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SUPPLEMENTARY HEAD MOLT IN CAPE WHITE-EYES: A CONSEQUENCE OF NECTAR FEEDING?

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Abstract.—Cape White-eyes (*Zosterops pallidus*) frequently feed on nectar during early winter. This feeding can leave feathers on the forehead matted with nectar and pollen. At least some individuals then shed these feathers, at a time when the annual complete molt has already been terminated. It is suggested that such localized replacement of fouled plumage may occur regularly both in white-eyes and in other short-billed nectar-feeders.

MUDA SUPLEMENTARIA DE LAS PLUMAS DE LA CABEZA EN *ZOSTEROPS PALLIDUS*: UNA CONSECUENCIA DE ALIMENTARSE DE NÉCTAR?

Sinopsis.—A principios del invierno individuos de *Zosterops pallidus* se alimentaron con frecuencia de néctar. Este tipo de alimentación puede dejar las plumas de la frente enmarañadas con polen y néctar. Al menos, algunos individuos mudan estas plumas, para el periodo de tiempo cuando la muda anual ha sido terminada. Se sugiere que esta muda tan localizada pueda ocurrir regularmente tanto en esta especie como en otras de pico corto que se alimenten de néctar.

White-eyes (Zosteropidae) frequently feed on nectar from flowers. Skead (1967) noted that southern African birds often had foreheads dusted with pollen, which had even led observers to describe new plumage variants in the Cape White-eye (*Zosterops pallidus*). Plumage discoloration by pollen has also been reported for the Abyssinian White-eye (*Z. abyssinicus*) on the Arabian peninsula (Gallagher and Woodcock 1980, Harvey 1993) and for the Oriental White-eye (*Z. palpebrosa*) in Pakistan (Roberts 1992). Ali and Ripley (1974:58) stated that the Oriental White-eye is "largely responsible for cross-pollinating a wide variety of flowers," which implies that it is frequently pollen-bedecked.

In the Grahamstown Botanical Gardens (33°19′S, 26°31′E), we have mist-netted more than 350 Cape White-eyes in the course of studies on sunbirds (Nectariniidae) (Craig and Hulley 1994). At this site, two winter-flowering aloe species (*Aloe ferox* and *A. pluridens*) attract many birds which feed on nectar, including Cape White-eyes. We noted that from May through June many of the birds handled had the feathers of the forehead clotted with nectar and pollen. From June to mid-August we have caught 26 bald white-eyes, in which all the feathers of the forehead had been shed, leaving bare skin in this region.

The annual complete molt in this Cape White-eye population occurs from February to June, based on more than 800 birds handled from this region. By late May, 70% (n = 53) of the white-eyes caught in the botanical gardens had new plumage with no active molt. Most cases of head molt (87) were found in birds with active wing molt, but 43 individuals with active head molt but no wing molt were captured both before and after the main molt period. Of these birds, 35 (81%) came from the

months May to August, including the only instances of birds with new wing feathers but active head molt in the forehead region (32 birds). Thus it appears that in some individual Cape White-eyes, newly molted head feathers are shed and replaced again at the time when intensive nectar-feeding has occurred. For these small birds (mean mass 11.7 g) plumage insulation should be most important during the coldest months of the year, in this region July–August. The energetic costs of molt in the Cape White-eye are currently under study, but such a localized molt is not likely to impose any significant physiological burden on birds that utilize a wide range of food sources and cluster when sleeping.

We have never seen sunbirds with head plumage fouled by nectar and pollen. Although the iridescent forehead feathers of many male sunbirds are structurally different than the corresponding feathers on white-eyes (unpubl. electron microscope studies), female and subadult sunbirds have head plumage like that of the Cape White-eye. The long bill of sunbirds will be an advantage here, and a sticky forehead is likely a problem only for short-billed birds feeding at a rich nectar source, because it is the nectar and not the pollen alone that is responsible for matted feathers. Even though Cape White-eyes bathe frequently, it may not be sufficient to clean the plumage, so that shedding and regrowing some head feathers becomes a necessary "cost" of nectar feeding. We suggest that observers and bird-banders should watch for this phenomenon in other short-billed species that opportunistically feed on nectar.

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