Fundación Miguel Lillo
Tucumán
Argentina

NOTE

Aberrant Birds: Five cases of progressive graying in Southern Brazil

Aves aberrantes: cinco casos de grisalho progressivo no sul do Brasil

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Abstract

The plumage of birds can exhibit various chromatic aberrations, with progressive graying being one example. This condition is characterized by the presence of randomly scattered white feathers, giving the bird a mottled appearance. In this study, we present records of five new cases of birds with progressive graying across five different species. Notably, species such as *Phimosus infuscatus, Pygochelidon cyanoleuca*, and *Aramides cajaneus* represent the first documented cases of this type of chromatic aberration. These records spanned the years 2022 to 2023 and were documented in the municipalities of Pelotas and Rio Grande, located in the southern coastal region of the state of Rio Grande do Sul, Brazil. The findings presented here contribute to our understanding of birds with progressive graying, documenting the occurrence of this aberration in new species and reinforcing its presence in those previously documented.

Keywords: Birdlife; chromatic aberration; Pampa biome; Rio Grande do Sul.

Resumo

A plumagem das aves pode exibir várias aberrações cromáticas, sendo o grisalho progressivo uma delas. Essa condição é caracterizada

➤ Ref. bibliográfica: Machado-Teixeira, F.; Souto Dias, J. P. 2025. "Aberrant Birds: Five cases of progressive graying in Southern Brazil". *Acta Zoológica Lilloana 69* (1): 257-267. DOI: https://doi.org/10.30550/j.azl/2050
➤ Recibido: 12 de diciembre 2024 – Aceptado: 1 de febrero 2025.
➤ URL de la revista: http://actazoologica.lillo.org.ar

pela presença de penas brancas dispersas aleatoriamente, conferindo à ave uma aparência moteada. Neste estudo, apresentamos registros de cinco novos casos de aves com grisalho progressivo em cinco espécies diferentes. Notavelmente, espécies como *Phimosus infuscatus, Pygochelidon cyanoleuca* e *Aramides cajaneus* representam os primeiros casos documentados desse tipo de aberração cromática. correram entre os anos de 2022 e 2023 nos municípios de Pelotas e Rio Grande localizados na região costeira do sul do estado do Rio Grande do Sul, Brasil. Os registos aqui apresentados aumentam o conhecimento sobre aves com grisalho progressivo, documentando a ocorrência deste tipo de aberração para novas espécies e reforçando-a para aquelas já documentadas.

Palavras-chave: Avifauna; aberração cromática; bioma Pampa; Rio Grande do Sul.

The plumage of birds can exhibit various variations within a single species, such as sexual dimorphism, plumage of adults and immatures, eclipse and reproductive rest, and also individual variations such as xanthochroism, melanism, cyanism, erythrism, leucism, and albinism (Buckley 1982; Sigrist 2006). Several chromatic variations in the plumage and external parts of birds are documented in the literature (Teixeira 1985; Nemésio 1999). Documenting these variations allows understanding possible occurrence patterns, causes, and potential effects on the survival of these organisms (Van Grouw 2013).

In North America, there are records of chromatic aberrations in birds for about 75 families (Ayala-Pérez, Arce, Carmona, 2014). For the Neotropical region, this information is still not well understood; however, we know that these records are commonly reported, as evidenced by several studies published in recent years (Urcola 2011; Corrêa et al. 2017; Carboneras 2018; Vanstreels et al. 2018; Meyer and Crozariol 2020; Dias, Teixeira, Marques, Meller, Kasper, 2023).

Progressive graying is initially characterized by the presence of randomly scattered feathers, giving the bird a mottled appearance, and later the entire plumage may become white, forming spots or even covering practically the entire body (Van Grouw 2018). However, progressive graying seems to be one of the most reported aberrations for southern Brazil, especially in more recent records (Frainer, Daudt, Carlos 2015; Corrêa et al. 2020; Lambert, Lobo, Corrêa 2020; Silva, Pozzebon, Corrêa 2021; Dias et al., 2023).

The records in this study were opportunistically obtained during travels, fieldwork, and other non-standardized observations, in the Brazilian Pampa biome and coastal region of the state of Rio Grande do Sul (IBGE

2019). This region is part of the formation of the Uruguayan Savanna, a landscape characterized by subtropical grasslands (Olson et al. 2001).

The purpose of this study is to report the registration of new cases of progressive graying for the species: *Phimosus infuscatus*, *Paroaria coronata*, *Aramides cajaneus*, *Chrysomus ruficapillus*, and *Pygochelidon cyanoleuca*. Thus, we expand the cases and knowledge of this chromatic aberration in the respective bird species in southern Brazil.

OCCURRENCE DESCRIPTION

The encounters with the birds took place in the municipalities of Pelotas, Rio Grande, and Rosário do Sul. These municipalities belong to the Brazilian region of the Pampa biome (Brazilian Institute of Geography and Statistics - IBGE), a grassland formation in southern Brazil (Olson et al., 2001). This biome, which is restricted to the State of Rio Grande do Sul, with an area of 176,496 km^2, corresponds to 63% of the state's territory and 2.07% of the Brazilian territory (MMA, 2002). According to the Köppen classification, the climate is type Cfa, characterized as subtropical, with an average annual temperature of 18.6°C and an average annual precipitation of 1,356 mm (Maluf, 2000).

The records in the present work were obtained with Bushnell 10x42 binoculars to identify the birds and Nikon cameras with 70-300 mm lenses to take the records. They were collected opportunistically between August 2022 and May 2023 dng movements through this region, or during non-standard birdwatching observations. Two of them were conducted during Global Big Day in May 2023.

Phimosus infuscatus

— Bare-faced Ibis —

An individual of the Bare-faced Ibis was recorded with plumage aberration on August 24, 2022. It was observed flying over a marshy area of bulrush in the locality of Pontal da Barra, in the municipality of Pelotas, Rio Grande do Sul (31°46'S, 52°13'W). This Ibis is widely distributed in South America, from Guyana and Venezuela to Bolivia, Paraguay, Argentina, Uruguay, and virtually all of Brazil. It inhabits open areas with marshes and fields (Sick 1997). In southern Brazil, the species is common in the marshes of the southeast coast and the pampa region of Rio Grande do Sul, as well as in rice fields and marshes (Belton 1994). At the time, the bird had white feathers, especially in the pectoral region, and to a lesser extent, in the surrounding neck area (fig. 1A). Based on Van Grouw's descriptions (2013), we identified the aberration as progressive graying. Plumage mutation in this species had previously been reported in the municipality of Estrela,

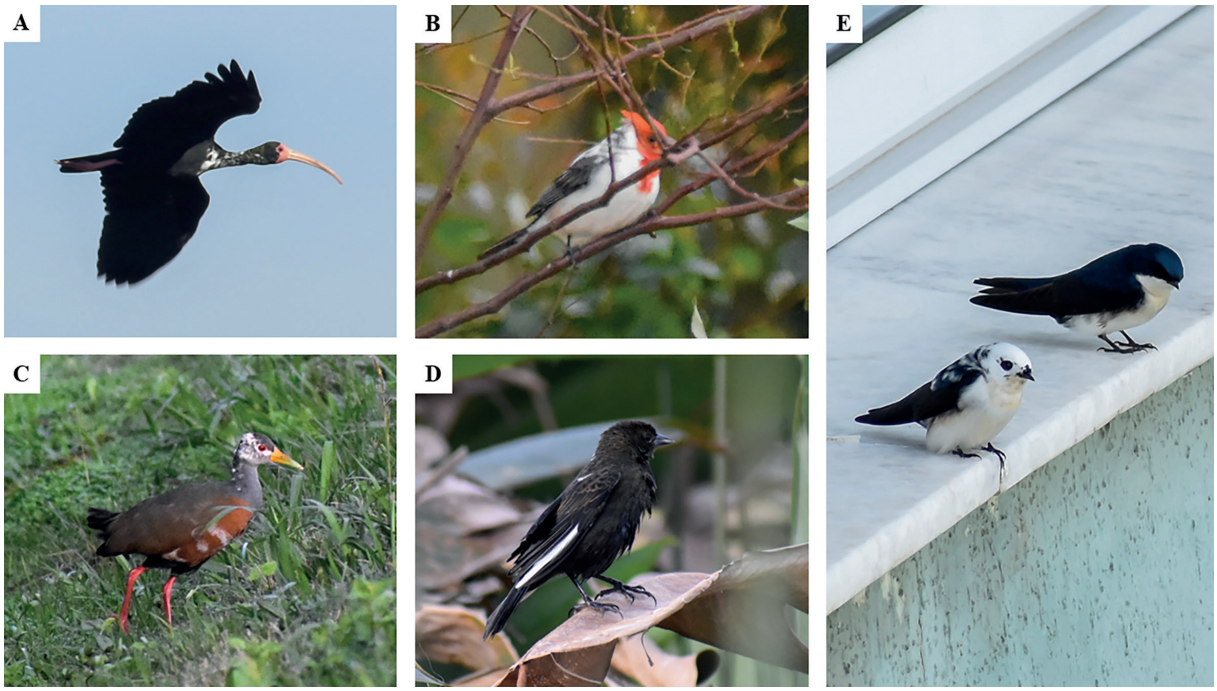

Figure 1. Individuals recorded with progressive graying aberration in the Brazilian Pampa: (A) *Phimosus infuscatus*, August 24, 2022 - Pelotas/RS. Photo: Dias, JP; (B) *Paroaria coronata*, September 29, 2022 - Rosário do Sul/RS. Photo: Dias, JP; (C) *Chrysomus ruficapillus*, May 20, 2023 - Rio Grande/RS. Photo: Teixeira, FM; (D) *Aramides cajaneus*, May 20, 2023 - Rio Grande/RS. Photo: Teixeira, FM; (E) *Pygochelidon cyanoleuca*, May 20, 2023 - Pelotas/RS. Photo: Dias, JP.

Figura 1. Indivíduos registrados com aberração de grisalho progressivo no Pampa brasileiro: (A) *Phimosus infuscatus*, 24 de agosto de 2022 - Pelotas/RS. Foto: Dias, JP; (B) *Paroaria coronata*, 29 de setembro de 2022 - Rosário do Sul/RS. Foto: Dias, JP; (C) *Chrysomus ruficapillus*, 20 de maio de 2023 - Rio Grande/RS. Foto: Teixeira, FM; (D) *Aramides cajaneus*, 20 de maio de 2023 - Rio Grande/RS. Foto: Teixeira, FM; (E) *Pygochelidon cyanoleuca*, 20 de maio de 2023 - Pelotas/RS. Foto: Dias, JP.

also in Rio Grande do Sul (Corrêa et al. 2017). In this case, the individual exhibited whitish tones in some feathers of the right wing, extending from the back to the tail, identified by the authors as partial leucism.

Paroaria coronata

— Red-crested Cardinal —

An individual of the Red-crested Cardinal was recorded on September 29, 2022, foraging on the shoulder of BR-290 in the municipality of Rosário do Sul, Rio Grande do Sul (30°14'S, 54°46'W). This individual had white feathers on the nape and part of the mantle (fig. 1B), representing a case of progressive graying, according to Van Grouw's descriptions (2013). This species occurs in Brazil, Argentina, Bolivia, Paraguay, and Uruguay, with its distribution in Brazil extending from Rio Grande do Sul to the southwest of Mato Grosso (Sick 1985). Cases of Red-crested Cardinal with aberrant

plumage are known from Argentina, where an individual registered by Chebez (1987) and identified with leucism was sighted in the Bermejo Department, in the Chaco Province, about 600 km away from the records here. Distinguished by being predominantly white, with some feathers of yellowish, reddish, and grayish colors. Also in Argentina, Zapatta and Novatti (1979) reported other specimens with different coloration from normal individuals of the species. In Rio Grande do Sul, Corrêa, Silva, Ferla, Seixas, Oliveira (2012) recorded an individual with leucism that had feathers, plumes, beak, and tarsi completely depigmented. Still in Rio Grande do Sul, another case for the species, mentioned by Dias et al. (2023), where an individual recorded on BR-290, near the municipality of São Gabriel, exhibited aberrant plumage identified as progressive graying or perhaps a case of isabel dilution.

Chrysomus ruficapillus

— Chestnut-capped Blackbird —

A female individual of the Chestnut-capped Blackbird was recorded on May 13, 2023, along with a flock of about 10 other individuals of the species in a flooded area within the municipality of Rio Grande, state of Rio Grande do Sul (31°51'S, 54°17'W). The individual had some white feathers scattered throughout the body, such as on the mantle, nape, wings, rump, and tail (fig. 1C). Following Van Grouw's descriptions (2013), the individual exhibited progressive graying. The Chestnut-capped Blackbird belongs to the Icteridae family and has a wide distribution throughout South America, ranging from eastern Bolivia and Brazil to northeastern Argentina and Uruguay (Fraga, 2020). Populations of this species are gregarious, forming large flocks for most of the year (Fallavena 1987). The species is considered paludicole and forms small groups that are easily observed in natural marsh areas or artificial flooded areas, such as wet pastures and agricultural fields (Fraga 2020). Cases of Chestnut-capped Blackbird with chromatic aberrations in the plumage were recorded in the municipality of Doutor Pedrinho in the state of Santa Catarina. Meyer and Crozariol (2020) identified two females with progressive graying and described these observations as one female with some white rectrices dividing the tail into three parts and the other with some white feathers on the nape region.

Aramides cajaneus

— Gray-cowled Wood-Rail —

An adult individual of the Gray-cowled Wood-Rail was found in the late afternoon of May 13, 2023, foraging along the margins of highway 471 in the municipality of Rio Grande (31°47'S, 52°20'W). The wood-rail predom-

inantly exhibited the head region mottled with white feathers, as well as some other white feathers on the neck, ventral portion, and some parts of the wings (fig. 1D), indicating the aberration known as progressive graying according to Van Grouw's descriptions (2013). This species is reported for the Pacific slope, where it is distributed from the state of Oaxaca, Mexico, to the west of El Salvador (Howell and Webb 1995). A case of this species with aberrant plumage was recorded on Ilha Solteira, in the northwest region of the state of São Paulo (Silva and Teixeira, 2019). According to the authors' description, only the ventral region, neck, and head showed traces of standard colors with some pigmented feathers, which they identified as leucism for the species.

Pygochelidon cyanoleuca

— Blue-and-white Swallow —

A female individual of the Blue-and-white Swallow was recorded for the first time on May 20, 2023, as part of a flock of about 12 individuals on a building in the city of Pelotas (31°44'S, 52°19'W). This individual was followed for about a week and apparently was part of a pair, as it was always accompanied by another individual with normal plumage within the flock, where both coexisted normally despite their plumage alterations. Following Van Grouw's descriptions (2013), this individual exhibited progressive graying, as it had entirely white feathers in various parts of the body, predominantly in the head region, which was practically entirely white, decreasing in intensity from the nape to the mantle region (fig. 1E). The Blue-and-white Swallow is a neotropical species, widely distributed in Brazil (Sheldon and Winkler 1993, Sigrist 2006). It occurs in forested environments, swamps, floodplains, fields, and open areas near farms and cities (Sick 1997; Sigrist 2006). Migratory, it appears at the end of the dry season and the beginning of the rainy season in the southern and southeastern regions, where it breeds (Antas 1981; Develey 2004; Sigrist 2006). In Brazil, two cases of chromatic aberration in this species are documented, both in the state of São Paulo. One case was an individual observed with partial leucism in the municipality of Bananal (Pacheco and Gagliardi 2012), and the other case was an individual with uniformly white plumage, pink legs and beak, and dark eyes found in a flock of about 30 swallows of the same species (Godoy 2012).

Aberrations in bird plumages are not uncommon in nature (Van Grouw et al. 2011). In the state of Rio Grande do Sul, several cases of birds with aberrant coloration have recently been reported, as cited by Corrêa et al. (2017), Mohr, da Silva Mohr, Correa, Machado, Périco (2017), Vieira, Brentano, Horn (2018), Lambert et al. (2020), Rödel, Pozzebon, Vieira, Silva, Corrêa (2020), and Dias et al. (2023) (table 1). During our reviews, we noticed that many cases of progressive graying may have been mentioned

Table 1. Records of aberrant individuals with progressive graying in the state of Rio Grande Sul, Brazil.

Tabela 1. Registros de indivíduos aberrantes com grisalho progressivo no estado do Rio Grande Sul, Brasil.

Species	Aberrant plumage reported	City	Autors
Procellaria aequinoctialis	p. graying or parcial leucism	Torres/RS	Frainer et al, 2015
Trogon surrucura	progressive graying	Santa Maria/RS	Vieira et al, 2018
Troglodytes musculus	progressive graying	Santa Maria/RS	Vieira et al, 2018
Turdus amaurochalinus	progressive graying	Três coroas/RS	Vieira et al, 2018
Zenaida auriculata	progressive graying	Lajeado/RS	Rödel et al. 2020
Zenaida auriculata	progressive graying	Júlio de Castilhos/RS	Rödel et al. 2020
Molothrus bonariensis	progressive graying	Santa Maria/RS	Rödel et al. 2020
Turdus rufiventris	progressive graying	Santa Maria/RS	Rödel et al. 2020
Vanellus chilensis	progressive graying	Rio Grande/RS	Corrêa et al. 2020
Mimus saturninus	progressive graying	Santa Cruz do Sul/RS	Lambert et al. 2020
Cyclarhis gujanensis	progressive graying	Pinhal Grande/RS	Silva et al. 2021
Tyrannus savana	progressive graying	São Gabriel/RS	Dias et al. 2023
Furnarius rufus	progressive graying	São Gabriel/RS	Dias et al. 2023
Paroaria coronata	p. graying or isabel dilution	São Gabriel/RS	Dias et al. 2023
Vanellus chilensis	progressive graying	São Gabriel/RS	Dias et al. 2023
Vanellus chilensis	progressive graying	Santa Margarida do Sul/RS	Dias et al. 2023
Netta peposaca	progressive graying	Santa Margarida do Sul /RS	Dias et al. 2023
Amazonetta brasiliensis	progressive graying	Santa Margarida do Sul /RS	Dias et al. 2023
Phimosus infuscatus	progressive graying	Pelotas/RS	this paper
Paroaria coronata	progressive graying	Rosário/RS	this paper
Aramides cajaneus	progressive graying	Rio Grande/RS	this paper
Chrysomus ruficapillus	progressive graying	Rio Grande/RS	this paper
Pygochelidon cyanoleuca	progressive graying	Pelotas/RS	this paper

erroneously, often confused as partial or total leucism. This confusion occurs especially when the plumage shows whitish depigmentation mixed with normal-colored feathers or isolated feathers with whitish parts (Van Grouw 2012, 2018). Some cases of this type have already been corrected, such as the case of the Southern Lapwing (*Vanellus chilensis*) by Corrêa et al. (2020), where the authors analyzed 24 different cases of aberrations with the species and corrected 21 of these with misidentification. It is possible that many species documented with some type of aberration have erroneous information, so further revisions are necessary, especially referencing Van Grouw's works (2012, 2013, 2018).

Some factors that may influence the occurrence of these abnormalities in birds are discussed by Guay, Potvin, Robinson (2012). Authors such as Santos (1981), Ellegren, Lindgren, Primmer, Møller (1997), and Collins (2003) show that the lifespan of birds with chromatic aberrations in nature tends to be reduced compared to birds with normal coloration since they are more easily spotted by predators due to their distinct coloration. With that said, it is important for these events to be documented in the literature, reporting the aberrant plumage patterns of the affected specimens (Van Grouw 2006, 2013). In addition to mentioning all types of species

behavior as well as any data about the environment in which it is inserted (Corrêa et al. 2017), partner selection, reproductive success (Finger, Santos, Corrêa, Brum, Petry, 2018), and longevity (Corrêa, Silva, Oliveira 2013). It would also be interesting to have a longer follow-up of individuals with chromatic aberrations, investigating how these mutations affect the lives of these birds, especially since studies reporting the monitoring of these individuals are scarce in the literature.

ACKNOWLEDGMENTS

This work was carried out with the support of the "Coordenação de Aperfeiçoamento Pessoal de Ensino Superior" - Brazil (CAPES) - Financing Code 001.

PARTICIPATION

Both authors, FMT and JPSD, contributed to the field records (as identified in the article) and collaborated on the literature review, writing, revision, and editing of the paper.

CONFLICTS OF INTEREST

The authors declare no competing interests.

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