







The world's largest hummingbird was described 131 years ago

by Juan I. Areta , Matthew R. Halley , Guy M. Kirwan ,
Heraldo V. Norambuena , Niels K. Krabbe  & Vítor Q. Piacentini 

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SUMMARY.—A recent paper in the *Proceedings of the National Academy of Sciences USA* argued that Giant Hummingbird *Patagona gigas* comprises two species ('northern' and 'southern') that differ in morphology, migratory behaviour and, especially, genetics. This proposal merits close consideration, but the introduction of a new name, '*P. chaski*', for the northern population is unwarranted, as the taxon concerned had already been described, as *Patagona peruviana* Boucard, 1893. Failure by the authors of '*P. chaski*' to identify and check the syntypes of *P. peruviana*, which unambiguously correspond to the same morphotype and taxon as '*P. chaski*', resulted in the unnecessary erection of a 'new species' described already more than a century ago. Here we stabilise nomenclature by designating a lectotype for *P. peruviana* of which '*P. chaski*' is a junior synonym.

Williamson et al. (2024) presented evidence that the northern (larger) taxon of Giant Hummingbird *Patagona gigas* (Vieillot, 1824), originally named *Patagona peruviana* Boucard, 1893, and long known as *Patagona gigas peruviana* (e.g., Zimmer 1930, 1952, Hellmayr 1932, Jouanin 1950, Ortiz-Crespo 1974; Table 1), merits species rank. This is plausible, although further studies are needed to rigorously test the hypothesis. However, their claim that 'The world's largest hummingbird is undescribed' (Williamson et al. 2024: 7) is unfounded¹. This taxon had already been named (Boucard 1893) and described in detail (Hellmayr 1932, Zimmer 1952), based originally on two specimens (syntypes), male and female, collected at Tinta (14°09'S, 71°25'W), Peru, by Henry Whitely, both labelled as types by Boucard, and held in the Muséum national d'Histoire naturelle, Paris (MNHN) (Zimmer 1930, 1952, Hellmayr 1932, Jouanin 1950). Despite this, Williamson et al. (2024) made the unfounded assumption that any or all of the 13 extant Whitely specimens labelled 'peruviana' in North American museums could be syntypes of *P. peruviana*, and made no effort to study the relevant Paris type material clearly mentioned in earlier works (e.g., Zimmer 1930, 1952, Hellmayr 1932, Jouanin 1950). None of the specimens they studied has type status;

¹ On 16 May 2024, three days after Williamson et al. (2024) was published, MRH was apparently the first to enquire about Boucard's *Patagona* types at the MNHN. On 17 May, he was informed that the 'specimens are ... present in our collection but have not yet been processed for the database', and that MNHN staff would 'take the opportunity of [his] request to treat these types as a priority, which will therefore soon be available with photos online' (P. Boussès *in litt.* 2024). On 24 May, the MNHN online database was updated and MRH shared the link with J. Williamson, explaining in detail that *P. peruviana* has priority and 'the nomenclature needs to be resolved'. In response, Williamson informed MRH of her intention to stand by the conclusions in Williamson et al. (2024). On 10 June, MRH & JIA sent Williamson an early (but not substantially different) version of the present paper, with an invitation to join as a co-author, which was declined. This correspondence, archived at the Delaware Museum of Nature & Science, Wilmington, is available on request. The manuscript that was shared with Williamson was submitted to *Proc. Natl. Acad. Sci. USA* on 19 June 2024, then on request shortened on 25 June 2024, but rejected by the latter's editors on 5 July 2024 for want of it being a 'substantial' comment on the science in Williamson et al. (2024). Publication herein has been pursued to resolve these issues as swiftly as possible.

e.g., two *peruviana* specimens in the Field Museum (FMNH 45797–45798), formerly in the Boucard collection, also from Tinta and collected by Whitely, are not labelled as types and do not form part of the type series. On finding that DNA sequences of their samples of these ‘putative types’ contained individuals of both *gigas* (AMNH 37502; collected at Ccachupata) and *peruviana* (AMNH 37499, also from Ccachupata; AMNH 37500–37501, from Tinta) they argued that *P. peruviana* was a ‘nomen dubium’ and invalid, and named the northern taxon as a new species, ‘*P. chaski*’ (Williamson et al. 2024).

Even if Williamson et al.’s (2024) conclusion that the name *peruviana* was based on two different taxa had been accurate, this would not make it a *nomen dubium*, nor an invalid name. In that case, the appropriate procedure would have been to take action to preserve nomenclatural stability for the long-established name *peruviana* under Arts. 74 or 75.5 of the *International code of zoological nomenclature* (ICZN 1999). Likewise, their claim that Boucard’s (1893) description was not diagnostic would not invalidate the name *peruviana*, because it was based on one or more extant name-bearing specimens. Furthermore, their claim of historical confusion between the two taxa in the literature does not hold up; and misidentifications on the labels of non-type specimens are irrelevant from the nomenclatural standpoint.

In a keynote text, Hellmayr (1932) examined Boucard’s male syntype in Paris (MNHN-ZO-1989-340), provided a diagnosis of *peruviana* on plumage and morphometry clearly mirrored by that of Williamson et al. (2024) for their ‘*chaski*’, clarified that *peruviana* was not a ‘*nomen nudum*’ (*contra* Simon 1921), and restricted the type locality of *gigas* to Valparaiso, Chile (Table 1). He did not mention the female syntype (MNHN-ZO-1989-341; wing chord 129.5 mm, bill length NA, tarsus 8.6 mm, with plumage generally matching the northern taxon), perhaps because it already lacked an original Whitely label (Jouanin 1950). Hellmayr (1932) wrote (italics ours): ‘*The type*, a male obtained by H. Whitely on June 15, 1868, at Tinta, Dept. Cuzco... *the type* examined in the Paris Museum...’ (Fig. 1; MNHN-ZO-1989-340). It is clear that Hellmayr correctly applied the name *peruviana* to the corresponding taxon, but

TABLE 1

Comparison of selected phenotypic characterisations of *Patagona* taxa by different authors from 1893 to present. Compare these characterisations of *gigas* and *peruviana* (= ‘*chaski*’), with Williamson et al.’s (2024) assertion that ‘neither Whitely, nor Boucard, nor any subsequent ornithological taxonomist of the 19th or 20th centuries, was able to distinguish these two species’.

Boucard (1893: 61) original description of <i>Patagona peruviana</i>
<p>I have in my collection what I consider as the type of Vieillot “Ex Coll Riocour.” My other specimens were collected in Chili by Reed. I have also three specimens collected by Whitely in Peru, and in Bolivia by Buckley. They are different in their coloration.</p> <p>The specimens from Peru have the upper part of the throat black, margined with buff, and the lower part rusty red, all the underside slaty-gray, with the abdomen buffy-white.</p> <p>The specimen from Bolivia has the upperside more bronzy with a rufous tinge on neck, the patch on rump buffy-white, all the underside deep buff, and the wings shining purple with bluish reflections, each feather, excepting the two longest tipped white.</p> <p>If they should prove distinct species, I propose the names of <i>Patagona peruviana</i> and <i>Patagona boliviana</i> for them.’</p>
Zimmer (1930: 280) <i>Patagona gigas peruviana</i>
<p>‘Compared with twenty-three additional skins from Tinta, Hacienda Llagueda, Cajamarca, Macate, and Putre, Tacna; also with thirteen skins of <i>gigas</i> from Caldera, Coquimbo, Aconcagua, Limache, and Santiago, Chile, and Tucumán, Argentina.</p> <p>The Peruvian birds, with one or two exceptions, are consistently larger than the Chilean skins, with longer wings and longer, heavier bills. They also, with one or two exceptions, are more rufescent on the under parts, sometimes very markedly so. Since Dr. Hellmayr plans to discuss the characters of these two races in a forthcoming paper on the birds of Chile, I will leave further details to his able pen.’</p>

Hellmayr (1932: 231) <i>Patagona gigas peruviana</i>
<p>'Although the late Eugene Simon (Hist. Nat. Troch., p. 157) questioned the possibility of discriminating any geographic races of the Giant Humming bird, the study of between fifty and sixty properly labeled specimens from the whole range clearly indicates the existence of two forms.</p> <p>Birds from central Chile (Atacama to Santiago) are characterized by small size, short, slender bill, and mainly grayish under parts, without any chestnut on the lower throat and with rather indistinct dusky streaks on the chin. Specimens from Bolivia, Peru, and Ecuador are decidedly larger, with stouter, longer bill, and the ventral surface is much more suffused with rufescent, the abdomen being often bright cinnamon-rufous. The throat is much more heavily streaked with black and strongly washed or edged with cinnamon-rufous on the lower portion. There is a certain amount of variation in the extent and intensity of the rufous color underneath, but this seems to be purely individual and not to depend on either sex or age. While the palest examples of the northern form can be closely matched by one or two unusually rufous-bellied birds from central Chile, the general run of the two series is easily told apart.</p> <p>Oudart's plate of <i>T. gigas</i>, based on an evidently immature bird from "Brésil" in the collection of "M. Portier, attache au ministre de la marine," while none too good, corresponds fairly well to certain bright-colored Chilean specimens, such as No. 61,676, Caldera, and accordingly I propose to restrict Vieillot's term to the small southern form suggesting Valparaiso as type locality.</p> <p>The larger northern race is entitled to the name <i>P. gigas peruviana</i>,¹ tentatively proposed by Boucard for a specimen from Peru in his collection. The type, a male obtained by H. Whitely on June 15, 1868, at Tinta, Dept. Cuzco, agrees with the average of our Peruvian series, while <i>P. boliviana</i>, was based on an individual variant with wholly cinnamon-rufous under parts, represented in our material by a female from Huanuco Viejo and a male from Macate, Peru.'</p> <p>¹Simon's statement (I. c., p. 356, note 2) that <i>P. peruviana</i> and <i>P. boliviana</i>, are nomina nuda is a mistake, since both are characterized in the preceding paragraphs, although several of the characters claimed by Boucard prove to be individual.'</p>
Ortiz-Crespo (1974: 349) taxonomy
<p>'Ecuadorian birds were not given subspecific status by Chapman (1926), but are similar in size and coloration to birds from Peru, Bolivia and extreme northern Argentina and Chile. These are placed in the race <i>peruviana</i> (cf. Cory 1918, Hellmayr 1932, Peters 1945, Zimmer 1952), which differs from the nominate race, occurring in central Chile, adjacent Argentina, and the southern Chilean provinces, in having a larger body size, a stouter, longer bill, and rufescent underparts. Some specimens from central western Argentina might also represent <i>peruviana</i> (Zotta 1937). The Giant Hummingbird is among the few trochilids with no consistent sexual differences in adult plumage coloration, and it is also confusing in that immatures of both races resemble adult <i>peruviana</i> in having rufescent underparts (Zimmer 1952).</p> <p>I examined well over a hundred specimens from points throughout the range of this hummingbird [...]</p> <p>Only four specimens from outside central Chile whose exposed culmen I measured can be ascribed to the typical race. These are FMNH no. 67518 from Peru, FMNH no. 179394 and ANSP no. 145417 from Bolivia, and ANSP no. 167558 from Argentina, all of which have bills slightly shorter than the mean of <i>P. g. gigas</i> (and thus well below the mean of <i>P. g. peruviana</i>) and uniformly grey underparts. The remainder, including all specimens from Ecuador, have much longer bills and/or rufous feathers ventrally.'</p>
Wiliamson et al. (2024: 7) original description of <i>Patagona chaski</i>
<p>'<i>Species diagnosis.</i> Nuclear and mitochondrial DNA indicate ancient (~2.1 to 3.4 Mya) divergence from the southern giant hummingbird, <i>P. gigas</i>. The two species are distinguished by substantial differences in migratory behavior and nuclear and mitochondrial genomes and subtle differences in external measurements, plumage coloration, and respiratory traits (Figs. 1–4). Adult northern giant hummingbirds typically have whitish throats with dark streaks, a subtle cinnamon patch at the base of the throat, and a whitish eye-ring with postocular spot.</p> <p><i>Comparisons with similar taxa.</i> The southern giant hummingbird has a warm brown to cinnamon throat with subtly contrasting brown streaks, occasionally with a subtle cinnamon patch at the base. Its eye-ring and postocular spot are typically buffy-colored and reduced in extent, giving its face a "blank" appearance.'</p>

it is less clear whether his work qualifies as a valid lectotype designation or not depending on how one interprets the wording in Art. 74.5 (ICZN 1999) concerning Hellmayr's use of the term 'the type', but VQP and many of his colleagues in the Working Group on Avian Nomenclature, as well as GMK, consider that it does not.

To overcome the conflict between these possible interpretations and to promote stability, from the two syntypes we designate MNHN-ZO-1989-340 as the lectotype of *P. peruviana* Boucard, 1893, the same specimen referred to as 'the type' by Hellmayr (1932). It

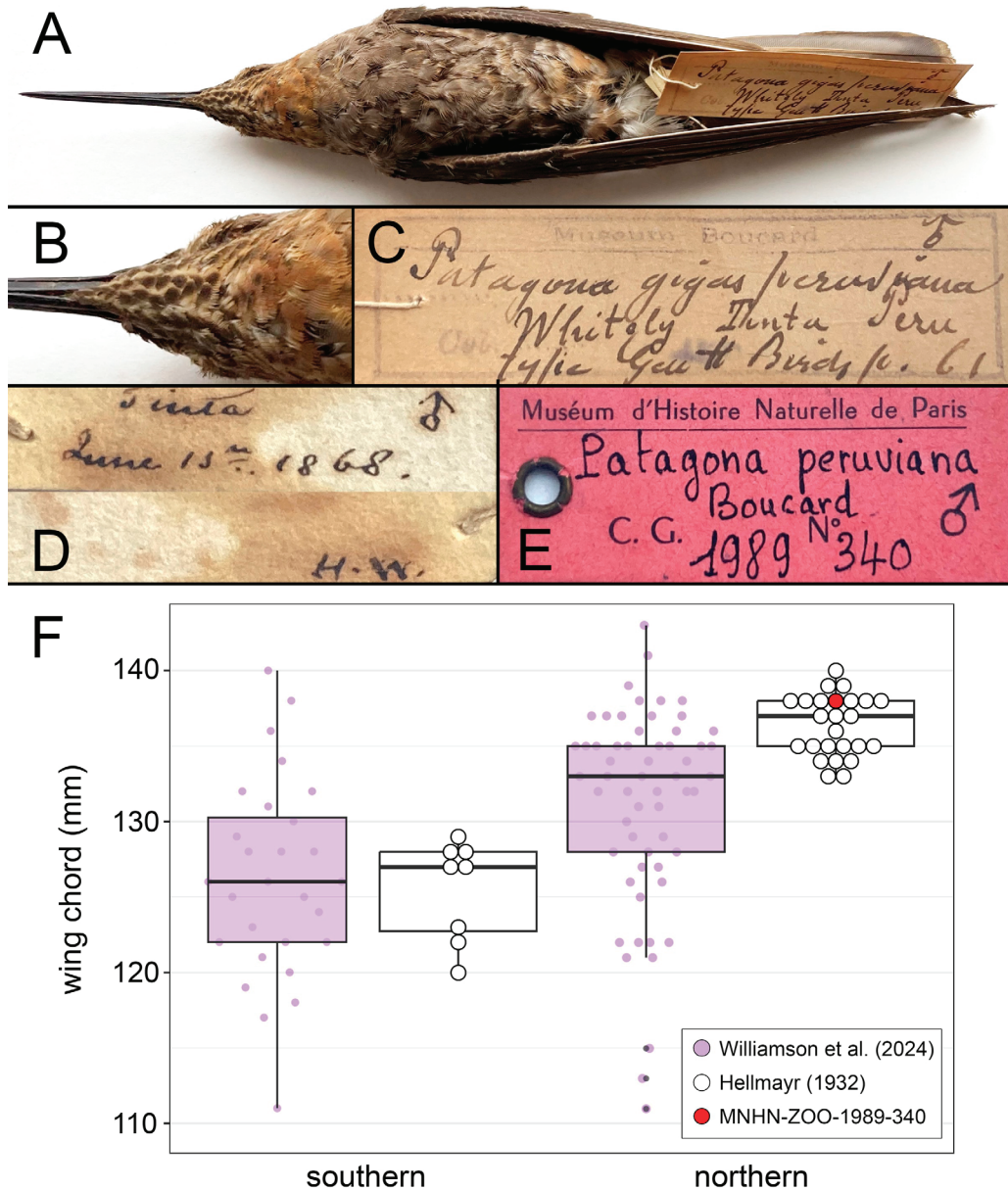


Figure 1. (A) The lectotype of *Patagona peruviana* Boucard, 1893 (MNHN-ZO-1989-340) designated here is the same specimen referred to as 'the type' by Hellmayr (1932); (B) Close-up of the throat, showing diagnostic black spots forming broad stripes on a pale background on the upper throat and contrasting cinnamon lower throat, and compare figs. 3 and S11 in Williamson *et al.* (2024); (C) Boucard's label (front) with original data and citation to original description ('type Gen[era] H[umming] Birds p. 61'); (D) Whitley's ('H.W.') label (front and back), with data matching Hellmayr's (1932) reference to 'the type'; (E) MNHN label (front), with modern registration number (images courtesy of MNHN); (F) Boxplots comparing wing chord data for the southern (*gigas*) and northern (*peruviana*) taxa of 'Giant Hummingbird', from Williamson *et al.* (2024) and Hellmayr (1932). The red circle denotes the wing chord measurement of the *P. peruviana* lectotype (MNHN-ZO-1989-340).

is an adult male unambiguously identifiable as the northern (non-migratory) taxon, i.e. '*P. chaski*': throat with distinct blackish spots forming streaks, pale upper throat and cinnamon lower throat, wing chord 138 mm, bill length 35.7 mm, and tarsus 8.4 mm (Fig. 1, Table 1). This action fixes the identity on the already universally understood taxonomic concept associated with *P. peruviana*, satisfying Arts. 74.7.1, 74.7.2 and 74.7.3 (both original and amended versions; ICZN 1999, 2003), as well as clearly according with Recommendations 74A, 74C, 74D, 74E and 74G (ICZN 1999, 2003). Boucard's female syntype (MNHN-ZO-1989-341) becomes a paralectotype with no name-bearing function (Art. 74.1.3). By priority (Art. 23), the name of the world's largest hummingbird is *P. peruviana* Boucard, 1893, and '*P. chaski*' (Williamson *et al.* 2024) is its subjective junior synonym (Art. 61.3.1).

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References:

- Boucard, A. 1893. *Genera of humming birds*. Pardy & Son, London.
- Hellmayr, C. E. 1932. The birds of Chile. *Publ. Field Mus. Nat. Hist., Zool. Ser.* 19: 1–472.
- International Commission for Zoological Nomenclature (ICZN). 1999. *International code of zoological nomenclature*. Fourth edn. The International Trust for Zoological Nomenclature, London.
- International Commission for Zoological Nomenclature (ICZN). 2003. Declaration 44. Amendment of Article 74.7.3. *Bull. Zool. Nomencl.* 60: 263.
- Jouanin, C. 1950. Catalogue systématique des types de Trochilidés du Muséum de Paris. *Bull. Mus. Natl. Hist. Nat.* 22(6), suppl. 2, 1–27.
- Ortiz-Crespo, F. I. 1974. The Giant Hummingbird *Patagona gigas* in Ecuador. *Ibis* 116: 347–359.
- Simon, E. 1921. *Histoire naturelle des Trochilidés (Synopsis et Catalogue)*. Encyclopedia Roret, Paris.
- Vieillot, L. P. 1824. *Colibris et Oiseaux-Mouches*. Chez Desray, Paris.
- Williamson, J. L., Gyllenhaal, E. F., Bauernfeind, S. M., Bautista, E., Baumann, M. J., Gadek, C. R., Marra, P. P., Ricote, N., Valqui, T., Bozinovic, F., Singh, N. D. & Witt, C. C. 2024. Extreme elevational migration spurred cryptic speciation in giant hummingbirds. *Proc. Natl. Acad. Sci. USA* 121: e2313599121.
- Zimmer, J. T. 1930. Birds of the Marshall Field Peruvian Expedition, 1922–1923. *Publ. Field Mus. Nat. Hist., Zool. Ser.* 17: 233–480.
- Zimmer, J. T. 1952. Studies of Peruvian birds. No. 62. The hummingbird genera *Patagona*, *Sappho*, *Polyommus*, *Ramphomicron*, *Metallura*, *Chalcostigma*, *Taphrolesia*, and *Agelaiocercus*. *Amer. Mus. Novit.* 1595: 1–29.

Addresses: Juan I. Areta, Laboratorio de Ecología, Comportamiento y Sonidos Naturales (ECOSON), Instituto de Bio y Geociencias del Noroeste Argentino (IBIGEO-CONICET), Salta, Argentina, e-mail: esporofila@yahoo.com.ar. Matthew R. Halley, Delaware Museum of Nature & Science, Wilmington, DE, USA, e-mail: mhalley@delmn.org. Guy M. Kirwan, Bird Group, Natural History Museum, Akeman Street, Tring, Herts. HP23 6AP, UK; Research Associate, Field Museum of Natural History, 1400 South Lakeshore Drive, Chicago, IL 60605, USA; and Setor de Ornitologia, Departamento de Vertebrados, Museu Nacional/UFRJ, Av. Bartolomeu de Gusmão, 875, São Cristóvão, 20941-160, Rio de Janeiro, RJ, Brazil. Heraldo V. Norambuena, Centro Bahía Lomas, Facultad de Ciencias, Universidad Santo Tomás, Chile; and Red de Observadores de Aves y Vida Silvestre de Chile ROC, Santiago, Chile. Niels K. Krabbe, Natural History Museum of Denmark, University of Copenhagen, Copenhagen, Denmark. Vítor Q. Piacentini, Departamento de Biologia e Zoologia & Programa de Pós-graduação em Zoologia, Instituto de Biociências, Universidade Federal de Mato Grosso, Cuiabá, Brazil.