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SHORT-COMMUNICATION

A case of partial leucism in the American Barn Owl (*Tyto furcata*) (Temminck, 1827), from Buenos Aires province, Argentina

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ABSTRACT: The diverse colorations of a birds' plumage are due to either structural colors or pigments that are synthesized in specialized cells or incorporated through the diet. However, plumage color aberrations can occur; several cases of albinism and leucism have been reported for different bird species and some examples are found in Strigiformes. A specimen of the American Barn Owl (*Tyto furcata*) with partial leucism was found in Carhué, Buenos Aires province. The plumage of its facial disc, tail and the ventral region was completely white; furthermore, the neck, primaries, and secondaries were pigmented although in a significantly lighter fashion than in normal-phenotype specimens. The rest of the body presented a normal pattern for the species.

KEY-WORDS: Birds, melanins, pigmentation, plumage, Strigiformes.

Bird plumages present diverse colorations, some of which are due to structural colors and/or to several pigments. In turn, pigments may be divided into three categories, namely:

1) Melanins, being derived from the aminoacid tyrosin and synthesized in melanoblasts; there are two types of melanins: eumelanins (*i.e.* big and regular granules that produce dark browns, greys and black colors), and pheomelanins (*i.e.* irregular granules which originate different types of reddish brown and yellow pigmentation);

2) Carotenoids, which must be incorporated through the diet and then modified by enzimatic reactions into diverse compounds that give the plumage bright red, orange, yellow and some violet and ultraviolet coloration; and

3) Porfirins, chemically related to hemoglobin, the better known of which are turacin (magenta) and turacoverdin (bright green) (these elements are very unstable and they can be easily destroyed by the sun; Gill 2007).

Plumage aberrations are common in birds. In the case of leucism, there is a total absence of a particular pigment (*e.g.* melanin or pheomelanin) either in the entire plumage or in some feathers. As a result, the whole plumage or distinct feather-groups are white (Nemésio 1999). However, leucistic birds have normal pigmentation in other regions such as the bill, eyes and legs, unlike the case of albinism (Van Grouw 2006). Leucism can be the result of a genetic disorder in the melanin biosynthesis pathway (Van Grouw 2006). Other cases of leucism are related to disorders in the deposition of carotenoid pigments, as it was observed in a population of barn swallows (*Hirundo rustica*), which had been temporarily affected by radioactive contamination at Chernobyl, Russia. These birds presented partial leucism (wrongly called "partial albinism") in the head feathers (Møller & Mousseau 2001).

The occurrence of leucistic birds does not exceed 1% in the wild (Sage 1963, Bensch *et al.* 2000), with a few cases recorded in different bird families of non-Passeriformes and Passeriformes (Zapata & Novatti 1979, 1995), such as Anatidae (Wilson *et al.* 2006), Spheniscidae (*Pygoscelis sp.*, Forrest & Naveen 2000; and *Aptenodytes patagonicus*, Voisin *et al.* 2002), Procellariidae (Mancini *et al.* 2010), Sulidae (Van Grouw *et al.* 2011), Cathartidae (Hosner & Lebbin 2006, Figueroa *et al.* 2011), Accipitridae (Van Grouw 2011, Robb & Pop 2012), Charadriidae (Cestari & Vernaschi Vieria Da Costa 2007), Columbidae (Contreras Balderas & Ruiz Campos 2011, Costa Correa

et al. 2013), Emberizidae (Acosta Broche 2005, Grilli *et al*. 2006), Turdidae (Campos Gonçales Junior *et al*. 2008, Azzarri *et al*. 2011), and Corvidae (Van Grouw 2014), among others.

During periodic field-work sampling at Carhué (37º10', 62º45'W), SW Buenos Aires province, a pair of American Barn Owls (*Tyto furcata*) was found in an old abandoned barn. One of them caught our attention because the plumage of its facial disc, tail and the ventral region was entirely white; furthermore, the neck, secondaries, and primaries were pigmented, albeit in a significantly lighter fashion than in specimens with a normal pigmentation. On the other hand, the tertiaries, covert feathers, and alula had a normal pigmentation. This combination of white and colored feathers denoted a characteristic pattern (Figure 1). This leucistic individual was observed and photographed in the same place during April 2013 and a year later, in March 2014, along with another individual with normal plumage (Figure 2). No breeding records are available for these birds, thus, it is not known whether the leucistic condition could affect the breeding success of the specimen in question.

Previous studies have found no differences in life expectancy and reproductive success of leucistic- and normal-phenotypes of several bird species, such as Great Reed warblers (*Acrocephalus arundinaceus*, Bensch *et al*. 2000) and other Strigiformes (Ajala & Mikkola 1997). However, McCardle (2012) reported the death at two months of age of a leucistic specimen of the great horned owl (*Bubo virginianus*). If any, the adverse consequences

Figure 1. An American Barn Owl *Tyto furcata* with partial leucism from Carhué, Buenos Aires province, Argentina. Photograph taken on March 22, 2014 by M.C. Chiale.

Figure 2. Leucistic and normal-phenotype American Barn owls (*Tyto furcata*) specimens from Carhué, Buenos Aires province, Argentina. Photograph taken on April 30, 2013 by L.G. Pagano.

of leucism in birds might compromise aspects such as camouflage and prey capture, but not their vision. Leucistic birds have normal eye pigmentation and this fact relates directly to a normal visual system; therefore, they should not have vision problems that might interfere with prey search (Van Grouw 2006).

According to several authors, albinism and leucism are rare among Strigiformes (Gross 1965, Ajala & Mikkola 1997). However, few species have been reported with such chromatic aberrations (Ajala & Mikkola 1997). Leucism was reported in burrowing owls (*Athene cunicularia*) by Sutton (1912), Ajala & Mikkola (1997), and most recently by Motta-Junior *et al.* (2010). A recent reference (Nogueira & Alves 2011) reports a specimen with its entire plumage being white but its eyes, legs and beak having a normal pigmentation. Likewise, a leucistic Austral pigmy owl (*Glaucidium nana*) was reported from Parque Nacional Los Alerces, Chubut province, Argentina (Comisso 2012). Previous reports for leucistic barn owls (*T. alba*) are from a male belonging to a private collection in Norfolk, England, a specimen which was completely white but with normal coloration eyes (Alaja & Mikkola 1997). As far as we know, this contribution represents the first report of partial leucism in the American barn owl (*T. furcata*).

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