



The rediscovery of the Crested Eagle (*Morphnus guianensis*) in Rio Grande do Sul state, Brazil

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Abstract

The Crested Eagle (*Morphnus guianensis*) is a large raptor that inhabits the lowland forests in the Neotropical region, whose population is currently decreasing owing to habitat loss and hunting. This species has become very rare in the southern region of the Atlantic Forest and is considered locally threatened or even extinct in some localities, including Rio Grande do Sul state, in southern Brazil. There are only two historic records of this eagle in this state, represented by specimens shot in the municipalities of Igrejinha before 1885 and Santa Cruz do Sul in the 1920s. Here, we report the rediscovery of the Crested Eagle in Rio Grande do Sul on 26 August 2019, when we observed an immature Crested Eagle vocalizing while perched on a *Parapiptadenia rigida* tree inside the Turvo State Park. We also report compiled information on the occurrence of this eagle in the southern Atlantic Forest and mapped the published historical and recent records. There is little information about this eagle in the Atlantic Forest and almost no information related to diet and nesting. We recorded the first images and audio of a wild Crested Eagle in the southern Atlantic Forest. Our records suggest that this species is breeding in this region. The Turvo State Park has recent records of Harpy Eagles (*Harpia harpyja*), which could suggest that the Crested Eagle is using the park without partitioning the habitat.

Keywords Birds of prey · Conservation · Green corridor · Misiones · Raptors · Turvo State Park

The Crested Eagle *Morphnus guianensis* (Daudin, 1800) is a very large, slender eagle that inhabits the lowland forests of the Neotropical region from Guatemala and Honduras to Paraguay, northern Argentina (Misiones), and southern Brazil (Del Hoyo et al. 1994; Ferguson-Lees and Christie

2001). The Crested Eagle resembles the Harpy Eagle *Harpia harpyja* (Linnaeus, 1758), but it is smaller and much less bulky, with thinner legs and smaller feet and bills. It also does not have the Harpy Eagle's typical black markings on the chest and underwing linings. It has a characteristic small dark mask, and its crest is not divided (Brown and Amadon 1968; Ferguson-Lees and Christie 2001). There is a melanistic form in which the black markings on the ventral parts vary from barred to all black (Ferguson-Lees and Christie 2001); however, this form has never been recorded in the Atlantic Forest (Chebez and Anfuso 2008a).

The records of the Crested Eagle in the southern Atlantic Forest are few and widely scattered in both space and time (Fig. 1). There have been only two previous records in the state of Rio Grande do Sul, Brazil, and both are about a century old, represented by juvenile eagles that were shot in the municipalities of Igrejinha before 1885 (von Berlepsch and von Ihering 1885; Bencke et al. 2003), and Santa Cruz do Sul in the 1920s (Bencke 1997). In Santa Catarina state, there are two specimens that were collected in the past, one before 1926 in Joinville, held at Museu Frei Miguel, and another between 1965 and 1970 in Lontras, presently held at Universidade Federal de Santa Catarina Bird Collection

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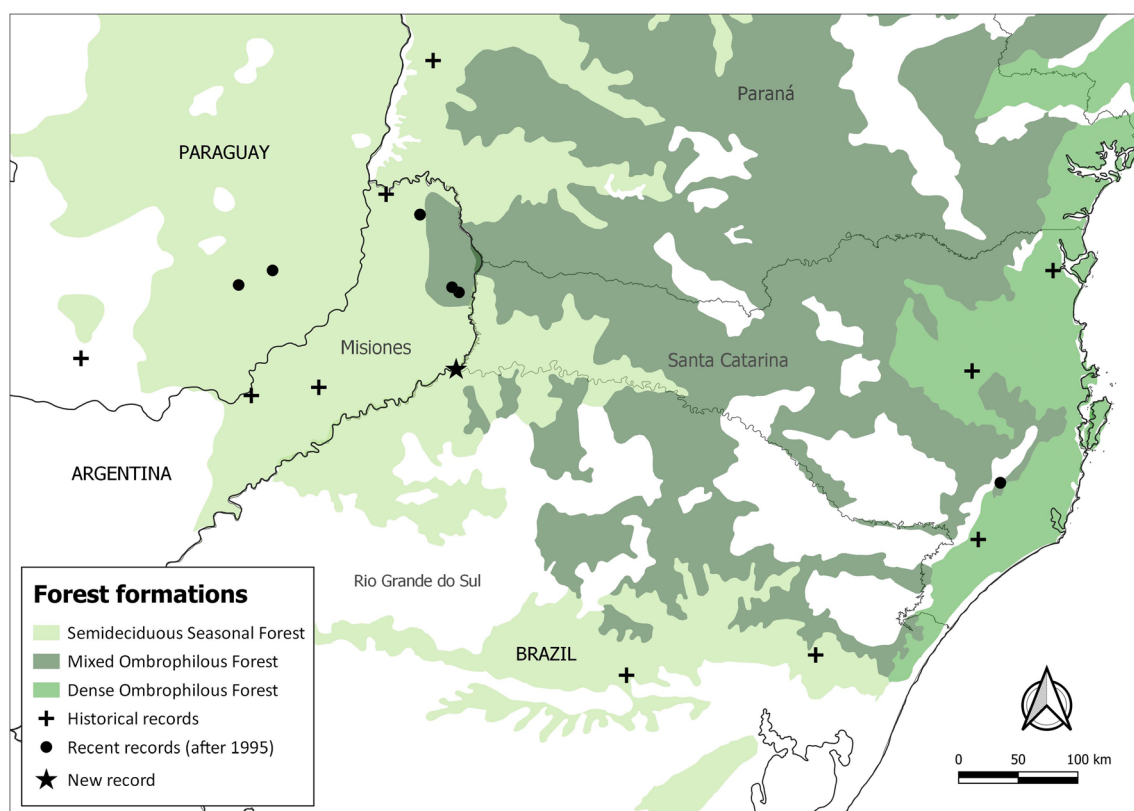


Fig. 1 Records of Crested Eagle (*Morphnus guianensis*) in southern Atlantic Forest. The star indicates rediscovery record for Rio Grande do Sul state, Brazil. Dots indicate recent records (after 1995). Crosses indicate historical records (before 1995)

(CAUFSC 362), acquired from G. Knoll collection (Favretto 2008; Gomes and Sanaïotti 2015; Müller and Vieira 2016). There are also two reports of visual observation for this state, one from Siderópolis in 1977 (Albuquerque 1983; Rosário 1996), and the other from 2005 in Aiure, Grão-Pará (Albuquerque et al. 2006). In the Paraná state, there is only one record, of a juvenile specimen collected in 1964 about 70 km north of the Iguaçu National Park, in the municipality of Pato Bragado (previously part of Marechal Cândido Rondon municipality up to 1990), held at Museu Sete Quedas (MSSQ-52 ex MSQ-196) (Mikich and Bérnils 2004; Straube and Urben-Filho 2010).

In Misiones, Argentina, there are six known records of the Crested Eagle, three of which are historical, while the other three are recent. The historical data are from Santa Ana around the end of the 19th century (Bertoni 1913; Chebez and Anfuso 2008a), Cerro Moreno in 1974 (Chebez and Anfuso 2008a), and Iguaçu National Park in 1980 (Olrog 1985). The three recent records are from Uruguá-i Provincial Park in 1996 (Chebez and Anfuso 2008a), El Piñalito Provincial Park in 1999 (Pearman 2001), and the surroundings of Tobuna in 2000 (Chebez and Anfuso 2008a).

There are also three confirmed records of the Crested Eagle from eastern Paraguay, including a very old one from Misiones (Chebez and Anfuso 2008a). There are two

unconfirmed observations from San Rafael National Park (Madrño-Nieto et al. 1997), which were verified later by the capture of an adult Crested Eagle in the same area. This specimen survived at Itaipu Zoo until 2002 and is presently held at Museu de Historia Natural da Itaipu Binacional (MHNIB 872). There is also one observation from Colonia Aurora in 2002 (Del Castillo and Clay 2004; Chebez and Anfuso 2008a).

The records from Misiones, Argentina, led Belton (1994) and Bencke et al. (2003) to believe that the Crested Eagle may still exist in the Turvo State Park, in the state of Rio Grande do Sul, despite it being considered extinct in this state (Belton 1994; Bencke et al. 2003; Rio Grande do Sul 2014). The species is also considered extinct in Paraná (Mikich and Bérnils 2004) and “critically endangered” in Santa Catarina (CONSEMA 2011) states. The species is classified as “vulnerable” in Brazil (Sanaïotti et al. 2018) and “endangered” in Argentina and Paraguay (Chebez and Anfuso 2008a; MADES 2019). Globally, the Crested Eagle is listed as “near threatened,” with a decreasing population owing to habitat loss and hunting (BirdLife International 2017).

We rediscovered the Crested Eagle in Rio Grande do Sul on 26 August 2019, after D.A.M., A.F., and R.T. Araújo observed a Crested Eagle perched on a *Parapiptadenia rigida* (Benth.) tree at 08:00 h, inside the Turvo State Park (Fig. 2a).

The observation occurred in an area along the road that leads to Yucumã Falls, about 10 km from the entrance of the park (27°9'20"S; 53°51'56"W). The Crested Eagle continually vocalized and was mobbed by a group of plush-crested jays *Cyanocorax chrysops* (Vieillot, 1818). We observed the Crested Eagle for 4 min, after which it flew away into a valley and has not been observed since.

Based on the plumage characteristics outlined in Ferguson-Lees and Christie (2001), the Crested Eagle that we observed in the Turvo State Park could be classified as a third-year pale-morph. The individual displayed some gray mottling on the upper wing coverts and a white abdomen without barring (Fig. 2a). To the best of our knowledge, this is the first picture ever taken in the wild of a Crested Eagle in the southern Atlantic Forest. We recorded the audio of this individual as it vocalized, which, to our knowledge, is also the first recording of Crested Eagle vocalization ever made in this biome. The audio recording was deposited in the WikiAves catalog using the code WA3511853 (Meller 2019).

The Crested Eagle is very rare in the Atlantic Forest, and there is almost no information related to its breeding and

feeding habits there. Rather, most of the knowledge of the Crested Eagle breeding and feeding is based on nests in Amazonia and Central America (Bierregaard-Jr 1984; Whitacre et al. 2012; Gomes 2014). Unlike many other large eagles, the Crested Eagle does not choose emergent trees to nest and instead opts for those in the sub-canopy (Whitacre et al. 2012; Gomes 2014) where it can be difficult to locate nests, as they tend to be much less visible. There are no records of Crested Eagle nests in the Atlantic Forest (Gomes and Sanaïotti 2015), but our observation of an immature Crested Eagle suggests that the species is breeding in the region of the Turvo State Park. Bencke et al. (2003) also suggested that in the past the species bred in other areas of Rio Grande do Sul, as the two historical records from this state were of juvenile eagles.

As regards the old specimens from Rio Grande do Sul, only the bird from Santa Cruz do Sul is now known to be preserved, placed at the museum of Mauá school, in that city (Bencke 1997). The record from Igrejinha, reported by von Berlepsch and von Ihering (1885), was presumed to be in the Senckenberg Museum, in Frankfurt, Germany, among the specimens collected by H. von Ihering in Rio Grande do Sul, which were part of H. von Berlepsch collection (Naumburg 1931). In fact, there is a specimen identified as *M. guianensis* at the Senckenberg Museum, collected by H. von Ihering in 1885, which was presumed to be the one from Igrejinha, but in its tag it is mentioned to be from the municipality of São Lourenço do Sul. However, in a recent consultation to the museum curator, we discovered that this specimen (catalogued by the number 13848) has been wrongly identified, as proved by a picture sent to us (G. Mayr, in litt.). The specimen, composed by skull and tarsus, both with skin, revealed to be an *Urubitinga coronata* (Vieillot, 1817), which, among other features, was recognized by the yellow cere in the basis of its prominent bill (Fig. 2b). In *M. guianensis*, the cere is dark (Ferguson-Lees and Christie 2001). So, the specimen collected in Igrejinha has its whereabouts now unknown. Misidentification of juvenile *U. coronata* by another large eagle, *H. harpyja*, has been reported previously for a Brazilian museum (Banhos and Sanaïotti 2011).

The Crested Eagle observed at the Turvo State Park was in an area close to a valley, near the location of some recent records of Harpy Eagles reported by Meller and Guadagnin (2016) in this park. In Misiones, Argentina, there are some records indicating that Crested Eagles prefer the dense forests of river valleys at lower altitudes, rather than mountainous areas, which the Harpy Eagle prefers (Chebez and Anfuso 2008a, 2008b). Because valleys at lower altitudes are the mostly affected areas of Misiones, the Crested Eagle conservation status in Argentina is considered more critical than that of the Harpy Eagle (Chebez and Anfuso 2008a). However, some records of the Crested Eagle in the mountainous areas of Argentina and Paraguay call this partition of habitat further

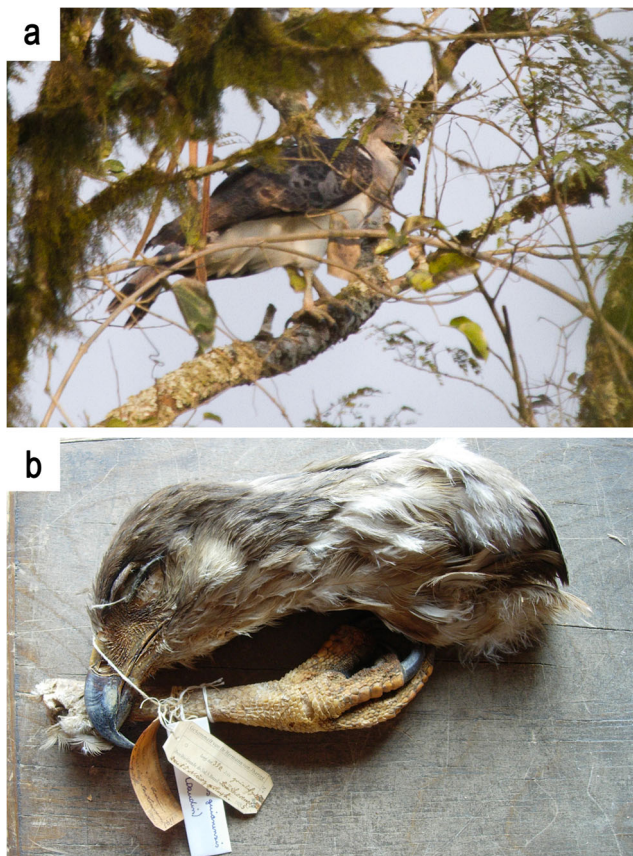


Fig. 2 **a** Immature Crested Eagle (*Morphnus guianensis*) recorded in Turvo State Park, Rio Grande do Sul state, Brazil, on 26 August 2019. Photo: DA Meller. **b** Crowned Eagle (*Urubitinga coronata*) specimen collected in 1885 by H. von Ihering in São Lourenço do Sul, Rio Grande do Sul, Brazil, and deposited at the Senckenberg Museum, Frankfurt, Germany (number 13848). Photo: G. Mayr

into question (see Chebez and Anfuso 2008a). The overlap of territories between these two large eagles has also been confirmed in the Amazon Forest, both species inhabiting and nesting at the same portions of forest (Sanaïotti et al. 2015). Our data also suggest that these species cohabit.

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