

# The Azure Jay *Cyanocorax caeruleus* (Aves: Corvidae) in Paraguay, with restriction of the type locality

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**ABSTRACT:** *Cyanocorax caeruleus* (Vieillot, 1818) is based on the description by Azara of number 55 Urraca Celeste and has traditionally been ascribed the type locality “Paraguay”. However, Azara based his description on captive birds and a lack of reliable records from the country meant that it was recently eliminated from the official country avifaunal list. Here we provide a discussion of previous reports of the species in Paraguay to vindicate that decision. We also provide the first documented records of the species from Paraguay from the same general area that Azara described as its distribution, thereby reaffirming the accuracy of that work. We also suggest a restricted type locality of “Itapúa department, Paraguay at 27°S latitude” for the species which more accurately reflects these results.

**KEY-WORDS:** *Cyanocorax cyanomelas*, distribution, occurrence, Purplish Jay, type locality.

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The Azure Jay *Cyanocorax caeruleus* (Vieillot, 1818), is a “Near Threatened” Atlantic Forest endemic corvid with recent records from southeastern Brazil (Paraná, Rio Grande do Sul, Santa Catarina, and São Paulo states), extreme northeastern Uruguay (Cerro Largo) and northeastern Argentina. In Argentina it is mainly found in the northeast of Misiones province around San Antonio and San Pedro with a possible subpopulation along the Arroyo Martires to Concepción de la Sierra, and occurs marginally into Corrientes province. Published references to Formosa and Chaco provinces are misidentifications (Anjos *et al.* 2009, M. Pearman, pers. comm.). Although the type locality of the species is Paraguay (Vieillot 1818), and the species is frequently listed in the Paraguayan avifauna (Goodwin 1986, Madge & Burn 1994, Anjos *et al.* 2009), the lack of confirmed records meant that it was recently downgraded to of “possible” occurrence in Paraguay (del Castillo 2013). However, del Castillo (2013) did not discuss the reasons for taking those measures. Here we elucidate the case for its removal from the list and document the first confirmed record of the species in Paraguay to reinstate the species to the country list.

## Historical reports

Vieillot (1818) described *Pica caeruleus* based on Azara's (1802) number 55 Urraca Celeste (Volume 1, p. 259). Azara's description of the bird clearly refers to this species, it being distinguished adequately from the number 54 Urraca Morada or Purplish Jay *Cyanocorax cyanomelas*. In his introduction to the family Azara stated that Azure Jay only occurs around 27°S latitude, corresponding to the extreme south of modern day Paraguay including the southern portions of Itapúa, Misiones and Ñeembucú departments. Based on what is known of the ecological requirements of the species it would seem that the Atlantic Forest habitat of Itapúa department is most conducive to the species, with the Humid Chaco, marshes and flooded grasslands of Ñeembucú unlikely to have ever harboured populations. The historical distribution of the species can thus at best be presumed to have been very restricted in Paraguay, but given the inaccuracies of geolocation at that time this should be taken as approximate. Unfortunately, in the species account of number 55 Urraca Celeste, Azara describes a captive bird, and does not specifically state where it was obtained from – it should also be remembered that in Azara's time Paraguayan territory



**Figure 1.** Adult Azure Jay *Cyanocorax caeruleus*, Puerto Hohenau, 07 January 2018 (A). Photo author: N. Argentini. Presumably the same individual in flight, Puerto Hohenau, 09 January 2018 (B). Photo author: S.D. Ríos.

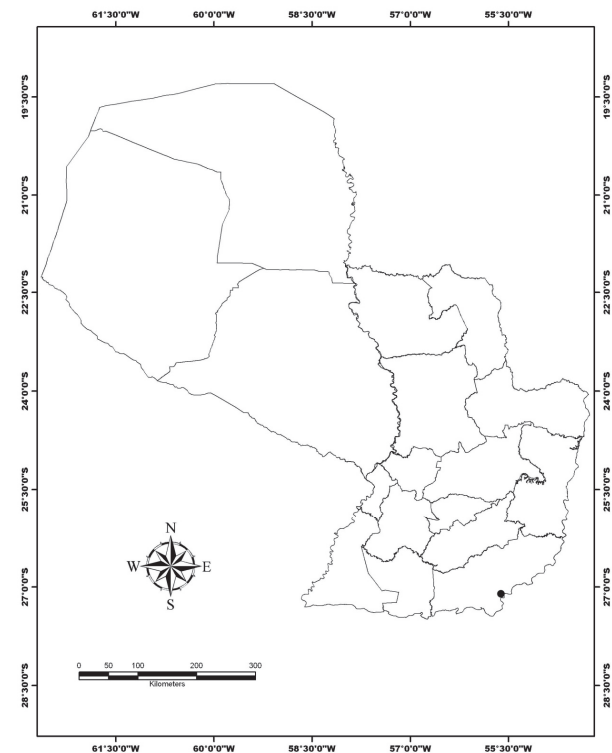
was larger, incorporating much of the now Argentine Misiones province. Berlepsch (1887) and Bertoni (1901) cited Azara as the basis for their inclusion of the species in the Paraguayan avifauna.

In much of the early literature there was a clear confusion between this species and Purplish Jay *C. cyanomelas*. Salvadori (1895) notes specimens of “*C. caeruleus*” from the Río Apa, area of northern Concepción department and Kerr (1892) reported the species as “very common” along the Pilcomayo River in Presidente Hayes department, citing a now lost specimen collected at Fortín Page (24°47'S; 58°45'W) (10 September 1890). Similarly, Kerr (1901) described the species as “nearly as numerous as *C. chrysops*” at Villa Concepción (23°24'09"S; 57°26'29"W), Concepción department and flocks of “seven or eight” individuals on 15 and 21 January 1897 at Waikthlatingmayalwa (= Misión Inglesa, 23°26'60"S; 58°13'60"W), Presidente Hayes department. However, the palm savannas and gallery forests that typify the Humid Chaco region explored by Kerr are completely different to the habitat preferred by the Azure Jay, and *C. cyanomelas* is common there to this day.

Oberholser (1902) reported an undated specimen of *C. heckelii* (= *C. caeruleus*) collected by William

Foster at Sapucái (25°40'04"S; 56°57'20"W), Paraguari department, but Hayes (1995) examined this specimen in the USNM and found it to be a *C. cyanomelas*. This specimen was also cited by von Ihering (1904) as his basis for including the species in the Paraguayan avifauna. Other specimens collected by Foster at the same locality during 1902 to 1904 and sent to the Natural History Museum, London, were identified as *C. caeruleus* by Chubb (1910), but Hayes (1995) confirmed that there are no Paraguayan specimens of Azure Jay in that museum. Grant (1911) then listed specimens from Humaitá (27°04'12"S; 58°30'08"W), Ñeembucú department (28 August 1909) and Curuzu Chica (= Antequera, 24°05'05"S; 57°11'50"W), San Pedro department (7 November 1909) describing it as “commonly observed north of Corrientes”. Again the habitat where these specimens were collected and the inference of abundance strongly indicates that they are *C. cyanomelas* as Hayes (1995) surmised.

Bertoni (1914, 1939) listed the species in both editions of his Catálogos, but only in the second edition did he provide a locality of “southwest Paraguay”, in reference to the Pilcomayo region and thus surely derived from Kerr (1892, 1901). Bertoni never claimed the species from the Atlantic Forests of Alto Paraná department where he resided for several decades, despite this being geographically and ecologically closer to the known range and requirements of the species. Other authors also listed



**Figure 2.** Puerto Hohenau, Itapúa department (27°08'S; 55°34'W), locality at which the species was observed in Paraguay.

the species for Paraguay (Laubmann 1940, Schmidt 1948, de Schauensee 1970, Dunning 1982, Contreras *et al.* 1990) but none provided any new information to justify the inclusion of *C. caeruleus* in the Paraguayan avifauna. The statement in Schade & Masi-Pallarés (1971) that the species is “very rare” was probably a reflection of the lack of information available rather than being based on actual reports.

Two more contemporary reports, albeit lacking documentation and exact localities, are by Contreras *et al.* (1989) from Lago Ypoá, Paraguari department without details and two birds seen west of Ciudad del Este, Canindeyú department during August 1977 (Ridgely & Tudor 1989). Del Castillo *et al.* (2004, 2005) treated the species as pending documentation on the basis of the Ridgely sight record, but it was subsequently retracted by the observer (del Castillo 2013). At this point there existed no documented report of the species in Paraguay, no details to support the correct identification of any of the published claims (except that of Azara) and no records from the area which Azara (1802) had stated that the species was restricted to. This led to del Castillo (2013) downgrading the species from “pending documentation” to “of possible occurrence”, in accordance with Hayes (1995).

### New record

The first confirmed Paraguayan record of *C. caeruleus* is an individual photographed by N.A. at Puerto Hohenau, Itapúa department (27°08'S; 55°34'W) on 05 January 2018 around 7:00 h and it was subsequently observed by all the authors on 09 January 2018 at the same locality around 8:20 h. The bird was in the company of a small flock of Plush-crested Jay *Cyanocorax chrysops*, being initially shy and less vocal than its group mates. Only upon squeaking did it become agitated, at that point separating from the rest of the flock and calling loudly so that recordings of the call could be made by O.R. (Rodríguez 2018 as XC 399021 and XC 399022). The bird was still present on 31 March 2018 when it was seen by Sofía, Matthew and Rob Clay.

The presence of a single bird rather than a flock and the location of the observation on the banks of the Paraná River opposite Misiones, Argentina, are perhaps suggestive of a vagrant individual rather than a permanent population, and the owners of the property where the bird was observed, who have resided at the property for three decades, said that the bird had arrived some 6 months previous and had been there ever since (A. Brouwer, pers. comm.). The Paraná River is particularly narrow at this point (approximately 1.1 km wide) and E. Krauczuk (*in litt.*) notes that a small population of Azure Jay is present at Gobernador Roca, Misiones province, Argentina (27°11'S; 55°28'W), approximately 15 km distant from

the Paraguay record. He stated that the species was previously regular at that locality, but has declined over the last decade, with very few individuals now being observed and typically in association with Plush-crested Jay. The causes of the decline are unknown.

Given the noisy and conspicuous nature of this species and the landowners' unfamiliarity with the species, it would seem sufficient to raise questions about a permanent population at this locality. However, it should be noted that this record is from the same area described by Azara as the historical species range, and searches for the species in the surrounding area may provide further data about the status of the species in Paraguay.

### Restriction of type locality

According to Article 76.1 (ICZN 1999) “the type locality of a nominal species-group taxon is the geographical (and, where relevant, stratigraphical) place of capture, collection or observation of the name-bearing type”. In summary it acts to fix a scientific name to a defined geographical population so that it can be retained in the event of future taxonomic changes. Typically this accompanies the type specimen, but in the case of this species the “type” is Azara's (1802) description.

The formal scientific description of Vieillot (1818) was derived entirely from Azara's (1802) description, and the type locality of “Paraguay” was allocated by proxy of it being the country in which Azara resided. In fact, Azara provided more detailed information about the distribution of the species in Paraguay in the introduction to the family, stating that the species occurred “around 27°S latitude”.

In the time of Azara Paraguayan territory was considerably greater, including much of what is today Misiones and Formosa provinces in Argentina, the land being ceded to Argentina as part of the reparations for the loss of the Triple Alliance War (1864–1870). Consequently, it is no longer clear whether the type locality of “Paraguay” provided by Vieillot even refers to Paraguay at all as currently understood. We consider that restriction of the type locality is desirable under ICZN Article 76A.2 (ICZN 1999). Article 76A.1.4. states that “as a last resort, and without prejudice to other clarification, localities within the known range of the taxon or from which specimens referred to the taxon had been taken” can be assigned as type locality. Given this new and reliable distributional data, we recommend that the type locality of this species be restricted to “Itapúa department, Paraguay at 27°S latitude”, thereby maintaining the link with Azara's original text, incorporating the only confirmed data about the species in Paraguay and negating the need for declaration of a neotype or more radical changes.

We highlight also the existence of syntypes in the

National Museum of Natural History, Leiden (RMNH 100787, 100788) (Dekker & Quaiser 2006) and in the Museum d'Histoire Naturelle de Paris (CG 2011-572, 2011-573) (Voisin & Voisin 2016) but consider that choosing a lectotype from these specimens unnecessarily breaks the historical link with Azara and note that none of these specimens is accompanied with precise locality data. Voisin & Voisin (2016) suggest that Vieillot may have examined the specimens included in their work justifying this with the statement that “Vieillot referred to the work of Azara (1809), cited a part of Azara's description and added a plumage description by himself”. However this is a misunderstanding, as the original Azara (1802) description contains all of the information subsequently repeated by Vieillot (1818) and in fact uses identical adjectives to describe the plumage.

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