

FIRST REPORT OF ALBINISM IN TRAHIRA *Hoplias malabaricus* FROM BRAZIL

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ABSTRACT

This paper is the first report on an adult female specimen of the trahira, *Hoplias malabaricus*, caught in the Pernambuco state, which exhibited the characteristics of total albinism.

Keywords: Pigmentation; carnivorous fish; freshwater fish

PRIMEIRO REGISTRO DE ALBINISMO EM TRAÍRA *Hoplias malabaricus* NO BRASIL

RESUMO

Este trabalho é o primeiro registro sobre uma fêmea adulta de traíra, *Hoplias malabaricus*, capturada no estado de Pernambuco, que apresentou características de albinismo total.

Palavras chave: Pigmentação; peixe carnívoro; peixe dulcícola

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INTRODUCTION

The family Erythrinidae is an exclusive group from South America and comprises three genera (*Erythrinus*, *Hoplerythrinus* and *Hoplias*), with broad geographic distribution. Seven species of the genera *Hoplias* occurs in Brazil: *H. aimara*, *H. australis*, *H. brasiliensis*, *H. curupira*, *H. lacerdae*, *H. malabaricus* and *H. microcephalus* (OYAKAWA and MATTOX, 2009). The trahira *H. malabaricus* is a carnivorous fish with wide distribution in South America, ranging from Colombia to the Argentina, included all Brazilians hydrographic basins (VICARI *et al.*, 2005; BALBONI *et al.*, 2011). This species inhabit a great number of habitats, ranging from lotic environments such as small to large rivers and waterfalls, to strictly lentic waters such as lakes and reservoirs. Although *H. malabaricus* is largely distributed, no records or comments on the occurrence of total or partial albinistic animals have been made.

Albinism is a hereditary condition caused by a homozygosis in a recessive gene, which implies a lack of pigmentation caused by an enzyme deficiency involving the metabolism of melanin. Mutations that affect enzymes involved in the metabolism of melanin can inhibit its production, resulting in either partial or complete loss of coloration (PURDOM, 1993). Individuals with total albinism exhibit total absence of melanin involving the entire body; on the other hand, partial albinism (or leucism) is phenotypically characterized by absence of melanin in part of the body or reduction of melanin in the entire body or a part of it (LUTZ, 2001).

The different kinds of albinism has been registered in a wide range of wild teleost fish species, such as *Rhamdella minuta* (SAZIMA and POMBAL Jr., 1986), *Silurus glanis* (DINGERKUS *et al.*, 1991), *Schizolecis guntheri* (BRITO and CARAMASCHI, 2005), *Batrachoides surinamensis* (PIORSKI and NUNES, 2010), *Acanthistius patachonicus* (MANSUR, 2011). There are also reports of albinism in chondrichthyan (TEIXEIRA and ARAÚJO, 2002; BOTTARO *et al.*, 2008; MNASRI *et al.*, 2010) and amphibian (SANABRIA *et al.*, 2010; LÓPEZ and GHIRARD, 2011) species.

This paper reports on the first known case of albinism in trahira *H. malabaricus*.

MATERIAL AND METHODS

On 21 June 2011, one specimen of *H. malabaricus* was caught by amateur fishermen in a reservoir from Sertânia-PE (7°58'52.70"S 37°16'11.03"O). The fish was frozen at -20°C and transported to the campus of Universidade Federal Rural de Pernambuco (UFRPE) in Garanhuns - PE. The specimen's identity was confirmed using the taxonomic key (BRITSKI *et al.*, 1984) and was deposited in the Ichthyological Collection of the same university, receiving catalogue number as follow, LIUFRPE P0135.

RESULTS AND DISCUSSION

The albino specimen was an adult female, measuring 39.4 cm of total length; 31.8 cm of standard length and weighted 712 g. The appearance fitted the descriptions of the species (BRITSKI *et al.*, 1984), except for its lack of body pigmentation. The coloration of dorsal and lateral surface, caudal, dorsal and anal fins of the albino specimen was yellowish; pectoral and ventral fins were slightly orange; membrane between the branched fin rays is according fins color; darker horizontal stripes on the fins were undistinguished and the eyes were reddish (Figure 1). Trahira has usually ground coloration of body dark grey, darker dorsally and paler ventrally, latter region white or slightly brownish. Sometimes shows oblique stripes on lateral surface. It presents darker stripes on the dorsal, caudal and anal fins (SANTOS *et al.*, 1984; FERREIRA *et al.*, 1998). This coloration is very contrasting with the one found on the albino specimen.

According SAZIMA and POMBAL Jr. (1986) albinos are recognized by their pinkish or yellowish body color and red eyes. However, body coloration by itself is not diagnostic of albinism, but that the eyes of the fish must also be without melanin at the back of the retina and hence appear pink to red (from hemoglobin in blood cells) (PURDOM, 1993; LUTZ, 2001).

The normal body coloration patterns of the trahira allow completely mimetism in its natural

habitat. Thus, albino specimens have a little chance of survival, due to increased risk of predation or by high cannibalism occurrence in species of genus *Hoplias* (BISTONI *et al.*, 1995;

LUZ *et al.*, 2000). On the other hand, albino fish are not rare in captivity conditions because anomalous individuals are selected by aquarium hobbyists (BRITO and CARAMASCHI, 2005).



Figure 1. Female albino trahira *Hoplias malabaricus* caught in Pernambuco State, Northeast Brazil.

Albinism occurs because of inherited gene alterations occurring in several forms. It can be inherited when the alleles are autosomal and recessive, autosomal and dominant, or sex-linked (PURDOM, 1993). The specimen was collected from an isolated *H. malabaricus* population, because original reservoir has not communication with other natural body waters. A reasonable explanation for albinism may be that recessive gene expression increases in isolated populations as consequence of low genetic flow. *Hoplias malabaricus* shows a conspicuous karyotypic diversification, with seven cytotypes identified (CIOFFI *et al.*, 2009). The karyotypes A, C and F present geographical distribution that includes the Brazilian northeast (BERTOLLO *et al.*, 2000). This group has a low migratory capacity, favoring the maintenance of chromosomal rearrangements in small populations (VICARI *et al.*, 2005). Unfortunately, it was not possible to perform the cytogenetic analysis in specimen.

In conclusion, the lack of skin pigmentation and the reddish eyes characterize the specimen as a total albino.

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