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A case of total absence of yellow in the Golden Whistler *Pachycephala pectoralis*

Svante Martinsson

Department of Biological and Environmental Sciences, University of Gothenburg, Box 463, SE405 30 Göteborg, Sweden. Email: svante.martinsson@bioenv.gu.se

Abstract. An aberrantly coloured male Golden Whistler *Pachycephala pectoralis*, lacking yellow pigment, is reported from the Bellarine Peninsula, Victoria. This could be the first documented case of this colour aberration in the species.

Introduction

The Golden Whistler *Pachycephala pectoralis* (Latham, 1801), is a species found in southern and eastern Australia, and western New Guinea. The taxonomic treatment has varied; early authors recognised 60–70 subspecies found in most of the Indo-Pacific region, which are currently placed in several different species (see Andersen *et al.* 2014 for a summary of the various classifications). However, Gill & Donsker (2015) listed only six subspecies for the Golden Whistler. All subspecies, except the Norfolk Island subspecies *P. p. xanthoprocta*, have clear sexual dimorphism, with the males having a bright-yellow breast and belly, olive back, and black head with a white chin surrounded by a black chest-band, whereas the females are more uniformly greyish.

Melanins and carotenoids are the two main classes of pigments in birds. Melanins are responsible for browns, greys and black (eumelanin) and buff to reddish brown (phaeomelanin), whereas carotenoids are responsible for pale yellow to bright red (Guay *et al.* 2012; van Grouw 2013). Male Golden Whistlers seem to lack phaeomelanin and have plumage features that are mainly based on eumelanin (black breast-band), mainly carotenoid (yellow breast and belly) or contain both (olive back and rump and wings and tail), as well as a mainly unpigmented white chin-patch (with the downy lower part coloured by eumelanin) (van Dongen & Mulder 2007).

Melanin- and carotenoid-based colorations are commonly involved in plumage signals linked to male condition and mate choice. Sexual ornaments based on either type of coloration are equally important, and unpigmented areas can also be important signals for mate choice and male–male contest (Griffith *et al.* 2006). In the Golden Whistler, the unpigmented chin seems to be the most important ornament, at least for male–male interaction (van Dongen & Mulder 2007).

Aberrant colorations in birds are regularly observed, and deviation from the normal pigmentation may be the result of various processes. Abnormal melanin pigmentation can be classified into a number of categories based on both the appearance and the underlying cause (Guay *et al.* 2012; van Grouw 2013). Aberrant carotenoid pigmentation is less well studied, and therefore definitive naming for the different categories is not yet available.

Carotenoids cannot be synthesised by vertebrates, including birds, and must therefore be acquired from food (Goodwin 1984). Variation in carotenoid-based coloration can result from the acquisition, deposition and metabolisation of carotenoids from the diet, and the ability to metabolise and deposit carotenoids, which are under genetic control (e.g. McGraw *et al.* 2001). Therefore aberrant coloration can be linked to both enviromental and genetic factors.

In this paper I report an observation of an aberrently coloured Golden Whistler, lacking yellow pigmentation.

Observation and discussion

During a visit to Edwards Point Nature Conservation Reserve (38°12′S, 144°42′E), eastern Bellarine Peninsula, southern Victoria, on 6 November 2014, a male whistler *Pachycephala* sp. without any yellow or rufous pigments was observed (Figure 1). The bird was photographed and preliminarily identified as an aberrant Golden Whistler, and after discussion with the iGoTerra (www.igoterra.com) community the identification was confirmed.

Figure 1. An aberrantly coloured male Golden Whistler at Edwards Point, southern Victoria, 6 November 2014. Note the complete lack of yellow in the plumage. Photos: Svante Martinsson

Table 1. Comparison between the colours of the observed whistler and male Golden and Rufous Whistlers, the two whistler species present on the eastern Bellarine Peninsula, Victoria.

Plumage feature	*Golden Whistler*	*Observed bird*	*Rufous Whistler*
Back and rump	Olive	Grey	Grey
Wings	Olive	Grey	Grey
Wing-band	Yellow	White	Absent
Belly & breast	Bright yellow	White	Rufous
Head	Black	Black	Grey crown & black mask
Chin	White	White	White
Chest-band	Black	Black	Black
Neck	Yellow collar	White collar	Grey

I could not observe any yellow or rufous pigmentation of the bird. At this locality, two whistler species are present—Golden Whistler and Rufous Whistler *P. rufiventris*—and a comparison between the observed bird and these two species is presented in Table 1. An aberrant Rufous Whistler lacking rufous tones can be ruled out as a potential identification based on the following characters: crown and forehead black and sharp border to grey back. However, the bird's plumage is consistent with what could be expected from a Golden Whistler lacking all yellow pigmentation.

To my knowledge, this is the first documented record of complete lack of yellow pigments in the Golden Whistler. The cause of this abnormal pigmentation remains unknown, but in most cases aberrations in carotenoids are caused by environmental issues with the bird's food, rather than having a genetic basis (Guay *et al.* 2012; van Grouw 2013). As the bird seems to completely lack yellow pigment, it must have had a carotenoid-free diet during its complete moult, if the cause of the aberration was malnourishment. If the cause was completely environmental, one would expect the aberration to be common in the Reserve. However, given that no other individuals (Golden Whistler or other) with a similar aberration were found in the area and that birds fed a carotenoid-poor diet usually grow paler-yellow feathers, rather than completely lack traces of yellow (Hill 1992; Prager *et al.* 2009), an environmental cause seems unlikely. Mutations resulting in total absence of yellow are also reported from several species of captive birds, e.g. Canary *Serinus canaria domestica*, Gouldian Finch *Chloebia gouldiae* and Budgerigar *Melopsittacus undulatus*. In these species, inheritance of the total absence of yellow, caused by carotenoids in finches and psittacin in parrots, is recessive (Crew & Lamy 1935; Perez-Beato 2008). It seems more likely that a genetic mutation rather than a dietary issue caused the lack of yellow in the Golden Whistler described here.

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