A Sexual Difference in the Plumage of the Silvereye, *Zosterops lateralis*

By Jiro Kikkawa

According to Auber (1957) the fairly bright yellowish-green colour of *Zosterops* is caused by "apposition" of melanins and yellow carotenoids. The amount and distribution of these pigments, as well as the structure of the feather, result in complex colour variations within and between populations. For this reason, Moreau (1957) found general plumage colour of no use as a guide to taxonomic affinities of African species, while Stresemann (1931) had to be contented with a large number of polytypic species in his classification of Indo-Australian forms. The work of Mees (1957, 1961) indicates how challenging the problem of colour variation is in taxonomy.

The analysis of such characters is further complicated by dispersal and migration of polymorphic populations. From the study of variation in *Zosterops lateralis* and seasonal occurrences of different forms in Australia, Keast (1958) inferred that part of the Tasmanian population migrated to the continent in winter. The recent banding scheme has in fact produced evidence for such migration (Lane 1962). As increased banding activities may also clarify the colour variation in local populations, it is worth reporting a sexual difference which may be confused with racial difference in this species.

In the course of behaviour and population studies of *Zosterops lateralis* in New Zealand (Kikkawa 1961, 1962), the author recorded the colour variation within the population and, in addition to the characters already noted by Marples (1945), found one showing a slight but distinct sexual difference. This is the colour of the flank, which is darker or more reddish in the male.

The analysis of this colour was made from 51 males and 44 females collected between 1958 and 1960 in the South Island of New Zealand. These birds were all taken in winter so that no juveniles without brown colour on the flank were included. The flank colour of each specimen was analysed in three dimensions (hue, value, chroma) by using Munsell's (1929) book of colour. The colour was found to vary from reddish yellow (males) to yellowish red (females) in hue; from dark (males) to middle (females) in value, and from moderate (males) to weak (females) in chroma.

Although some overlapping between sexes is apparent in each dimension, the combination of all three readings (Figure 1) shows a marked difference between sexes.

Sexing of the birds in banding is thus possible by having a series of skins representing light-coloured males and dark-coloured

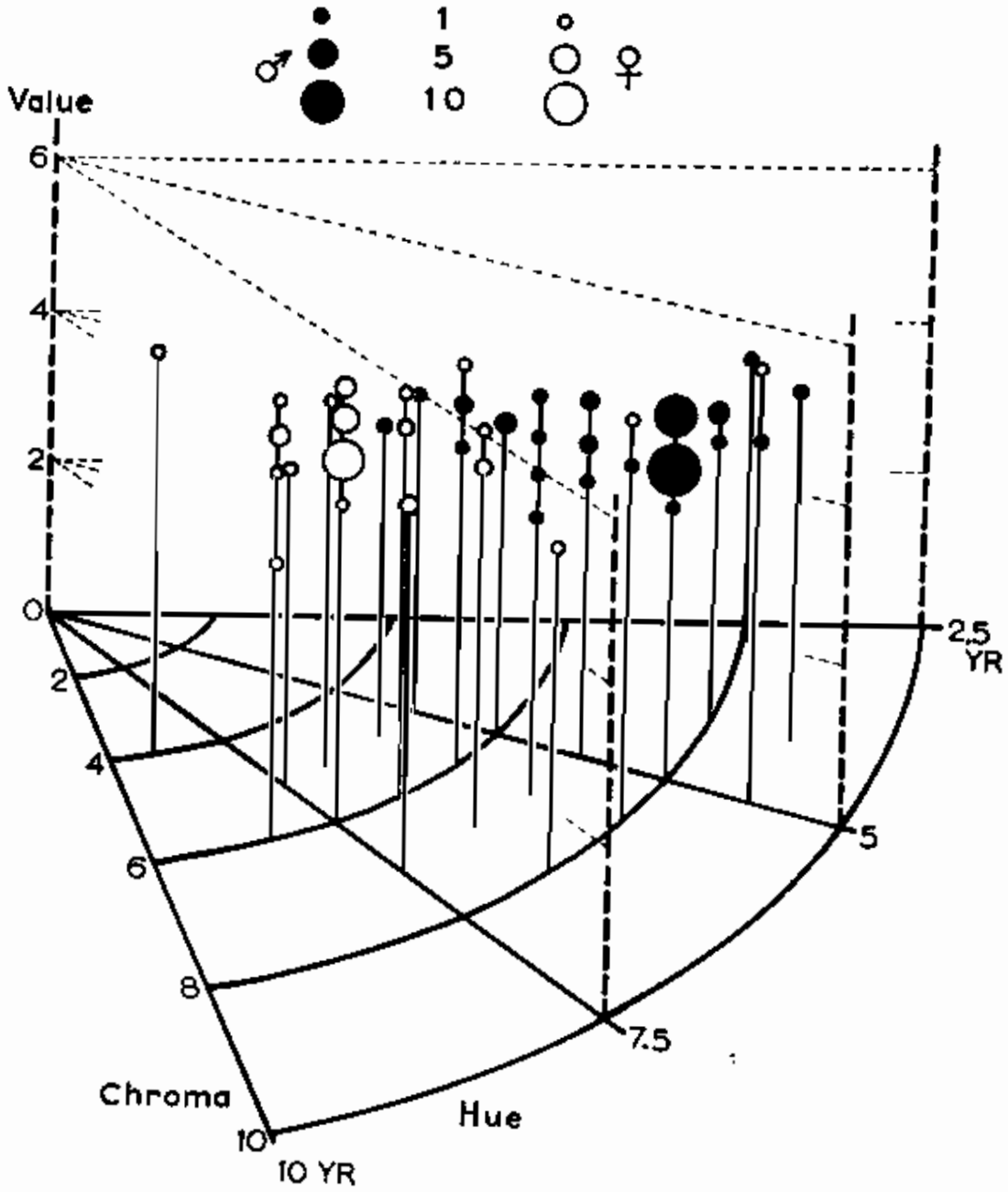

FIG. 1.—Variation of brown colour on the flank of the Silvereye *Zosterops lateralis* (New Zealand population) showing the sexual difference. The number of individuals is indicated by the size of the circle. The ranges of three dimensions are: from 2.5YR (reddish brown) to 10YR (yellowish brown) in hue, from 0 (very dark) to 6 (light) in value, and 0 (very weak) to 10 (strong) in chroma.

females for comparison. However, since this character is considered to be peculiar to the New Zealand and Tasmanian race, it is sometimes difficult to separate the female of the Tasmanian form from southern continental forms when flocks mix in winter on the mainland. This applies particularly when other characters such as the yellow throat (which is also variable) do not provide ready separation. My observations of Australian forms seem to indicate that in a pair, regardless of the actual intensity of the colour, the male has the darker flank.

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Department of Zoology, University of New England, Armidale, N.S.W.
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