First record of leucism in brown pelicans (*Pelecanus occidentalis*) in Costa Rica

Primer registro de leucismo en el pelícano pardo (*Pelecanus occidentalis*) en Costa Rica

**ABSTRACT**

Leucism in birds is rarely observed in the Pelecaniformes order and has not been recorded for the brown pelican (*Pelecanus occidentalis*) in Costa Rica. We describe an observation of a leucistic brown pelican with white plumage, pink coloration on the bill and feet, but normal color on the eyes. Leucism in birds is the most frequently reported color aberration and these cases present low survival rates for individuals. Although isolated cases occur in birds, these reports help determine the frequency of these events for specific bird populations and species.

**Keywords:** Leucism, brown pelican, plumage, albinism, Costa Rica.

**INTRODUCTION**

Birds obtain their coloration from pigments or refractive structures in feathers and skin (Yusti-Muñoz & Velandia-Perilla, 2013). The principal pigments present in birds are melanins that are classified into pheomelansins, which produce brown and rufous colors, eumelansins, which produce dark brown, grey and black, and carotenoids which are extracted from food and produce reddish, orange and yellow colors (Rodriguez-Pinilla & Gómez-Martínez, 2011).

1 Escuela de Ciencias Biológicas, Universidad Nacional. Heredia, Costa Rica. ornatehawkeagle@gmail.com*, pilararguedas@hotmail.com
2 Vicerrectoría de Investigación. Universidad Estatal a Distancia, San Pedro de Montes de Oca, San José, Costa Rica. rovargas@uned.ac.cr
3 Instituto Costarricense de Pesca y Acuicultura, Puntarenas, Costa Rica. parguedas@incopesca.go.cr

Recibido: 30 de marzo de 2014
Corregido: 20 de junio de 2014
Aceptado: 19 de julio de 2014
DOI: http://dx.doi.org/10.15359/revmar.6.10
The occurrence of abnormal colorations is attributed to gene mutations or differences in gene expression, which affect the production of pigments such as melanins (Torres & Franke, 2008). Total albinism is defined as the complete absence of pigments in feathers, bill, legs and iris while partial albinism (leucism) is the absence of pigments (symmetric or not) in some parts of the body or group of feathers (Davis, 2007; Sibley, 2011).

Cases of abnormal coloration in birds are relatively rare including the Pelecaniformes order (Gross, 1965; Nesbitt, 1979; Post, 2012). However, abnormal color cases are common in domesticated birds, while cases in natural populations are rarely observed and seem to exist differences in frequency between families, but there is no research to support it yet (van Grouw, 2006; Sibley, 2011; Post, 2012).

The brown pelican (*Pelecanus occidentalis*) is distributed from the northern Pacific coast of the United States to northern Peru as well as the Atlantic Ocean, Gulf of Mexico and the Caribbean coast where it is found in both coastal areas and islands (Stiles & Skutch, 2007; Shields, 2002; Peterson, 2008; Tanglely, 2009). *P. occidentalis* has been shown to display variation in plumage coloration related to age and breeding status (Harrison, 1996), changing from brownish to greyish and white color during breeding season. Adults have mainly gray and brown plumage with a brownish bill, gray throat pouch and black facial skin and legs (Shields, 2002; Peterson, 2008; Tanglely, 2009).

Other reports of abnormal coloration in the Pelicaniformes order have been reported in the Peruvian pelican (*P. thagus*) in Peru (Torres & Franke, 2008), brown pelican in the United States (Nesbitt, 1979), brown booby (*Sula leucogaster*) in Brazil (Coelho & Alves, 1991), and species of Anhingidae and Phalacrocoracidae families in the United States (Post, 2012), but there are no records of abnormal coloration in the brown pelican in Costa Rica.

Here we present the first record of leucism in the brown pelican (*P. occidentalis*) in Costa Rica and notes about the behavior observed in the individual reported.

**MATERIALS AND METHODS**

**Observation Site**

Observations were made in the areas surrounding the piers contiguous to the estuary of Barrio del Carmen in Puntarenas city, Costa Rica (Fig. 1).

**Methods**

The leucistic brown pelican was observed for four months on a casual basis by the authors and on a regular basis by Jorge Zúñiga-López, who collaborated with data regarding the pelican’s permanence and behavior. Photographs of the subject were sent to the Natural History Department (*Departamento de Historia Natural*) at Museo Nacional de Costa Rica to be included in their photographic catalog (registry codes: Z8216, Z8217 and Z8216).

**Observation**

On November 10, 2013, while observing a group of browns pelicans...
First record of leucism in brown pelicans (Pelecanus occidentalis) in Costa Rica

feeding on fish scraps from fishermen, one individual was identified by the researchers that showed white color on all plumage and body parts (Fig. 2). The behavior of this pelican differed from the others since the rest tried to prevent the individual from getting fish, which could be related to social rejection from the other pelicans due to its different color.

There were no dark pigments in any body feathers. The bill was completely pink including the throat pouch and legs, but normal pigmentation was detected on the eyes. During the initial observation, the bird had slightly brown feathers in few parts of the body. However, the feathers on the neck, head and wings had a more tawny coloration during the last observation four months later (March 23, 2014).

Although the size and plumage of the observed subject resembled that of a juvenile brown pelican, the individual was considered to be an adult because of the whiteness of its iris (Fig. 2) given that adult P. occidentalis always have white coloration on their iris (Stiles & Skutch, 2007). In addition, it was concluded that the observed individual was not an albino brown pelican because the coloration of the
eyes of albino subjects is usually red (Edelaar et al. 2011). The subject remained in the same area during the first three months, returning every sunset to a roosting site in a *Ceiba pentandra* tree (Fig. 1). After February 2, 2014, the bird was not observed in that area, as reported by high school teacher and birdwatcher Jorge Zúñiga-López. A month later (March 18, 2014), a fisherman of the area (Eduardo Oviedo-Cortez) reported that the individual had been observed for several days in the mangrove located 3 km in front of the roosting site. On March 30, 2014, the pelican returned to the initial roosting area.

**DISCUSSION**

Similar to other reports on leucism observed for the Peruvian pelican (*P. thagus*), local fishermen favored the individual and provided food, likely increasing the survival of these
First record of leucism in brown pelicans (*Pelecanus occidentalis*) in Costa Rica

The occurrence of slightly brown feathers can be a sign of reduced pigmentation or an incidence of mild leucism (Torres & Franke, 2008). The individual described in this paper showed white coloration, mainly in wing and head feathers, which was intensified during the last observation. It is assumed that changes on plumage were due to the breeding season.

Nesbitt (1979) reported a case of albinism in a brown pelican in Florida, whose entire body was white with few tawny feathers on its wings and back, but had normal coloration on its feet and bill. There are unpublished pictures of another leucistic brown pelican in Florida presenting normal coloration on its bill and feet (Danny Bales, http://www.flickr.com/photos/mudhen).

Leucism in birds is the most frequently reported color aberration, resulting in low survival rates for these individuals (Cook *et al.* 2012). Reports of abnormal colorations in birds and other animals are important to increase our knowledge of their frequency in different populations and species.

**ACKNOWLEDGEMENTS**

We appreciate the contributions from James Zook and Oscar Ramírez in the identification of this case. To Maynor Barrientos, Luis Guzmán and Cindy Jiménez for editing this paper as well as the Museo Nacional de Costa Rica for including the photographs in their catalog. To Jorge Zúñiga López and Eduardo Oviedo Cortez for their contributions in monitoring this case.

**BIBLIOGRAPHY**


