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ARTICLE

Taxonomy of *Aburria* Reichenbach, 1853 (Aves, Galliformes, Cracidae) based on morphological characters

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Abstract. Within the South American Cracidae, the genus *Aburria* Reichenbach, 1853 is considered monotypic, while the closely related *Pipile* Bonaparte, 1856 contains up to five species accepted by some authors. That classification stands even though genetic and morphological studies have demonstrated that *Pipile* is rendered paraphyletic by *Aburria*. We provide an assessment of the status of those two genera and their species and subspecies based on morphological (plumage and morphometrics) and zoogeographical evidence. *Pipile* is a junior synonym of *Aburria,* and, based on the analysis of 305 specimens deposited in museums worldwide, 2,388 photos from citizen science databases, and 250 additional field records, we found consistent and unambiguous diagnostic characters for recognizing seven species of *Aburria: A. aburri* (Lesson, 1828), *A. cujubi* (Pelzeln, 1858), *A. cumanensis* (Jacquin, 1784), *A. grayi* (Pelzeln, 1870), *A. jacutinga* (Spix, 1825), *A. nattereri* (Reichenbach, 1862), and *A. pipile* (Jacquin, 1784).

Keywords. Neotropics; *Pipile;* Piping guans; South America; Wattled guan.

INTRODUCTION

Guans, along with chachalacas and curassows, are members of the galliform family Cracidae, the most endangered group of birds in the Americas, with about half its species threatened by extinction (IUCN, 2025). The name "guan" is commonly applied to species from six genera: *Oreophasis, Penelopina, Chamaepetes, Penelope, Aburria,* and *Pipile*. The systematics of the latter two genera have recently attracted attention, leading to conflicting views. Some consider the genus *Aburria* Reichenbach, 1853 as monotypic and containing only the Wattled Guan *Aburria aburri* (Lesson, 1828). The piping guans of the genus *Pipile* Bonaparte, 1856 currently comprise five accepted species: the Trinidad Piping-Guan *P. pipile* (Jacquin, 1784), the Red-throated Piping-Guan *P. cujubi* Pelzeln, 1858, the Blue-throated Piping-Guan *P. cumanensis* (Jacquin, 1784), the White-throated Piping-Guan *P. grayi* Pelzeln, 1870, and the Black-fronted Piping-Guan *P. jacutinga* (Spix, 1825). Furthermore, Natterer's Piping-Guan *P. nattereri* (Reichenbach, 1862) has been alternately recognized as a subspecies of either *P. cujubi* (current) or *P. cumanensis*.

Aburria and *Pipile* form a monophyletic clade with little genetic distance between them (Grau *et al.,* 2005; Chen *et al.,* 2021). The phylogenetic study of Grau *et al.* (2005) recovered *Pipile* as paraphyletic, pending the inclusion of *Aburria,* which led them to consider the former a junior synonym of the latter. That result was also supported by a phylogenetic analysis using a complete sampling of the species and genetics, external morphology, and osteology data by Frank-Hoeflich *et al.* (2007). Chen *et al.* (2021) recovered *Aburria* as the sister taxon to *Pipile,* although those authors had only two species of *Pipile* in their study. The synonymy has some precedent and support in the literature based on external morphology and osteology (*e.g.,* Delacour & Amadon, 1973, 2004; Haverschmidt & Mees, 1994; Silveira, 2003), but some checklists retain the two genera as distinct (*e.g.,* del Hoyo & Collar, 2014), notably the IOC World Bird List (Gill *et al.,* 2023) and the South American Classification

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Committee (Remsen Jr. *et al.,* 2023), while Pacheco *et al.* (2021) follow the results published by Grau *et al.* (2005) and Frank-Hoeflich *et al.* (2007), which had much broader taxonomic coverage.

In the past four decades, no attempts have been made to revise the group's taxonomy and consolidate the knowledge of the morphological features and geographic distribution of the species and subspecies involved. Mostly, species and subspecies have been relocated or combined, with their classification varying from one checklist to another (*e.g.,* del Hoyo, 1994; del Hoyo & Collar, 2014). Here, we provide an assessment of the status of *Aburria* and *Pipile* and their species and subspecies based on morphological (plumage and morphometrics) and zoogeographical evidence.

MATERIAL AND METHODS

We analyzed 306 specimens (skins) in natural history collections worldwide, of which 182 were directly analyzed and 124 studied via high-quality photographs (including type specimens when available). A list of the analyzed material is presented in Appendix 1, and the specimens are housed in the following collections: AMNH, American Museum of Natural History (New York, USA); COP, Colección Ornitológica Phelps (Caracas, Venezuela); EBRG, Estación Biológica de Rancho Grande (Carabobo, Venezuela); FMNH, Field Museum of Natural History (Chicago, USA); IAvH, Instituto Alexander von Humboldt (Villa de Leiva, Colombia); ICN, Colección del Instituto de Ciencias Naturales (Bogotá, Colombia); MHNT, Museu de História Natural de Taubaté Doutor Herculano Alvarenga (Taubaté, Brazil); MNHN, Muséum National d'Histoire Naturelle (Paris, France); MNRJ, Museu Nacional (Rio de Janeiro, Brazil); MPEG, Museu Paraense Emílio Goeldi (Belém, Brazil); MZUSP, Museu de Zoologia da Universidade de São Paulo (São Paulo, Brazil); NHMUK, Natural History Museum (Tring, UK); NMPC, National Museum Natural History (Prague, Czechia); NMW, Naturhistorisches Museum Wien (Vienna, Austria); RMNH, Naturalis Biodiversity Center (Leiden, The Netherlands); USNM, Smithsonian National Museum of Natural History (Washington, D.C., USA); ZMB, Museum für Naturkunde (Berlin, Germany); ZSM, Zoologische Staatssammlung München (Munich, Germany).

For morphological analysis, the previous identifications of museum specimens and photographs were ignored due to the long history of contradictory identifications and classifications. Each specimen was clustered into consistent morphological groupings, compared to type specimens and original descriptions, and assigned to a species (General Lineage Concept of Species *sensu* de Queiroz, 2007).

After a preliminary assessment of the specimens, a series of external morphological characters (15 qualitative and seven quantitative; Baldwin *et al.,* 1931; Baumel *et al.,* 1993) was defined that could be used for comparison among all specimens and that reflected the variation present. Measurements were taken using a Vernier caliper (precision 0.1 mm) or, for larger structures, with a metal ruler (precision 1 mm).

We selected the following qualitative characters: **C1:** Naked facial area: (1) large; (2) restricted to eye-ring; (3) absent (*i.e.,* covered by feathers). **C2:** Crest feather tips shape: (1) lanceolate; (2) rounded. **C3:** Crest feather rachis color: (1) corneous; (2) brown; (3) black. **C4:** Black area on crest feathers: (1) entire vexilla; (2) more than half vexilla; (3) only bordering rachis; (4) absent. **C5:** White feathers to the sides of the crest (towards the neck): (1) absent; (2) present. **C6:** Dewlap shape: (1) rounded; (2) triangular; (3) narrow/pendular. **C7:** Dewlap color: (1) blue to purple; (2) blue anterior and red posterior; (3) yellow to red. **C8:** Dewlap feathers: (1) complete feathers present; (2) only shafts present. **C9:** Alular feathers color: (1) black with a white strip in at least one of the feathers; (2) entirely black. **C10:** Lesser coverts color: (1) presence of white on edge and center of vexilla; (2) presence of white only on the edge of vexilla; (3) no white on vexilla. **C11:** Median coverts color: (1) white color present on a larger part of vexilla, only with tips black; (2) white color present only on the edge of vexilla; (3) no white on vexilla. **C12:** Greater coverts color: (1) white color present on both vexilla; (2) white color present on the entire external vexillum; (3) white color present only on edge of external vexillum; (4) no white on vexilla. **C13:** Breast and ventral feathers may present a white border on their vexillum, giving the bird a streaked appearance: (1) white streaks present, restricted to neck area; (2) white streaks present until anterior portion of ventral area; (3) white streaks present in entire ventral area; (4) white streaks absent. **C14:** Dorsal feathers streaks: (1) present; (2) absent. **C15:** Dorsal and caudal feathers iridescence: (1) greenish black; (2) bluish black; (3) purplish black.

Quantitative characters: **C16:** Bill length (from exposed culmen to tip). **C17:** Bill width (measured on the terminal region of the nostrils). **C18:** Bill height (or depth; measured on the terminal region of nostrils). **C19:** Wing length (from the most proximal portion of the wing to the tip of the longest remige). **C20:** Tail length (from the insertion of rectrices on the rump to the tip of the longest feather of the central pair). **C21:** Tarsometatarsus length (from the articulation of tarsus to the base of digit III). **C22:** Number of modified primaries (primary remiges with a tapered distal extremity).

To create the distribution maps, we included museum specimens, photographs from the online community science platform WikiAves (https://www.wikiaves.com.br; 2,388 in total), and field observations made by the senior author (LFS; about 250 records of all Brazilian taxa, made from 1998 to 2024). Specimens with uncertain provenance and photographs in which the species could not be determined with certainty were excluded. Literature records that were not tied to voucher specimens were excluded, as their identification cannot be confirmed.

Appendix 2 contains the localities and geographic coordinates of each analyzed specimen, WikiAves photographs, and new observations. The names were corrected and updated to current usage and spelling, with the

aid of Gazetteers whenever necessary. When not present in the data, Coordinates were derived using Google Earth. The distribution map was generated using QGIS software (https://qgis.org) using the map from Natural Earth (https://www.naturalearthdata.com).

A detailed history of the taxonomy of *Aburria* and *Pipile* is provided, including all species-level taxa. The results are presented below, followed by the Systematics section, in which we provide an updated classification based on our analysis. The Systematics section also includes an updated diagnosis and distribution for each taxon, as well as the synonymy and an abridged chresonymy referencing the main taxonomic studies (*i.e.,* works relevant to the clade's taxonomy, excluding publications such as general catalogs, checklists and field guides).

Taxonomic History

Jacquin (1784) described the first two species of this clade, classifying them as *Crax cumanensis* and *Crax pipile*. His descriptions were based on birds held at the Imperial Menagerie (Zoological Garden) in Vienna that were brought on a ship from South America through Martinique, which has led to some confusion regarding the type localities of the species (Vaurie, 1967a; see below). With access to specimens housed in a zoo, Jacquin's (1874) descriptions could include illustrations based on living animals, which was not usual for many Neotropical birds at the time. Both species were then transferred to the genus *Penelope* by Gmelin (1789).

Similarly, Merrem (1786) described *Penelope leucolophos* based on a live specimen kept by Mr. Ickens in Bremen, Germany. Merrem identified his species with Jacquin's *Crax cumanensis* and "l'Yacou" of Bajon (1777). Thus, this was not the third species described in this clade, as it is synonymous with *P. cumanensis* (Hellmayr & Conover, 1942; Vaurie, 1968).

Wied (1820) listed a *Penelope leucoptera* in his work; however, no accompanying information is provided and it represents, therefore, a *nomen nudum*. *Penelope jacutinga* was the actual third species in this clade, described by Spix (1825) from the Atlantic Forest and consisting of the same species listed by Wied. Lesson (1828) used the notes of Mr. Goudot to describe *Penelope aburri* from New Granada (present-day Colombia). Wied (1833) finally presented a valid description for his *P. leucoptera,* but by then, Spix's (1825) *P. jacutinga* had precedence.

Wagler (1830) was the first author to provide a taxonomic revision of these taxa, reassessing the genus *Penelope* as it was then defined. That author recognized *Penelope pipile* and *P. cumanensis* as valid, but synonymized *P. jacutinga* with *P. pipile;* no mention was made of *P. aburri* (likely due to the time frame). Wagler's (1830) classification was followed by Gray (1844), although the latter author included *P. aburri* in the genus.

Reichenbach (1853) introduced the genus *Aburria* to contain his *Aburria carunculata* (later shown to be a synonym of Lesson's *Penelope aburri*). A few years later, Bonaparte (1856) introduced the genus *Pipile,* containing *P. leucolophos* Merrem, 1786 (a junior synonym of Jacquin's *P. pipile*), *P. cumanensis,* and *P. nigrifrons* "Temminck" (understood as *P. jacutinga;* Hellmayr & Conover, 1942), as well as *P. argyrotis* Bonaparte, 1856 (which presently belongs to the genus *Penelope*).

Pelzeln (1858) then described a new species, *Penelope cujubi,* retaining the usage of the genus *Penelope* instead of the newly coined *Pipile*. Reichenbach (1862) started using the genus *Pipile* and described *P. nattereri* based on Pelzeln's (1858) description of some specimens that he identified as *P. cumanensis*. Reichenbach also proposed the name *Pipile jacquini* for Jacquin's *Crax pipile* and described *Pipile jacou* (a synonym of *P. cumanensis*) from Cayenne, French Guiana. Gray (1867) then described the last species in this clade: *Penelope* (*Pipile*) *jacquinii*. However, the name was already pre-occupied by *Pipile jacquini* Reichenbach, 1862, which led Pelzeln (1870) to coin the new name *Penelope grayi*.

Sclater & Salvin (1870) provided a synopsis of all Cracidae, accepting only *P. cumanensis, P. cujubi,* and *P. jacutinga* as valid species, along with *Aburria carunculata* (= *A. aburri*). Ogilvie-Grant (1897) reinstated *A. aburri* as having precedence over *A. carunculata* and followed Sclater & Salvin (1870) in accepting only those three valid species in *Pipile*. Coues (1900) argued that the name *Pipile* was already preoccupied by *Pipilo* Vieillot, 1816 (Passeriformes), and therefore proposed the new name *Cumana*. However, that assessment was incorrect, and *Pipile* is valid. The name *Cumana* was thus correctly disregarded by most authors, although a few adopted it (*e.g.,* Ihering, 1905; Ihering & Ihering, 1907; Bertoni, 1914). Notably, Ihering & Ihering (1907) disagreed with contemporaneous authors and considered *Cumana nattereri* as a valid species.

Hellmayr (1908) was the first to adopt trinomials in this group, recognizing the subspecies *P. cumanensis cumanensis, P. cumanensis grayi,* and *P. cumanensis nattereri*. While that decision was not immediately adopted (*e.g.,* the revision of *Pipile* by Salvadori, 1914, which maintains them as separate species), the subspecies later became ingrained in the literature of the group, though very inconsistently: virtually all combinations of species and subspecies have been proposed at some point. The validity of some subspecies was questioned by Naumburg (1930) based on overlaps in distribution and intermediate character states observed in some specimens. This, notably the synonymy of *P. c. grayi* and *P. c. nattereri,* was a contentious issue in *Pipile* taxonomy until very recently (see below). Todd (1932) described a new subspecies, *P. cumanensis naumburgae,* based on Naumburg's observations. That subspecies, however, was widely regarded as a synonym of *P. cumanensis nattereri,* with a few exceptions (*e.g.,* Peters, 1934).

The subsequent works were mostly catalogs and checklists, and the previous classifications (including the trinomials) were adopted to different degrees. Sometimes, the authors of such works based their decisions on additional data (*e.g.,* Hellmayr & Conover, 1942, when considering *P. cumanensis grayi* a synonym of *P. c. nattereri*), but arbitrary decisions were also made

(*e.g.,* Peters, 1934: *P. p. pipile* and *P. p. cujubi*). The next authoritative study was that of Vaurie (1968), who revised the status of all Cracidae taxa and proposed the following valid species and subspecies of *Pipile* (*Aburria aburri* remained separated): *P. pipile pipile, P. pipile cumanensis, P. pipile grayi, P. cujubi cujubi, P. cujubi nattereri,* and *P. jacutinga*. In their book *Curassows and Related Birds,* Delacour & Amadon (1973) recognized the same taxa as Vaurie (1968) but treated *Pipile* as a synonym of *Aburria*. Most subsequent studies did not accept the latter, keeping *Pipile* as a distinct genus. Notably, del Hoyo (1994), in the *Handbook of the Birds of the World,* recognized the following taxa: *P. pipile, P. cumanensis cumanensis, P. cumanensis grayi, P. cujubi cujubi, P. cujubi nattereri,* and *P. jacutinga*. Delacour & Amadon (2004), in the revised edition of their book, used different generic allocations in the text (*Aburria*) and in the figures (*Pipile*). Finally, del Hoyo & Collar (2014) recognized *P. grayi* as a distinct species from *P. cumanensis*.

Phylogenetic studies demonstrated that *Pipile* was a paraphyletic assemblage and, thus, should be regarded as a junior synonym of *Aburria* (Grau *et al.,* 2005; Frank-Hoeflich *et al.,* 2007). While most South American researchers have followed that assessment (*e.g.,* Pacheco *et al.,* 2021), it was not adopted by "global" (*i.e.,* Global North-led) committees and checklists (Gill *et al.,* 2023; Remsen Jr. *et al.,* 2023), although consistent evidence from different datasets was presented and phylogenetically analyzed.

RESULTS AND DISCUSSION

The specimens were grouped in morphologically cohesive populations according to the character states described above. Qualitative characters were very informative in clustering populations, with some states allowing for a quick and unambiguous diagnosis. Quantitative characters presented some differences among taxa, but those are minimal (Table 1) and, thus, of little taxonomic value. Sexual dimorphism in size was observed in all characters, with males being larger than females (Table 1). That allowed the identification of seven distinct and diagnosable species based on a unique combination of plumage and naked parts. As such characters have been historically employed for species recognition by previous authors (*e.g.,* Vaurie, 1968; Delacour & Amadon, 1973, 2004), the species recovered here represent taxa already described in the literature, although some reformulation and reinterpretation were necessary.

The seven species recognized here are: *Aburria aburri* (Lesson, 1828), *Aburria cujubi* (Pelzeln, 1858), *Aburria cumanensis* (Jacquin, 1784), *Aburria grayi* (Pelzeln, 1870), *Aburria jacutinga* (Spix, 1825), *Aburria nattereri* (Reichenbach, 1862), and *Aburria pipile* (Jacquin, 1784). The Systematics section further below provides a full taxonomic treatment of each taxon and a discussion of characters. Figures 1 and 2 present the diagnostic characters for each species, while Figure 3 shows the geographic distribution of each recognized taxon.

Morphologically, there is no definitive set of characters to justify a genus-level diagnosis of *Aburria aburri* in relation to *Pipile* spp. All character states observed in the former can be observed in groups of two or more species of *Pipile*. For instance, the thin dewlap is present in both *A. aburri* and *P. grayi,* while the blue cere can be seen in both *A. aburri* and *P. jacutinga* (Fig. 1). The only singular features of *A. aburri* are the absence of a distinct crest, the yellow color of the dewlap, and the overall black plumage. Those differences consist in a solid species-level diagnosis, but it is inadequate to distinguish an entirely separate genus. Still, the unique vocalization of *A. aburri* has been brought up as a possible reason for keeping it in a separate genus (del Hoyo & Collar, 2014, citing unpublished data), but no comparative analysis of the vocal repertoire was presented to justify this supposition.

Furthermore, an osteological study of the Cracidae (Silveira, 2003) concluded that osteological characters were not enough to distinguish species-level taxa, although it has proven useful at genus level. Due to their close similarity, Silveira (2003) suggested that *Pipile* should be considered a synonym of *Aburria*. The osteological analysis of Frank-Hoeflich *et al.* (2007) reached the same conclusion.

Grau *et al.* (2005) and Frank-Hoeflich *et al.* (2007) recovered *Pipile* as paraphyletic, pending the inclusion of *Aburria*. A similar result was obtained by Eo *et al.* (2009; although the position of *P. jacutinga* on the tree was uncertain), but it was not obtained by Chen *et al.* (2021), though the latter authors included only two species of *Pipile*. The exact relationship between the species should be reassessed in the future, by improving both specimen sampling and genetic coverage. Nevertheless, these studies agree on one front: there is little genetic distance between *Aburria* and *Pipile* (Grau *et al.,* 2005; Chen *et al.,* 2021). Such distance is similar to those observed in other galliform genera, such as *Crax* and *Gallus,* and smaller than in genera such as *Coturnix* and *Polyplectron* (Chen *et al.,* 2021). Finally, the divergence time between *Aburria aburri* and *Pipile jacutinga* is estimated to be during the Early Pliocene (Pereira *et al.,* 2002). This is, thus, a very young clade, which weakens the argument of keeping the two genera separate.

When all the above is considered together, the evidence makes a strong argument in favor of the synonymy of the two genera. Furthermore, as an added benefit, this decision avoids yet another monotypic genus, a type of taxon that adds very little value and information to a classification scheme if no significant differences can be observed.

Therefore, we follow Delacour & Amadon (1973, 2004), Grau *et al.* (2005), and Frank-Hoeflich *et al.* (2007), considering *Pipile* Bonaparte, 1856 synonymous with *Aburria* Reichenbach, 1853. Consequently, all taxa classified in *Pipile* are transferred to *Aburria: Aburria cujubi* (Pelzeln, 1858), *Aburria cumanensis* (Jacquin, 1784), *Aburria grayi* (Pelzeln, 1870), *Aburria jacutinga* (Spix, 1825), *Aburria nattereri* (Reichenbach, 1862) (see below), and *Aburria pipile* (Jacquin, 1784).

Table 1. Measurements of quantitate characters for all *Aburria* spp. Number of specimens analyzed, average value, minimum and maximum for males and females. The data for *A. aburri* and *A. pipile* was obtained from Vaurie (1967a, b).

Aburria spp.	n	Bill length			Bill width			Bill height			Wing length			Tail length			Tarsometatarsus length		
		Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
A. aburri	—	—	—	—	—	—	—	—	—	—	356,0	—	—	271,7	—	—	63,0	—	—
♂	—	—	—	—	—	—	—	—	—	—	367,4	—	—	274,7	—	—	64,0	—	—
♀	—	—	—	—	—	—	—	—	—	—	344,7	—	—	268,7	—	—	62,0	—	—
A. cujubi	33	32,0	29,0	35,0	13,0	11,0	14,0	13,5	12,0	16,0	321,0	300	370	272,5	270	320	57,0	54,0	67,0
♂	18	32,3	30,0	35,0	12,9	12,0	14,0	13,8	12,5	16,0	336,2	305	370	299,7	275	320	59,0	54,0	64,0
♀	15	31,5	29,0	33,0	12,7	11,0	14,0	13,0	12,0	14,0	322,3	300	335	294,0	270	310	58,1	55,0	67,0
A. cumanensis	11	31,5	30,0	35,0	12,8	11,5	14,5	12,8	11,0	15,0	315,4	305	330	287,2	265	320	60,0	54,0	67,0
♂	5	33,2	32,0	34,0	12,9	11,5	14,0	13,0	12,0	14,0	324,0	315	330	289,0	275	305	62,0	58,0	67,0
♀	6	31,2	30,0	35,0	13,3	12,0	14,5	13,2	12,0	15,0	314,2	305	325	290,8	265	320	60,0	59,0	62,0
A. grayi	18	30,1	28,0	33,0	11,9	11,0	14,0	12,5	10,0	14,0	323,0	290	360	291,0	260	335	58,7	45,0	65,0
♂	6	31,2	29,0	33,0	12,3	11,0	13,0	12,8	11,5	14,0	339,2	315	360	302,5	275	335	60,7	53,0	65,0
♀	12	30,1	28,0	32,0	11,8	11,0	14,0	12,4	10,0	14,0	319,2	290	360	290,9	260	320	58,8	55,0	64,0
A. jacutinga	20	33,0	30,0	37,0	12,4	11,0	14,0	13,0	12,0	14,5	332,6	305	370	307,6	275	340	61,2	57,5	64,0
♂	10	33,5	32,0	37,0	12,9	12,0	14,0	13,3	12,0	14,5	340,5	305	370	314,0	290	340	61,2	57,5	64,0
♀	10	32,5	30,0	34,5	12,2	11,0	13,5	12,6	12,0	14,0	324,5	310	345	303,0	275	325	60,8	57,5	63,5
A. nattereri	56	31,3	27,5	36,0	12,8	11,0	14,5	13,0	11,0	15,0	329,0	285	360	293,0	260	330	60,5	54,0	68,0
♂	28	32,8	27,5	36,0	13,3	11,0	14,5	13,3	12,0	15,0	339,6	290	360	301,2	260	330	61,8	55,0	68,0
♀	28	30,8	28,0	35,0	12,4	11,0	13,5	12,8	12,0	14,5	318,1	285	345	285,3	260	315	59,3	54,0	67,0
A. pipile	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
♂	—	31,5	—	—	—	—	—	—	—	—	361,5	—	—	286,0	—	—	60,5	—	—
♀	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Our analysis has shown seven well-circumscribed and diagnosable taxa within the genus, namely: *Aburria aburri, A. cujubi, A. cumanensis, A. grayi, A. jacutinga, A. nattereri,* and *A. pipile*. Our results align with almost all taxa described in the literature (the exception being the subspecies *naumburgae;* see below), including the decision of del Hoyo & Collar (2014) to elevate *A. grayi* to species level. The latter is easily diagnosable from the closely related *A. cumanensis* by its pendular light blue dewlap and white crest feathers with dark raquis, with a crest that extends to the sides of the neck (Fig. 1), in addition to differences in wing coverts (Fig. 2). These two species have little overlap of morphological characters. However, the dewlap, crest, and coverts might be challenging to observe in older museum specimens and some photographs, rendering the identification difficult in such cases. There is also no known overlap in their distribution (Fig. 3).

Notably, our results support the return of *A. nattereri* to the level of species based on the following morphological characters: a triangular dewlap, white crest feathers with varying amount of black, and a crest that extends to the sides of the neck (Fig. 1). There is a marked white panel on the wings formed by the coverts, which is a very useful diagnostic character for distinguishing this species from the closely related *A. cujubi* alongside the

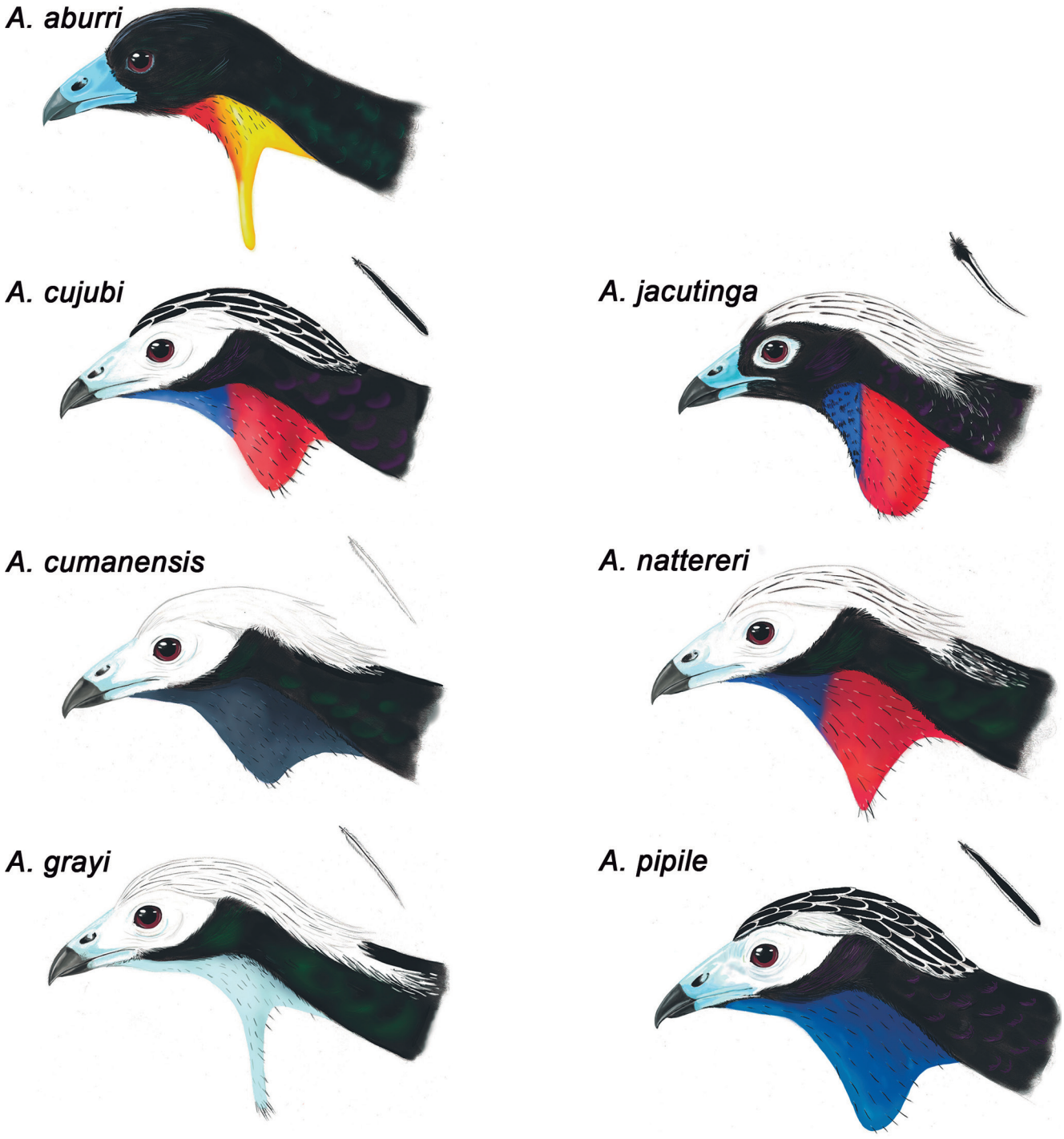

Figure 1. Diagnostic features on the head of each species: crest, crest feathers (detail), face, and dewlap.

color of the coverts (Fig. 2). As for the pair *A. cumanensis* and *A. grayi,* diagnosis can be complicated by poor preservation of some museum specimens and poor angle or lighting in photographs. This species has not always been identified as a separate taxon, and we believe this might be due to the wide array of morphological variation observed in it, particularly on the crest feathers, wing coverts, and the overall iridescence of the black body feathers. Nevertheless, *A. nattereri* has a well-circumscribed geographic distribution, with only small stretches of sympatry with *A. grayi* and *A. cujubi* along the borders of its range (Fig. 3). The subspecies *naumburgae* cannot be distinguished from nominate *nattereri.* It was described from the extreme northwest of *A. nattereri*'s range (Todd, 1932; Fig. 3) and can be confidently diagnosed as belonging to the latter.

Individuals with supposed intermediate character states (typically of crest and wing coloration) between some species pairs (*A. nattereri* and *A. cujubi, A. nattereri* and *A. grayi, A. cumanensis* and *A. grayi, A. cumanensis* and *A. cujubi*) have been reported in the literature and often considered hybrids (*e.g.,* Hellmayr, 1908; Naumburg, 1930; Vaurie, 1967a, 1968; Delacour & Amadon, 2004; del Hoyo & Collar, 2014). Most of the supposed intermediates or hybrids did not stand a closer investigation; using the unique diagnostic features delineated in this study, it was possible to assign them to a species confidently. A few specimens remained, however, that are difficult to classify and could either represent a morphological extreme or a hybrid. Nevertheless, apart from some observations of supposed mixed pairs and notes on hybridization in captivity (with *Penelope* spp.; del Hoyo *et al.,* 2014), no genetic data exists to support hybridization in most species' pairs. Nevertheless, one pair of species seems to hybridize, *A. cujubi* and *A. nattereri*; the specimens supporting these claims are discussed in the entry of *A. nattereri* in the Systematics section.

Another aspect that often confounds species distributions using photographic evidence is that people tend to notice and photograph outliers and "rare" animals more frequently for such online platforms (Rosa *et al.,* 2022). Thus, some records might represent birds with unusual morphology (as mentioned above) or even occasional vagrants. Therefore, photographic records close to the boundaries of species' distributions must be taken with extra care.

In summary, the seven taxa studied here can be considered as distinct species. They present a consistent set of morphological diagnostic features that allow precise identification; they are distributed geographically in distinct regions, with very little overlap in their ranges (Fig. 3); there are a handful of records of mixed pairs, but with poor evidence of continuing hybridization. Thus, there is good evidence to fulfill the requirements of different species concepts: phylogenetic (diagnosability) and biological/evolutionary/genetic (isolation and

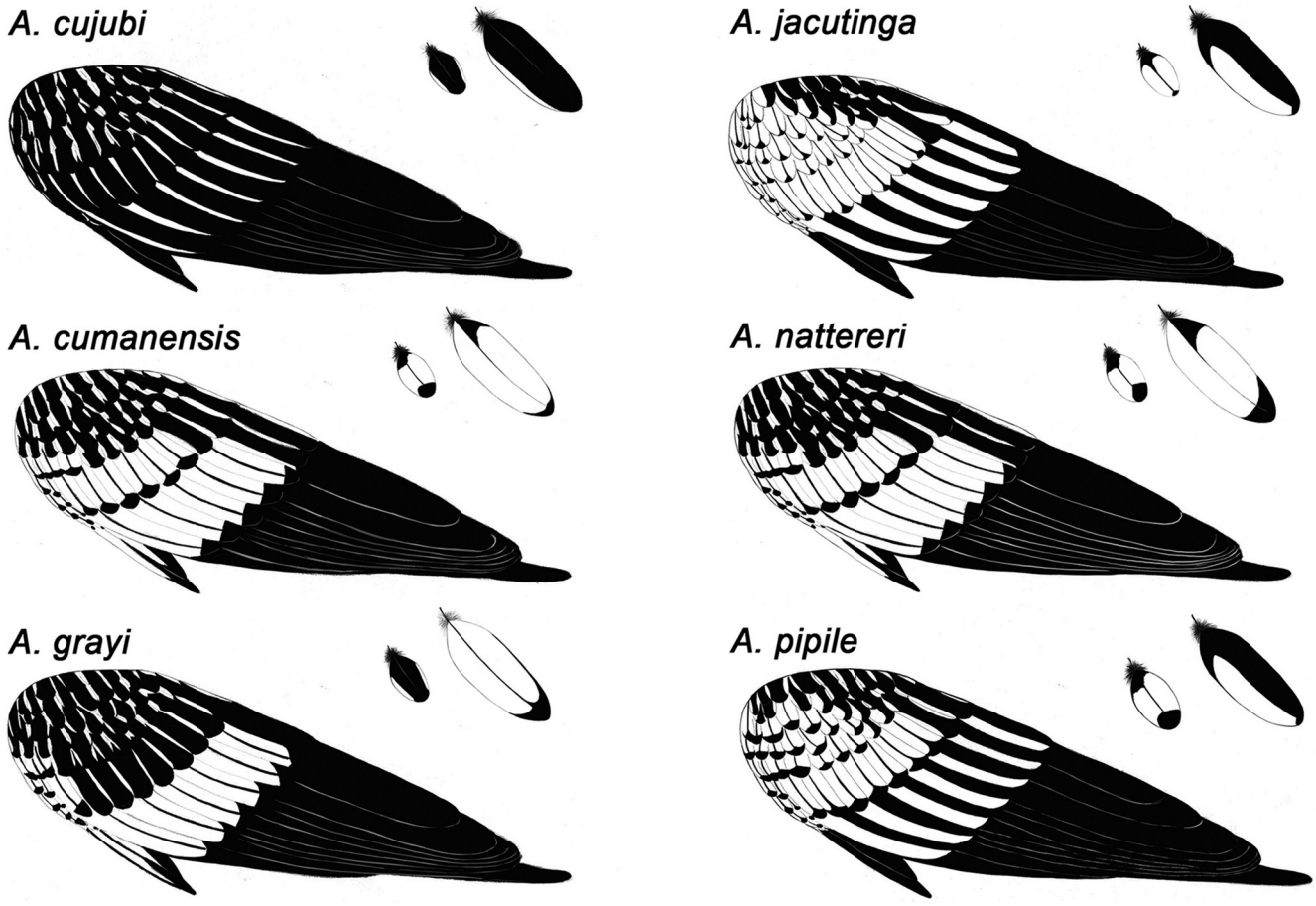

Figure 2. Diagnostic features on the wings of each species: wing panel, lesser and median coverts (detail, left), and greater coverts (detail, right).

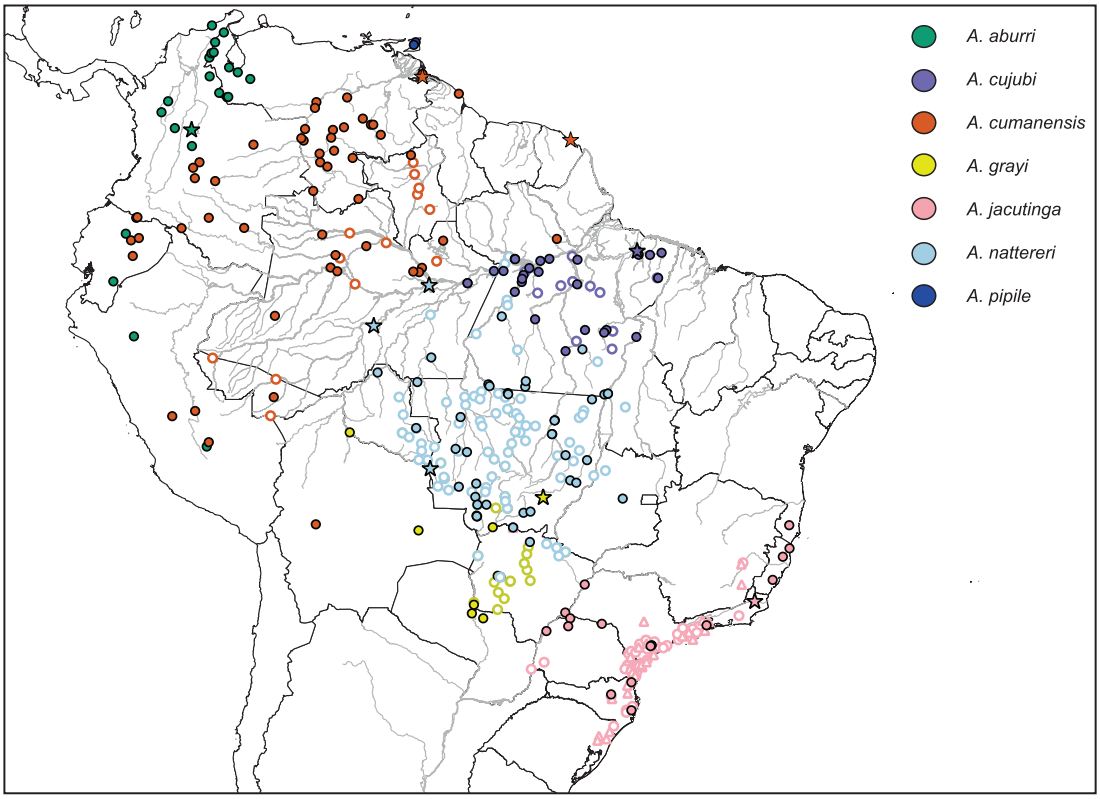

Figure 3. Geographic distribution of *Aburria* spp. Closed circles = museum specimens; open circles = photographic records (from citizen science sites); triangles = new observational records (by LFS); stars = type localities, including those of synonymized taxa (see Systematics section and the final table of Appendix 2).

little to no hybridization) (Cracraft, 1997; Ghiselin, 1997; Wheeler & Platnick, 2000; Baker & Bradley, 2006; Zachos, 2016).

Systematics

Order Galliformes
Family Cracidae
Genus *Aburria* Reichenbach, 1853

Aburria Reichenbach, 1853: 26.
Pipile Bonaparte, 1856: 877.
Opetioptila Sundevall, 1873: 118 [new name for *Aburria* Reichenbach, 1853 on unclear reason].
Cumana Coues, 1900: 65 [new name for *Pipile* Bonaparte, 1856 due to perceived preoccupation by *Pipilo* Vieillot, 1816 (Passeriformes)].

Type species: *Aburria carunculata* "Temminck" Reichenbach, 1853 [= *Penelope aburri* Lesson, 1828], by original designation.

Included species: *Aburria aburri* (Lesson, 1828), *Aburria cujubi* (Pelzeln, 1858), *Aburria cumanensis* (Jacquin, 1784), *Aburria grayi* (Pelzeln, 1870), *Aburria jacutinga* (Spix, 1825), *Aburria nattereri* (Reichenbach, 1862), *Aburria pipile* (Jacquin, 1784).

Diagnosis: Members of this genus can be distinguished from other cracids (and in particular from the closely related genus *Penelope*) by their developed dewlap, colored (bluish) cere, tail feathers lacking markings, and short tarsometatarsi.

Aburria aburri (Lesson, 1828) (Figs. 1, 2)

Penelope aburri Lesson, 1828: 215; Gray, 1844: unpaginated.
Penelope (*Penelope*) *aburri:* Lesson, 1831: 482.
Aburria carunculata Reichenbach, 1853: 26; Reichenbach, 1862: 141; Sclater & Salvin, 1870: 530.
Aburria aburri: Ogilvie-Grant, 1897: 254; Peters, 1934: 23; Hellmayr & Conover, 1942: 195; Vaurie, 1967b: 1; Vaurie, 1968: 247; Delacour & Amadon, 1973: 156, fig. 31, pl. 16; del Hoyo, 1994: 354, pl. 32, fig. 32; Pereira *et al.,* 2002: table 1; Delacour & Amadon, 2004: 145, fig. 29, pls. 3, 21; Grau *et al.,* 2005: 642; Frank-Hoeflich *et al.,* 2007: 252; del Hoyo & Collar, 2014: 72, fig. 24; Aguilar & Aguilar, 2012: 54, figs. 1-2; Chen *et al.,* 2021: fig. 1.

Type material: Uncertain.

Type locality: Mountains of New Granada, restricted to Muzo in Boyacá Province, Colombia, by Vaurie (1968).

Analyzed material: n = 27 (see Appendix 1 for details).

Diagnosis: Body and head covered by entirely black feathers with greenish iridescent hue. Cere blue. Crest absent. Dewlap is narrow and pendular, bright yellow with a reddish base. Legs yellow.

Geographic distribution: Colombia, western Venezuela, eastern Ecuador, Peru. From 450 m to 3,000 m altitude.

Remarks: This is the most easily recognizable species in the genus due to its completely back plumage and yellow dewlap. The feathers on the top of the head of *A. aburri* are short and do not constitute a proper crest, in sharp contrast to the other species, which are all crested. The legs are yellow, which is also in contrast to all other species, which have reddish legs.

It has been alluded that this species could contain unrecognized subspecies based on differences in size (larger individuals in Venezuela and Colombia) and on the iridescence of the feathers (greenish hue in Venezuela and Colombia, bluish in Ecuador and Peru; *e.g.,* Chubb, 1919; Chapman, 1926; Hellmayr & Conover, 1942; Vaurie, 1967b, 1968; Delacour & Amadon, 2004). However, the size differences do not seem to hold, and the different shades of bluish hue vary widely from southern Colombia to Ecuador and Peru (Vaurie, 1967b). Our analysis agrees with Vaurie (1967b, 1968) in that no subspecies-level taxa can be recognized within *A. aburri.*

This species is distributed along the eastern Andes, from northwestern Venezuela (Cerro del Cedro, specimen COP 9089) to southern Peru (near Cuzco, specimen USNM 273024). Altitudinally, it can occur higher than previously reported (*e.g.,* del Hoyo, 1994), up to 3,000 m in Colombia (specimen USNM 368532). It can occur in areas close to the distribution of *A. cumanensis* in Colombia, Ecuador, and Peru. These species occupy different altitudinal ranges and niches (*cf.* Delacour & Amadon, 2004); no hybrid morphology specimens have been encountered so far.

Aburria cujubi **(Pelzeln, 1858)**
(Figs. 1, 2)

Penelope cujubi Pelzeln, 1858: 328; Pelzeln, 1870: 284.
Pipile cujubi: Reichenbach, 1862: 153.
Pipile cujubi: Sclater & Salvin, 1870: 530; Ogilvie-Grant, 1897: 253; Salvadori, 1914: 55; Snethlage, 1914: 58; Hellmayr & Conover, 1942: 189.
Cumana cujubi: Coues, 1900: 65; Ihering & Ihering, 1907: 17.
Pipile pipile cujubi: Peters, 1934: 22.
Pipile cujubi cujubi: Vaurie, 1967a: 4, fig. 2; Vaurie, 1968: 247, fig. 20; del Hoyo, 1994: 354, pl. 32, fig. 30; Delacour & Amadon, 2004: pls. 3, 20; del Hoyo & Collar, 2014: 72, fig. 22.
Aburria pipile cujubi: Delacour & Amadon, 1973: 148, pl. 3; Delacour & Amadon, 2004: 141.
Aburria cujubi: Grau *et al.,* 2005: 642; Frank-Hoeflich *et al.,* 2007: 252.
Aburria cujubi cujubi: Pacheco *et al.,* 2021: suppl.

Type material: NMW 22309 (holotype).

Type locality: Brazil, Pará state; restricted to the city of Belém (Pinto, 1964; Vaurie, 1967a).

Analyzed material: n = 43 (see Appendix 1 for details).

Diagnosis: Crest feathers with rounded tips, black with white borders. Dewlap round, anterior portion blue, posterior portion red, sparsely covered by black feather shafts. Lesser, median, and greater coverts with white borders. Black alula. Body plumage black, purplish iridescent. Ventral feathers streaked white.

Geographic distribution: Brazil, in easternmost Amazonas state and Pará state (south of the Amazon River).

Remarks: This species is most similar to *P. nattereri,* from which it can be distinguished by its darker crest and wing, lack of crest feathers extending to the side of the neck, and the purplish hue of its body plumage. It can be distinguished from *A. cumanensis* by its blue and red dewlap, darker crest and wing, and purplish iridescence. The amount of back on the crest feathers and amount of white on the wing coverts of *A. cujubi* display some variation, even between individuals from the same locality. It is presently unknown whether this is solely intraspecific morphological variation or if it is related to the age of the individual.

The geographic distribution of this species reported in the literature is ambiguous in some cases (*e.g.,* Hellmayr & Conover, 1942; del Hoyo, 1994; Delacour & Amadon, 2004), due to the difficulty and confusion of diagnosing *A. cujubi* from *A. nattereri. Aburria cujubi* is restricted to the western Amazonas state and Pará state in Brazil, always south of the Amazon River (Fig. 3). In some areas, its distribution borders that of *A. cumanensis,* which is restricted to the north of the Amazon River. It has some overlap with *A. nattereri* and a few specimens suggesting hybridization were found, being discussed below in the entry for *A. nattereri.*

Aburria cumanensis **(Jacquin, 1784)**
(Figs. 1, 2)

I'Yacou: Bajon, 1777: 398, pl. 5.
Crax (*cumanensis*) Jacquin, 1784: 25, pl. 10.
Penelope leucolophos Merrem, 1786: 43, pl. 12.
Penelope cumanensis: Gmelin, 1789: 734; Wagler, 1830: 1109; Gray, 1844: unpaginated; Pelzeln, 1858: 330.
Pipile cumanensis: Bonaparte, 1856: 877; Reichenbach, 1862: 154.
Pipile leucolophos Bonaparte, 1856: 877; Reichenbach, 1862: 152.
Pipile Jacou Reichenbach, 1862: p. 154, pl. 271c, fig. 5056.
Pipile cumanensis: Sclater & Salvin, 1870: 529; Ogilvie-Grant, 1897: 250; Salvadori, 1914: 50; Snethlage, 1914: 57; Delacour & Amadon, 2004: pl. 17; del Hoyo & Collar, 2014: 72, fig. 20; Chen *et al.,* 2021: fig. 1.
Cumana cumanensis: Coues, 1900: 65; Ihering & Ihering, 1907: 16.
Pipile cumanensis cumanensis: Hellmayr, 1908: 97; Peters, 1934: 23; Hellmayr & Conover, 1942: 191; del Hoyo,

1994: 354, pl. 32, fig. 29; Delacour & Amadon, 2004: pls. 3, 20.
Pipile pipile cumanensis: Vaurie, 1967a: 4, fig. 2; Vaurie, 1968: 246, fig. 20.
Aburria pipile cumanensis: Delacour & Amadon, 1973: 148, pls. 3, 15; Delacour & Amadon, 2004: 141.
Aburria cumanensis: Grau *et al.,* 2005: 642; Frank-Hoeflich *et al.,* 2007: 252.
Aburria cumanensis cumanensis: Pacheco *et al.,* 2021: suppl.

Type material: Unknown.

Type locality: Venezuela, Orinoco River, near Cumana. Vaurie (1967a) argued that this type locality is probably mistaken, based on a captive bird from the Imperial Menagerie in Vienna. The delta of the Orinoco was suggested as the correct type locality by Phelps & Phelps (1958).

Analyzed material: n = 82 (see Appendix 1 for details).

Diagnosis: Crest feathers lanceolate, white to dirty white; raquis light yellowish brown to light brown. Dewlap triangular, purplish blue, sparsely covered by black feather shafts. Most lesser coverts with white borders (more pronounced on anterior feathers). Six to ten median coverts are white with black tips. Greater coverts white with black tips. Body plumage black, greenish iridescent. Ventral feathers streaked white.

Geographic distribution: Central and southern Venezuela (along Orinoco River), Guyana, Suriname, French Guiana, northern Brazil (Amapá, Roraima, Acre, northern Pará, northern Amazonas), Colombia, Ecuador, central and southeastern Peru.

Remarks: This species is similar to *A. grayi,* from which it can be distinguished by a whiter and shorter crest (it does not extend to the sides of the neck), a purplish-blue dewlap, and the whitish wing coverts and wing panel (Fig. 2). The crest feathers are considerably variable in *A. cumanensis,* and the rachis can have a corneous or sometimes brownish color. Nevertheless, the overall white or "dirty white" crest is still useful in diagnosing this species. Many authors have also considered the iridescent green hue of the black body plumage of *A. cumanensis* a diagnostic character (*e.g.,* Sclater & Salvin, 1870; Hellmayr, 1908; Naumburg, 1930), but this character is sometimes not observable.

Aburria cumanensis is also reminiscent of *A. pipile* due to the blue color of the dewlap, although it is purplish-blue in the former and cobalt blue in the latter (Fig. 1). The latter can also be distinguished by its blacker crest and its body plumage bearing a purplish iridescent hue.

This species has a wide distribution in northern and western South America, coming in close contact with *A. aburri* in some parts of the Andes (Fig. 3). In Brazil, *A. cumanensis* is restricted to northern (north of the Amazon River) and western Amazon, while *A. cujubi* occurs in the eastern Amazon and *A. nattereri* in the southern Amazon (both latter species are restricted to the south of the Amazon River) (Fig. 3). The species might come in close contact in some regions (Fig. 3), but there is no overlap in distribution. Finally, the purported overlap in the distribution of *A. cumanensis* with *A. grayi* reported in the literature is mistaken (see entry of *A. grayi* below).

Aburria grayi (Pelzeln, 1870) (Figs. 1, 2)

Penelope (*Pipile*) *Jacquinii* Gray, 1867: 8.
Penelope Grayi Pelzeln, 1870: 284 [new name for *Penelope jacquinii* Gray, 1867, which was pre-occupied by *Pipile jacquini* Reichenbach, 1862 (= *Pipile pipile* Jacquin, 1784)].
Pipile cumanensis grayi: Hellmayr, 1908: 98; Peters, 1934: 23; del Hoyo, 1994: 354, pl. 32, fig. 29; Delacour & Amadon, 2004: pls. 3, 20.
Pipile grayi: Salvadori, 1914: 52; del Hoyo & Collar, 2014: 72, fig. 21.
Pipile pipile grayi: Vaurie, 1967a: 4, fig. 2; Vaurie, 1968: 247, fig. 20.
Aburria pipile grayi: Delacour & Amadon, 1973: 148, pl. 3; Delacour & Amadon, 2004: 141.
Aburria cumanensis grayi: Pacheco *et al.,* 2021: suppl.

Type material: NHMUK 1858.6.25.11 (holotype).

Type locality: Peru (Gray, 1867), emended to Paraguay by Laubmann (1939). As the holotype's origin was not known, Vaurie (1967a) suggested the origin of Pelzeln's specimens (Pelzeln, 1870) as an emended type locality: Sangrador, in Mato Grosso state, Brazil (referring to what is known today as Rio Sangradouro Grande).

Analyzed material: n = 30 (see Appendix 1 for details).

Diagnosis: Crest feathers thin, pure white with black rachis. Dewlap thin, pendular, cerulean, sparsely covered by black feather shafts. White feathers on the side of the crest towards the neck. Lesser coverts with white borders, occasionally entirely black. Four to five median coverts are white with black tips. Greater coverts white. Alula with white band on the external vane. Body plumage black, greenish to bluish iridescent. Ventral feathers streaked white.

Geographic distribution: Bolivia, western Brazil (Rondônia, Mato Grosso, and Mato Grosso do Sul states), Paraguay (Concepción department).

Remarks: This species is most similar to *A. cumanensis,* which has been widely regarded as conspecific until rather recently (del Hoyo & Collar, 2014). Our analysis supports its status as a distinct species, diagnosed by its pendular grayish blue dewlap, white crest feath-

ers with black shaft, crest extending to the sides of the neck, and mostly black lesser and median wing coverts (Fig. 2). The white crest feathers extending to the side of the neck (Fig. 1) are a remarkably good diagnostic feature, and one that has been pointed out by only a few authors (Pelzeln, 1858; Sclater & Salvin, 1870; del Hoyo & Collar, 2014).

The distribution of *A. grayi* is considered to overlap with that of *A. cumanensis* in southeastern Peru and northern Bolivia (Vaurie, 1967a, 1968; del Hoyo & Collar, 2014), but this overlap was not observed in the available specimens and photographs studied here. All SE Peruvian specimens (Appendix 1) previously assigned to *A. grayi* were misidentified and belong instead to *A. cumanensis*. All Bolivian specimens, on the other hand, belong to *A. grayi*. The distributions of the two species, therefore, do not seem to overlap (Fig. 3), and no intermediate specimens (or potential hybrids) were observed.

Aburria grayi, however, meets *A. nattereri* in a narrow area in midwestern Brazil stretching from Rondônia to Mato Grosso do Sul state (Fig. 3). Some hybrid specimens between *A. grayi* and *A. nattereri* have been mentioned in the literature (*e.g.,* Hellmayr, 1908; Vaurie, 1968; Delacour & Amadon, 2004) and several photographs taken at Poconé, Mato Grosso (*e.g.,* WA1916807, WA5606786, WA5559901, WA4603235), including mixed pairs (*e.g.,* WA5655937, WA5124959) confirm the presence of this hybrid zone. However, whether these F1 hybrids can reproduce beyond F2 generations is unclear. Poconé is a well-known collecting locality, and hybrids were not observed in older museum specimens. Human-landscape modifications through time may provide the conditions for the recent contact of both species at this site, and this hybrid zone needs further research and monitoring.

Finally, it has been argued that in the past, the range of *A. grayi* had some overlap with *A. jacutinga* in Concepción and Amambay departments in Paraguay, with no interbreeding (Vaurie, 1967a; del Hoyo & Collar, 2014), but that could not be confirmed with the available specimens and photographs.

Aburria jacutinga **(Spix, 1825)**
(Figs. 1, 2)

Penelope leucoptera Wied, 1820: 260 [*nomen nudum*].
Penelope Jacutinga Spix, 1825: 53, pl. 70; Pelzeln, 1870: 283.
Penelope nigrifrons ("Temminck") Lesson, 1831: 482.
Penelope leucoptera Wied, 1833: 544.
Pipile leucolophos: Reichenbach, 1862: 152 [non Merrem].
Pipile nigrifrons: Reichenbach, 1862: 154.
Pipile jacutinga: Sclater & Salvin, 1870: 530; Ogilvie-Grant, 1897: 251; Hellmayr, 1906: 689; Salvadori, 1914: 53; Peters, 1934: 23; Hellmayr & Conover, 1942: 190; Vaurie, 1967a: 5, fig. 2; Vaurie, 1968: 247, fig. 20; del Hoyo, 1994: 354, pl. 32, fig. 31; Pereira *et al.,* 2002: table 1; Delacour & Amadon, 2004: pls. 3, 19, 20, 45; del Hoyo & Collar, 2014: 72, fig. 23; Chen *et al.,* 2021: fig. 1.
Cumana jacutinga: Coues, 1900: 65.
Cumana jacutinga: Ihering & Ihering, 1907: 17.
Aburria jacutinga: Delacour & Amadon, 1973: 150, fig. 30, pl. 3; Delacour & Amadon, 2004: 143, fig. 28; Grau *et al.,* 2005: 642; Frank-Hoeflich *et al.,* 2007: 252; Pacheco *et al.,* 2021: suppl.

Type material: ZSM-ORN00000195 (holotype).

Type locality: Brazil, between Bahia and Rio de Janeiro states.

Analyzed material: n = 23 (see Appendix 1 for details).

Diagnosis: Almost no bare skin on the head; featherless eye ring whitish blue. Crest feathers lanceolate to rounded, white with black base gradually becoming white towards the tip, black rachis. Dewlap rounded, anterior portion blue, posterior bright red; covered by black feathers on the base. Lesser coverts and 15 to 20 median coverts white with black tips. Greater coverts with white external vane. Body plumage black, purplish iridescent. A large number of ventral feathers streaked white.

Geographic distribution: Eastern to southernmost Brazil (from Bahia to Rio Grande do Sul states), southeastern Paraguay, and northeastern Argentina (Misiones province).

Remarks: This species is easily diagnosable by its black face with white eye ring and the stark blue cere. Previous mentions of sexual dimorphism in plumage (crest feathers size and dorsal feather colors; Wied, 1833) were not substantiated by our analysis. *Aburria jacutinga* is the largest bird in the genus in overall body size, together with *A. pipile* (Table 1; *cf.* Vaurie, 1968).

Due to the color of the dewlap, *A. jacutinga* might seem similar in appearance to *A. cujubi* and *A. nattereri,* although its black face with white eye-ring is unmistakable (Fig. 1). The white wing panel of *A. jacutinga* and the purplish iridescent hue of its body feathers are similar to what is observed in *A. pipile* (Fig. 2).

A few variable characters could be observed in *A. jacutinga*. The amount of black in the crest feathers is variable among individuals, as well as the shape of those feathers, which are usually lanceolate but can also have a more rounded tip. The number of white "streaks" observed on the side of the neck (extending from the crest) and on the ventral region of the animal is also variable. Even though the latter character is not diagnostic, overall, *A. jacutinga* seems to display more white streaks on the ventral region.

In the phylogenetic analysis of Grau *et al.* (2005), *A. jacutinga* was recovered as the sister taxon to a clade formed by all other *Aburria* spp. In the following node, *A. aburri* branched out (Grau *et al.,* 2005). Thus, it is possible that some features shared by these species (face covered by black feathers and the blue cere) are ancestral character states in the genus. Nevertheless, a new phylogenetic study containing all species and additional genetic markers is necessary to test such hypotheses.

Aburria jacutinga is distributed from southern Bahia state to southern Brazil and west to southeastern Paraguay and Misiones province in Argentina (Fig. 3). Even though it is distributed over a wide geographic area, it is rarely found outside protected areas such as national parks and other nature reserves (Brooks, 2006; Silveira *et al.,* 2008).

In the past, it was considered that the range of *A. jacutinga* had some overlap with that of *A. grayi* in Concepción and Amambay departments in Paraguay, without interbreeding (Vaurie, 1967a; del Hoyo & Collar, 2014). We could not confirm that assertion based on the specimens and photographs available. In any event, *A. jacutinga* is presently not known from those departments (del Hoyo & Collar, 2014).

Aburria nattereri (Reichenbach, 1862) (Figs. 1, 2)

Penelope cumanensis: Pelzeln, 1858: 330 [in part, non Jacquin, 1784].
Pipile Nattereri Reichenbach, 1862: 154, pl. 271c, fig. 5060.
Penelope Nattereri: Pelzeln, 1870: 283.
Cumana nattereri: Ihering & Ihering, 1907: 17.
Pipile cumanensis nattereri: Hellmayr, 1908: 96; Naumburg, 1930: 64; Peters, 1934: 23; Hellmayr & Conover, 1942: 193.
Pipile nattereri: Salvadori, 1914: 51.
Pipile cumanensis naumburgae Todd, 1932: 213; Peters, 1934: 23.
Pipile cujubi nattereri: Vaurie, 1967a: 4, fig. 2; Vaurie, 1968: 247, fig. 20; del Hoyo, 1994: 354, pl. 32, fig. 30; Delacour & Amadon, 2004: pls. 3, 20; del Hoyo & Collar, 2014: 72, fig. 22.
Aburria pipile nattereri: Delacour & Amadon, 1973: 148, pl. 3; Delacour & Amadon, 2004: 141.
Aburria cujubi nattereri: Pacheco *et al.,* 2021: suppl.

Type material: NMW 22285 and 22286 (syntypes).

Type locality: The type locality of this species is often considered to be Rio das Flexas in Mato Grosso state, Brazil. However, that assumption is erroneous. As explained by Schifter *et al.* (2007), Reichenbach's (1862) description was based on Pelzeln (1858), who only had the two specimens listed above for his study (identified by him as *A. cumanensis*). Hence, those specimens are syntypes, and the correct type localities are: Ilha do Carvalho on Rio Guaporé (Mato Grosso state) and Lago de Manaqueri on Rio Solimões (Amazonas state). Pelzeln (1858) also lists the following other localities (rivers) for *A. cumanensis* (including what would later be described as *A. nattereri*): Rio das Flexas, Rio Madeira, Rio Negro, and Rio Branco. However, the type localities of *A. nattereri* should remain only Ilha do Carvalho and Lago de Manaqueri.

While the latter is a rather precise locality, the former (Ilha do Carvalho) was largely uncertain, even to Vanzolini (1993), who researched the itineraries of Johann Natterer in Brazil. However, Da Fonseca (1880) reported that Ilha do Carvalho is around 4 km in length, located where the Rio Verde joins the Rio Guaporé to the north of the Vila Bela municipality. Da Fonseca (1880) also provided a map with the locality noted. With the kind help of André C. De Luca, we could pinpoint the locality on Google Earth at the coordinates 13°59′49.9″S, 60°23′41.6″W, close to the border with Bolivia (De Luca, *pers. comm.,* 2023).

Analyzed material: n = 76 (see Appendix 1 for details).

Diagnosis: Crest feathers lanceolate to round, white to yellowish white, with varying amounts of black; rachis black to light yellowish brown. Dewlap's anterior portion is blue, and the posterior portion is bright red, sparsely covered by black feather shafts. Lesser coverts with white borders. Six to seven median coverts are white with center and tip black. External vane of the alula with a white band. Body plumage is black, greenish to bluish iridescent; variation in the same individual is possible. Ventral feathers streaked white.

Geographic distribution: Brazil, in the states of Amazonas (south of the Amazon River), Rondônia, Pará, Mato Grosso, Tocantins, Goiás, and northern Mato Grosso do Sul.

Remarks: This taxon is herein elevated from a subspecies of *A. cujubi* to a full species based on a consistent set of diagnostic features and a geographic distribution restricted to southern Amazon and the Cerrado. The subspecies *naumburgae* described by Todd (1932) is its synonym.

Throughout the taxonomic history of the genus, many authors have proposed that *nattereri* represented a distinct entity (*e.g.,* Reichenbach, 1862; Hellmayr, 1908; Naumburg, 1930; Hellmayr & Conover, 1942; Delacour & Amadon, 2004), although it has proven difficult to diagnose it. According to our analysis, that confusion might be due to the intrinsic variability seen in some plumage characters. The crest feathers vary from lanceolate to round, white to yellowish white with varying amounts of black, with a rachis that can vary from black to light yellowish brown; sometimes, this variation may be present in a single individual. The crest can extend to varying degrees to the sides of the neck (a feature also observed in *A. grayi* and *A. jacutinga*). The body plumage can have a greenish to bluish iridescence, and this can also vary in the same individual.

Even though the *nattereri* taxon was for quite a while considered a subspecies of *A. cumanensis,* it is simple to diagnose both based on the shape and color of the dewlap in *A. nattereri* (Fig. 1), as well as by the body plumage having a mixture of green and blue iridescence. Later, *A. nattereri* was considered a subspecies of *A. cujubi* (*e.g.,* Vaurie, 1967a, 1968; del Hoyo, 1994; del Hoyo & Collar, 2014), with which it shares a closer morphological similarity as well as an overlapping distribution. Overall, *A. nattereri* can be diagnosed from *A. cujubi* by its whiter crest feathers (Fig. 1) and the presence of a white pan-

el on the wings resulting from a larger amount of white on its coverts, most notably the median and greater coverts (Fig. 2).

The geographic distribution of *A. nattereri* is much larger than previously recognized in the literature (*e.g.,* del Hoyo, 1994; Delacour & Amadon, 2004); it inhabits a large area in central and northern Brazil (Fig. 3). It has a narrow overlap zone with *A. grayi* to the east, and it occurs in sympatry with *A. cujubi* over a wide area (Fig. 3). It does not have an overlap with *A. jacutinga* (*contra* Vaurie, 1968).

Naumburg (1930) mentioned birds with intermediate features between *A. nattereri* and *A. grayi* (notably near the Roosevelt River), but the present study does not support that: all specimens from that area could be easily diagnosed as *A. nattereri.* Further specimens from the overlap area can be diagnosed as either one or the other species, and no real intermediate (or potential hybrid) between *A. nattereri* and *A. grayi* could be found.

However, a few potential hybrid specimens of *A. nattereri* and *A. cujubi* were found. In eastern Amazonas state, all specimens from Lago Batista area display intermediate states for crest characters (feather shape and color) and wing panel (color of coverts and alular feathers). Specimens MNRJ 20572 and 20616, and MZUSP 22031 and 22053, are intermediate in all characters, while specimens MNRJ 20546 and 20547 are intermediate only in crest characters (wing characters are typical of one or the other species). Further potential hybrid specimens showed intermediate crest and wing character states in Pará state (rivers Jamauchim and Iriri; MPEG 6558 and 10604, respectively).

Aburria pipile (Jacquin, 1784) (Figs. 1, 2)

Crax (*Pipile*) Jacquin, 1784: 26, pl. 11.
Penelope Pipile: Gmelin, 1789: 734; Pelzeln, 1858: 329.
Penelope (*Penelope*) *pipile:* Lesson, 1831: 482.
Penelope pipile: Wagler, 1830: 1109; Gray, 1844: unpaginated, pl. unnumbered, fig. 2.
"Penelope" pipile: Reichenbach, 1853: 26.
Pipile Jacquini Reichenbach, 1862: 154 [new name for *Crax pipile* Jacquin, 1784].
Pipile pipile: Salvadori, 1914: 56; Hellmayr & Conover, 1942: 188; del Hoyo, 1994: 354, pl. 32, fig. 28; Delacour & Amadon, 2004: pls. 3, 18, 20; del Hoyo & Collar, 2014: 72, fig. 19.
Cumana pipile: Coues, 1900: 65.
Pipile pipile pipile: Peters, 1934: 22; Vaurie, 1967a: 3, fig. 2; Vaurie, 1968: 246, fig. 20.
Aburria pipile pipile: Delacour & Amadon, 1973: 148, pl. 3; Delacour & Amadon, 2004: 141.
Aburria pipile: Grau *et al.,* 2005: 642; Frank-Hoeflich *et al.,* 2007: 252.

Type material: Unknown.

Type locality: Venezuela, Orinoco River, near Cumana. Vaurie (1967a) argued that this type locality is probably mistaken, based on a captive bird from the Imperial Menagerie in Vienna, and suggested Trinidad as type locality, considering that the species is restricted to that island.

Analyzed material: n = 3 (see Appendix 1 for details).

Diagnosis: Crest feathers rounded, black with white borders. Dewlap round, cobalt blue, sparsely covered by black feather shafts. 15 to 20 lesser and median coverts on average are white with black tips. Greater coverts white with black tip. Alula black. Body plumage black, purplish iridescent. Ventral feathers streaked white.

Geographic distribution: Trinidad.

Remarks: This species is endemic to Trinidad and is easily diagnosable from the others by the cobalt blue dewlap (Fig. 1) and the purplish iridescent hue of its body plumage. *Aburria pipile* has sometimes been considered a congener of or even synonymous with *A. cujubi* and *A. cumanensis* (*e.g.,* Sclater & Salvin, 1870). With the former, *A. pipile* shares the rounded and mostly black crest feathers, and with the latter it shares a blue dewlap (though it is cobalt blue in *A. pipile* and purplish blue in *A. cumanensis*).

On the other hand, Hellmayr & Conover (1942) considered *A. pipile* closer to *A. jacutinga* rather than to *A. cujubi* or *A. cumanensis.* Indeed, the wing panel and wing coverts of *A. pipile* are very similar to that of *A. jacutinga* (Fig. 2), and so is the purplish hue of the body plumage. However, the phylogenetic study of Grau *et al.* (2005) suggests that *A. pipile* is the sister taxa of *A. cumanensis,* with *A. cujubi* being the sister to both. *Aburria jacutinga* is the sister to all other *Aburria* spp. (Grau *et al.,* 2005).

Due to its restricted geographic distribution in the forests of Trinidad (Fig. 3), this species is critically endangered, the only species in the genus to have such status (Brooks, 2006).

CONCLUSION

Pipile Bonaparte, 1856 is considered a junior synonym of *Aburria* Reichenbach, 1853, which includes seven species:
— *Aburria aburri* (Lesson, 1828);
— *Aburria cujubi* (Pelzeln, 1858);
— *Aburria cumanensis* (Jacquin, 1784);
— *Aburria grayi* (Pelzeln, 1870);
— *Aburria jacutinga* (Spix, 1825);
— *Aburria nattereri* (Reichenbach, 1862);
— *Aburria pipile* (Jacquin, 1784).

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SUPPLEMENTARY MATERIAL

Appendix 1: List of analyzed specimens, including their registration number and collection data.

Appendix 2: Tables with the geographic coordinates of analyzed specimens, WikiAves photographs, new observations, and type localities used to build the distribution map (Fig. 3).

APPENDIX 1: SPECIMENS ANALYZED

Below are listed all specimens analyzed for the present study, with their accompanying collection data, arranged by country and then by province/state. Specimens for which the sex is known are indicated accordingly by ♀ or ♂; if no symbol is present, the sex is unknow.

Aburria aburri (Lesson, 1828)

COLOMBIA: unknown (NHMUK 1889.6.1.255). **Antioquia:** Antioquia (NHMUK 1889.6.1.258), Valdivia; Antioquia (NHMUK 98.10.6.2). **Cundinamarca:** Santa Fé de Bogotá (NHMUK 1889.6.1.259). **Huila:** PNN Cueva de los Guácharos (IAvH 247 ♂). **La Guajira:** Los Gorros, Old Trail Fonseca, Riohacha (USNM 383377 ♀); Tierra Nueva, Sierra Negra (USNM 368532 ♀). **Meta:** Ridge Camp, SW of Entrada, Macarena (NHMUK 1950.64.59 ♂). **Nariño:** Basin of Rumiyaco and Ranchería rivers (IAvH 10451).

ECUADOR: Morona-Santiago: Chigüinda, Villa Gomez (NHMUK 1889.6.1.256, NHMUK 1889.6.1.257). **Napo:** Baeza (NHMUK 1925.12.24.653 ♂).

PERU: Amazonas: Santa Rosa de Huayabamba (NHMUK 1899.6.30.764 ♀). **Cuzco:** Río San Miguel (USNM 273024 ♀).

VENEZUELA: Barinas: Calderas, Barinas (COP 81090). **Mérida:** Limones (NHMUK 1914.11.26.11 ♀, NHMUK 1914.11.26.12 ♀); Mérida: Santa Elena, Río Perdido, Mérida (COP 62905 ♀, COP 62906). **Táchira:** Cumbre, Cerro El Teteo, Burgua (COP 60527 ♂); El Salao, Burgua (COP 60773 ♂). **Zuila:** Cerro Alto del Cedro (COP 9089 ♀); Cerro Pejochaina, Perijá-Zulia (COP 54438 ♂, COP 54457 ♂); La Sabana, Rio Negro, Perijá (COP 5997 ♂, COP 5998 ♀, COP 5999 ♂).

Aburria cujubi (Pelzeln, 1858)

BRAZIL: Amazonas: Lago do Batista, Rio Amazonas (MNRJ 20546 ♂), Villa Bela, Imperatriz, Lago Andira, Rio Amazonas, S bank (AMNH 217463 ♂). **Goiás:** Rio Araguaia, Posto Indígena dos Xambioá (MPEG 34763). **Pará:** Belém (MZUSP 43879 ♂, NMW 22309 holotype); Caxiricatuba, Rio Tapajós (MNRJ 20548 ♀, MNRJ 20570 ♀, MZUSP 20832 ♂); Curuatinga, tributary of Curuá Una, Prainha municipality (MNRJ 25233 ♂, MNRJ 25234 ♀, MNRJ 25235 ♀, MNRJ 25236 ♂, MNRJ 25237 ♀, MNRJ 25238 ♂, MNRJ 25239 ♀); Fordlândia, Rio Tapajós (MZUSP 46451 ♀); Igarapé Fortaleza, right margin of Rio Xingu (MPEG 28037 ♀); Juruti, Capiranga, Igarapé Mutum (MPEG 58242 ♂); Lago Cuipeua, Rio Amazonas (MZUSP 15958 ♂); Lower Amazon (NHMUK 1889.6.1.252 ♀, NHMUK 1889.6.1.253 ♀, NHMUK 1889.6.1.254); Obidos, lower Tapajós (MZUSP 10598 ♂); Ourém, Sítio Fé em Deus, km 24, Igarapé Pedral (MPEG 31994 ♂, MPEG 31995 ♀, MPEG 31996 ♀); Paragominas, mata 35 km, between Pimental and upper Rio Gurupi (MPEG 28442 ♂ juvenile); Piquiatuba, Rio Tapajós (MZUSP 20912 ♂, MZUSP 21931 ♂, MZUSP 21947 ♀, MZUSP 21948 ♀); Portal Pará (Rodovia Transamazônica, close to Rio Aratás (MHNT 6971 ♂); Portel, Flona de Caxiuanã, plot PP BIO (MPEG 61650 ♀); Rio Acará (MPEG 1695 ♂); Rio Cussary (MNRJ 2938 ♂); Rio Tapajós (MHNT 6563); Rio Xingu, Altamira, Ilha da Taboca, UHE Belo Monte (MPEG 55322); Serra dos Carajás, right margin of Rio Azul (MPEG 34897 ♂); Serra dos Carajás, Serra Norte N1 (MPEG 43801); Serra dos Carajás, Serra Norte N2 (MPEG 35333 ♀, MPEG 35334 ♂, MPEG 36718 ♂); Urucurituba, Rio Tapajós (MZUSP 46452 ♀).

Aburria cumanensis (Jacquin, 1784)

BRAZIL: Acre: Rio Macauã (MZUSP 76359, MZUSP 76360, MZUSP 76361). **Amapá:** Rio Mapari e Inipacu. Aldeia Uai-Uai (MPEG 31646). **Amapá/Pará:** Rio Jarí (ZMB 51181 ♂). **Amazonas:** Balaio, km 107, estrada S.G. Cachoeira (MNRJ 38056 ♂); Jacaré, próximo a Fonte Boa (MZUSP 69822 ♀); Maraã, Lago Cumapi (MPEG 62382 ♀); Raudal Uayanari, Rio Padauari (COP 34796); Rio Juruá (MZUSP 2264 ♂); Rio Pitinga, Igarapé Água Branca (MPEG 43698 ♂); RPS. Cujubim, *ca.* 390 km SW Jutaí (MPEG 60084 ♀, MPEG 60085 ♀). **Roraima:** Alto Mucajaí, perto da boca do Rio Apiaú (MZUSP 55752 ♂, MZUSP 55753 ♀); Rio Mucajaí, Sul de Boa Vista (MPEG 28039 ♂); Vila da Colônia do Apiau, Igarapé Serrinha (MPEG 40647 ♂, MPEG 40648 ♀).

COLOMBIA: Caquetá: Río Cuemani, 30 km from mouth (IAvH 1495 ♂); Tres Troncos, La Tagua, Río Caquetá (ICN-UNAL 15893 ♂, ICN-UNAL 15894 ♀). **Guaviare:** Río Guaviare, mout of Río Ariari (IAvH 4055 ♂). **Meta:** Hacienda La Colorada, Vereda Dano Grande (ICN-UNAL 1510 ♀); La Macarena (ICN-UNAL 1511 ♂, ICN-UNAL 1512 ♂, ICN-UNAL 1513 ♂, ICN-UNAL 1514 ♀, ICNUNAL 1515 ♀, ICN-UNAL 1516 ♂, ICN-UNAL ICN-UNAL 1517 ♀, ICN-UNAL 1518 ♂, ICN-UNAL 1519 ♂, ICN-UNAL 13699 ♂, ICN-UNAL 13700 ♂, ICN-UNAL 16783 ♀, ICN-UNAL 16784 ♀, ICNUNAL 16785 ♂, ICN-UNAL 16786 ♂); Río Cafre (IAvH 1642 ♀). **Nariño:** Basin of Rumiyaco and Ranchería rivers (IAvH 10450). **Vaupés:** Soratama (ICN-UNAL 1520 ♂). **Vichada:** Alto Río Tomo, N of Hato Canaima (IAvH 4059 ♂).

ECUADOR: Napo: Cordillera de Galeras (NHMUK 1953.68.44 ♂). **Oriente:** Rio Suno, Oriente (NHMUK 1940.12.5.43 ♂). **Pastaza:** Sarayacu (NHMUK 1889.6.1.244, NHMUK 1889.6.1.245).

GUYANA: uncertain (ZMB 11873). **Demerara-Essequibo Coast:** Pomeroon River (NHMUK 1922.3.5.185 ♂).

PERU: Cuzco: Cosñipata (NHMUK 1889.6.1.248); Río Comberciato (AMNH 166490 ♂, USNM 273022 ♀, USNM 273023 ♂); Río Comberciato, Urubamba tributary (AMNH 166489 ♂). **Junín:** Perene (NHMUK 1902.3.13.1852 ♂). **Ucayali:** Lagarto, upper Ucayali (AMNH 238778 ♂, AMNH 238781).

VENEZUELA: Amazonas: Brazo Casiquiare (USNM 326573 ♀, USNM 326574 ♂); Caño Cataniapo, Atures (COP 20612 ♀); Caño Cuao, Caño, Piedra (COP 33347 ♂); Caño Cuao, Río Sipapo (COP 22359 ♂, 22360 ♂); Cerro Yavi (COP 37570); Las Carmelitas (COP 38204 ♀); Nacientes do Río Siapa (COP 34795); Puerto Yapacana (COP 38902 ♀); Río Asisa (COP 47049 ♂); Río Puruname, 40 km from Río Orinoco (EBRG 9600 ♀); Río Puruname, 50 km from Río Orinoco (EBRG 9601 ♀); San Juan de Manapiare (COP 52266, COP 52267 ♂); Serrania de Maigualida (EBRG 11102 ♂). **Bolívar:** Comején Camp, Cerro Guaiquinima (COP 29165 ♂); El Cambur, lower Río Caura (COP 24980 ♂); La Urbana (EBRG 6339 ♂); Raudal Apure, Caño Antabari (COP 29166 ♂); Río Suapure (EBRG 8288 ♀); Salto Guaiquinima, Río Paragua (COP 29164 ♀); Salto Pará, Alto Caura, Bolívar (COP 24979 ♂); Sierra Pacaraima, Cerro Urutaní (COP 73498 ♂). **Delta Amacuro:** Rio Jobure, Delta Amacuro (COP 49523 ♀, COP 49524).

Aburria grayi (Pelzeln, 1868)

BOLIVIA: El Beni: Río Itenez (ZMB 39827 ♀, ZMB 39828 ♀). **La Paz:** Charuplaya (NHMUK 1902.3.18.1853 ♀). **Santa Cruz:** Santa Cruz de la Sierra, Curr. de San Ramon (ZSM 27.979).

BRAZIL: Mato Grosso: Rio Piquiri (MNRJ 21515 ♂, MZUSP 12352 ♂, MZUSP 13039 ♀); Rio Piquiri, Fazenda São José do Piquiri (MNRJ 44235 ♀). **Mato Grosso do Sul:** Fazenda Miranda-Estância, Miranda (MNRJ 44236 ♂); Miranda (MNRJ 28270 ♀); Porto Quebracho (MNRJ 23477); Salobra (MNRJ 20118 ♀, MNRJ 20119 ♂ juvenile, MNRJ 20820 ♂, MNRJ 20821 ♀, MNRJ 20822 ♀, MNRJ 20823 ♀, MNRJ 22877, MNRJ 22878 ♀, MZUSP 18239 ♀, MZUSP 18240 ♂, MZUSP 18241 ♀, MZUSP 26463 ♀, MZUSP 27631 ♂, MZUSP 27634 ♀).

PARAGUAY: Concepción: Concurrência, upper Paraguai (NHMUK 1910.7.9.107 ♂); NW Paraguay, Río Apa, mounts (ZSM 32.53, ZSM 32.54, ZSM 32.55).

UNCERTAIN: Paraguay? (NHMUK 1858.6.25.11 holotype).

Aburria jacutinga (Spix, 1825)

BRAZIL: between Bahia and Rio de Janeiro (ZSM-ORN00000195 holotype); uncertain (ZMB 11871, 11872). **Bahia:** Cachoeira Grande, Rio Jucurucu (MZUSP 14025 ♀). **Espirito Santo:** Córrego Braço do Sul, Colatina (MNRJ 39528 ♂); Cupido (MNRJ 26741 ♀); Fazenda Boa Esperança, C. da Barra (MNRJ 44242 ♀). **Paraná:** Porto Camargo, Rio Paraná (MZUSP 36713 ♀); Rio Cinza (MZUSP 11366 ♂). **Rio de Janeiro:** Mambucaba (MNRJ 7590 ♂, MNRJ 7591 ♂, MNRJ 20004 ♀, MNRJ 20005 ♂). **São Paulo:** Iporanga (MZUSP 49387 ♂); Itapura (MZUSP 5066 ♀); Porto Cabral, Rio Paraná (MZUSP 27484 ♂, MZUSP 27485 ♀, MZUSP 27486 ♀); Rio Paranapanema, Ilha da Serra do Diabo (MZUSP 31223 ♀, MZUSP 31224 ♀); Rocha (MZUSP 49385 ♂, MZUSP 49386 ♂). **Santa Catarina:** Joinville (MZUSP 4864); Parque Estadual da Serra do Tabuleiro, São Bonifácio (MZUSP 78436).

Aburria nattereri (Reichenbach, 1862)

BRAZIL: Amazonas: Lago de Manaqueri, Rio Solimões (NMW 22286 ♂ syntype); Lago do Batista, Rio Amazonas (MNRJ 20547 ♀). **Goiás:** Fazenda Thome Pinto, Rio das Almas (MZUSP 14703 ♂). **Mato Grosso:** unknown (NMW 22284 ♀);

32 km NE Alta Floresta, Ilha do Ludovico (MPEG 54591 ♀); 6 km from mouth of Rio São Benedito (MPEG 54565 ♀); upper Rio Xingu, Posto Jacaré (MPEG 28040 ♀); upper São Lourenço, Poxoréu (MNRJ 44238 ♂, MNRJ 44239 ♀); Cabeçeiras do Ribeirão Pindaíba (MZUSP 32254 ♂); Cáceres (MZUSP 10123 ♂, RMNH 363 ♀); Chavantina (MZUSP 32250 ♂, MZUSP 32251 ♀, MZUSP 32252 ♀, MZUSP 32253 ♂); Colônia dos Índios Barbados (MNRJ 21762 ♀, MNRJ 21763 ♂); Descalvados (AMNH 149329); Diauarum, upper Xingu (MNRJ 31541 ♀, MNRJ 31542 ♂); Fazenda Descalvados, camp. 1, Cáceres (MZUSP 79222, MZUSP 79223 ♂); Fazenda Descalvados, camp. 2, Cáceres (MZUSP 79221 ♂, MZUSP 79224 ♂, MZUSP 79225); Fazenda Ipê, Vila Rica (MZUSP 78125 ♀); Garapú, upper Culuene (MNRJ 31540 ♀); Ilha do Carvalho, Rio Guaporé (NMW 22285 ♂ syntype); Jacaré, lower Rio Culuene, upper Xingu (MNRJ 31538 ♀, MNRJ 31539 ♂, MNRJ 31544 ♂, MNRJ 33493 ♂, MNRJ 33495 ♀, MNRJ 33496 ♀, MNRJ 33497 ♂, MNRJ 33498 ♂, MNRJ 33494 ♂); Juruena (MNRJ 18878 ♂); Ribeirão Pindaíba, Rio das Mortes (MZUSP 34964 ♀); Rio do Sangue (MNRJ 18874); Rio Piquiri (MNRJ 21512 ♀, MNRJ 21513 ♂, MNRJ 21514 ♀); Rio Piquiri, Fazenda São José do Piquiri (MNRJ 44237 ♀); Rio Roosevelt (AMNH 127234 ♂); Rio Suiá-Missu, tributary of Rio Xingu (MHNT 2717); Rio Teles Pires, Alta Floresta, Rio Cristalino (MPEG 51277 ♀); Rondonópolis (MZUSP 17028 ♂); Sangradouro (NMW 22283 ♂); São Domingos, Rio das Mortes (MZUSP 34963 ♀); Tapirapuã (MNRJ 18880 ♀); Teles Pires, left margin, Paranaíta (MNRJ MNA4355 ♀, MNRJ MNA4356 ♀, MNRJ MNA4357 ♀, MNRJ MNA4358 ♂); Utiariti, Rio Papagaio (MNRJ 18873 ♂, MNRJ 18879 ♀, MNRJ 18881 ♀, MNRJ 18883 ♀). **Mato Grosso do Sul:** Fazenda Recreio, Coxim (MZUSP 17027 ♀, MZUSP 17029 ♂). **Pará:** Base Aeronáutica do Cachimbo (MPEG 57297, MPEG 57298 ♂); Cachimbo (MZUSP 38309 ♂); Fazenda Barra das Princesas, S of Araguaia (MPEG 48494 ♂); Fazenda Fartura, S of Araguaia (MZUSP 81977, MZUSP 81978, MPEG 48491 ♂); Fazenda Fartura, S of Araguaia, Rio Santana (MZUSP 81979); Riosinho, tributary of Rio Fresco, Rio Xingu (MPEG 28041 ♂); **Rondônia:** Pimenta Bueno (MNRJ 33439 ♂); Rio Jamari (MNRJ 18870, MNRJ 18871, MNRJ 18872, MNRJ 18875).

***Aburria pipile* (Jacquin, 1784)**

TRINIDAD AND TOBAGO: uncertain (NMPC P6V-27037 ♂); **Arima:** Aripo (ZSM 12.2008 ♂). **Caroni:** Caparo (AMNH 471557 ♂). **Princess Town:** Princess Town (AMNH 59510 ♂).

APPENDIX 2

Specimens

Country	State/Province	Locality	LatDec	LonDec	Species	Voucher specimen
Peru	Amazonas	Santa Rosa de Huayabamba (Guayabamba)	-6,366667	-77,416667	*aburri*	NHMUK 99.6.30
Colombia	Antioquia	Antioquia	-6,550000	-75,833333	*aburri*	NHMUK 99.6.1
Colombia	Antioquia	Valdivia	-7,183333	-75,450000	*aburri*	NHMUK 98.10.6.2
Venezuela	Barinas	Calderas	-8,466667	-70,733333	*aburri*	COP 81090
Colombia	Caldas	La Sofia (Hacienda Sofia), Río Samana	-5,633333	-75,066667	*aburri*	USNM 436130
Colombia	Cesar	Hiroca, Sierra de Perija (Eroca)	-9,700000	-73,083333	*aburri*	NMNH 372432/ 372433
Colombia	Cundinamarca	Bogotá (Sta Fé de Bogotá)	-4,600000	-74,083333	*aburri*	NHMUK 69.6.1.259
Peru	Cuzco	Rio San Miguel	-12,716667	-73,233333	*aburri*	USNM 273024
Colombia	La Guajira	Los Gorros	-11,550000	-72,933333	*aburri*	NMNH 383377/ 383378/ 383379/ 383380
Colombia	La Guajira	Tierra Nueva, Sierra Nueva	-10,583333	-72,750000	*aburri*	NMNH 368532
Venezuela	Mérida	Limones	-9,133333	-71,950000	*aburri*	NHM 1914.11.26.11/ 1914.11.26.12
Venezuela	Mérida	Santa Elena	-8,850000	-71,450000	*aburri*	COP 62905/ 62906
Ecuador	Morona-Santiago	Chigüinda, Villa Gomez	-3,200000	-78,600000	*aburri*	NHMUK 69.6.1.256/ 69.6.1.257
Ecuador	Napo	Baeza	-0,450000	-77,883333	*aburri*	NHMUK 1925.12.24
Colombia	Nariño	Cuenca de los ríos Rumiyaco e Ranchería	0,466667	-77,283333	*aburri*	IAvH 10451
Colombia	Norte de Santander	Bella Vista Pumping Station	-8,616667	-73,066667	*aburri*	USNM 372431
Colombia	Norte de Santander	Palo Gordo	-7,666667	-72,516667	*aburri*	USNM 401235
Venezuela	Táchira	Cumbre, Cerro El Teteo	-7,416667	-72,066667	*aburri*	COP 60527
Venezuela	Táchira	El Salão	-7,433333	-72,000000	*aburri*	COP 60773
Venezuela	Zuila	Cerro Alto del Cedro	-11,150000	-72,250000	*aburri*	COP 9089
Venezuela	Zuila	Cerro Pejochaina, Perijá	-9,950000	-72,966667	*aburri*	COP 54438/ 54457
Venezuela	Zuila	La Sabana, Rio Negro	-10,000000	-72,833333	*aburri*	COP 5997/ 5998/ 5999
Brazil	Amazonas	Lago do Batista (Lago do Baptista), Rio Amazonas	-3,300000	-58,250000	*cujubi*	MNRJ 20546
Brazil	Amazonas	Parintins (Villa Bela, Imperatriz)	-2,600000	-56,733333	*cujubi*	AMNH 217463
Brazil	Goiás	Rio Araguaia, Posto Indígena dos Xambioá	-6,400000	-48,550000	*cujubi*	MPEG 34763
Brazil	Pará	[São Domingos do] Capim (BR 14, km 93, estrada Belém-Brasília)	-1,671071	-47,770202	*cujubi*	MZUSP 43879
Brazil	Pará	Belém	-1,450000	-48,483333	*cujubi*	MZUSP 43879
Brazil	Pará	Caxiricatuba, Rio Tapajós	-2,833333	-55,033333	*cujubi*	MZUSP 20832/ MNRJ 20548/ 20570
Brazil	Pará	Curuatinga, Rio Amazonas, mun. de Prainha	-2,650000	-54,166667	*cujubi*	MNRJ 25234/ 25237/ 25236/ 25235/ 25233/ 25238/ 25239
Brazil	Pará	Faz. Barra das Princesas, Santana do Araguaia	-9,666667	-50,183333	*cujubi*	USNM 121093
Brazil	Pará	Faz. Fartura, Santana do Araguaia	-9,666667	-50,183333	*cujubi*	MPEG 48491/ MZUSP 81977/ 81978
Brazil	Pará	Fordlândia, Rio Tapajós (leste)	-3,233333	-55,133333	*cujubi*	MZUSP 46451
Brazil	Pará	Igarapé Fortaleza, Rio Xingu	-7,216667	-52,616667	*cujubi*	MPEG 28037
Brazil	Pará	Juruti, Capiranga, Igarapé Mutum	-2,600000	-56,183333	*cujubi*	MPEG 58242
Brazil	Pará	Lago Cuipeua ("Cuipeva"ou "Cuiteño"), Rio Amazonas	-1,900000	-55,533333	*cujubi*	MZUSP 15958
Brazil	Pará	Lower Amazon ("Santarém")	-2,433333	-54,700000	*cujubi*	NHMUK 89.6.1.252/ 89.6.1.253/ 89.6.1.254
Brazil	Pará	Monte Alegre	-2,016667	-54,066667	*cujubi*	MPEG #
Brazil	Pará	Obidos	-1,916667	-55,516667	*cujubi*	MZUSP 10598
Brazil	Pará	Ourém, Sítio Fé em Deus, Rio Guamá	-1,550000	-47,100000	*cujubi*	MPEG 31994/ 31995/ 31996
Brazil	Pará	Paragominas, entre Pimental e Alto Rio Gurupi	-3,000000	-47,300000	*cujubi*	MPEG 28442
Brazil	Pará	Piquiatuba, Rio Tapajós	-3,050000	-55,116667	*cujubi*	MZUSP 20912/ 21947/ 21948/ 21931
Brazil	Pará	Portel, Flona de Caxiuanã, Plot PP BIO	-1,950000	-51,933333	*cujubi*	MPEG 61650
Brazil	Pará	Rio Acará	-1,666667	-48,416667	*cujubi*	MPEG 1695
Brazil	Pará	Rio Cussary	-1,900000	-53,550000	*cujubi*	MNRJ 2938
Brazil	Pará	Rio Iriri, boca do Rio Curuá	-5,383333	-54,366667	*cujubi*	MPEG 10604
Brazil	Pará	Rio Xingu, Altamira, Ilha da Taboca (UHE Belo Monte)	-3,366667	-51,950000	*cujubi*	MPEG 55322
Brazil	Pará	Serra dos Carajás, marg. direita do Rio Azul	-6,000000	-51,500000	*cujubi*	MPEG 34897
Brazil	Pará	Serra dos Carajás, N1 área de ferro	-6,000000	-50,266667	*cujubi*	MPEG 43801
Brazil	Pará	Serra dos Carajás, N1 área de manganês	-6,150000	-50,400000	*cujubi*	MPEG 35333/ 353334/ 36718
Brazil	Pará	Urucurituba, Rio Tapajós	-3,800000	-55,533333	*cujubi*	MZUSP 46452
Brazil	Acre	Rio Macauã	-9,866667	-69,383333	*cumanensis*	MZUSP 76360/ 76359/ 76361
Brazil	Amapá	Rio Mapari e Rio Inipacu, aldeia dos índios Uai-Uai	-0,750000	-53,116667	*cumanensis*	MPEG 31646
Brazil	Amazonas	Balaio, estrada S. Gabriel da Cachoeira, km 107, Cucui	-0,500000	-66,600000	*cumanensis*	MNRJ 38056
Venezuela	Amazonas	Brazo Casiquiare	-2,016667	-67,116667	*cumanensis*	USNM 326573/ 326574
Venezuela	Amazonas	Cerro Yavi	-5,533333	-65,983333	*cumanensis*	COP 37570
Brazil	Amazonas	Jacaré, próximo a Fonte Boa	-2,400000	-66,116667	*cumanensis*	MZUSP 69822

Country	State/Province	Locality	LatDec	LonDec	Species	Voucher specimen
Venezuela	Amazonas	Las Carmelitas	-4,166667	-66,750000	*cumanensis*	COP 38204
Brazil	Amazonas	Maraã, Lago Cumapi	-1,683333	-65,833333	*cumanensis*	MPEG 62382
Venezuela	Amazonas	Nacientes do Rio Siapa	-1,550000	-64,516667	*cumanensis*	COP 34795
Venezuela	Amazonas	Puerto Yapacana	-3,666667	-66,716667	*cumanensis*	COP 38902
Brazil	Amazonas	Raudal Uayanari, Rio Paduari	-1,166667	-64,066667	*cumanensis*	COP 34796
Venezuela	Amazonas	Rio Asisa	-4,333333	-65,916667	*cumanensis*	COP 47049
Venezuela	Amazonas	Rio Cataniapo, Atures	-5,583333	-67,583333	*cumanensis*	COP 20612
Venezuela	Amazonas	Rio Cuao	-4,916667	-67,666667	*cumanensis*	COP 33347
Brazil	Amazonas	Rio Juruá	-2,616667	-65,733333	*cumanensis*	MZUSP 2264
Brazil	Amazonas	Rio Pitinga	-0,850000	-59,650000	*cumanensis*	MPEG 43698
Venezuela	Amazonas	Rio Puruname	-3,416667	-66,300000	*cumanensis*	EBRG 9600
Venezuela	Amazonas	Rio Sipapo	-5,050000	-67,800000	*cumanensis*	COP 22359/ 22360
Brazil	Amazonas	RPS. Cujubim	-5,183333	-69,316667	*cumanensis*	MPEG 60084/ 60085
Venezuela	Amazonas	San Juan de Manapiare	-5,083333	-66,083333	*cumanensis*	COP 52266/ 52267
Venezuela	Amazonas	Serrania de Maigualida	5,683333	-65,350000	*cumanensis*	EBRG 11102
Venezuela	Amazonas	Simarawochi	-3,916667	-64,850000	*cumanensis*	COP 70673
Venezuela	Bolívar	Cerro Guaiquinima (Salto Guaiquinima)	-5,833333	-63,800000	*cumanensis*	COP 29164
Venezuela	Bolívar	Comejen Camp, Cerro Guaquinima	-5,833333	-63,666667	*cumanensis*	COP 29165
Venezuela	Bolívar	El Cambur	-7,400000	-65,166667	*cumanensis*	COP 24980
Venezuela	Bolívar	La Urbana	7,133333	-66,933333	*cumanensis*	EBRG 6339
Venezuela	Bolívar	Raudal Apure, Caño Antabari	-5,250000	-63,233333	*cumanensis*	COP 29166
Venezuela	Bolívar	Rio Suapure	6,800000	-67,016667	*cumanensis*	EBRG 8288
Venezuela	Bolívar	Salto Pará	-6,183333	-64,266667	*cumanensis*	COP 24979
Venezuela	Bolívar	Sierra Pacaraima	-4,083333	-61,500000	*cumanensis*	COP 73498
Colombia	Caquetá	Río Cuemani, 30 km da sua desembocadura	0,466667	-73,116667	*cumanensis*	IAvH 1495
Colombia	Caquetá	Tres Troncos	-0,133333	-74,683333	*cumanensis*	ICN 15893/ 15894
Peru	Cuzco	Rio Comberciato (ou Combreciato)	-12,466667	-73,116667	*cumanensis*	AMNH 166489/ 166490/ USNM 273022/ 273023
Venezuela	Delta Amacuro	Rio Jobure	-8,750000	-60,833333	*cumanensis*	COP 49523
Guiana	Demerara-Essequibo Coast	Pomeroom River	-7,616667	-58,750000	*cumanensis*	NHMUK 1922.3.5.185
Colombia	Guaviare	Río Guaviare (marg. Dir.), na boca do río Ariari	2,583333	-72,750000	*cumanensis*	IAvH 4055
Peru	Junin	Perené	-10,966667	-75,216667	*cumanensis*	NHMUK 1902.3.13
Bolivia	La Paz	Río Charuplaya	-17,200000	-66,966667	*cumanensis*	NHMUK 1902.3.18.1853
Colombia	Meta	Hacienda La Colorada, Vereda Dano Grande, sul de S. Martín	-3,666667	-73,650000	*cumanensis*	ICN 1510
Colombia	Meta	La Macarena [Serraía de La Macarena]	-2,750000	-73,916667	*cumanensis*	ICN 13700/ 1514/ 16786/ 1513/ 1511/ 1519/ 13699/ 1517/ 16785/ 1518/ 1515/ 1516/ 1512/ 16784/ 16783
Colombia	Meta	Río Cafre	3,350000	-74,016667	*cumanensis*	IAvH 1642
Ecuador	Napo	Cordillera de Galleras (Cerro Galera)	-0,833333	-77,583333	*cumanensis*	NHMUK 1953.68.44
Colombia	Nariño	Cuenca de los ríos Rumiyaco e Ranchería	0,500000	-77,216667	*cumanensis*	IAvH 10450
Ecuador	Oriente	Rio Suno (Rio Juno)	-0,700000	-77,133333	*cumanensis*	NHMUK 1940.12.5.43
Ecuador	Pastaza	Sarayacu	-1,733333	-77,483333	*cumanensis*	NHMUK 89.6.1.244/ 89.6.1.245
Brazil	Roraima	Alto Mucajaí perto da boca do Rio Apiaú	-2,416667	-60,866667	*cumanensis*	MZUSP 55752/ 55753
Brazil	Roraima	Rio Mucajaí, S de Boa Vista	-2,666667	-61,033333	*cumanensis*	MPEG 28039
Brazil	Roraima	Vila da Colônia do Apiau, Igarapé Serrinha	-2,633333	-61,366667	*cumanensis*	MPEG 40647/ 40648
Peru	Ucayali	Lagarto, Alto Ucayali	-10,666667	-73,900000	*cumanensis*	AMNH 238978/ 238981
Colombia	Vaupés	Soratama	-0,116667	-71,083333	*cumanensis*	ICN 1520
Colombia	Vichada	Alto Río Tomo, N do Hato Canaima	4,683333	-70,550000	*cumanensis*	IAvH 4059
Paraguai	Concepción	Concurrencia	-22,333333	-58,000000	*grayi*	NHMUK 1910.7.9.107
Paraguai	Concepción	Nordost-Paraguay, Apa-Bergland	-22,616667	-57,350000	*grayi*	SMM 3253/ 3254/ 3255
Bolivia	El Beni	Río Itenez	-11,900000	-65,016667	*grayi*	BFNB 39827/ 39828
Brazil	Mato Grosso	Faz. São José do Piquiri, Rio Piquiri	-17,366667	-56,800000	*grayi*	MNRJ 44237/ 44235
Brazil	Mato Grosso	Rio Piquiri (Rio Piquery)	-17,383333	-55,633333	*grayi*	MZUSP 13039/ 12352/ MNRJ 21515
Brazil	Mato Grosso do Sul	Faz. Miranda-Estância	-20,233333	-56,366667	*grayi*	MZUSP 44236/ 17029/ 17027
Brazil	Mato Grosso do Sul	Miranda	-20,233333	-56,366667	*grayi*	MNRJ 28270
Brazil	Mato Grosso do Sul	Porto Quebracho	-21,833333	-57,883333	*grayi*	MNRJ 23477
Brazil	Mato Grosso do Sul	Salobra	-20,166667	-56,516667	*grayi*	MZUSP 18240/ 18239/ 18241/ 26463/ 27631/ 27634/ MNRJ 22877/ 20118/ 20823/ 20822/ 20119/ 22878/ 20820/ 20821
Bolivia	Santa Cruz	Sta Cruz de la Sierra, Curr. De San Ramon, Chiquitos	-17,550000	-61,066667	*grayi*	SMM 27979
Brazil	Amazonas	Lago do Batista (Lago do Baptista), Rio Amazonas	-3,300000	-58,250000	*indet*	MZUSP 22031/ 22053/ MNRJ 20572/ 20616

Country	State/Province	Locality	LatDec	LonDec	Species	Voucher specimen
Brazil	Tocantins	Furo das Pedras, Ilha do Bananal	-10,466667	-50,383333	*indet*	MNRJ 18921
Brazil	Tocantins	Palmas	-12,550000	-46,209167	*indet*	MNRJ 18923
Brazil	Bahia	Cachoeira Grande, Rio Jucurucu	-17,250000	-39,766667	*jacutinga*	MZUSP 14025 e Pinto, 1933
Brazil	Espirito Santo	Córrego Braço do Sul, Rio São José, Colatina	-20,400000	-40,716667	*jacutinga*	MN 39528
Brazil	Espirito Santo	Cupido	-19,066667	-40,133333	*jacutinga*	MN 26741
Brazil	Espirito Santo	Faz. Boa Esperança, Rio Itaúnas, Conceição da Barra	-18,583333	-39,750000	*jacutinga*	MNRJ 44240/ 44241/ 44242
Brazil	Paraná	Porto Camargo, Rio Paraná	-23,350000	-53,716667	*jacutinga*	MZUSP 36713
Brazil	Paraná	Rio das Cinzas	-22,933333	-50,533333	*jacutinga*	MZUSP 11366
Brazil	Rio de Janeiro	Mambucaba	-23,016667	-44,516667	*jacutinga*	MNRJ 7590/ 20005/ 7591/ 20004
Brazil	Santa Catarina	Joinville	-26,300000	-48,833333	*jacutinga*	MZUSP 4864
Brazil	Santa Catarina	PE da Serra do Tabuleiro	-27,916667	-48,833333	*jacutinga*	MZUSP 78436
Brazil	Santa Catarina	Santa Catarina	-27,000000	-50,000000	*jacutinga*	NMNH 24122/ 24142
Brazil	São Paulo	Iporanga	-24,166667	-47,666667	*jacutinga*	MZUSP 49387
Brazil	São Paulo	Itapura	-20,666667	-51,516667	*jacutinga*	MZUSP 5066
Brazil	São Paulo	Porto Cabral, Rio Paraná	-22,283333	-52,633333	*jacutinga*	MZUSP 27484/ 27485/ 27486
Brazil	São Paulo	Rio Paranapanema, Ilha da Serra do Diabo	-22,616667	-52,350000	*jacutinga*	MZUSP 31223/ 31224
Brazil	São Paulo	Rocha	-24,216667	-47,733333	*jacutinga*	MZUSP 49385/ 49386
Brazil	Amazonas	Lago do Batista (Lago do Baptista), Rio Amazonas	-3,300000	-58,250000	*nattereri*	MNRJ 20547/ 20616
Brazil	Amazonas	Rio Roosevelt	-7,583333	-60,333333	*nattereri*	AMNH 127234
Brazil	Goiás	Fazenda Thomé Pinto, Jaraguá, Rio das Almas	-15,716667	-49,333333	*nattereri*	MZUSP 14703 e Pinto, 1936
Brazil	Mato Grosso	6 km acima Boca Rio São Benedito, Rio Teles Pires	-9,133333	-57,050000	*nattereri*	MPEG 54565
Brazil	Mato Grosso	Alto Rio Xingu, Posto Jacaré	-12,000000	-53,383333	*nattereri*	MPEG 28040
Brazil	Mato Grosso	Alto São Lourenço, Poxoréu	-16,533333	-55,033333	*nattereri*	MNRJ 44238/ 44239
Brazil	Mato Grosso	Angical, rio Paraguai, 9 léguas acima de Cáceres	-15,616667	-57,800000	*nattereri*	MNRJ 18869
Brazil	Mato Grosso	Cáceres (São Luis de Caceres of Villa Maria)	-16,066667	-57,683333	*nattereri*	MZUSP 10123
Brazil	Mato Grosso	Chavantina (Xavantina)	-14,666667	-52,350000	*nattereri*	MPEG 28038/ MZUSP 32250/ 32251/ 32252/ 32253
Brazil	Mato Grosso	Colônia dos Indios Barbados	-9,000000	-61,133333	*nattereri*	MNRJ 21762/ 21763
Brazil	Mato Grosso	Descalvados	-16,750000	-57,700000	*nattereri*	AMNH 149329
Brazil	Mato Grosso	Diaurum, alto Rio Xingu	-11,200000	-53,233333	*nattereri*	MNRJ 31541/ 31542
Brazil	Mato Grosso	Faz. Descalvados, camp.1, Cáceres	-16,700000	-57,733333	*nattereri*	MZUSP 79222/ 79223
Brazil	Mato Grosso	Faz. Descalvados, camp.2, Cáceres	-16,733333	-57,716667	*nattereri*	MZUSP 79221/ 79224/ 79225
Brazil	Mato Grosso	Faz. Ipê, Vila Rica	-10,000000	-51,100000	*nattereri*	MZUSP 78125
Brazil	Mato Grosso	Garapú, alto Culuene	-13,216667	-52,616667	*nattereri*	MNRJ 31540
Brazil	Mato Grosso	Ilha do Ludovico, Rio Teles Pires, 32 km NE Alta Floresta	-9,633333	-55,933333	*nattereri*	MPEG 54591
Brazil	Mato Grosso	Jacaré, baixo Rio Culuene, alto Xingu	-12,000000	-53,400000	*nattereri*	MNRJ 31538/ 31539/ 31543/ 31544/ 33493/ 33494/ 33495/ 33496/ 33497/ 33498
Brazil	Mato Grosso	Juruena	-12,850000	-58,933333	*nattereri*	MNRJ 18878
Brazil	Mato Grosso	Ribeirão Pindaíba, Rio das Mortes	-14,800000	-52,000000	*nattereri*	MZUSP 32254/ 34964/ 32254
Brazil	Mato Grosso	Rio do Sangue	-11,016667	-58,650000	*nattereri*	MNRJ 18874
Brazil	Mato Grosso	Rio Piquiri (Rio Piquery)	-17,383333	-55,633333	*nattereri*	MNRJ 21513/ 21514/ 21512
Brazil	Mato Grosso	Rio Suiá-Missu, afl. do Rio Xingú	-11,216667	-53,250000	*nattereri*	MHNT 2717
Brazil	Mato Grosso	Rio Teles Pires, Alta Floresta, Res. Flor Cristalino	-9,700000	-55,916667	*nattereri*	MPEG 51277
Brazil	Mato Grosso	Rondonópolis	-16,466667	-54,633333	*nattereri*	MZUSP 17028
Brazil	Mato Grosso	Salto, Rio Jauru	-15,033333	-58,750000	*nattereri*	MNRJ 18859
Brazil	Mato Grosso	Sangrador (R. Sangradouro Grande)	-16,066667	-57,166667	*nattereri*	NMW 22283
Brazil	Mato Grosso	São Domingos, Rio das Mortes	-13,500000	-51,383333	*nattereri*	MZUSP 34963
Brazil	Mato Grosso	Tapirapuã	-14,850000	-57,750000	*nattereri*	MNRJ 18880
Brazil	Mato Grosso	Teles Pires, Paranaíta	-9,233333	-56,983333	*nattereri*	MNRJ 4355/ 4356/ 4357/ 4358
Brazil	Mato Grosso	Uiariti, Rio Papagaio	-13,033333	-58,283333	*nattereri*	MNRJ 18873/ 18879/ 18881/ 18883
Brazil	Mato Grosso do Sul	Faz. Recreio, Coxim	-18,216667	-54,666667	*nattereri*	MZUSP 17027/ 17029
Brazil	Pará	Base Aeronáutica do Cachimbo	-9,266667	-54,933333	*nattereri*	MPEG 57297/ 57298
Brazil	Pará	Cachimbo	-8,950000	-54,900000	*nattereri*	MZUSP 38309
Brazil	Pará	Faz. Fartura, Santana do Araguaia (rio Santana)	-9,716667	-50,383333	*nattereri*	MZUSP 81979
Brazil	Pará	Riosinho, afl. Do Rio Fresco	-7,116667	-51,650000	*nattereri*	MPEG 28041
Brazil	Pará	Santa Helena, Rio Jamanxim (Jamauchim)	-5,216667	-56,283333	*nattereri*	MPEG 6558
Brazil	Rondônia	Pimenta Bueno	-11,650000	-61,200000	*nattereri*	MNRJ 33439
Brazil	Rondônia	Rio Jamari	-8,450000	-63,416667	*nattereri*	MNRJ 18870/ 18871/ 18872/ 18875
Trinidade	Arima	Aripo	10,583333	-61,233333	*pipile*	SMM 12.2008
Trinidade	Caroni	Caparo	10,433333	-61,333333	*pipile*	AMNH 59510

WikiAves photographs

Locality	State	Lon	Lat	Species	Photos
Altamira/PA	PA	-52,206401	-3,203449	*cujubi*	1
Anapu/PA	PA	-51,198398	-3,47245	*cujubi*	1
Belterra/PA	PA	-54,9374	-2,63645	*cujubi*	5
Medicilândia/PA	PA	-52,888431	-3,442823	*cujubi*	1
Pacajá/PA	PA	-50,638401	-3,838459	*cujubi*	2
Paragominas/PA	PA	-47,353401	-2,99545	*cujubi*	4
Parauapebas/PA	PA	-49,9024	-6,06847	*cujubi*	43
Placas/PA	PA	-54,220401	-3,868459	*cujubi*	1
Porto de Moz/PA	PA	-52,238399	-1,74844	*cujubi*	2
São Félix do Xingu/PA	PA	-51,995399	-6,64547	*cujubi*	1
Xinguara/PA	PA	-49,946399	-7,095469	*cujubi*	2
Assis Brasil/AC	AC	-69,567497	-10,941499	*cumanensis*	6
Mâncio Lima/AC	AC	-72,896499	-7,614449	*cumanensis*	1
Manoel Urbano/AC	AC	-69,260498	-8,83946	*cumanensis*	8
Barcelos/AM	AM	-62,924499	-0,97544	*cumanensis*	1
Maraã/AM	AM	-65,581497	-1,856439	*cumanensis*	1
Presidente Figueiredo/AM	AM	-60,025501	-2,03444	*cumanensis*	5
Santa Isabel do Rio Negro/AM	AM	-65,0195	-0,41444	*cumanensis*	1
Tefé/AM	AM	-64,711502	-3,354449	*cumanensis*	1
Oriximiná/PA	PA	-55,866401	-1,76644	*cumanensis*	1
Alto Alegre/RR	RR	-61,292499	2,979579	*cumanensis*	1
Amajari/RR	RR	-61,371498	3,65158	*cumanensis*	5
Caracaraí/RR	RR	-61,128501	1,815569	*cumanensis*	7
Iracema/RR	RR	-61,0415	2,18158	*cumanensis*	1
Rorainópolis/RR	RR	-60,418498	0,945569	*cumanensis*	2
Anastácio/MS	MS	-55,807498	-20,4845	*grayi*	2
Aquidauana/MS	MS	-55,787498	-20,4715	*grayi*	99
Bela Vista/MS	MS	-56,521499	-22,1095	*grayi*	2
Bodoquena/MS	MS	-56,715499	-20,539499	*grayi*	25
Bonito/MS	MS	-56,482498	-21,1215	*grayi*	77
Campo Grande/MS	MS	-54,646499	-20,4435	*grayi*	2
Chapadão do Sul/MS	MS	-52,6235	-18,7945	*grayi*	2
Corguinho/MS	MS	-54,829498	-19,8325	*grayi*	5
Corumbá/MS	MS	-57,653499	-19,0095	*grayi*	105
Coxim/MS	MS	-54,760501	-18,507499	*grayi*	2
Jardim/MS	MS	-56,1385	-21,480499	*grayi*	33
Miranda/MS	MS	-56,378501	-20,2415	*grayi*	98
Porto Murtinho/MS	MS	-57,883499	-21,699499	*grayi*	2
Rio Negro/MS	MS	-54,987499	-19,449499	*grayi*	5
Rio Verde de Mato Grosso/MS	MS	-54,844501	-18,9185	*grayi*	9
Barão de Melgaço/MT	MT	-55,958499	-16,279499	*grayi*	11
Cáceres/MT	MT	-57,6795	-16,0715	*grayi*	3
Comodoro/MT	MT	-59,786499	-13,663499	*grayi*	4
Conquista d'Oeste/MT	MT	-59,572498	-14,5585	*grayi*	1
Cuiabá/MT	MT	-56,097499	-15,5965	*grayi*	1
Poconé/MT	MT	-56,6235	-16,257499	*grayi*	216
Alta Floresta d'Oeste/RO	RO	-61,996498	-11,929499	*grayi*	1

Locality	State	Lon	Lat	Species	Photos
Ipaba/MG	MG	-42,419399	-19,414499	*jacutinga*	72
Adrianópolis/PR	PR	-48,991401	-24,6576	*jacutinga*	4
Antonina/PR	PR	-48,712398	-25,429599	*jacutinga*	9
Campina Grande do Sul/PR	PR	-49,0554	-25,306499	*jacutinga*	6
Céu Azul/PR	PR	-53,849498	-25,147499	*jacutinga*	1
Foz do Iguaçu/PR	PR	-54,5885	-25,5485	*jacutinga*	50
Guaraqueçaba/PR	PR	-48,329399	-25,3076	*jacutinga*	4
Guaratuba/PR	PR	-48,575401	-25,8836	*jacutinga*	7
Morretes/PR	PR	-48,8344	-25,4776	*jacutinga*	14
Paranaguá/PR	PR	-48,509399	-25,5205	*jacutinga*	22
Piraquara/PR	PR	-49,0634	-25,4426	*jacutinga*	2
Pontal do Paraná/PR	PR	-48,511398	-25,674499	*jacutinga*	1
Quatro Barras/PR	PR	-49,0774	-25,3666	*jacutinga*	1
São José dos Pinhais/PR	PR	-49,206501	-25,535499	*jacutinga*	3
Cachoeiras de Macacu/RJ	RJ	-42,6534	-22,4636	*jacutinga*	1
Anitápolis/SC	SC	-49,129501	-27,9025	*jacutinga*	1
Joinville/SC	SC	-48,8465	-26,304599	*jacutinga*	1
Santa Rosa de Lima/SC	SC	-49,128501	-28,0396	*jacutinga*	1
Santo Amaro da Imperatriz/SC	SC	-48,779399	-27,6886	*jacutinga*	41
Taió/SC	SC	-49,9985	-27,1166	*jacutinga*	2
Timbé do Sul/SC	SC	-49,847499	-28,830499	*jacutinga*	2
Apiaí/SP	SP	-48,843399	-24,509599	*jacutinga*	2
Bertioga/SP	SP	-46,1394	-23,854499	*jacutinga*	12
Cananéia/SP	SP	-47,927398	-25,0156	*jacutinga*	3
Caraguatatuba/SP	SP	-45,413398	-23,620599	*jacutinga*	15
Cunha/SP	SP	-44,960399	-23,0746	*jacutinga*	1
Ilhabela/SP	SP	-45,358398	-23,778499	*jacutinga*	91
Iporanga/SP	SP	-48,593399	-24,5865	*jacutinga*	38
Itanhaém/SP	SP	-46,789398	-24,1835	*jacutinga*	4
Mogi das Cruzes/SP	SP	-46,1884	-23,523599	*jacutinga*	2
Pedro de Toledo/SP	SP	-47,233398	-24,2756	*jacutinga*	1
Peruíbe/SP	SP	-46,998401	-24,3206	*jacutinga*	20
Ribeirão Grande/SP	SP	-48,365398	-24,099599	*jacutinga*	286
São José dos Campos/SP	SP	-45,887401	-23,179599	*jacutinga*	3
São Luiz do Paraitinga/SP	SP	-45,310398	-23,222499	*jacutinga*	4
São Miguel Arcanjo/SP	SP	-47,997398	-23,878499	*jacutinga*	31
São Sebastião/SP	SP	-47,997398	-23,878499	*jacutinga*	5
Sete Barras/SP	SP	-47,926399	-24,3885	*jacutinga*	13
Tapiraí/SP	SP	-47,5074	-23,964599	*jacutinga*	315
Ubatuba/SP	SP	-45,071399	-23,434499	*jacutinga*	8
Novo Aripuanã/AM	AM	-60,3805	-5,121459	*nattereri*	1
Parintins/AM	AM	-56,736499	-2,628449	*nattereri*	1
Nova Crixás/GO	GO	-50,3274	-14,099499	*nattereri*	2
Alcinópolis/MS	MS	-53,706501	-18,324499	*nattereri*	1
Chapadão do Sul/MS	MS	-52,6235	-18,7945	*nattereri*	1
Corumbá/MS	MS	-57,653499	-19,0095	*nattereri*	2
Costa Rica/MS	MS	-53,129501	-18,5445	*nattereri*	2

Locality	State	Lon	Lat	Species	Photos
Miranda/MS	MS	-56,378501	-20,2415	*nattereri*	1
Paraíso das Águas/MS	MS	-53,008121	-19,026124	*nattereri*	1
Alta Floresta/MT	MT	-56,086399	-9,87648	*nattereri*	186
Apiacás/MT	MT	-57,449501	-9,54448	*nattereri*	3
Arenápolis/MT	MT	-56,8465	-14,450499	*nattereri*	1
Aripuanã/MT	MT	-59,459499	-10,167499	*nattereri*	12
Barão de Melgaço/MT	MT	-55,958499	-16,279499	*nattereri*	14
Barra do Bugres/MT	MT	-57,181499	-15,073499	*nattereri*	3
Cáceres/MT	MT	-57,6795	-16,0715	*nattereri*	6
Campinápolis/MT	MT	-52,895401	-14,5165	*nattereri*	1
Canabrava do Norte/MT	MT	-51,830799	-11,053899	*nattereri*	1
Canarana/MT	MT	-52,1664	-13,550499	*nattereri*	2
Cláudia/MT	MT	-54,891399	-11,5155	*nattereri*	4
Cocalinho/MT	MT	-50,996398	-14,3975	*nattereri*	2
Colíder/MT	MT	-55,455398	-10,8135	*nattereri*	2
Comodoro/MT	MT	-59,786499	-13,663499	*nattereri*	7
Confresa/MT	MT	-51,5694	-10,644499	*nattereri*	1
Conquista d'Oeste/MT	MT	-59,572498	-14,5585	*nattereri*	1
Cotriguaçu/MT	MT	-58,414501	-9,85848	*nattereri*	3
Cuiabá/MT	MT	-56,097499	-15,5965	*nattereri*	2
Feliz Natal/MT	MT	-54,920398	-12,3865	*nattereri*	2
Gaúcha do Norte/MT	MT	-53,080398	-13,2425	*nattereri*	1
Itaúba/MT	MT	-55,2765	-11,0625	*nattereri*	7
Juara/MT	MT	-57,5205	-11,255499	*nattereri*	4
Juína/MT	MT	-58,7415	-11,378499	*nattereri*	3
Juruena/MT	MT	-58,3595	-10,318499	*nattereri*	1
Lambari d'Oeste/MT	MT	-58,004501	-15,323499	*nattereri*	7
Lucas do Rio Verde/MT	MT	-55,911499	-13,050499	*nattereri*	1
Nova Bandeirantes/MT	MT	-57,862499	-9,814479	*nattereri*	8
Nova Canaã do Norte/MT	MT	-55,953399	-10,5585	*nattereri*	3
Nova Lacerda/MT	MT	-59,6095	-14,476499	*nattereri*	2
Nova Maringá/MT	MT	-57,074501	-13,026499	*nattereri*	3
Nova Monte Verde/MT	MT	-57,535499	-9,98248	*nattereri*	1
Nova Mutum/MT	MT	-56,084499	-13,8385	*nattereri*	1
Novo Mundo/MT	MT	-55,198398	-9,95048	*nattereri*	20
Paranaíta/MT	MT	-56,4775	-9,665479	*nattereri*	31
Pontes e Lacerda/MT	MT	-59,335498	-15,226499	*nattereri*	4
Porto Alegre do Norte/MT	MT	-51,633399	-10,878499	*nattereri*	1
Porto dos Gaúchos/MT	MT	-57,414501	-11,535499	*nattereri*	1
Porto Estrela/MT	MT	-57,2285	-15,3245	*nattereri*	3
Querência/MT	MT	-52,378398	-12,476499	*nattereri*	4
Ribeirão Cascalheira/MT	MT	-51,824401	-12,9425	*nattereri*	5
Santa Carmem/MT	MT	-55,226501	-11,913499	*nattereri*	2
Santo Antônio do Leverger/MT	MT	-56,077499	-15,866499	*nattereri*	2
São José do Rio Claro/MT	MT	-56,7215	-13,4475	*nattereri*	10
Sapezal/MT	MT	-58,764499	-12,9895	*nattereri*	2
Sinop/MT	MT	-55,504501	-11,8645	*nattereri*	6
Sorriso/MT	MT	-55,711399	-12,545499	*nattereri*	1
Tabaporã/MT	MT	-56,620498	-10,807499	*nattereri*	1
União do Sul/MT	MT	-54,353401	-11,533499	*nattereri*	1
Vila Bela da Sant. Trindade/MT	MT	-59,951499	-15,0085	*nattereri*	8
Altamira/PA	PA	-52,206401	-3,203449	*nattereri*	3
Belterra/PA	PA	-54,9374	-2,63645	*nattereri*	1
Cumaru do Norte/PA	PA	-50,773399	-7,825479	*nattereri*	1
Itaituba/PA	PA	-55,9845	-4,27646	*nattereri*	4
Jacareacanga/PA	PA	-57,754501	-6,22446	*nattereri*	11
Juruti/PA	PA	-56,095372	-2,163497	*nattereri*	1
Novo Progresso/PA	PA	-55,3824	-7,147469	*nattereri*	4
Oriximiná/PA	PA	-55,866401	-1,76644	*nattereri*	1
Parauapebas/PA	PA	-49,9024	-6,06847	*nattereri*	12
Santarém/PA	PA	-54,7084	-2,443449	*nattereri*	1
Trairão/PA	PA	-55,944499	-4,57446	*nattereri*	1
Alta Floresta d'Oeste/RO	RO	-61,996498	-11,929499	*nattereri*	2
Cabixi/RO	RO	-60,545501	-13,4925	*nattereri*	6
Chupinguaia/RO	RO	-60,900501	-12,552499	*nattereri*	4
Corumbiara/RO	RO	-60,8875	-12,962499	*nattereri*	1
Ji-Paraná/RO	RO	-61,944499	-10,882499	*nattereri*	2
Parecis/RO	RO	-61,6035	-12,175499	*nattereri*	3
Pimenta Bueno/RO	RO	-61,1935	-11,6735	*nattereri*	1
Pimenteiras do Oeste/RO	RO	-61,0475	-13,483499	*nattereri*	1
Vale do Anari/RO	RO	-62,1865	-9,86347	*nattereri*	1
Vilhena/RO	RO	-60,146499	-12,741499	*nattereri*	1
Pium/TO	TO	-49,182399	-10,443499	*nattereri*	9

New observations

Country	State	Locality	LatDeg	LatMin	LongDeg	LonMin	LatDec	LonDec	Species
Brazil	Minas Gerais	PE do Brigadeiro	20	40	42	30	-20,66666667	-42,5	jacutinga
Brazil	Minas Gerais	PE do Rio Doce	19	30	42	31	-19,5	-42,51666667	jacutinga
Brazil	Paraná	APA Guaraqueçaba	25	9	48	19	-25,15	-48,31666667	jacutinga
Brazil	Paraná	APA Guaratuba	25	44	48	47	-25,73333333	-48,78333333	jacutinga
Brazil	Paraná	PE da Serra da Graciosa	25	18	48	51	-25,3	-48,85	jacutinga
Brazil	Paraná	Rio Piquiri, Altânia	17	23	55	38	-17,38333333	-55,63333333	jacutinga
Brazil	Paraná	Superagui (PN do)	25	25	48	13	-25,41666667	-48,216667	jacutinga
Brazil	Paraná	Chauás (EE dos)	24	43	47	38	-24,71666667	-47,633333	jacutinga
Brazil	Paraná	Salto Morato (RPPN do)	25	19	48	36	-25,31666667	-48,600000	jacutinga
Brazil	Paraná	Rio Cachoeira (RPPN do)	25	27	48	42	-25,45	-48,700000	jacutinga
Brazil	Paraná	Serra do Itaqui (RPPN da)	25	17	48	28	-25,28333333	-48,466667	jacutinga
Brazil	Paraná	Sebuí (RPPN)	25	17	48	15	-25,28333333	-48,250000	jacutinga
Brazil	Paraná	Roberto Ribas Lange (PE)	25	27	48	46	-25,45	-48,766667	jacutinga
Brazil	Paraná	Pau Oco (PE do)	25	28	48	50	-25,46666667	-48,833333	jacutinga
Brazil	Paraná	Área Especial de Interesse Turístico do Marumbi	25	32	48	55	-25,53333333	-48,916667	jacutinga
Brazil	Paraná	Saint-Hilaire/Lange (PN)	25	44	48	47	-25,73333333	-48,783333	jacutinga
Brazil	Paraná	Rio das Onças (PE do)	25	48	48	34	-25,8	-48,566667	jacutinga
Brazil	Paraná	Baguaçu (PE do)	25	55	48	37	-25,91666667	-48,616667	jacutinga
Brazil	Paraná	Lauráceas (PE de)	24	51	48	53	-24,85	-48,883333	jacutinga
Brazil	Rio de Janeiro	Juatinga (RE de)	23	19	44	37	-23,316667	-44,61666667	jacutinga
Brazil	Rio de Janeiro	Cairuçu (APA)	23	19	44	37	-23,316667	-44,61666667	jacutinga
Brazil	Rio Grande do Sul	entre Canela e São Francisco de Paula	29	24	50	42	-29,4	-50,7	jacutinga
Brazil	Rio Grande do Sul	Aparados da Serra, Vacaria	29	9	50	5	-29,15	-50,08333333	jacutinga
Brazil	Rio Grande do Sul	Barra do Ouro, Rolante	29	34	50	16	-29,56666667	-50,26666667	jacutinga
Brazil	Rio Grande do Sul	Taquara	29	39	50	47	-29,65	-50,78333333	jacutinga
Brazil	Santa Catarina	Blumenau	26	56	49	3	-26,93333333	-49,05	jacutinga
Brazil	Santa Catarina	Jaraguá do Sul	26	29	49	4	-26,48333333	-49,06666667	jacutinga
Brazil	Santa Catarina	Pouso Redondo	27	15	49	57	-27,25	-49,95	jacutinga
Brazil	São Paulo	EB de Boracéia	23	39	45	54	-23,65	-45,9	jacutinga
Brazil	São Paulo	EE de Bananal	22	48	44	24	-22,8	-44,400000	jacutinga
Brazil	São Paulo	Fazenda Barreiro Rico, Anhembi	22	48	48	7	-22,8	-48,11666667	jacutinga
Brazil	São Paulo	Iguape	24	43	47	33	-24,71666667	-47,55	jacutinga
Brazil	São Paulo	PE da Ilha do Cardoso	25	8	47	58	-25,13333333	-47,96666667	jacutinga
Brazil	São Paulo	PE da Serra da Bocaina	22	45	44	45	-22,75	-44,75	jacutinga
Brazil	São Paulo	PE de Carlos Botelho	24	4	47	58	-24,06666667	-47,96666667	jacutinga
Brazil	São Paulo	PE de Ilhabela	23	50	45	18	-23,83333333	-45,3	jacutinga
Brazil	São Paulo	PE de Intervales	24	17	48	25	-24,28333333	-48,41666667	jacutinga
Brazil	São Paulo	PE Serra do Mar, Núcleo Caraguatatuba	23	26	45	32	-23,43333333	-45,53333333	jacutinga

Type localities

Country	State/Province	Locality	LatDec	LonDec	Species	Notes
Colombia	Boyacá	Muzo	5,529840	-74,104476	*aburri*	
Brazil	Pará	Belém	-1,455833	-48,503889	*cujubi*	
Venezuela	Delta Amacuro	delta of Río Orinoco	8,581396	-60,840659	*cumanensis*	
France	French Guiana	Cayenne	4,937222	-52,326111	*cumanensis*	type loc. of *Pipile jacou*
France	French Guiana	l'Oyapock			*cumanensis*	type loc. of *Penelope leucolophos*
Brazil	Mato Grosso	Rio Sangradouro Grande	-15,656963	-53,901390	*grayi*	
Brazil		between Bahia and Rio de Janeiro states			*jacutinga*	
Brazil	Rio de Janeiro	São Fidélis, Rio Paraíba do Sul	-21,645833	-41,746944	*jacutinga*	type loc. of *Penelope leucoptera*
Brazil	Rio de Janeiro				*jacutinga*	type loc. of *Penelope nigrifrons*
Brazil	Mato Grosso	Rio Guaporé, Ilha do Carvalho	-13,997199	-60,394880	*nattereri*	species has two type locs
Brazil	Amazonas	Rio Solimões, Lago de Manaqueri	-3,427731	-60,457381	*nattereri*	species has two type locs
Brazil	Amazonas	Rio Purus, Arimã	-5,768113	-63,637515	*nattereri*	type loc. of *Pipile cumanensis naumburgae*
Trinidad and Toabago	Trinidad				*pipile*	

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