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Reconsidering the taxonomy of the Black-Faced Uacaris, *Cacajao melanocephalus* group (Mammalia: Pitheciidae), from the northern Amazon Basin

STEPHEN F. FERRARI[1,6], PATRÍCIA G. GUEDES[2], WILSEA M.B. FIGUEIREDO-READY[3] & ADRIAN A. BARNETT[4,5]

[1]*Department of Ecology, Universidade Federal de Sergipe, São Cristóvão, SE, Brazil* [2]*Department of Mammalogy, Museu Nacional/UFRJ, Rio de Janeiro, RJ, Brazil*
[3]*Institute of Coastal Studies, Universidade Federal do Pará, Bragança, PA, Brazil*
[4]*Centre for Research in Evolutionary and Environmental Anthropology, Roehampton University, London, England*
[5]*Coordenação de Biodiversidade, Instituto Nacional de Pesquisa da Amazônia, Manaus, AM, Brazil*
[6]*Corresponding author. E-mail: ferrari@pq.cnpq.br*

Abstract

The black-faced uacaris are a poorly known group of platyrrhine monkeys from the Rio Negro basin in northwestern Amazonia. Originally described as two distinct species—*Cacajao melanocephalus* (Humboldt 1812) and *Cacajao ouakary* (Spix 1823)—from opposite banks of the Negro, they were treated as a single species until the end of the twentieth century, when molecular studies reconfirmed their status as true species. One of these studies not only nominated a third (northern) species, *Cacajao ayresi* Boubli et al. 2008, but also identified *C. ouakary* as a junior synonym of *C. melanocephalus*, resulting in the introduction of a new nomen, *Cacajao hosomi* Boubli et al. 2008. In the present study, additional evidence on morphological and zoogeographic variables is analyzed, which indicates that *C. ouakary* should be reinstated, and supports the nomination of a neotype of *C. melanocephalus*. The molecular and zoogeographic data on the species status of the *ayresi* form are also re-assessed, leading to the conclusion that, on the basis of the evidence available at the present time, this form should be considered a subspecies of *C. melanocephalus*. A new taxonomic arrangement is proposed, which recognizes two species, *C. ouakary* and *C. melanocephalus*, the latter with two subspecies, *C. m. melanocephalus* and *C. m. ayresi*.

Key words: *Cacajao*, taxonomy, systematics, geographic distribution, Amazonia

Introduction

The medium-bodied platyrrhine monkeys of the subfamily Pitheciinae (*Cacajao*, *Chiropotes*, and *Pithecia*) constitute a unique clade of specialized seed predators, which are restricted almost entirely to the Amazon-Orinoco basins (Norconk 2011; Ferrari *et al*. 2013). As with many other groups of organisms, the scale and remoteness of much of this region have long hampered efforts to define intrageneric diversity, although in recent years ongoing research (e.g., Bonvicino *et al.* 2003; Seuánez *et al.* 2005; Silva *et al.* 2005, 2013; Figueiredo *et al.* 2013) has provided new insights into the diversity of all three extant pitheciine genera.

Of all the pitheciines, the uacaris (*Cacajao* spp.) are, arguably, the least well-known, although the pioneering research of Ayres (1989) provided the inspiration for studies such as those of Barnett & Cunha (1991), Lehman & Robertson (1994), Boubli (1997, 1999), Aquino & Encarnación (1999), Barnett *et al.* (2002, 2005, 2013), Bowler (2007), Bowler & Bodmer (2009), Barnett (2010), Bezerra (2010), Heymann & Aquino (2010), and Bowler *et al*. (2012). Despite these advances, even basic parameters, such as the limits of species' geographic ranges, are still only poorly known, and are punctuated by considerable lacunas, which are difficult to interpret on the basis of the available data (Rylands & Mittermeier 2009; Ferrari *et al.* 2013).

Until recently, the review of Hershkovitz (1987) was the taxonomic standard for the genus *Cacajao*. It reinforced the basic division between the bald or red-faced uacaris, *Cacajao calvus*, and the black-faced uacaris, *Cacajao melanocephalus*, with four and two subspecies, respectively (see Silva Jr. *et al*., 2013). While the two

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alternative interpretation of Humboldt's holotype. This appears to be the least parsimonious reading of the available data, especially considering the specimens of Handley (1976), which were not analyzed in detail by Boubli *et al.* (2008). On the other hand, while the evidence points to a degree of systematic differentiation within the distribution of *C. melanocephalus*, it does not appear to be conclusive enough, at the present time, to confirm the existence of two distinct species. Once again, the most parsimonious interpretation of the data indicates that the observed variation is consistent with divergence at no more than the subspecific level, if that.

The evidence points to a degree of morphological and ecological variation within the distribution of *C. melanocephalus* (see Boubli & Lima 2009), which demands further investigation. Similarly, it seems likely that the differentiation patterns observed within this species may be paralleled over the much more ample distribution of *C. ouakary*, which is at least as poorly-known as that of *C. melanocephalus*, relative to its total area. The adequate classification of the different uacari populations is more than a merely academic exercise, given its importance for the effective planning of any conservation and management measures. In this sense, the recent advances in the understanding of the diversity of the black-faced uacaris have been extremely valuable, although it is also important to appreciate that premature decisions on the classification of species will almost certainly be counterproductive over the long term.

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