



Two records of leucism in the Eurasian Collared-Dove (*Streptopelia decaocto*) in northern Mexico

Dos registros de leucismo en la paloma de collar asiática (*Streptopelia decaocto*) en el norte de México

Cristian Adrian Martínez-Adriano¹, * , Elisa Paulina Zaragoza-Quintana¹ , Mauricio Cotera-Correa¹

¹Facultad de Ciencias Forestales, Universidad Autónoma de Nuevo León. Linares, Nuevo León, México

* Autor de correspondencia: cristian.martinez.cama@gmail.com

Abstract

We observed two cases of leucism in the Eurasian Collared-Dove (*Streptopelia decaocto*) in two localities of Northern Mexico. Both individuals were the first leucistic records for this species in Nuevo Leon and Durango states. The two specimens had most of the body with white plumage, pinkish legs, and grayish beak (compared to normal individuals), but maintained the characteristic color in the eyes; and were observed only once and as solitary individuals.

Keywords: chromatic aberration, Columbidae, feather pigmentation, invasive species.

Resumen

Registramos dos casos de leucismo en la paloma de collar Asiática (*Streptopelia decaocto*) en dos localidades del norte de México. Ambos individuos fueron los primeros registros de leucismo en esta especie para los estados de Nuevo León y Durango. Los dos ejemplares presentaban la mayor parte del cuerpo con plumaje blanco, patas rosadas y pico grisáceo (comparado con los individuos normales), pero mantuvieron los ojos con su color característico. Ambos individuos fueron observados solo una vez y en solitario.

Palabras clave: aberración cromática, Columbidae, especie invasora, pigmentación de las plumas.

Introduction

Leucism is an aberration in plumage coloration due to genetic causes (van Grouw 2006). This mutation is characterized by the lack of total or partial melanins (eumelanin and pheomelanin) in the feathers (van Grouw 2006), which often does not affect carotenoids (van Grouw 2013, Trivedi 2016). Contrary to albinism (where the melanins are not produced), in leucistic birds, melanins are produced but not deposited in the feathers due to an inherited disorder (van Grouw 2006). The extent of white plumage in leucistic birds can vary from a few white feathers (partial leucism) to totally white feathers (total leucism) (van Grouw 2013, Tinajero et al. 2018). This chromatic aberration is most common in species with gregarious, sedentary habits, or with reduced populations due to inbreeding (Sage 1962). Leucism has been frequently documented in domestic or cap-

INFORMACIÓN SOBRE EL ARTÍCULO

Recibido:

25 de agosto de 2021

Aceptado:

26 de julio de 2022

Editora Asociada:

Teresa Patricia Feria Arroyo

Contribución de cada uno de los autores:

CAMA and EPZQ conducted the field observations of the Eurasian Collared-Dove; CAMA and EPZQ wrote initial draft; CAMA, EPZQ, and MCC revised, edited, and approved the final version of the manuscript.

Cómo citar este documento:

Martínez-Adriano, CA, Zaragoza-Quintana, EP, Cotera-Correa, M. 2022. Two records of leucism in the Eurasian Collared-Dove (*Streptopelia decaocto*) in northern Mexico. Huitzil Revista Mexicana de Ornitología 23(2):e-642. DOI: <https://doi.org/10.28947/hrmo.2022.23.2.620>



Esta obra está bajo una licencia de Creative Commons Reconocimiento No Comercial-Sin Obra Derivada 4.0 Internacional.

tive birds and to a lesser extent in wild species (Ellegren et al. 1997, Ayala-Pérez et al. 2015), where this color anomaly may be negatively selected due to both predation (Sage 1962, Ellergren et al. 1997; Izquierdo et al. 2018), and reduced mating success (Ellegren et al. 1997).

Both leucism and albinism, have been widely recorded in hundreds of bird species globally (Sage 1962, Contreras-Balderas and Ruíz-Campos 2011, Villegas 2021). Particularly, leucism concentrates the highest frequency of reports of chromatic aberrations in birds from temperate and tropical regions (Li et al. 2011, Cadena-Ortiz et al. 2015, Villegas 2021), and records have been increased over the last two decades (Tinajero et al. 2018, Villegas 2021). For Mexico, there are few records of chromatic aberrations in birds (Tinajero et al. 2018). The first record of a chromatic aberration for the country was made by Phillips (1954), who observed partial albinism on an individual of *Quiscalus mexicanus*. Among publications of plumage alterations observed in Mexico, those related with leucistic wild birds have been the most documented (Contreras-Balderas and Ruíz-Campos 2011, Ayala-Pérez et al. 2014, Cortinas-Salazar and Contreras-Balderas 2014, Hernández-Valdez et al. 2016, Reséndiz-Cruz and Caballero-Jiménez 2016, Tinajero et al. 2018), followed by albinism, ino, and melanism (Tinajero et al. 2018).

According to the description of Álvarez-Romero et al. (2008), the Eurasian Collared-Dove (*Streptopelia decaocto*, Frivaldszky 1838) is a bird with light gray plumage with a slight pink tint, particularly on the chest. The back and wings are light brown, with a blackish zone under the tail base, and the species has a black collar on the nape, black beak, reddish legs, and dark eyes. This dove is an Old-World species that was introduced to the Bahamas in the 1970s (AOU 1998). Over the next three decades, this species dramatically expanded westward across the United States of America (Smith 1987). The species was first reported in northern Mexico in the early 2000s and soon was documented throughout the country (CONABIO 2017).

Observations

We observed two adult leucistic individuals of the Eurasian Collared-Dove in two localities of northern Mexico. The first specimen was observed on 29 April 2018, feeding on the edge of an experimental sorghum crop field belonging to Centro de

Investigación en Producción Agropecuaria at Universidad Autónoma de Nuevo León, on the outskirts of Linares city in Nuevo León state (24°47'37.05"N, 99°32'50.74"W; Figure 1A). This individual had the body and flight feathers completely white (except for the primary and nape feathers that structure the characteristic collar of the species) and fled from human presence.

The second specimen was observed on 22 November 2020, while foraging in cow feces, inside the suburban area of the locality "La Esmeralda", belonging to the municipality of Gómez Palacio in Durango state (25°44'19.50"N, 103°25'44.48"W; Figure 1B-D). This second individual had a white head and chest, with a faint nape crescent and some gray feathers (the usual color of the species) on its scapulars and back (Figure 1D). The individual lacked the black tips on primary feathers, and was tolerant of human presence.

Both individuals had legs and beak of a lighter color than normal individuals, but had the characteristic eye-color (Figure 1B-D), and were observed only once under solitary conditions. Both observations of this species represent the first records of this chromatic aberration for Nuevo León and Durango. These observations occurred fortuitously, that is, an exhaustive or systematic exploration was not developed to detect individuals with chromatic aberrations.

Discusión

We considered that both individuals observed in this study corresponded to a near-total leucism chromatic aberration. According to van Grouw (2006), this chromatic aberration can vary from a few white feathers (<25 %, which corresponds to a partial leucism) to an entire white individual (100 %, which corresponds to a total leucism). The individuals were observed were almost white (>80%). Additionally, the specimens observed in this study had feather coloration similar to the first record for this species in Mexico (Contreras-Balderas and Ruíz-Campos 2011). Other authors report individuals of several bird species with partial leucism, which corresponds to the most common type of leucism in birds (González-Arrieta and Zuria 2015, Hernández-Valdéz et al. 2016, Reséndiz-Cruz and Caballero-Jiménez 2016, Izquierdo et al. 2018).

Published records report three cases of chromatic aberrations reported for the Eurasian Col-

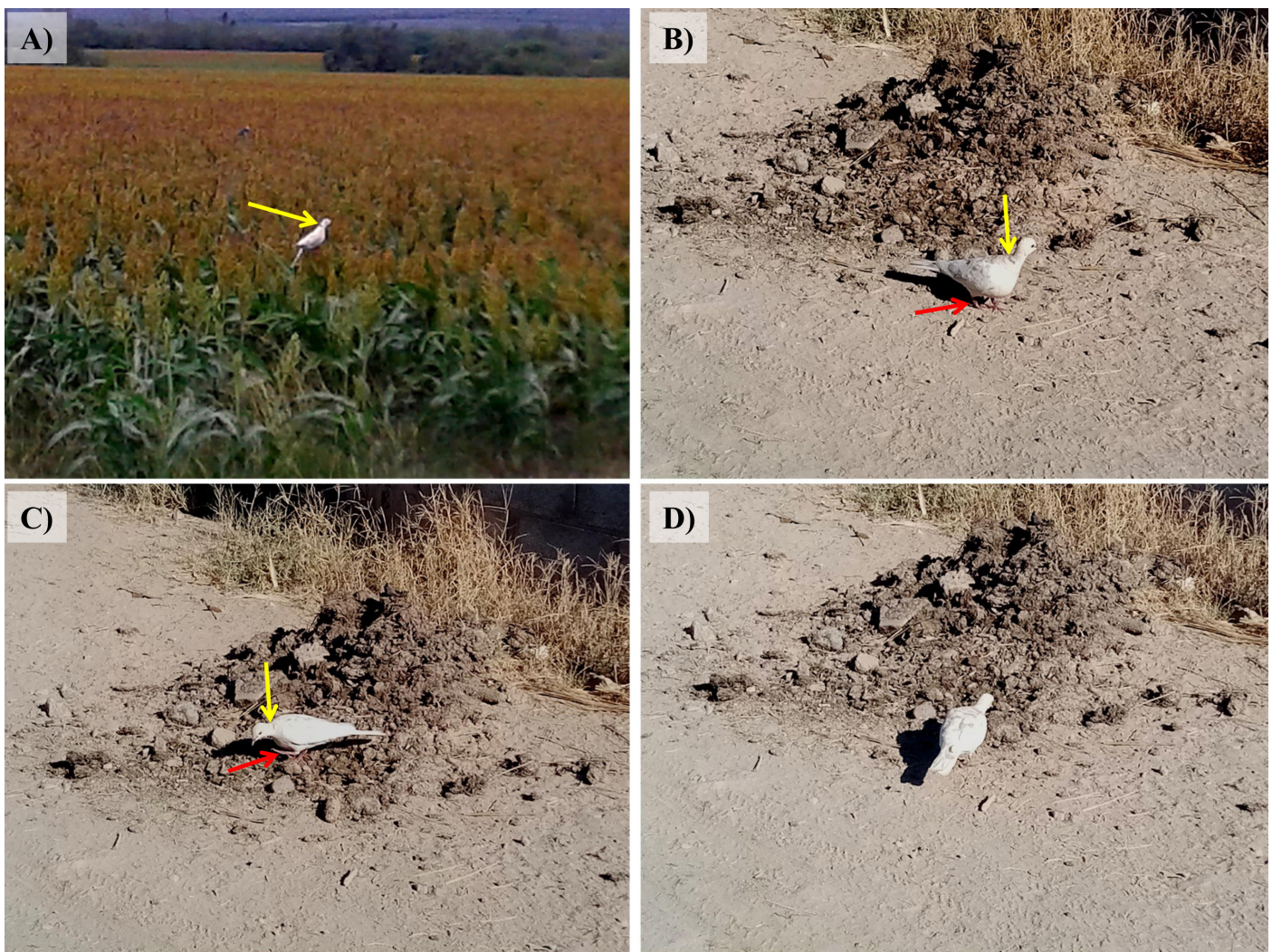


Figure 1. Leucistic specimens of the Eurasian Collared-Dove (*Streptopelia decaocto*) observed in Nuevo Leon and Durango in northern Mexico. A) First specimen was recorded on 29 April 2018 feeding on the edge of an experimental sorghum crop field (Photograph by Cristian Adrian Martínez Adriano). B and C) Second specimen of the Eurasian Collared-dove recorded on 22 November 2020 foraging in cow feces in a suburban area (Photographs by Elisa Paulina Zaragoza Quintana). D) Gray feathers on the wings and back of the second dove specimen (Photograph by Elisa Paulina Zaragoza Quintana). Yellow arrows show the characteristic collar of this species and red arrows highlighted their pinkish legs. All photographs were taken with mobile phones.

lared-Dove: brown from India (Trivedi 2016) and ino and leucism from Mexico (Tinajero et al. 2018). According to the review by Tinajero et al. (2018), our observations comprise the third and fourth records of leucism for the Eurasian Collared-Dove worldwide, and the first records for Nuevo Leon and Durango states. Previous reports of leucistic Eurasian Collared-Doves were made by Contreras-Balderas and Ruíz-Campos (2011) who recorded a solitary individual and Ayala-Pérez et al. (2015) who observed a leucistic individual within a group of normal individuals of the same species; both records occurred in suburban areas. Similarly, in the present study both birds were observed solitary and foraging on the outskirts of urban areas. In Mexico, color abnormalities in the plumage of dif-

ferent bird species have been documented mostly in urban areas (Palacios-Vázquez 2016), compared to findings reported by Cadena-Ortiz et al. (2015) who highlight a higher number of records of chromatic aberrations on rural areas at Ecuador.

Chromatic aberrations in birds are strongly related to an hereditary component and to a lesser degree to environmental factors, such as food resources, contamination, and habitat fragmentation (Ellengren 1997, Agüero et al. 2017). Therefore, it is important to continue documenting avian chromatic aberrations so as to understand the distribution, abundance, and frequency with these mutations occur, as well as the role that these abnormalities play on the structure of wild populations (Bensch et al. 2000, Ayala-Pérez et al. 2015, Agüero et al. 2017).

Thus, the new records of leucism in the Eurasian Collared-Dove reported in our study are important since these could provide us with information about the distribution and occurrence of these chromatic aberrations on wild-introduced birds.

Acknowledgments

We give special thanks to O. Suárez García and M. Osorio Beristain for their suggestions on earlier versions of this manuscript. CAMA is grateful for grants from Basic Science-CONACYT (Project CB-15 255453) and CONACYT national postdoc (710775). EPZQ thanks for the grant from Secretaría de Educación Pública for a postdoc position (511-6/2019). We thank two anonymous reviewers and the Editor for help to improve our manuscript.

Literature Cited

- Agüero ML, Berrier HE, Massabie PJ. 2017. Conteo oportunista de individuos leucísticos de carancho (*Caracara plancus*) dentro del Parque Patagonia Austral (Chubut, Argentina). *Hornero* 32:281-284.
- Álvarez-Romero JG, Medellín RA, Oliveras de Ita A, Gómez de Silva H, Sánchez O. 2008. Animales exóticos en México: una amenaza para la biodiversidad. México D.F.: Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, Instituto de Ecología, UNAM, Secretaría de Medio Ambiente y Recursos Naturales.
- AOU (American Ornithologist's Union). 1998. Check-list of North American Birds. Kansas: American Ornithologists, Union and Allen, Lawrence.
- Ayala-Pérez V, Arce N, Carmona R. 2014. Observaciones de leucismo en cuatro especies de aves acuáticas en Guerrero Negro, Baja California Sur, México. *Revista Mexicana de Biodiversidad* 85:982-986. <https://doi.org/10.7550/rmb.36515>
- Ayala-Pérez V, Arce N, Carmona R. 2015. Registro de aves con leucismo en Baja California Sur, México. *Acta Zoológica Mexicana* (n. s.) 31:309-312. <https://doi.org/10.21829/azm.2015.312988>
- Bensch S, Hansson B, Hasselquist D, Nielsen B. 2000. Partial albinism in a semi-isolated population of great reed warblers. *Hereditas* 133:167-170. <https://doi.org/10.1111/j.1601-5223.2000.t01-1-00167.x>

[org/10.1111/j.1601-5223.2000.t01-1-00167.x](https://doi.org/10.1111/j.1601-5223.2000.t01-1-00167.x)

- Cadena-Ortiz H, Bahamonde-Vinueza D, Cisneros-Heredia DF, Buitrón-Jurado G. 2015. Alteraciones de coloración en el plumaje de aves silvestres del Ecuador. *Avances en Ciencias e Ingenierías* 7:B75-B90. <https://doi.org/10.18272/aci.v7i2.259>
- CONABIO. 2017. Análisis de riesgo rápido de *Streptopelia decaocto*. Sistema de información sobre especies invasoras en México. México D.F.: Comisión Nacional para el Conocimiento y Uso de la Biodiversidad.
- Contreras-Balderas AJ, Ruíz-Campos G. 2011. Primer informe de leucismo en la paloma de collar *Streptopelia decaocto* (Columbiformes), especie exótica en México. *Cuadernos de Investigación UNED* 3:85-88.
- Cortinas-Salazar JL, Contreras-Balderas AJ. 2014. Two cases of partial leucism in the house sparrow *Passer domesticus* in two localities of Northern Mexico. *Acta Zoológica Mexicana* (n.s.) 30:707-710. <https://doi.org/10.21829/azm.2014.30390>
- Ellegren H, Lindgren G, Primmer CR, Møller AP. 1997. Fitness loss and germline mutations in barn swallows breeding in Chernobyl. *Nature* 389:593-596. <https://doi.org/10.1038/39303>
- González-Arrieta RA, Zuria I. 2015. Aberrant coloration (partial leucism) in the house finch (*Haemorrhous mexicanus*) in an urban area of central Mexico. *Acta Zoológica Mexicana* (n. s.) 31:318-320. <https://doi.org/10.21829/azm.2015.312990>
- Hernández-Valdez SD, Rodríguez-Maturino JA, Viggers-Carrasco MG. 2016. Primer reporte de leucismo parcial en el tordo cabeza café (*Molothrus ater*) en el estado de Durango, México. *Huitzil Revista Mexicana de Ornitología* 2:239-243. <https://doi.org/10.28947/hrmo.2016.17.2.253>
- Izquierdo L, Thomson RL, Aguirre JI, Díez-Fernández A, Faivre B, Figuerola J, Ibáñez-Álamo JD. 2018. Factors associated with leucism in the common blackbird *Turdus merula*. *Journal of Avian Biology* 49:e01778. <https://doi.org/10.1111/jav.01778>

- Li D, Li J, Wu Y. 2011. A leucistic Little Grebe *Tachybaptus ruficollis* in Hebei Province and a review of albinistic and leucistic species in China. *BirdingASIA* 16:75-77.
- Palacios-Vázquez AJ. 2016. Primer registro de leucismo total en el tirano tijereta rosado (*Tyrannus forficatus*) en México. *Huitzil Revista Mexicana de Ornitología* 17:229-233. <https://doi.org/10.28947/hrmo.2016.17.2.251>
- Phillips AR. 1954. The cause of partial albinism in a Great-tailed Grackle. *Wilson Bulletin* 66:66.
- Reséndiz-Cruz I, Caballero-Jiménez R. 2016. Primer registro de leucismo parcial en el mirlo pardo (*Turdus grayi*) para México. *Huitzil Revista Mexicana de Ornitología* 17:225-228. <https://doi.org/10.28947/hrmo.2016.17.2.250>
- Sage BL. 1962. Albinism and melanism in birds. *British Birds* 55:201-225.
- Smith P. 1987. The Eurasian collared-dove arrives in the Americas. *American Birds* 41:1371-1379.
- Tinajero R, Chapa-Vargas L, Ramírez-Albores JE. 2018. Aberraciones cromáticas en aves de México: una revisión y registros recientes en el estado de San Luis Potosí. *Ornitología Neotropical* 29:179-185.
- Trivedi R. 2016. Observations of some colour aberrations in birds seen in Gujarat. *Indian BIRDS* 12:74-75.
- van Grouw H. 2006. Not every white bird is an albino: sense and nonsense about color aberrations in birds. *Dutch Birding* 28:79-89.
- van Grouw H. 2013. What colour is that bird? The causes and recognition of common colour aberrations in birds. *British Birds* 106:17-29.
- Villegas S. 2021. Partial leucism in the Variable Seedeater (*Sporophila corvina corvina*) in Costa Rica. *Huitzil Revista Mexicana de Ornitología* 22:e-623. <https://doi.org/10.28947/hrmo.2021.22.2.613>