

## COMUNICACIÓN CORTA/SHORT COMMUNICATION

**Four cases of different plumage chromatic aberrations in Galapagos birds**Enzo M. R. Reyes<sup>1,3,\*</sup> & Luis Ortiz Catedral<sup>2</sup><sup>1</sup>Marine Bycatch and Threats Team, New Zealand Department of Conservation National Offices, Wellington, New Zealand.<sup>2</sup>World Parrot Trust, Oceania Conservation Program, Hayle TR27 4HB, UK<sup>3</sup>Current address: Alalā Project and Maui Forest Bird Recovery Project, Makawao, Hawaii, USA

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**Cuatro casos de distintas aberraciones cromáticas de plumaje en aves de Galápagos****Resumen**

Las aberraciones cromáticas usualmente representan un problema para los ornitólogos de campo. Estas aberraciones se originan debido a mutaciones genéticas que resultan en una deficiencia de pigmentos, cambiando drásticamente las coloraciones típicas de los individuos, y pueden variar tanto dentro como entre especies. En esta nota presentamos cuatro observaciones de diferentes aberraciones de color en cuatro especies de aves nativas y endémicas de las islas Galápagos: Gaviota de Lava *Leucophaeus fuliginosus*, Charrán Pardo *Anous stolidus*, Cucuve de Floreana *Mimus trifasciatus* y Pinzón Terrestre Chico *Geospiza fuliginosa*. Estos registros amplían taxonómicamente la ocurrencia de aberraciones cromáticas en aves ecuatorianas y del archipiélago de Galápagos.

**Palabras clave:** aberraciones de color, leucismo, café, ino, plumaje.**Abstract**

Plumage chromatic aberrations usually represent a problem for field ornithologists. Chromatic aberrations are originated by genetic mutations that result in a pigment deficiency, drastically altering the typical colour of individuals, and can vary both within and between species. Here, we present four different colour aberrations in four bird species native and endemic to the Galapagos Islands: Lava Gull *Leucophaeus fuliginosus*, Brown Noddy *Anous stolidus*, Floreana Mockingbird *Mimus trifasciatus*, and Small Ground Finch *Geospiza fuliginosa*. These records expand taxonomically the occurrence of chromatic aberrations on Ecuadorian birds and in the Galapagos archipelago.

**Keywords:** colour aberrations, leucism, brown, ino, plumage.

Plumage colour is produced by a combination of several types of pigments from which melanin and carotenoids are the most important (van Grouw, 2006). Genetic mutations could create heritable pigment deficiency and colour aberrations that may differ radically within and between species, representing a problem for ornithologists (van Grouw, 2021). Different terminology has been given to categorise differences in the colour aberration spectrum, including albinism, leucism, brown, dilution, ino, schizochroism, melanism, and differently coloured (van Grouw, 2006). Nevertheless, van Grouw (2021) proposed a new nomenclature of seven colour aberrations (Leucism, Progressive greying, Albino, Brown, Ino, Dilution, and Melanism) based on the effects on melanin pigments, and identifiable in the field according to the effects on plumage and skin colour. In this note, we follow this new nomenclature to classify colour aberrations of opportunistic observations of four bird species in the Galapagos Islands, Ecuador.

**Lava Gull *Leucophaeus fuliginosus***

A single individual *L. fuliginosus* was observed on Bahía de los Pescadores, Puerto Ayora, Santa Cruz Island, Galapagos, in August 2019 (Fig. 1). This bird exhibited a paler than typical brownish plumage and slightly paler colouration of the beak and legs. These aberrations match van Grouw's (2021) Brown aberration category that affect both skin and feather colour, with black plumage turning brown and easily fading in sunlight while

original red and yellow colouration is unaffected by it. Additionally, the beak's typical pigmentation is significantly lighter than usual, but the colour of the eyes and feet is unaltered. According to van Grouw (2021), these Brown aberrations are caused by defects in the production of melanin, specifically a change in the colour of the eumelanin. This is also known as Brown Albinism (Manga *et al.*, 1997). The bird was seen again for several days in April 2023 at the same location. This time we recorded some interactions with a conspecific. We observed that the brown *L. fuliginosus* was attacked by another individual in adult plumage. Literature show that many colours aberrant species are harassed by normal coloured individuals (Sage, 1962; Withgott & McMahon, 1993) from the same species. Nevertheless, the same brown *L. fuliginosus* was attacking another individual in juvenile plumage.

### **Brown Noddy *Anous stolidus***

A single individual was seen by Jenny Daltry on Canal de las Tintoreras, south of Santa Cruz Island, during a tour in July 2022 (Fig. 2). The plumage presented a similar colouration to the *L. fuliginosus* reported above but paler/creamier. Normal-coloured *A. stolidus* present black/dark chocolate plumage, a white eye-ring and black beak and feet. Leucistic colour aberrations have already been reported for the species in French Polynesia (Ducatez & Devore, 2023). The individual we present in Fig. 2 retained the white eye-ring, but its beak and legs were pinkish. This colour aberration is consistent with van Grouw's (2021) Ino, in which the original black plumage turns pale brown or dark brown, and all reddish, yellow, and brown colouration becomes significantly paler or barely perceptible. Colouration on eyes, feet and beak could slightly change or lack any colour difference. According to van Grouw (2021), such Ino aberrations are caused by defects in melanin synthesis, specifically by reduction of melanin.



Figure 1: Brown Lava Gull *Leucophaeus fuliginosus* photographed over a boat in Bahía de los Pescadores, Puerto Ayora, Galapagos (Enzo M. R. Reyes).

### **Floreana Mockingbird *Mimus trifasciatus***

A single individual of this range-restricted and endangered species was observed on Gardner-by-Floreana Islet in October 2012. The individual presented a typical colouration of dark-grey and brown upperparts and creamy underparts in the body, legs, eyes, and dark beak (Ortiz-Catedral, 2018), but the face, crown and chest were creamy instead of brown (Fig. 3). The colour anomaly in this individual is consistent with van Grouw's (2021) Pastel dilution definition, because the creamy colouring only affected the typically brown feathers, while the beak and leg colouration was unaffected. This colour aberration is the commonest form of dilution affecting eumelanin and phaeomelanins, turning the brown pigmentation into a creamy-brown as a washed-out version of their normal counterparts (Grouw 2021).

**Small Ground Finch *Geospiza fuliginosa***

A single individual was observed on the trail to the Charles Darwin Research Station on Puerto Ayora, Santa Cruz Island, in July 2022 (Fig. 4). This individual seemed to be resident in the area, as it has been seen a few times by park rangers of the Galapagos National Park. The individual had a normal-coloured plumage with no colour aberrations visible on beak, legs, eyes or most feathers, except for a white patch on the nape (Fig. 4). This individual's plumage colouration thus matches van Grouw's (2021) Partial leucism, where complete white plumage patches are mixed with normal coloured plumage. If the abnormal colouration patches are located near the feet and beak, these morphological traits could become pinkish. Otherwise, as seen in Fig. 4, no changes in colour on the feet or beak are noticeable. Colour aberrations have previously been recorded in the same species, but no photographic evidence or details of the type of colour aberration were reported (Cadena-Ortiz *et al.*, 2015). Furthermore, leucism has also been recorded in the Large Cactus Finch *Geospiza conirostris* (Grace *et al.*, 2013).

**DISCUSSION**

Records reported here expand taxonomically the occurrence of chromatic aberrations on Ecuadorian birds. Given the genetic relevance of chromatic aberrations, these anomalies are more likely to be observed in small populations where gene flow seems to be limited (Sage, 1962). Therefore, our observations of plumage aberrations in bird species found in the Galapagos Islands are not surprising, due to their smaller gene pool in comparison with mainland species, especially in endangered birds as *L. fuliginosus* and *M. trifasciatus*.



Figure 2: Ino Brown Noddy *Anous stolidus* photographed in Canal de la Tintoreras, Isla Santa Cruz, Galapagos (Jenny Daltry).

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Figure 3: Pastel dilution colouration in a Floreana Mockingbird *Mimus trifasciatus* photographed in Gardner Islet, Galapagos (Luis Ortiz-Catedral).



Figure 4: Leucistic Small Ground Finch *Geospiza fuliginosa* photographed on the way to the Charles Darwin Research Station, Puerto Ayora, Galapagos (Enzo M. R. Reyes).