Notes on *Zosterops* spp. from the Lake Matano area of southeast Sulawesi, Indonesia

by P. R. Holmes and H. J. Holmes

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Six species of the family Zosteropidae are known to occur in Sulawesi (Stresemann 1939-1941; Mees 1957, 1961, 1969). These are *Zosterops chloris, Z. montana, Z. atrifrons, Z. anomala, Z. consobrinorum* and *Lophozosterops squamiceps.* The former 3 species are widespread in the Indonesian region, with several races of *Z. atrifrons* and *Z. chloris* occurring in Sulawesi. The other 3 are endemic to Sulawesi.

The known distributions of white-eye species in Sulawesi were recorded by Stresemann (1939-1941). Only *Z. montana* and *L. squamiceps* have been recorded there as widespread, with the other species only found in restricted areas. *Z. anomala* is recorded only from the southern peninsula. *Z. atrifrons* has been found on the northern peninsula, the north part of the central region, and on islets off the eastern peninsula. *Z. consobrinorum* is the least known species (Mees 1969), having been found only on the little explored southeastern peninsula. Lack (1971) thought these latter 3 species *(anomala, atrifrons* and *consobrinorum)* geographically replaced each other in lowland areas. *Z. chloris* has been found on the southern peninsula, the northern part of the central region, islets off the northern and southeastern peninsulas and recently the eastern peninsula (White & Bruce in press); where it overlaps with *Z. anomala* in the southern peninsula the 2 species are found in different ecological zones (Lack 1971).

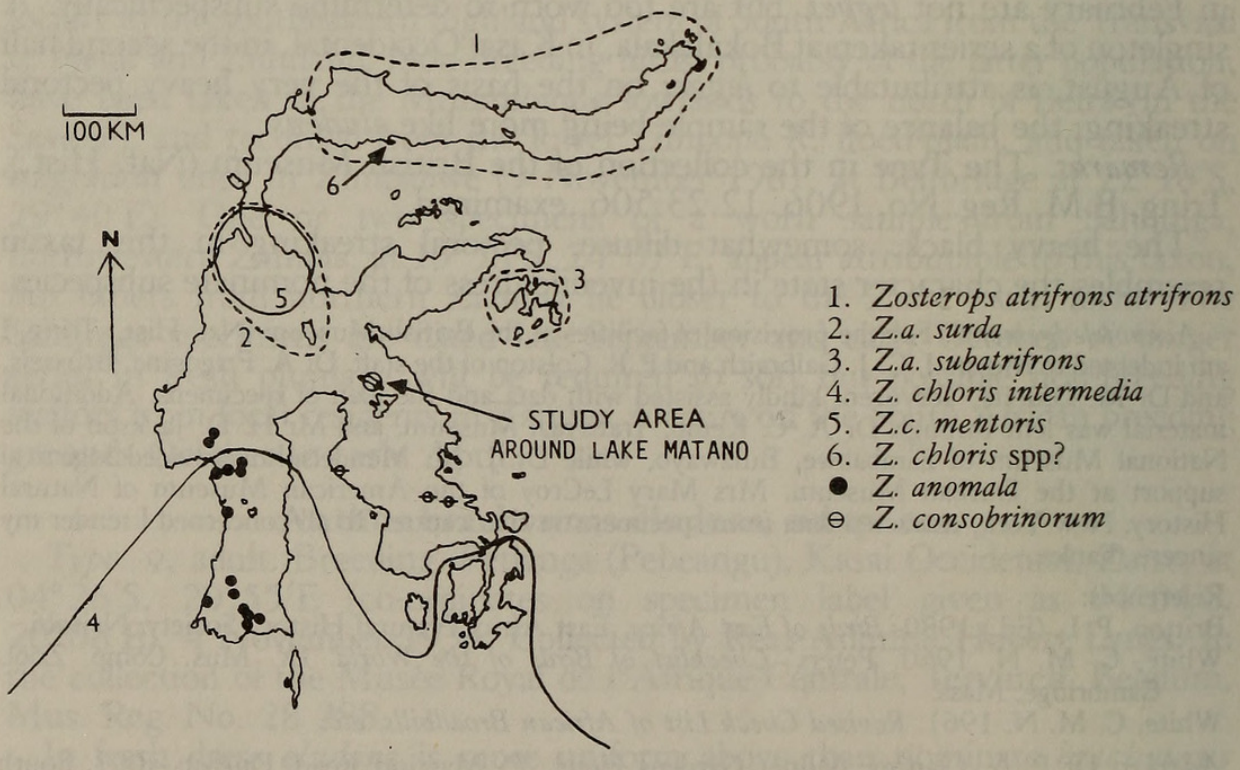

Figure 1. The distribution of *Zosterops* species in Sulawesi (after Mees 1961). *Zosterops montana* and *Lophozosterops squamiceps* are described as widespread.

We spent from late July to early September 1979 in the Lake Matano area, at the northern end of the southeastern peninsula of Sulawesi. Though near the central region, our understanding is that the area is part of the southeastern peninsula. Sites studied ranged in altitude from 250 to 400 m a.s.l. Habitats examined included disturbed scrub in Soroako town, secondary scrub at the forest edge, and true forest. The study area and the full results of this expedition are presented elsewhere (Holmes & Wood 1979). Much of the time was spent netting birds for identification.

Of the 27 white-eyes trapped, 24 were identified as *Z. atrifrons* and 3 as *Z. consobrinorum.* Measurements taken from captured birds included the standard measures for wing (maximum chord) and tail.

Zosterops atrifrons

This species, easily identified by the distinct black forehead (see photographs in Holmes & Wood 1979 and Wood & Holmes 1981) had not previously been recorded from the southeastern peninsula; Lake Matano is over 100 km from the nearest known population, at Lake Poso. It was found in scrub patches around the town of Soroako, in areas cleared of forest for agriculture and at the forest edge.

TABLE 1

Measurements (mm) of *Zosterops atrifrons* from Sulawesi

		Wing		Tail		Tail/Wing
Race	n	range	average	range	average	ratio x 100
atrifrons	14	54–56.5	54.79	34.5–38	36.18	66.04
surda	16	55–62	57.5	37.4–42	39.5	68.70
subatrifrons	3	53–56	54.17	37–38	37.5	69.23
Lake Matano	24*	52–58	54.42	36–46	39.46	72.51

From Mees (1961). *Measurements were not taken from all 24 birds since some were in different stages of moult. The weights of 21 individuals at Lake Matano ranged from 8.3 to 9.7 g (mean 8.93 g).

The 3 subspecies of *Z. atrifrons* known from Sulawesi are the nominate from the northern peninsula, *surda* from the north central region and *subatrifrons* from islands off the eastern peninsula. Mees (1961) suggests that Finsch (1901) may have been correct to synonymise *subatrifrons* with the nominate, since there is little difference in the measurements or colouration. Table 1 compares the measurements taken from Mees (1961) with the birds from the Lake Matano area. Some of the Lake Matano birds were in primary and/or tail moult, so measurements from these birds have been excluded from the table. It is appreciated that Mees was measuring from skins.

The wing lengths of the Lake Matano birds agree with those of *atrifrons* and *subatrifrons,* whereas the long tail agrees with that of *surda.* The combination gives rise to a higher tail/wing index than for the described subspecies. Plumage characteristics of the Sulawesian races, described in Mees (1961), are green back with rump at most slightly more yellow, throat lemon-yellow (nominate) or greenish-yellow *(surda, subatrifrons),* lemon-yellow under tail coverts and greyish-white underparts. The legs of the nominate race are pale horn. The Lake Matano birds had a marked yellow rump, golden-yellow throat, yellow undertail coverts with the rest of the underparts white. The legs were dark grey.

From the biometric data and plumage characteristics (no skins were collected) it is not possible to ascribe the Lake Matano birds to any of the known Sulawesi subspecies of *Z. atrifrons. Zosterops* is a sedentary genus, and with Lake Matano being 100 km from the nearest known race it may well be that the population represents an undescribed subspecies, for which the name *soroakensis* would be appropriate.

Zosterops consobrinorum

This species was less easy to identify than the preceding species. It does not have the black forehead of *atrifrons,* and *anomala* is excluded by the presence of a white eye-ring. It is separable from *Z. chloris* by its white abdomen and belly as opposed to the latter's all yellow underparts, and from *Z. montana* by the golden-yellow throat and undertail coverts, which in *montana* are greenish-yellow. Also *montana* was found above 1000 m by Stresemann (1939-1941), and above 900 m in Lore Lindu (north-central Sulawesi) by Watling (1984), well above the height of Lake Matano. *Z. consobrinorum,* however, is very similar to *Z. citrinella,* which is more southerly, being distributed from Sumba to Australia; Mayr (1965) thought that they were probably conspecific, although in fact he kept them separate.

Z. consobrinorum had previously only been recorded from 3 localities in southeast Sulawesi (Laloumera, Lalolei and Wawo – Mees 1961), the nearest (Wawo) over 100 km from Lake Matano. Stresemann (1939-41) describes this species as a bird of bushes, gardens and forest remnants. We found it in the forest edge and in an area of forest replanting.

The plumage description and colour of the soft parts of the birds trapped at Lake Matano agree exactly with those given in Mees (1961). Their measurements are compared in Table 2 with measurements given by Mees (1961).

TABLE 2

Measurements (mm) of *Zosterops consobrinorum* from Sulawesi

		Wing		Tail		Tail/Wing
Source	n	range	average	range	average	ratio x 100
Mees (1961)	16	51–56	53.22	33–37.5	35.91	67.47
Lake Matano	3	56–60	58	41.5–44	42.8	73.79

Weights of 2 individuals at Lake Matano were 9.8 and 10.4 g.

Much still needs to be discovered about the range of this species in southeast Sulawesi, and more information is needed on variation within the species. However, although the sample size is small, the Lake Matano birds appear to be larger than those measured by Mees.

At one site we found *consobrinorum* and *atrifrons* overlapping, and on one occasion trapped one *consobrinorum* and 2 *atrifrons* together. Therefore the 2 species do not completely geographically replace each other in the manner suggested by Lack (1971).

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Notes on Philippine birds, 7. Recent records of the Chinese Egret *Egretta eulophotes* from Luzon, Mindoro and Palawan, Philippines.

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The Chinese Egret *Egretta eulophotes* is considered a rare winter visitor to the Philippines by duPont (1971). Amadon (1951) records it as casual from Bohol, Cebu, Panay and Samar; Baud (1978) from Palawan; and Kuroda (1913) from Basilan. Reported here are first records for the islands of Mindoro and Luzon and additional records from Palawan.

MINDORO.

S.E.G. observed a single *E. eulophotes* on 9 April 1981 and 3 on 22 April 1981 in a large estuarine area of fish ponds and salt farms at Barrio Caminawit, Municipality of San Jose, Occidental Mindoro. The 9 April bird (observed at 50 m) was with a large mixed flock of Little Egrets *Egretta garzetta* and Great Egrets *E. alba.* On 22 April, 3 Chinese Egrets (observed at 40 m) were together on the perimeter of a flock of c. 50 Great Egrets and 8 Little Egrets, foraging in open water 10-15 cm deep, constantly ''dancing'' with high quick steps and with wings frequently extended or occasionally flapping. This behaviour is reminiscent of the feeding method of the Reddish Egret *E. rufescens* of the Gulf of Mexico in North America, and may be a useful field characteristic in recognising Chinese Egrets in large mixed flocks, particularly when not in breeding plumage. All these Chinese Egrets had well developed shaggy crest plumes, all-yellow bills and blackish legs with greenish-yellow feet. Due to the excellent viewing conditions on 22 April, the bluish facial skin, a species-diagnostic feature, was clearly seen on each of the 3 birds.