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LACK OF EVIDENCE FOR THE PRESENCE OF MACAWS OF THE *ANODORHYNCHUS* GENUS IN THE COLOMBIAN-BRAZILIAN RIVER BASIN OF THE VAUPÉS

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ABSTRACT.— It is generally understood that the *Anodorhynchus* genus of macaws does not spread north of the Amazon River. However, recent published information suggests that the endangered Hyacinth Macaw *Anodorhynchus hyacinthinus* may occur in the region of the Papurí River, lower Vaupés, in Amazonian Colombia. This information is hypothetical, based on old reports and observations with imprecise geographical data. Our objective was to confirm the presence of macaws of the genus *Anodorhynchus* in the lower Vaupés, Colombia, and in nearby Negro River, Brazil. We carried out fieldwork and interviews from September 2004 to July 2005, but we failed to locate the species. Notwithstanding, we received information from 8% of the interviewed members of local ethnic groups suggesting that a macaw with similar characteristics to *Anodorhynchus* genus could inhabit this area. We discuss about the presence of macaws of this genus north of the Amazon River, and their potential food sources (local palms). On the basis of the absence of recordings we conclude that *Anodorhynchus hyacinthinus* should be considered hypothetical, at least in Colombia. Nevertheless, we recommend following the precautionary principle and suggest further work in the area.

KEY WORDS: Anodorhynchus, *Brazil, Colombia, interviews, lower Vaupes, Negro River*

RESUMEN. NO HAY EVIDENCIAS DE LA PRESENCIA DE GUACAMAYOS DEL GÉNERO *ANODORHYNCHUS* EN LA CUENCA DEL RÍO VAUPÉS (COLOMBIA Y BRASIL).— Formalmente, el género *Anodorhynchus* no se distribuye al norte del río Amazonas, pero información reciente sugiere lo contrario, con la posibilidad de que *Anodorhynchus hyacinthinus* (especie amenazada) se encuentre presente en la región del río Papurí, en la cuenca inferior del Vaupés (Amazonía colombiana). Sin embargo, esta información es hipotética, se basa en documentos antiguos y observaciones con datos geográficos poco precisos. El objetivo del trabajo fue documentar la existencia de guacamayos del género *Anodorhynchus* en la cuenca inferior del río Vaupés (Colombia) y en el río Negro (Brasil). Se realizaron salidas de campo y entrevistas desde septiembre de 2004 hasta julio de 2005 pero no se pudo hallar a la especie. No obstante, un bajo porcentaje (8%) de la información obtenida de las etnias locales indicó que un guacamayo con las características del género *Anodorhynchus* habitaría en el área. Se discute sobre la presencia de guacamayos de este género al norte del río Amazonas y sus posibles fuentes de alimentación (las palmas locales). Ante la falta de registros se concluye que todas las evidencias deben ser consideradas como hipotéticas, al menos en Colombia, aunque aplicando el principio de precaución se justifica encarar una segunda fase del proyecto de búsqueda de la especie en el área.

PALABRAS CLAVE: Anodorhynchus, *bajo Vaupés, Brasil, Colombia, entrevistas, Rio Negro*

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Recent inclusion of Hyacinth Macaw (*Anodorhynchus hyacinthinus*) in the Colombian avifauna and presence of the genus in the Amazon region of the Colombian-Brazilian basin of the Vaupés River are based on Rodríguez-Mahecha and Hernández-Camacho (2002). These authors justify the inclusion of the species as "probably for Colombia" based on ethnozoological evidence; they state that this endangered species is known by the Desana tribe in the Colombian region of the Maporí River (best known as the river Papurí; Fig. 1), a tributary of the river Vaupés on the border with Brazil (Rodríguez-Mahecha and Hernández-Camacho 2002).

Biologist Rubén Darío Pérez-Ardila, as a tangent to his fieldwork with tortoises in the Papurí River, provided in part data that led to this conclusion. Pérez-Ardila learnt about an entirely blue macaw that had apparently been caught by the leader of a local indigenous community. Some days later, he reported observing a small flying group of macaws that were entirely blue except for some yellow on the sides of their heads. Pérez-Ardila made a similar observation a year later, when he returned to this area (Pérez-Ardila 2000, Rodríguez-Mahecha and Hernández-Camacho 2002). Rodríguez-Mahecha and Hernández-Camacho (2002) also support their conclusion on verbal information given by Antonio Garzón, a Desana anthropologist from whom they obtained some information on feeding, breeding, ethnozoological and biogeographic distribution of macaws of the *Anodorhynchus* genus for Colombia. Finally, Rodríguez-Mahecha and Hernández-Camacho (2002) cite evidence of local names for *Anodorhynchus hyacinthinus*: "Vihina" (in the Desana language), and "Ararúna" in Hianákoto-Umáua (or Carijona) language (Koch-Grünberg 1908). This latter ethnic group inhabited the region of the Yarí, Mesai and Chiribiquete, in the interior of Colombia's Amazon (Koch-Grünberg 1995), some 300 km from the Vaupés area.

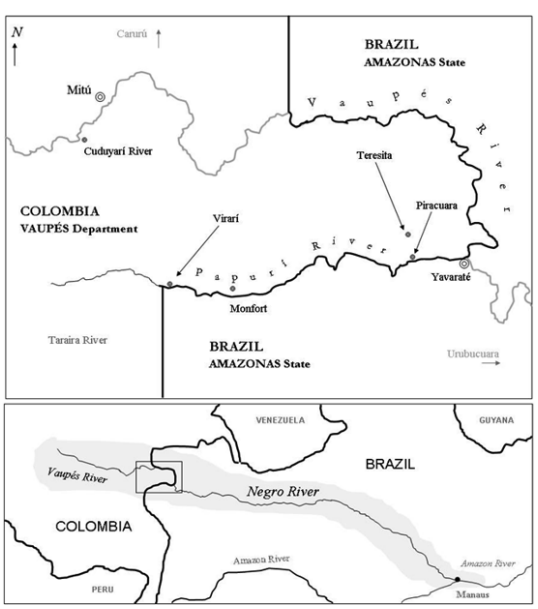

Figure 1. Study area in the Papurí River region, Colombian-Brazilian watershed in the Vaupés River catchment, and area surveyed in the Negro River, Brazil (inset shows detail of main map).

Although Juniper and Parr (1998) mapped *Anodorhynchus hyacinthinus* as occasional in northern Brazil, at present there is no convincing evidence of the genus *Anodorhynchus* north of the Amazon River (Forshaw 1989, Collar et al. 1992, BirdLife International 2009). The anecdotal evidence of the genus *Anodorhynchus* in Colombia, provided by Rodríguez-Mahecha and Hernández-Camacho (2002), is thus surprising. We therefore set out to confirm the presence of blue macaws in the area of the Vaupés River, north of the Amazon River, to identify the taxon to species level, to ascertain its status and ecological needs, and to make recommendations for its conservation.

METHODS

We surveyed the basin of the Vaupés and Negro rivers. Vaupés is a tributary of the Negro River, which flows to Manaus and join the Amazon River (Fig. 1). Most of fieldwork was carrying out on the Cuduyarí and Papurí (or Maporí) rivers, both tributaries of the Vaupés. Human settlements are found mostly along main rivers, and a short inspection to satellite images show the expansion of secondary woodland, agriculture and cattle-grazing around each population centre. In these areas, there are palms similar to those used by species of the *Anodorhynchus* genus in other regions, namely five species of both genera *Astrocaryum* and *Attalea* (Table 1), *Oenocarpus bataua* (known as Milpesos) and associations of *Mauritia flexuosa*, known as miritizales, cananguchales or morichales, special swamps where the macaws might breed (Collar et al. 1992, Yamashita and Valle 1993, C Yamashita, pers. com.). At Negro River fieldwork was focused on Sao Gabriel do Cachoeira and Manaus, areas that originally were covered by dense forest but which are gradually ceding to the advancing agricultural frontier following large-scale deforestation.

We gathered all information available about macaws of the *Anodorhynchus* genus from the region to identify the most promising areas to record the species. We carried out the project in two phases. First part was conducted in Colombia during September-October 2004, on the Cuduyarí, Vaupés and Papurí rivers (Fig. 1): this part was developed through interviews with local indigenous people and short excursions to places where macaws could be observed. A second phase was carried out in the

Table 1. Palms in the Vaupés region which could conceivably be eaten by macaws of the genus *Anodorhynchus*, and palms known to be eaten by *Anodorhynchus hyacinthinus*, *Anodorhynchus leari*, and *Anodorhynchus glaucus*. Data compiled from Yamashita and Valle (1993), Henderson et al. (1995), O Laverde (pers. obs.) and D Waugh (pers. com.).

Vaupés' palms	*Anodorhynchus hyacinthinus*	*Anodorhynchus leari*	*Anodorhynchus glaucus*
Attalea maripa	*Attalea maripa*	*Syagrus coronata*	*Butia yatay* (?)
Attalea butyracea	*Attalea speciosa*		
Attalea insignis	*Attalea funifera*		
Attalea microcarpa	*Attalea phalerata*		
Attalea racemosa	*Syagrus coronata*		
Astrocaryum acaule	*Acrocomia sp.*		
Astrocaryum chambira	*Astrocaryum sp.*		
Astrocaryum gynacanthum			
Astrocaryum jauari			
Astrocaryum murumuru			
Syagrus orinocensis			

Negro River by using just interviews. People with a good knowledge of the area, such as hunters and elder settlers were interviewed; techniques comprised informal conversation and showing pictures of different species of *Anodorhynchus* and *Ara* genera (including species unknown in this area). The questions were phrased in such a way to avoid receiving false positives. In the case of apparently genuine positive responses, we carefully confirmed the veracity of the claim through detailed follow-up questions, and by trusting the judgement of the experienced interviewer.

Finally, we looked for the presence of palms that may be important for macaws in the region (Table 1), taking into account bibliographic sources (Collar et al. 1992, Yamashita and Valle 1993, C Yamashita, pers. com.) and by direct observations in the field.

RESULTS

We visited seven localities in the Vaupés region (Fig. 1) where 156 interviews were carried out. We worked interviews mainly with indigenous communities from the Cubeo, Tukano, Barasano, Desano and Maku ethnics. Of the total interviews, just five (7.8 %) gave positive results regarding anecdotal information on macaws of the genus *Anodorhynchus*. Within interviews with positive results, four interviewed described a species more similar to *Anodorhynchus glaucus* than *Anodorhynchus hyacinthinus* on account of its smaller build, lighter plumage and in one case, larger extent of the yellow perimandibular skin. Nonetheless, answers were vague and uncertain about the exact date and place of the observation. The vast majority of interviews (92.2 %) failed to provide positive information relating to the potential presence of macaws of the genus *Anodorhynchus*. We also received clear indications of misidentifications. For example, at Yavaraté, two captive specimens that were claimed to be *Anodorhynchus hyacinthinus* turned out to be Scarlet Macaw (*Ara macao*) and Blue-and-yellow Macaw (*Ara ararauna*). Investigations from the region of the Negro River also produced negative results.

Rubén Darío Pérez-Ardila apparently recorded a voice of a macaw of the genus *Anodorhynchus* in the Vaupés River, but this was unknown to Rodríguez-Mahecha and Hernández-Camacho (2002). Recording was deposited at Banco de Sonidos Animales of the Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, Colombia, but when examined it was revealed that no macaws were in the recordings (M Álvarez, pers. com.).

We shown in Table 1 details of the palm species present in the region that could conceivably be consumed by any species of the genus *Anodorhynchus*. This list is based on the kind of palms mainly consumed by *Anodorhynchus hyacinthinus*, *Anodorhynchus leari* and *Anodorhynchus glaucus* in other areas where they are known to inhabit (Collar et al. 1992, Yamashita and Valle 1993, C Yamashita, pers. com.).

DISCUSSION

Following our assessment, there appears to be no reliable evidence of the existence of *Anodorhynchus hyacinthinus* in Colombia. We base this conclusion on several factors. First, the recording obtained by Pérez-Ardila does not contain vocalisations of any macaw of the genus *Anodorhynchus*. Moreover, there appears to be some confusion about Pérez-Ardila's study site. Whereas Rodríguez-Mahecha and Hernández-Camacho (2002) understood it to be around Papurí, Pérez-Ardila (2000) work was made at Inírida River and a tributary, the Caño Bocón, which lies more than 100 km north of Papurí. Second, ethnozoological evidence is far from satisfactory. During an interview in San José de Virarí, we learnt that the name "vihina" in the Desana language could refer to any species of macaw that occurs seasonally ("vihina" means visitor). Such is the case for *Ara ararauna*, a species that is present seasonally in this area.

There was also no evidence from "plumage art" (i.e., headpieces, feathers) that blue macaws occur in the area inhabited by the local ethnic groups. In no case were any ornaments found with blue ridged and black ventral rectrices corresponding to the macaw *Anodorhynchus* group. Even if there had been, there is no guarantee that the feathers came from local birds: plumage art can include feathers from very distant places, hundreds of kilometres away (C Yamashita, pers. com.). In addition, we did not receive any information relating to the trade of any kind of macaw of the genus *Anodorhynchus* in the study area; nor has any person —prior to our research— enquired about the presence of Psittacidae with characteristics of this genus.

The mention of the local name "ararúna" by the Hianákoto-Umáua ethnic group cited by Koch-Grünberg (1908) may be yet another confusion, potentially referring to *Ara ararauna*. This ethnic group was part of the well-known Carijonas, which inhabited the region of Chiribiquete, the Mesai and the Yarí rivers (Koch-Grünberg 1908). The Chiribiquete region is not very far away from the Vaupés area (some 300 km), but several expeditions to this region, such as those carried out by G Stiles (Instituto de Ciencias Naturales, Bogotá) or the Instituto Alexander von Humboldt (more recently) make no mention of macaws of the genus *Anodorhynchus*. Furthermore, research with indigenous communities at middle Caquetá River with Muinane and Matapí ethnic groups (intermediate area between the Vaupés and Chiribiquete) never produced any indication of entirely blue macaws of entirely blue plumage, whilst *Ara ararauna* is common in the area (O Laverde unpublished data).

Against this backdrop of negative results, the five "positive" interviews are intriguing; in particular the four who described a taxon different to *Anodorhynchus hyacinthinus*. People associated their observations regarding the size and plumage of macaws of the genus *Anodorhynchus* to illustrations of *Anodorhynchus glaucus*. If they were not mistaken, this could conceivably represent a different species, given that the former range of *Anodorhynchus glaucus* lay roughly to the south of that of *Anodorhynchus hyacinthinus*. However, it is more probable that these eyewitnesses were mistaken given the high percentage of interviewees that failed to recognise the species, and identification errors were noted with the two captive birds at Yavaraté. Another example lies in the general observations that were carried out long ago in regions such as Carurú or Tararaira. In other cases, the information came from distant sites, suspiciously far from the site where the interview was carried out, as at Urubucuara. On account of this, the data provided by these interviews can only be used to indicate possible occurrence, at best.

Even those who "positively" identified macaws of the genus *Anodorhynchus* were unable to shed light on the ecological information provided by Rodríguez-Mahecha and Hernández-Camacho (2002). We were thus unable to determine the veracity of their postulation that *Anodorhynchus hyacinthinus* eats fruits of *Hevea* sp. and *Micrantha sprucei*; nor could it be ascertained if the species reproduces occasionally or permanently in this region, and if they reproduce in *Mauritia flexuosa* morichales. Chambira or cumare (*Astrocaryum chambira*) is a palm much used by the indigenous communities for the making of handcrafts (O Laverde, pers. obs.); should there be a relationship between this palm and the presumed macaw of the genus *Anodorhynchus* in this area, it would be necessary to determine the degree of influence of this activity on the birds.

This discussion brings us to another question: whether *Anodorhynchus hyacinthinus* still inhabits or, indeed ever inhabited, regions north

of the Amazon River (as postulated by Juniper and Parr 1998, JI Hernández-Camacho, pers. com.). At present, we did not observe this bird in the area, and no documented record exists (G Stiles, pers. com., C Yamashita, pers. com.). The only reliable (but undocumented) records are over 100 years old, and come from two areas of Brazil: Amapá (Goeldi 1897, C Yamashita, pers. com.) and Monte Alegre in the state of Pará (C Yamashita, pers. com.), which retains good habitat with *Maximiliana maripa* palm formations (C Yamashita, pers. com.). So if birds of the genus *Anodorhynchus* ever occurred north of the Amazon River, there is no reliable evidence to suggest that it still does so.

The presence of palms of the genera *Attalea* and *Astrocaryum* (which *Anodorhynchus hyacinthinus* consumes) in the Vaupés area certainly suggests that *Anodorhynchus* genus macaws could subsist here. But our fieldwork suggests that, at best, *Anodorhynchus hyacinthinus* should be considered hypothetical in Colombia. More reasonably, we suggest that the species does not exist here, and probably never has done. It is therefore unfortunate that the presumption of the species' presence in Colombia has snowballed recently, most notably in the production by Conservation International Colombia of a poster of Colombian parrots which includes this species. Nevertheless, in keeping with the precautionary principle, we recommend that a second phase of this investigation be conducted. After all, if *Anodorhynchus hyacinthinus* (or a different taxon) were to occur north of the Amazon, there would be considerable implications for the species' conservation. We thus suggest that a poster seeking knowledge about blue macaws be distributed in the area of the Vaupés River as well as throughout the basin of the Negro River. This study should last at least one year and should be conducted in collaboration with Government (i.e., the Corporación de la Alta Amazonía en el Vaupés) and non-governmental organizations that are involved in environmental issues in the region. This would be more cost-effective than engaging a biologist on an exclusive basis in the region.

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