

# A critical review of egg descriptions for the Sucre Antpitta *Grallaricula cumanensis* based on the Ragnar Kreuger oological collection of the Finnish Museum of Natural History, Finland

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**Abstract.**— We provide a summary of published information on eggs of the endemic Sucre Antpitta *Grallaricula cumanensis* from Venezuela. Following the formal description of the eggs of *G. c. cumanensis* more than a half century ago, the natural history and breeding biology of the species still remains virtually unknown. During our investigation of inconsistencies in the linear measurements in the literature, we examined the original collection labels associated with the only three egg sets known for the Sucre Antpitta, all held at the Finnish Museum of Natural History. Herein we provide corrected linear measurements for the eggs of the Sucre Antpitta, previously unpublished information from the labels, and discuss the probable inaccuracy of the collecting locality.

**Key words.** Collecting history, egg description, egg measurement, Grallaridae, oology

The Sucre Antpitta is a Venezuelan endemic member of the Neotropical genus *Grallaricula*, that is comprised of ten species of small antpittas (Grallaridae). Formerly considered a subspecies of the Slate-crowned Antpitta *G. nana* (Phelps and Phelps 1963, Meyer de Schauensee and Phelps 1978, Hilty 2003), following a comprehensive phylogenetic analysis *G. n. pariae* and *G. n. cumanensis* were found to differ, in both plumage and vocalizations, from the remaining subspecies of *G. nana* (Donegan 2008). Currently these two taxa are considered to represent subspecies of the polytypic *G. n. cumanensis* (Greeney 2018, del Hoyo *et al* 2019). The geographic variation within the *G. nana/cumanensis* species group, however, remains inadequately known. In particular, the taxonomic affinities and species status of the Tepui population, *G. n. kukenamensis*, remain uncertain (Greeney 2018), but most recent authors still have treated as a related form of *G. nana* (Donegan 2008, Greeney 2018, del Hoyo *et al* 2019).

The Sucre Antpitta is confined to the coastal region of NE Venezuela, with the nominate form known only from the Turimiquire Massif in western Sucre and northern Monagas, and race *G. c. pariae* restricted to the Paria Peninsula (Greeney 2018, del Hoyo *et al* 2019). The species is primarily known from the undergrowth of montane and foothill forests, occasionally as low as 650–850 m in Cerro El Olvido, but more commonly at elevations of 1,000–1,850 m (Greeney 2018, del Hoyo *et al* 2019). The Sucre Antpitta is currently listed as globally Vulnerable, due primarily to its extremely limited range and the increasing threats of deforestation and habitat degradation (Birdlife International 2019). The past two decades have seen substantial additions to our understanding of the breeding biology and natural history of antpit-

tas (Greeney 2019). Published nest descriptions are available for seven of the ten species of *Grallaricula* recognized by del Hoyo *et al* (2019), and descriptions of the eggs are available for nine species, including the partial description given for the egg of Crescent-faced Antpitta *G. lineifrons* by Greeney (2018). Sucre Antpitta is one of the three species that still lack nest descriptions, though its eggs were described half a century ago (Schönwetter 1967, Kreuger 1968).

The purpose of this note is to correct and expand upon previously reported information on the eggs of Sucre Antpitta, based on the examination of egg specimens and labels housed in the Finnish Museum of Natural History (MZH).

To better understand the main problem of our research, a historical summary have been kindly provided by Torsten Stjernberg, who worked with Ragnar Kreuger, since in 1967, studying and curating his collection. Kreuger's oological collection, with approximately 60,000 eggs, was donated to the University of Helsinki in 1962, is currently maintained by the Finnish Museum of Natural History (Emma-Sofia Hyytiäinen, *personal communication*), and represents one of the most significant egg collections in the world. Among the eggs in Kreuger's collection there are numerous sets from Venezuela that were acquired by G. D. Smooker from R. H. Berryman, and later purchased by Kreuger in 1950. In May and June of 1953, Smooker visited Kreuger in Helsingfors. At this time, Smooker's collection was still boxed up (as it had been since 1943) and, at Kreuger's request, Smooker used this visit to begin unpacking and curating his (former) collection. Smooker's curation used two information systems: a note book (loose-leaf register according to Smooker) and data cards in a wooden box. On a full listing

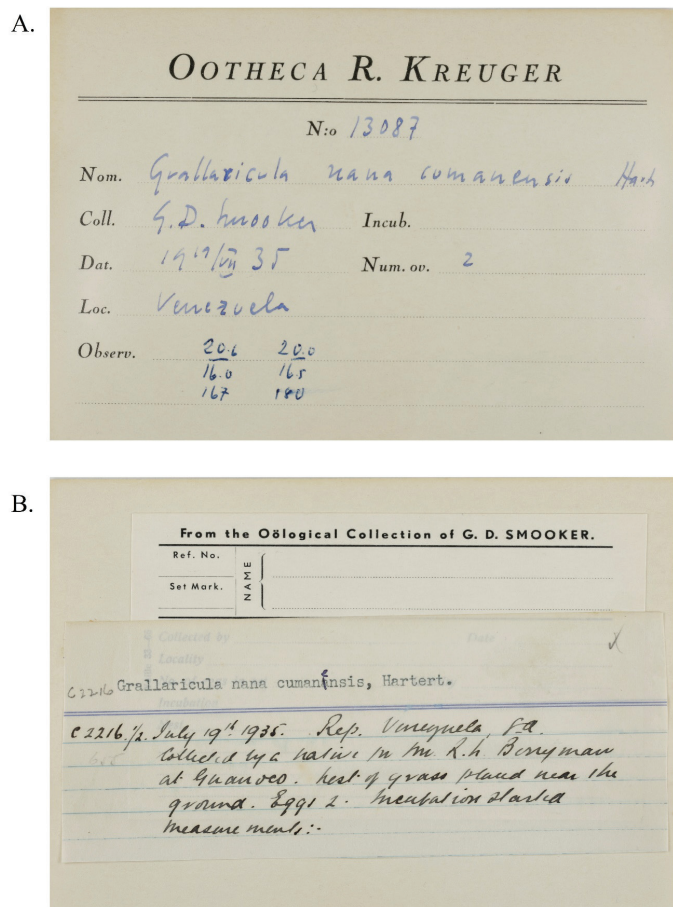


FIGURE 1. Data card for the Sucre Antpitta egg set MZH 43089 (R. Krueger 13087). (A) Front side with linear measurements (B) backside with attached data card from the oological collection of G. D. Smooker. Photos: E. S. Hyttiäinen (© LUOMUS).

of his collection, Smooker noted: "N.B. These data [on the data cards] are entirely separate from, and not included with those filed in the Register and *vice versa*." Likely because of this disparity in the location of information, Kreuger very often augmented his data cards by clipping the relevant text from Smooker's loose-leaf register and affixing it to the back of data cards (Fig 1).

The qualitative and quantitative egg descriptions provided by Schönwetter (1967) and Kreuger (1968) are derived from the six eggs of the nominate race held at the MZH. As pointed out by Greeney (2018), Kreuger's (1968) description of the eggs of Sucre Antpitta did not include any information on clutch size, collecting locality, date, or nest architecture. This omission was partially corrected by Schönwetter (1967), who noted that the eggs were from three clutches of two eggs, collected at Guanoco (Sucre state). This information was overlooked by Greeney (2018), who stated that clutch size was unknown for Sucre Antpitta and failed to include Guanoco in his distribution map. Data included on the MZH labels of the three two-egg clutches previously described by Schönwetter

(1967) and Kreuger (1968) are summarized in Table 1. The new egg measurements used for the comparative analysis were derived from the R. Kreuger labels. Measurements written on the labels were taken by Ragnar Kreuger (Torsten Stjernberg, *personal communication*). In order to obtain more precise measurements and to clarify confusion over previously published dimensions for these egg sets, we used a digital caliper (0.01 mm readability) to remeasure each egg. Where applicable, we provide  $\pm$  standard deviation values along with means.

According to the measurements found in the original labels (Fig 1), the average size of the six eggs is  $19.98 \pm 0.55$  mm in length and  $16.33 \pm 0.29$  mm in width, which differs slightly from the mean size ( $19.98 \times 16.16$  mm) reported by Kreuger (1968). The mean linear dimensions given by Schönwetter (1967) are also in error, as already pointed out by Greeney (2018). Our measurements provided mean dimensions of  $19.92 \pm 0.54$  mm (length)  $\times$   $16.25 \pm 0.22$  mm (width), which differing little from the mean values measurements written on the R. Kreuger labels, supporting these as the most accurate data (see Fig 2). Schönwetter (1967) added to the data for the set by providing the range of the egg size. Thus, the range in Schönwetter (1967) is not consistent with the measurements given in the labels and our measurements (Table 1), and should be revised accordingly to  $19.19\text{--}20.73 \times 15.99\text{--}16.52$  mm ( $n=6$ ). The average weight of the empty shell reported as  $0.171 \pm 0.007$  g ( $r = 0.163\text{--}0.183$  g) is correctly given in Schönwetter (1967). Schönwetter (1967) estimation of the fresh egg weight (2.81 g), however, likely refers to the given average size of the six eggs and is *de facto* questionable (see above).

Based on our own examination of the six eggs discussed above, the eggs of Sucre Antpitta are short-subelliptical (following Palmer 1962), creamy-white with different sized ( $\sim 0.5\text{--}2.5$  mm) flecks and blotches of varying shades of brown. These markings are generally concentrated around odd at the larger pole. The few described eggs of the closely related Slate-crowned Antpitta differ, to some degree, as follows: (1) base color beige to pale brown in contrast to creamy-white in *G. cumanensis* (2) their maculation is more extensive and more reddish brown, and includes sparse pale lavender blotches. The distribution of markings is fairly consistent across the egg's surface but, like eggs of Sucre Antpitta, usually shows a tendency to concentrate at larger pole or near the broadest region (Greeney 2018; Fig 3b). Unfortunately, the data cards now accompanying these eggs provide no information on parental behaviors, but they do cursorily describe the nest as "made of grass and located near the ground." Though lacking in details, this would not be inconsistent with related congeners, and presumably to this description might be added that the nests are shallow, open-cup nests (Greeney and Miller 2008, Niklison *et al* 2008, Greeney 2018)



FIGURE 2. Clutch of the Sucre Antpitta *Grallaricula c. cumanensis* deposited in the Finnish Museum of Natural History (MZH), catalog number 43089. Photo: E. S. Hyytiäinen (© LUOMUS).

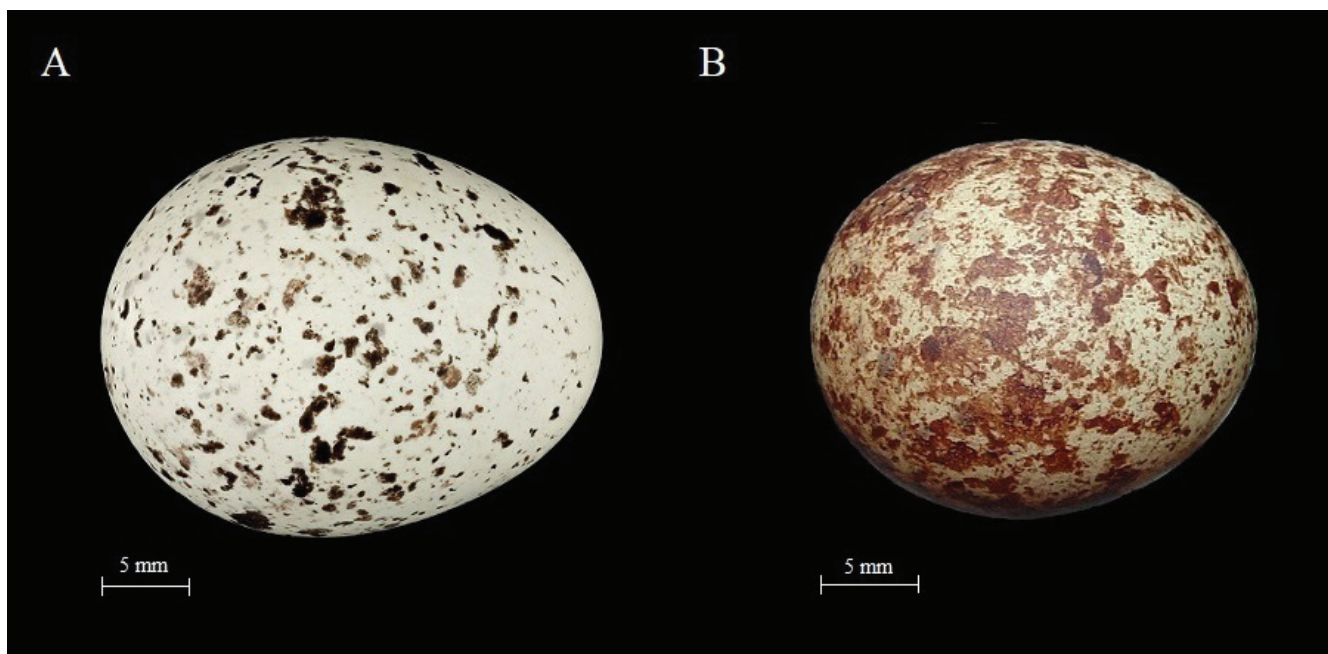


FIGURE 3. Representative eggs of Sucre Antpitta *Grallaricula c. cumanensis* (A) (MZH 43089) and the closely related Slate-crowned Antpitta *G. nana occidentalis* (B) (25 November 2003, Reserva Privada Tapichalaca, Zamora-Chinchipec, Ecuador). Photos: E. S. Hyytiäinen (© LUOMUS) (A) and H. F. Greeney (B).



TABLE 1. Overview of the three clutches of the Sucre Antpitta collected by/for R. H. Berryman held at the Finnish Museum of Natural History, Finland.

MZH catalog number	R. Kreuger oologicum catalog number	Collection date (dd/mm/yyyy)	Clutch size	Egg size (mm) from R. Kreuger data cards	Actual egg size (mm) <sup>1</sup>
MZH 43089	13087	19 July 1935	2	20.60 × 16.00 20.00 × 16.50	20.45 × 15.99 20.05 × 16.40
MZH 43090	13088	30 July 1935	2	19.60 × 16.65 19.25 × 15.90	19.54 × 16.52 19.19 × 15.94
MZH 43091	13089	06 August 1935	2	20.80 × 16.60 19.65 × 16.30	20.73 × 16.45 19.59 × 16.24

<sup>1</sup>Actual measurements for the six eggs held at MZH (Emma-Sofia Hyytiäinen, *personal communication*).

Apart from the minor inconsistencies in egg measurements mentioned above, the collecting locality (Guanoco) drew our attention, and deserves further discussion. Based on the appearance of the egg, and the mention of visual confirmation of adult antpittas at the nest, we do not question odd that the species to which these eggs belong. But the location of Guanoco seems an unlikely place for Sucre Antpitta, given that it is more than 500 m below the vast majority of confirmed locations. Paynter (1982) geo-reference it at 10°08'53.0"N–62°56'16.0"W, 30 m asl (slightly corrected using Google Earth), a place isolated from the nearest known populations of Sucre Antpitta by at least 50 km and, perhaps more importantly, by the Rio San Juan valley (Greeney 2018). Guanoco is located at the southeastern end of Venezuela's costal cordillera, and there are a few very small, and rather isolated peaks reaching 600 m only 5 km to the north. About 20 km northern of these outlying peaks there are many peaks and ridges rising above 600 m. Although eggs collected on the most proximal of these peaks would likely be (fairly correctly) given a collecting locality of Guanoco by most collectors, their small size and geographic isolation, as well as the lack of additional records and the evidence that follows, lead us to suggest an explanation for the equivocal origin of the eggs. In a two-part narrative report, C. F. Belcher (1938a,b) describes a visit to R. H. Berryman in Guanoco, from 15–24 July, 1934. Belcher (1938a) describes the trip originating from Trinidad, beginning with a flight into Quiriquire (09°59'N–63°13'W), where he met Berryman. They then proceeded to Guanoco, largely by boat, and spent the visit collecting eggs in the vicinity of Guanoco, returning together to Quiriquire, a location where well-documented populations of Sucre Antpitta still exist (Greeney 2018). Despite the inconsistency between the year of Smooker's visit and the year provided on the data labels (1934 vs 1935; see Table 1), the dates of this initial visit coincide nearly perfectly with when both collectors would have been in the vicinity of Quiriquire. Although the year of collection may, in fact, have been incorrectly reported on the labels, Berryman actively collected in this region of Venezuela through at least 1936 (based on the labels of egg sets acquired from Berryman and later acquired by Smooker). While we

have no written record of a return trip by Smooker, both he and his colleague, C. F. Belcher, undoubtedly visited Berryman several times, making the area surrounding their port of entry to, and departure from, Venezuela, a spot that one or all of these avid egg collectors would have explored.

An additional plausible explanation for the presumed erroneous locality data is suggested by the very similarly-named location, Guanoto (locally Cerro Guanoto; 10°16'00"N–63°27'02"W, ± 1,000 m asl), located in northeastern corner of Monagas at the border with Sucre; a location undoubtedly falling within the geographic range and habitat preferences of the Sucre Antpitta. Most of the egg sets (41 of 67 clutches, Torsten Stjernberg; *personal communication*) in the Berryman collection, which was acquired by Smooker, were collected at Guanaco and, as Smooker curated and updated the labels of this collections many years subsequent to its purchase, any number of reasons may have led to this error (e.g. incompletely labeled sets, faded hand-written labels, unfamiliarity with Venezuelan locality names, etc). We suggest that, when the three sets of eggs in question were given full labels by Smooker, many years after he acquired Berryman's collection, and they were inadvertently labeled as originating from Guanoco, along with other clutches in Berryman's Guanoco-centered collection. The vast amount of data contained within the world's historical collections of bird skins, nests, and eggs is an underused, but critically important, component of modern ornithological research (Green and Scharlemann 2003). The passage of time, incomplete labeling practices, and variability in the motivations of past collectors, however, all demand that the use of these historical data is accompanied by a critical evaluation of their reliability (Olson 2008). The present study, along with other modern papers (Carter and Sealy 2010, Raposo *et al* 2012), serve to highlight the value and importance of use and critical evaluation of collections, and we encourage others to pursue similar investigations.

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