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ECOSYSTEMS

Albinism in *Artibeus planirostris* (Chiroptera, Phyllostomidae) in the Caatinga biome and updated list of albino bats in Brazil

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Abstract: Albinism is a genetic disorder that results in a deficiency in melanin production. This type of chromatic alteration may affect several vertebrate species, but is rarely observed in nature. In Brazil, for the bat group, only 15 albino individuals have been registered. Here we present a new case for *Artibeus planirostris*. A pregnant female of this species with alopecia was captured in the Caatinga biome. A compilation of the distribution of albino bats in Brazil is presented.

Key words: bat, chromatic alteration, mammals, Northeastern Brazil, semi-arid zone.

INTRODUCTION

The albinism is an autosomal recessive genetic trait in vertebrates, characterized by a complete lack of melanin. This disorder occurs due to the absence of tyrosinase in the melanocytes, an enzyme essential for melanin production. Albino individuals have skin, hair or feathers white and red eyes (Hofreiter & Schöneberg 2010).

Albinism is a rare condition in wild populations but has been recorded in approximately 60 bat species (Lucati & López-Baucélls 2016). Here we reported a new record of albinism for *Artibeus planirostris* in the Caatinga biome. An updated list with informations on albino bats collected in Brazil is also presented.

MATERIALS AND METHODS

One albino pregnant bat was collected at Fazenda Tamanduá (7º0'14"S/37º20'38"W, Santa Terezinha, Paraíba, Brazil). This is the largest protected area of Caatinga biome, including a legal reserve of 614 hectares, and a Private Natural Heritage Reserve of 325 hectares (ordinance 110/98-N IBAMA-PB; Neves et al. 1999).

The albino bat was collected with a mist-net (12m x 3m) at ground level at 20:00h on October 19th, 2012 (SISBio: nº115971). External and cranial measurements were taken according to Vizotto & Taddei (1973) using a digital caliper (capacity 20 cm, precision 0.05 mm). The bat was fixed and the skull was removed according to Pacheco (2004). The specimen was deposited in the Collection of Mammals of the Federal University of Pernambuco, UFPE 3709.

RESULTS AND DISCUSSION

The albino individual (Figure 1) was identified as *Artibeus planirostris* (Spix, 1823) by the following external and cranial characteristics: horseshoe of nose leaf free mediobasally, dorsal fur short, warts arranged in front of lower lip, wide post orbital constriction (greater than 6.8 mm), preorbital and postorbital processes poorly developed, third molar present (Handley 1991).

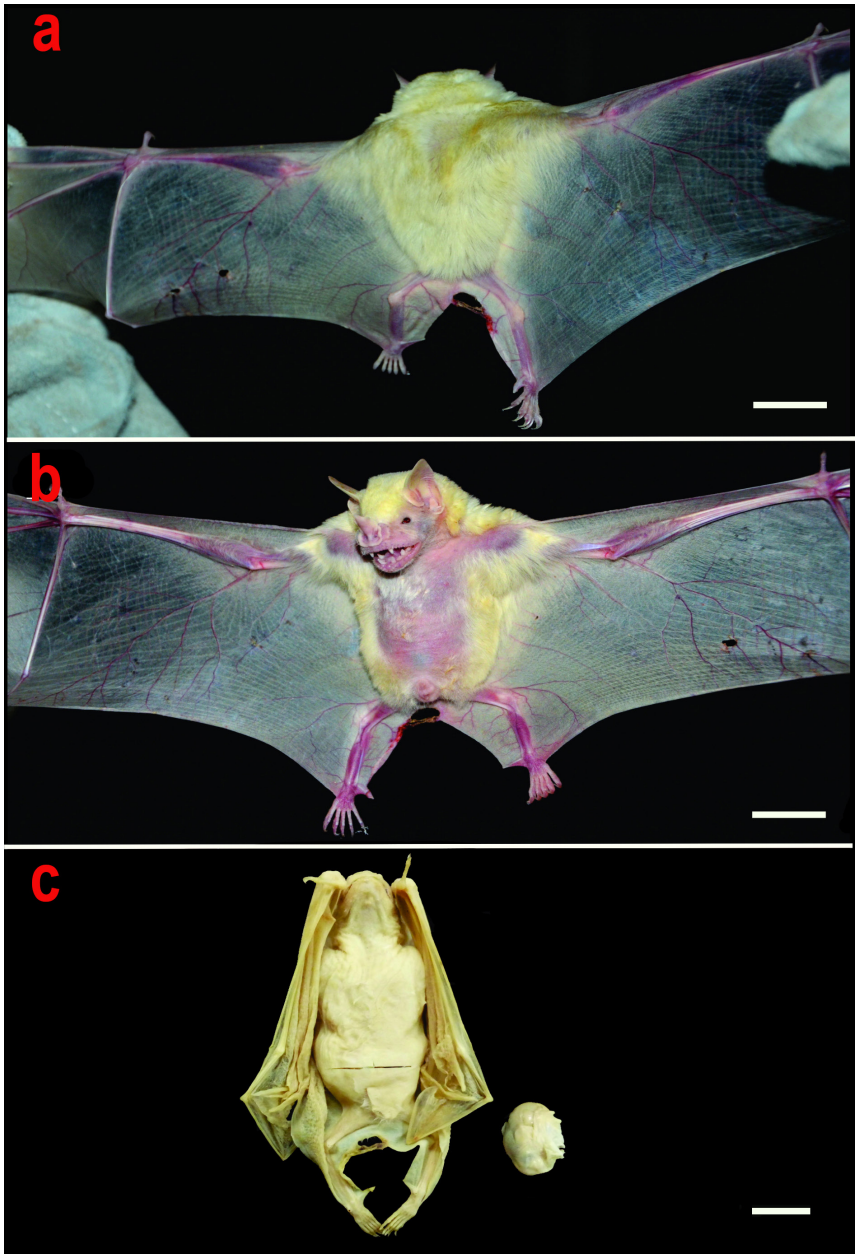

Figure 1. Pregnant albino specimen of *Artibeus planirostris* (♀ UFPE 3709) captured in Paraíba, Brazil: dorsal (a) and frontal (b) perspectives, and the specimen with its male fetus on the right side (c). Bars=2cm.

All external morphological measures (Lengh in mm: head-body=79.3, ear=20.1, forearm=57.6, thumb=9.7, third metacarpal=52.8, fourth metacarpal=51.3, fifth metacarpal=54) are in accordance with the descriptions of this species by Hollis (2005). The specimen presented alopecia in shoulders, thorax, and abdomen (Figure 1).

In Brazil, nine species of albino bats have been recorded. Here we report the 16th individual with this genetic disorder and the second case for *A. planirostris* in the country. This is the first study to deposit an albino specimen of this species in a scientific collection (Table I).

Cases of albinism in Brazil have been reported for all biomes except the Pantanal. This is the third record of an albino bat in Caatinga. The number of albino bats recording in this biome is similar to that observed for Cerrado, Amazonian, and the Atlantic Forest (Figure 2).

Table I. Species, localities, sex and ages of the albino bats recorded in Brazil. Codes refer to numbers indicated in Figure 2. N=number of individuals, A=adult, and Y= young.

Species	Municipality/state	Code	N (sex/age)	References
Artibeus planirostris (Spix, 1823)	Fortaleza/ Ceará	1	1 (lost specimen)	Uieda (2000)
	Santa Terezinha/ Paraíba	2	1 (♀/A)	Present Study
Carollia perspicillata (Linnaeus, 1758)	Igaporã/ Bahia	3	1 (♀/A)	Falcão (2014)
	Porto Velho/ Rondônia	4	1 (♂/Y)	Rosa et al. (2017)
Dermanura cinerea (Gervais, 1856)	Planaltina/ Goiás	5	1 (♂/A)	Oliveira & Aguiar (2008)
Desmodus rotundus (É. Geoffroy, 1810)	Apiaí/São Paulo	6	1(♀/Y)	Uieda (2001)
	Almenara/ Minas Gerais	7	2 (♂/A both)	Moreira et al. (1992)
	Rio Branco do Sul/ Paraná	8	1 (♂/A)	Guimarães et al. (2013)
Diaemus youngi (Jentink, 1893)	Pacajá/Pará	9	1 (-/-)	Uieda (2015)
Eumops glaucinus (Wagner, 1843)	Campinas/ São Paulo	10	1 (♂/Y)	Sodré et al. (2004)
Gradenycteris crenulatum (Geoffroy, 1803)	Barra do Ouro/ Tocantins	11	1 (♂/A)	Zórtea & Silva (2017)
Molossus molossus (Pallas, 1766)	Imperatriz/ Maranhão	12	1 (♀/A)	Nascimento et al. (2018)
	Santa Vitória do Palmar/Rio Grande do Sul	13	1 (♀/A)	Veiga & Oliveira (1995)
Peropteryx kappleri Peters, 1867	Parauapebas/ Pará	14	1 (♂/A)	Bernardi et al. (2019)
	Canaã dos Carajás/ Pará	15	1 (-/Y)	Bernardi et al. (2019)

Here we report an adult female and pregnant albino bat. The adult condition has been reported in 62.6% of the albino bats captured in Brazil (Table I). Albino bat pregnancies are reported for other bat species, such as *Myotis lucifugus* (Brigham & James 1993) and *Desmodus rotundus* (Sánchez-Hernández et al. 2010). Thus, it is possible that albinism does not affect bat survival and reproduction.

Considering that albinism is a rare hypopigmentary disorder, we emphasize the importance of researchers to record the cases found in nature. These data contribute to increase the knowledge of this phenomenon. We also reinforce the importance of albino specimens deposited in museums as a source of biological knowledge.

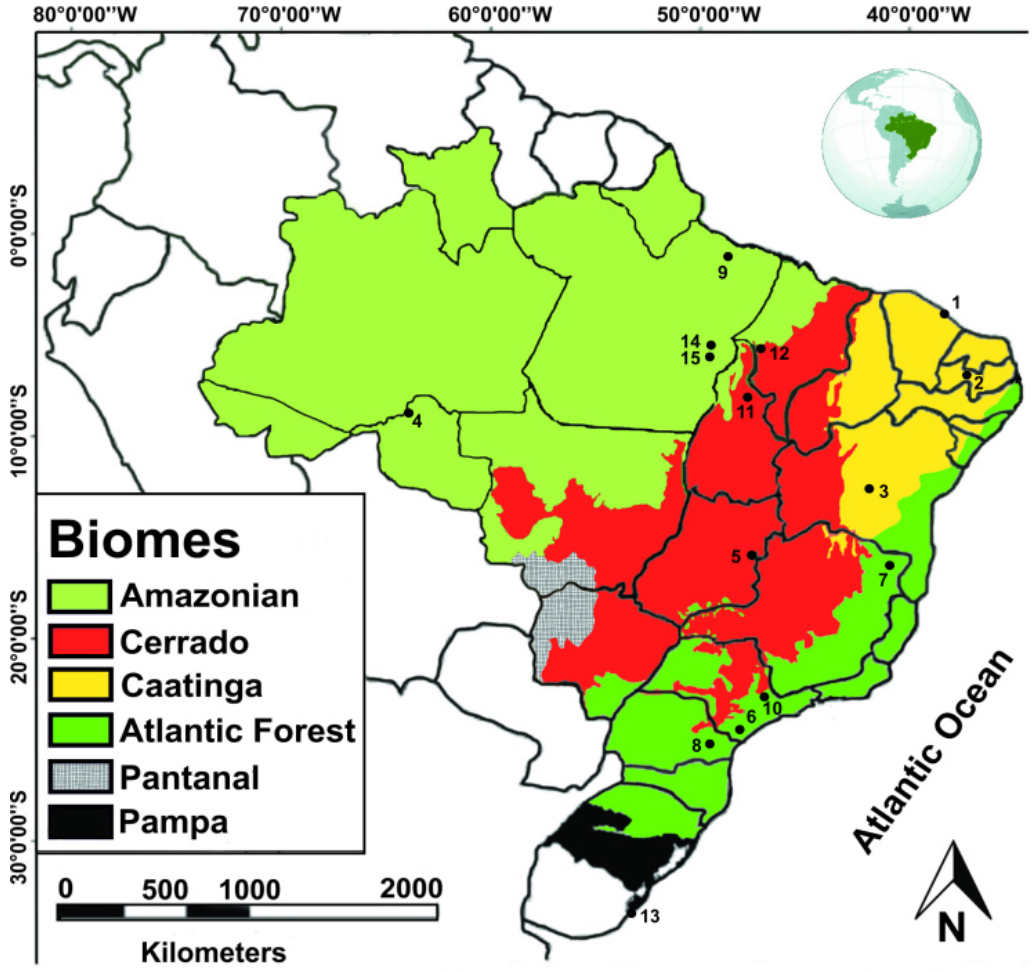

Figure 2. Partial map of South America showing Brazilian biomes. Circles indicate locations where albino bats have been recorded. The numbers refer to the codes in Table I.

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Author contribution

Edson Silva Barbosa Leal and Thaís de Castro Lira collected the albino bat. Edson Silva Barbosa Leal and Martín Alejandro Montes identified the albino bat. Ana Cristina Lauer Garcia, Martín Alejandro Montes and Edson Silva Barbosa Leal wrote the manuscript.