinism is a genetically inherited condition in which the pigment protein melanin is either absent or nonfunctional (Reum *et al.* 2008). There are 2 kinds of albinism: (1) complete albinism, where the integumentary and retinal pigmentation is absent and (2), partial albinism or leucism, where there is a partial or complete loss of integumentary pigments, but the retinal pigments are present (Goto *et al.* 2004). In most fish, the absence of color is related to mutations in the genes of the tyrosinase family, where the skin of albinos lacks melanin and eye development is affected (Wang *et al.* 2007).

Total or partial albinism has been observed in 36 different species of cartilaginous fish, including skates, rays and sharks (Sandoval-Castillo *et al.* 2006, Veena *et al.* 2011) with different anatomical and ecological features, demonstrating that albinism is not exclusive to some ecological or taxonomic groups. Albinism has also been reported in more than 20 species of teleosts worldwide (*e.g.*, Sazima & Pombal Jr. 1986, Béarez 2002, Brito & Caramaschi 2005, Reum *et al.* 2008, Mansur 2011, Piorski & Nunes 2011).

The gafftopsail catfish *Bagre marinus* (Mitchill, 1815) is a tropical benthic fish distributed in coastal waters from Cape Cod, Massachusetts to Panama, and throughout the Gulf of Mexico coast (Muncy & Wingo 1983). It is mainly marine but enters brackish estuaries with relatively high salinities (Cervigón *et al.* 1992). *B. marinus* is one of the most important fisheries in the Southeastern coastal zone of the Gulf of Mexico, particularly along the coast of

Tabasco state, where it is captured abundantly almost all year round (Mendoza-Carranza & Hernández-Franyutti 2005).

This paper describes the first record of albinism in the gafftopsail catfish, *Bagre marinus*, on the coast of Tabasco, Mexico.

MATERIALS AND METHODS

An albino adult female *B. marinus* was landed in July 2012 from the commercial catch of the small-scale daytime fleet from San Pedro, Tabasco, in the Southern Gulf of Mexico (18°39'32.35" N, 92°28'13.45"W). Bottom-set longlines with 60 mm shank length tuna circle hooks were the method of capture. The catch depth ranged from 10 to 40 m. The specimen was collected and transported to the laboratory where it was identified using the criteria described by Hoese & Moore (1998). The specimen was deposited in the Ichthyology Collection of the Centro de Investigación de Ciencias Ambientales (CICA) of the Universidad Autónoma del Carmen under catalog number CI-CICA-UNACAR 0250.

RESULTS AND DISCUSSION

The standard length of the albino specimen was 311 mm and the gutted weight was 962 g. The entire fish including the fins was dull whitish pink in color and devoid of any pigmentation (Fig. 1a). Pigmented specimens of *B. marinus* normally have a blue-grey to dark brown color



Figure 1. Lateral view of the gafftopsail catfish, *Bagre marinus*. a) Albino specimen and b) normal specimen. Photographs were taken from fresh fish. by A.T. Wakida-Kusunoki / Vista lateral del bagre bandera *Bagre marinus*. a) espécimen albino y b) espécimen normal. (Fotografía tomada en ejemplares frescos por A.T. Wakida-Kusunoki)

Table 1. Albinism reports in Order Siluriformes / Reportes de albinismo en el Orden Siluriformes

Family	Species	Reference
Ariidae	<i>Arius jella</i> (Day, 1877)	Gupta & Bhowmik 1958
	<i>Plicofollis dussumieri</i> (Valenciennes, 1840)	Rajapandian. & Sundaram 1967
	<i>Plicofollis tenuispinis</i> (Day, 1877)	Baragi <i>et al.</i> 1975
	<i>Nemapteryx caelata</i> (Valenciennes, 1840)	Krishna & Somvanshi 1979, Das <i>et al.</i> 2006
	<i>Osteogeneiosus militaris</i> (Linnaeus, 1758)	Chavan <i>et al.</i> 2008
	<i>Bagre marinus</i> (Mitchill, 1815)	Present work
Ictaluridae	<i>Ictalurus punctatus</i> (Rafinesque, 1818)	Aitken 1937, Menzel 1944
	<i>Ameiurus catus</i> (Linnaeus, 1758)	Mclane 1950, Britton & Davies 2006
	<i>Noturus gyrinus</i> (Mitchill, 1817)	Holder & Ramsey 1972
	<i>Noturus flavus</i> (Rafinesque, 1818)	Platania <i>et al.</i> 1986
Loricariidae	<i>Schizolecis guntheri</i> (Miranda Ribeiro, 1918)	Brito & Caramaschi 2005
Pimelodidae	<i>Zungaro zungaro</i> (Humboldt, 1821)	Taberner <i>et al.</i> 1976
	<i>Rhamdella minuta</i> (Lutken, 1875)	Sazima & Pombal Jr 1986
Siluridae	<i>Silurus glanis</i> (Linnaeus, 1758)	Platania <i>et al.</i> 1986, Dingerkus <i>et al.</i> 1991

with dark margins on the dorsal part of the body and caudal fin, and a light grey belly; the ventral body surface is unpigmented (Fig. 1b).

Several cases of albinism have been reported in catfish (Table 1), but until now no record of an albino gafftopsail catfish has been reported.

The incidence of albinism can be artificially increased in fish by exposing the eggs to heavy metals (*e.g.*, arsenic, cadmium, copper, mercury, selenium, zinc) (Oliveira & Foresti 1996). Thus, the albinism in *B. marinus* is more probably the result of a genetic random alteration since high concentrations of heavy metals seem to be improbable in the sampled habitat.

Sazima & Pombal Jr. (1986) and Brito & Caramaschi (2005) stated that albinism in tropical fish is more common among nocturnal and/or cryptobiotic species than among diurnal or non-cryptobiotic ones.

The lack of coloration in albinos has been suggested to increase susceptibility to predation or render them less attractive for reproduction (Sandoval-Castillo *et al.* 2006), however, the considerable size of adult albino gafftopsail catfish in question, leads us to suppose that albinism in catfish is not determinant for the survival of the organism.

This is the first report of albinism in the genus *Bagre* and in all fish from the southeastern Gulf of Mexico. *B. marinus* is a species subject to commercial fishing with a high number of individuals being captured for decades with no previous record of albinism. This, then, is a rare event still undetected in most wild fish species, at least regarding adult individuals.

ACKNOWLEDGMENTS

We would like to extend our thanks to Fernando Wakida, Universidad Autónoma de Baja California for his useful suggestions regarding the manuscript.

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Received 13 August 2012 and accepted 10 December 2012

Associate Editor: Gabriela Muñoz C.