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## Polymorphism in *Diglossa humeralis aterrima* in southern Ecuador

by J. R. King

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The Carbonated Flower-piercer *Diglossa carbonaria* superspecies of the northern Andes displays a complex pattern of allopatric speciation, hybridisation and phenotypic variation, though the work of Graves (1980a, 1980b, 1982) has done much to clarify this situation. Within the range of the superspecies, *Diglossa humeralis aterrima* (henceforth referred to by the subspecific epithet only) occurs between 6°S and 6°N, from Cutervo, northern Peru to Medellín, central Colombia (Graves 1982). This paper describes the first record of a rufous, 'hybrid-like' phenotype in *aterrima*, and also attempts to quantify the frequency of the grey-rumped 'nocticolor-type' morph known to occur in females.

During the course of ornithological work in the montane forest of the Rio Mazan Valley, Azuay Province, Ecuador (2°52'S, 79°7'W; 3000–3500 m a.s.l.), described in detail by King (1989), 35 *aterrima* were trapped in August and September 1987 (birds were marked with British Trust for Ornithology rings for individual recognition). This subspecies is typically uniform glossy black, with a wholly black bill (Hilty & Brown 1986, Graves 1982) but one individual, trapped on 4 August (BTO No. 2353603) possessed some atypical plumage features and the following field description was taken:

Whole of head including nape, throat and upper breast glossy black. Mantle, back and scapulars dark glossy *blueish-black*, rump greyer, grading into blackish upper tail coverts. Tail black. Upperwings wholly dark glossy *blueish-black*, lesser coverts paler, *blueish-grey*. Axillaries whiteish, edged chestnut. *Whole of underparts excluding upper breast rufous-chestnut*, including flanks and crissum. Legs grey, iris dark brown, bill black. Culmen (from anterior edge of nostril) 8.05 mm; bill depth (at anterior edge of nostril) 4.20 mm; wing (max. chord) 65.0 mm; weight 11.7 g. Prominent cloacal protrusion. The specimen was not collected, but a photographic record was obtained by Mr J. Dauris.

The rufous underparts and blueish plumage of this individual suggested an affinity with *D. brunneiventris*, populations of which occur at



both the northern and southern ends of the range of *aterrima* (Graves 1980b, 1982). However, the absence of rufous colour on the malars and upper breast, and of a pale supercilium, features typical of *brunneiventris*, suggested hybrid characters. Whilst limited hybridisation occurs between *aterrima* and the Peruvian *D. b. brunneiventris* (Graves 1982), Mazan is some 420 km north of this zone of secondary contact (and considerably further from the Colombian *D. b. vuilleumieri*).

In the Bolivian *D. carbonaria*, Graves (1982) found that the expression of 'hybrid-like' characters actually increased with distance from the zone of true hybridisation with *D. b. brunneiventris*, and hence concluded that the polymorphism was being maintained in *carbonaria* by factors other than introgression (probably pleiotropic and polygenic effects). In view of the distance from a source of *brunneiventris* genes, the individual from Mazan must similarly represent a heretofore undescribed morph of *aterrima*. No such 'hybrids' were found in *aterrima* examined by Graves (1982).

Of the 35 *aterrima* trapped at Mazan, 24 were adults or had completed the post-juvenile (prebasic I) moult and could hence be ascribed to a plumage morph. The frequency of the rufous morph was thus c. 0.04 (1/24). This probably represents a maximum figure, however, for of many further individuals seen in the field, no others showed any hybrid characters. This is significant considering the much higher figure of 0.49 found by Graves (1982) in *carbonaria*.

Two other *aterrima* trapped at Mazan showed grey rumps and some grey feathering of the crissum, but were otherwise typical in plumage, and consequently resembled the subspecies *D. humeralis nocticolor* of the Santa Marta Mountains, northern Colombia. Graves (1982) reported this morph as occurring in "a few female *aterrima*", but does not indicate its frequency.

A frequency distribution analysis of wing-length for the 24 adult *aterrima* (King, unpubl. data) using the methods described by Griffiths (1968) allowed 92% of the birds to be sexed (with an estimated 95% accuracy). The 2 'nocticolor-type' individuals, indeed, proved to be females, and the frequency of this morph in female *aterrima* from Mazan was estimated as 0.17 (2/12). Again, given the distance of Mazan *aterrima* from other members of the superspecies, Graves' (1982) suggestion that this phenotype cannot be directly attributed to introgression must indeed be correct.

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## Notes on the Giant Hummingbird *Patagona gigas* in southern Ecuador

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King (1989) reports on the findings of an avifaunal survey of the Rio Mazan Valley, Azuay Province, Southern Ecuador (2°52'S, 79°7'W) undertaken in July–September 1986 and July–October 1987. These findings included the most southerly known records of the Giant Hummingbird *Patagona gigas* in Ecuador, and the following notes expand upon these records and include new ecological information for the species.

The only previous record of *P. gigas* from southern Ecuador is that of Ortiz-Crespo (1974), who reported one found dead near Cuenca (15 km due E of Mazan) on 20 October 1968 (believed killed some 2 weeks earlier) and who understood the species to be “not uncommon in the dry hills in this area”. The species is also referred to by Ministerio de Agricultura y Ganaderia (1986), whose workers apparently recorded *P. gigas* on the paramo above the Llaviuco Valley (immediately north of Mazan—see King 1989), probably in the austral summer 1985/86, but no details are available.

We recorded several *P. gigas* daily throughout the paramo above Mazan from 13 September 1987 (not 14th as stated in King 1989) until we left the area on 10 October. Observations had been made on the paramo from 30 July and the sudden appearance in numbers of *P. gigas* in mid September strongly suggested a migratory influx. A similar influx occurs in the north of the country in October (Ortiz-Crespo 1974).

Mazan *P. gigas* were recorded over an altitudinal range of 3450–3800 m, the paramo in this area extending between 3400 and 4000 m. This represents a substantial increase in the known altitudinal range of the species in Ecuador, Ortiz-Crespo (1974) giving a maximum altitude of 3300 m, with only 2 records over 3000 m. However, this extension is not unexpected, with *P. gigas* regularly occurring up to 4000 m in the Peruvian altiplano (Dorst 1956).

Upon the Mazan paramo, individual *P. gigas* established large (up to 2 ha) territories around stands of *Puya hamata* (Bromeliaceae) and these



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