

so as to cover the hole. The male was first to return but did not stay in the nest, while the female entered hesitantly but appeared to accept it. On 19 May at 2100 I returned and found the eggs and birds gone. Early the following morning I looked for the eggs near the base of the tree and spent 2 h looking for a possible second nest. Having seen the eggs being carried on 15 May, I thought it likely that these also were carried, but I found neither the birds nor the eggs.

Truslow (1967, *Living Bird* 6: 227) reported and photographed an incident of egg-carrying by a Pileated Woodpecker (*Dryocopus pileatus*). In the article he also cites an incident of a Yellow-shafted Flicker (*Colaptes a. auratus*) carrying an egg, as reported and photographed by George P. Hitchcock. Both instances were preceded by nest disturbance, but in neither case was it determined where the eggs were carried. These incidents and the present case suggest that woodpeckers sometimes remove their eggs after their nest is disturbed.—JAMES N. BAKER, *Department of Zoology and Entomology, Colorado State University, Fort Collins, Colorado 80521*. Accepted 5 Aug. 74.

Observations on the Seychelles White-eye *Zosterops modesta*.—The Seychelles Islands in the Indian Ocean have had two endemic species of white-eyes, *Zosterops modesta* on the main island, Mahe, and the now extinct *Z. semislava* on the small island of Marianne. Newton (1867) found *Z. modesta* to be "tolerably plentiful" in groves of clove trees *Eugenia caryophyllata*. He noted that they did not sing, but from dissection he thought that the specimens he shot in late January would soon have bred. Subsequent workers in the Seychelles (Nicoll 1906, Vesey-Fitzgerald 1940, Lousteau-Lalanne 1962, Gaymer et al. 1969) did not add to our knowledge of this species, and Watson et al. (1963) said that "nothing is known of its biology."

The following observations on the Seychelles White-eye were made between January and August 1972, and November 1972 and May 1973. The Seychelles have two seasons: the wet northwest monsoon from November to March, and the drier southeast trades, from April to October, so that these observations were mainly during the rainy season.

Like many white-eyes, *Z. modesta* is relatively tame, and on many occasions I watched them from a distance of about 2 m. The head, back and tail are olive-gray, the rump is paler with a yellowish tinge. The breast is paler, less olivaceous, and the belly is tinged yellow. The throat is white, and in poor light the forehead also appeared white, but this was less noticeable in sunlight. The flanks are rusty, this being especially noticeable during wing-flicking, when the crown feathers are also raised. The white eye-ring is complete but for a small gap in front of the eye.

Four males and one female, collected on 16 February 1867 by E. Newton and now in the University of Cambridge Museum of Zoology, showed the rusty flanks to variable extents, being barely visible in one of the males. These specimens also showed a variable amount of rust on the primaries. In one male, the primaries were almost entirely rusty, while in another they were brown with rust restricted to spots around the rachis. In the other three specimens this feature was hardly noticeable.

Thus *Z. modesta* retains a limited amount of yellow pigment that is not mentioned in Newton's (1867) original description or in subsequent reports (Moreau 1957, Lousteau-Lalanne 1962). Mees (1957) however, stated that the mantle

"still has a definite greenish hue." Nevertheless like many insular forms *Z. modesta* has lost much of the carotenoid pigment of continental white-eyes. It appears to fall between the two Mascarene white-eyes, where *Z. olivacea* retains more green coloration and has a broad eye-ring, while *Z. borbonica* has lost both yellow pigment and the eye-ring (Gill 1971).

Z. modesta is known only from the island of Mahe. Apart from one pair of white-eyes at Sans Souci (ca. 170 m), all white-eyes seen were above 300 m. They were heard infrequently at La Misere, but appeared to be most abundant in the Mission-Casse Dents area, where most of these observations were made. In all areas they inhabited mixed secondary forest, especially where tall trees *Albizzia falcataria*, *Swietenia macrophylla*, and *Pterocarpus indicus* had an underlying, or were adjacent to, a scrub layer of young *Albizzia* and *Pterocarpus*, together with *Cinnamomum zeylanicum*, *Chrysobalanus icaco*, *Phyllanthus casticum*, and *Dillenia ferruginea*.

Most feeding was done in this scrub layer, usually below 3 m. Between November and January most of the birds seemed to be in nomadic feeding parties of either four or five birds, no larger or smaller parties being seen. These parties were constantly moving through the undergrowth and calling. While feeding the call was a low and intermittent "cher cher" but when the birds moved from one bush to another the calls became louder and more frequent, as described by Lousteau-Lalanne (1962). Two other calls, both probably alarm calls, were heard: a loud and hard chewick when a mynah (*Acridotheres tristis*) flew overhead, and a chattering trill when a Seychelles Bulbul (*Hypsipetes crassirostris*) flew close to a feeding party.

The birds appeared to be largely insectivorous, feeding especially on a mealy bug *Coccus* sp. that was common on young *Albizzia*. In addition, they took a wide variety of caterpillars in quantity. They may also have eaten ants, these being abundant in flowers of tea (*Camellia thea*) in which they had been feeding. The only vegetable matter seen to be eaten were berries of *Lantana camara*, but Lousteau-Lalanne (1962) thought they may take nectar. This insect and vegetable diet is typical of most members of the family (Mees 1957).

White-eyes rarely sang in November-January when most of them were in feeding parties, but they sang regularly from February to April. The song is varied and melodic, each phrase consisting of several notes that are not organized into a cadence. Singing occurs throughout the day but is most persistent in the morning and evening.

All notes on breeding were made in 1973, and the first indications of courtship were seen in two feeding parties, each of four birds, on 25 and 31 January. On each occasion one bird (presumably a female) moved close to another, and lowered and flattened its half-extended wings. The second bird then gave it a caterpillar and during this period neither bird called. Shortly afterwards the second presumed female begged to her mate who gave her a caterpillar. This courtship feeding lasted only a few seconds, after which normal feeding, with the cher call, was resumed.

In February song became more frequent and white-eyes were less commonly seen in feeding parties, until by mid-March all birds seemed to be in pairs, each pair having one or two favored song perches, usually an elevated position in a bush, tree, or on telegraph wires. They may have been territorial, but I saw no conflicts between birds.

From mid-March onward I concentrated my observations on one pair that I could nearly always find within a small area. On 22 March copulation was seen.

What eventually proved to be the female flew into a young *Pterocarpus* tree, giving the feeding call. She did not feed, but moved along the branches with highly exaggerated wing-flicking movements, giving intermittent low phrases of song. Shortly afterward the male arrived singing in flight, and settled high in a *Pterocarpus* tree about 10 m tall. The female flew up to the still singing male and crouched low on the branch. The male moved closer and began pecking at the female's eye-ring before mounting. Mees (1969) suggested that the eye-ring of the Zosteropidae might have some recognition function, but this observation, of which I have found no parallel in reports of other species, suggests that where an eye-ring is present, it may have an epigamic function. Copulation lasted a few seconds, after which the two birds preened briefly before separating, the male singing loudly and the female again giving the intermittent low song.

This pair was first seen carrying nest material on 27 March, when each bird took a fine root of *Chrysobalanus* into an overhang. No nest was found here, but the following day they were seen breaking the seed stalks of the grass *Panicum maximum* and carrying them to a half-completed nest in a mahogany *Swietenia macrophylla*. Both members of the pair took part in building the nest, which was a small cup made of grass and root fibers and supported by petioles about 1 m from the end of a mahogany branch, about 10 m above the ground. The nest was completely inaccessible, but appeared typical of nests of the Zosteropidae (Mees 1969). Subsequently the birds appeared to remove material from the nest and took it together with more *panicum* stalks to a second mahogany. The foliage of this was too dense for me to see what they were doing. On 29 and 30 March both birds visited the nest but were not building, and the nest was no further advanced. After this they were not seen to visit the nest again, and the pair became less vocal and spent less time together. Song was last heard on 12 April, and thereafter the birds were occasionally seen singly until 5 May, after which they were neither seen nor heard. Searches in the other areas where white-eyes had been found earlier in the year also failed to reveal birds, and this followed the pattern of May–August 1972, when I was unable to find them, either as pairs or as feeding parties.

In July 1974 Keith (pers. comm.) found a mixed party of sunbirds *Nectarinia dussumieri* and up to a dozen white-eyes at Casse Dents, feeding in the tops of trees. On 19 July 1974 I located a mixed party in the same place from the feeding calls of the white-eyes. They were in the tops of tall *Albizzia*, again apparently feeding. Out of the breeding season *Z. modesta* may therefore be more sociable and more nomadic than during it.

The Seychelles White-eye is inconspicuous and difficult to find in the rain forest it inhabits. It also appears to be highly localized, and at present is nowhere abundant. The species may have declined since its discovery by Newton (1867), but in view of the difficulty of finding it and of the paucity of observers in the first half of this century, there is no evidence for the "decline and apparent recovery" of the species reported by Gaymer et al. (1969).

The reason for its scarcity and restriction to Mahe is unknown. On other Indian Ocean islands (except Assumption) white-eyes, together with the sunbirds *Nectarinia* sp., are generally among the commonest endemic passerines (Benson 1960, Benson and Penny 1971, Gill 1971, Watson et al. 1963). Sunbirds *N. dussumieri* are common and widely distributed in the Seychelles, but it is unlikely that competition between sunbirds and white-eyes, which Stoddart et al. (1970) and Benson and Penny (1971) thought accounted for the absence of *Zosterops* on Assumption, would be important on the larger and more diverse granitic islands of Seychelles.

The extinction of *Z. semiflava* on Marianne was undoubtedly due to the clearance of the indigenous forest and its replacement with coconuts *Cocos nucifera*. Very little indigenous forest remains on Mahe, the existing forest comprising a mixture of endemic, indigenous, and exotic trees, with in many places a scrub layer of *Chrysobalanus* and *Cinnamomum*, which appears to be the habitat the white-eyes preferred.

I am grateful to the Natural Environment Research Council for a Research Fellowship to Aberdeen University that enabled me to undertake this work. C. W. Benson kindly showed me the white-eyes in the Cambridge University Museum of Zoology, and commented on an early draft of this paper.

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