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BIRDS COLLECTED DURING THE WHITNEY SOUTH SEA EXPEDITION. VII¹

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Zosteropidæ

Zosterops flavifrons (Gmelin)

Excellent series of representatives of this species, from nineteen islands in the New Hebrides Archipelago, have failed to make it simple for us to work out the status of what appear to be six or more subspecies. The Whitney Expedition birds were collected at islands between Aneiteum, at the extreme south, and Vanua Lava of the Banks Islands, near the northern end of the group. The distance between these two stations is well over four hundred miles, and the variations that crop out among the birds are somewhat confusing.

Unfortunately, we have no specimens from Tanna, said to be the type-locality of the species, nor from the neighboring island of Eromanga. Our two skins from Aneiteum, which lies not far from Tanna, do not agree with the description of birds from the latter island. Moreover, the Aneiteum specimens are very unlike a series from Efate (Vate¹ or Sandwich) Island. Now Sharpe (1900, *Ibis*, p. 346) specifically states that a specimen from Efate "agrees with others in the [British] Museum from Erromanga and from the typical locality of Tanna." Since our Efate specimens also agree perfectly with the published descriptions and figure of typical *flavifrons*, we are here regarding them as such and making them the basis of comparison.

Ultimately, the names now applied to the white-eyes of this group will probably need further revision, for the forms of *Zosterops flavifrons* seem to be closely akin to *Z. intermedia* of the Celebes Islands.

Zosterops flavifrons flavifrons (Gmelin)

Muscicapa flavifrons GMELIN, 1789, 'Syst. Nat.,' I, pt. 2, p. 944 (Tanna Island, New Hebrides Group).

Zosterops flavifrons, G. R. GRAY, 1873, in Brenchley's 'Cruise of the "Curaçoa,"' p. 366, Pl. VII, fig. 1; SHARPE, 1900, *Ibis*, p. 346; FINSCH, 1901, 'Tierreich,' Lief. 15, p. 30 (part).

¹Previous papers in this series comprise American Museum Novitates, Nos. 115, 124, 149, 322, 337, and 350.

MEASUREMENTS.—(7 males, 4 females): wing, 59–63 (60.9); tail, 37–41 (40.2); exposed culmen, 13–13.5 (13.2); tarsus, 19–20 (19.6) mm.

RANGE.—Tanna, Eromanga, Efate and Nguna Islands.

Ten specimens from Efate, June 2–26, July 14–20, December 20, 1926; one from Nguna, July 31, 1926.

Nguna is an islet off the northern coast of Efate. The single bird from there is immature, but it seems to have the characters of the subspecies, which are highly distinctive and are not shared by specimens from any one of seventeen other islands in the New Hebrides and Banks Groups.

In adult examples of this subspecies the throat and breast are strontian yellow heightening to lemon chrome. From the nostril to the middle of the upper eyelid is a broad supraloral stripe of a still richer hue than the throat, ranging between lemon chrome and light cadmium. A band of the same color passes across the feathers at the base of the maxilla, joining the supraloral areas and supplying a reason for the name *flavifrons*. If our two specimens from Aneiteum are normal, there would certainly be no likelihood of the term *flavifrons* being applied to the *Zosterops* of that island.

The dorsal surface of the Efate and Nguna birds is mainly warbler green, slightly and indefinitely yellower on head and upper tail-coverts. The sides of head and neck are a little greener than pyrite yellow, and the flanks are olive-yellow. A strong infraorbital black streak outlines the anterior part of the white eye-ring. Iris, brown; bill, black (so appearing in the skins, and so marked on most of the labels), yellowish or horn-color at the base of the mandible; feet and legs, "gray." The condition of the gonads seemed to bear no reference to season.

***Zosterops flavifrons macgillivrayi* Sharpe**

Zosterops magillivrayi SHARPE, 1900, Ibis, p. 345 (Malekula Island, New Hebrides Group); FINSCH, 1901, 'Tierreich,' Lief, 15, p. 30.

SUBSPECIFIC CHARACTERS.—Differs from *Z. flavifrons flavifrons* in general reduction of color tone and loss of pattern; no infraorbital black streak; yellowish supraloral stripe never more than barely perceptible and usually lacking; forehead, crown, nape, sides of head, flanks, and upper tail-coverts, mainly warbler green; throat, breast, and flanks washed with the same color, leaving at most the center of belly and the under tail-coverts yellow; also, apparently, slightly smaller than the typical form.

MEASUREMENTS.—(4 males, 4 females): wing, 57–60 (58.4); tail, 37–39 (38.2); exposed culmen, 13–13.2 (13); tarsus, 18.5–19.7 (19) mm.

RANGE.—Restricted, so far as known, to Malekula Island.

Eight specimens from Malekula, August 17–26, 1926.

Several were breeding adults. A juvenal has a rusty tinge on the green dorsal plumage, and is somewhat ochraceous on belly and under tail-coverts. The flesh colors, as recorded, are those of the preceding form.

Sharpe was evidently much impressed by the different aspects of the birds of Efate and Malekula, for he compared the latter with *Zosterops rendovæ rendovæ* of the Solomon Islands, a species which is not closely related, being larger, of a quite different color, and without a circumorbital ring. He wrote, significantly, of the Malekula specimens. "They all lack the yellow on the forehead, in this respect agreeing with birds from Aneiteum." He adds, "They are of not such a bright yellow below as *Z. flavifrons*, and the greenish color of the flanks is therefore not in such evident contrast."

Sharpe included within his description a specimen from Epi Island, but we believe that Epi birds belong within another aggregation. Certainly the specimens from the single island of Malekula stand apart from those of any other locality in the entire archipelago as regards suppression of color and the general lack of contrasts in their plumage.

***Zosterops flavifrons brevicauda*, new subspecies**

SUBSPECIFIC CHARACTERS.—Resembling *Z. f. macgillivrayi*, but smaller, particularly in the length of the tail, and with more brightly colored under surface, especially on the throat, which is in some instances lemon chrome, as in *Z. f. flavifrons*.

TYPE.—No. 213,604, Amer. Mus. Nat. Hist.; ♂ ad.; Malo Island, New Hebrides Group; August 27, 1926; J. G. Correia.

MEASUREMENTS.—(6 males, 1 female): wing, 55–60 (58); tail, 33–36.5 (35); exposed culmen, 12–12.7 (12.4); tarsus, 18–19 (18.4) mm.

RANGE.—Malo and Espiritu Santo Islands.

Four specimens from Malo, August 27; three from Espiritu Santo, August 30, December 4, 1926, January 13, 1927.

All but one were in breeding condition.

This form is very slightly different from the preceding, but it seems to have a consistently shorter tail, and more color in the throat and breast.

Malo is separated from the larger island of Espiritu Santo, or Marina, by only a narrow strait.

***Zosterops flavifrons perplexa*, new subspecies**

SUBSPECIFIC CHARACTERS.—Resembling *Z. f. brevicauda* in coloration, but slightly larger; wing and tail also averaging longer than in *Z. f. macgillivrayi*.

TYPE.—No. 212,600, Amer. Mus. Nat. Hist.; ♂ ad.; Ambrym Island, New Hebrides Group; August 14, 1926; J. G. Correia.

MEASUREMENTS.—(44 males and females from all of the islands listed below): wing, 59–64 (60.9); tail, 38–42 (39.7); exposed culmen, 11.4–13 (12.5); tarsus, 18–20 (19.3) mm.

RANGE.—The entire easterly chain of islands in the New Hebrides proper, from Mai northward to Meralav; also Vanua Lava Island in the Banks Group. Specific localities are listed below.

• Specimens from the following islands: Aoba, Pentacost, January, 1927; Meralav, September, 1926; Aurora, January, 1926; Ambrym, August, 1926, January, 1927; Pauuma, Lopevi, August, 1926; Epi, December, 1925, August and December, 1927; Tongoa, Tongariki, Mai, July, 1926; Vanua Lava, of the Banks Group, November, 1926.

This form exhibits evidences of intergradation with the three races already described. It averages considerably brighter on the ventral surface than *macgillivrayi*, while certain specimens show a faint yellowish tinge above the lores and on the forehead, suggestive of typical *flavifrons*.

Further evidence of its intermediate status is found in the geographic correlation of the intergrading characters; examples of *perplexa* from the southerly islands, close to Efate, are most likely to approach the subspecies *flavifrons*. However, it seems vain to try to draw a line of demarcation within the aggregation of birds under consideration. They vary widely, but apparently without essential regard to locality. They have longer tails and are generally larger than *brevicauda*; they are of brighter color than *macgillivrayi*, and yet they do not approach very closely toward *flavifrons*.

It goes against the grain to include within this assemblage the birds of the relatively remote island of Vanua Lava, in the Banks Group, especially since the nearer island of Gaua supports a well-marked endemic race. But we can find absolutely no grounds for the differentiation of the Vanua Lava specimens. They may have on the average, narrower white eye-rings, but variation in this character appears to show great independence of locality, and the Vanua Lava birds can be matched by many specimens from elsewhere.

Range in color of the breast is very wide among our fifty examples of this form, but no geographic significance is apparent. Some specimens are almost apricot yellow on the areas of greatest intensity. The state of the gonads was indiscriminately small or enlarged during all seasons represented.

***Zosterops flavifrons gauensis*, new subspecies**

SUBSPECIFIC CHARACTERS.—Resembling *Z. f. flavifrons*, but larger in all dimensions, of slightly darker coloration both dorsally and ventrally, and with a brown instead of a black bill.

TYPE.—No. 216,131, Amer. Mus. Nat. Hist.; ♂ ad.; Gaua Island, in the Banks Group of the New Hebrides; November 22, 1926; J. G. Correia. •

MEASUREMENTS.—(5 males, 4 females); wing, 61–66 (63.8); tail, 39–45 (42.7); exposed culmen, 13.5–14 (13.8); tarsus, 20–21 (20.6) mm.

RANGE.—Known only from the type-locality.

Specimens from Gaua, November 18–22, 1926.

In this form, which is quite unlike the Vanua Lava bird, we find a recurrence of the pattern of typical *flavifrons*, with the yellow forehead and supraloral area. The dorsal surface, however, is closer to yellowish oil green than to warbler green and the bill is distinctly brown in color, making a sharp contrast with that of specimens from Efate.

The eleven specimens collected were adults with enlarged gonads.

***Zosterops flavifrons majuscula*, new subspecies**

SUBSPECIFIC CHARACTERS.—Resembling *Z. f. macgillivrayi*, *brevicauda*, and *perplexa*, but larger than any of these, pronouncedly darker on the dorsal surface, and with a conspicuous, black infraorbital streak.

TYPE.—No. 212,612, Amer. Mus. Nat. Hist.; ♂ ad.; Aneiteum Island, New Hebrides Group; June 10, 1926; J. G. Correia.

MEASUREMENTS.—(1 male, 1 female, respectively); wing, 62, 60; tail, 46, 44; exposed culmen, 14.5, 13.8; tarsus, 21, 20.6 mm.

RANGE.—Known only from the type-locality. •

Two specimens from Aneiteum, June 10 and 11, 1926.

The male was a breeding adult, the female apparently immature. The measurements indicate a race of larger size than any of the other "greenish" forms of this species, to which group *majuscula* belongs. It is a black-billed bird, with a back of even darker green than that of *gauensis*. There is the slightest suggestion of yellow above the lores, but in general coloration, as well as in size, it is very different from the form inhabiting Efate. What is now needed is a comparison of adequate series of specimens from Efate, Eromanga, Tanna, and Aneiteum, for the reported relationships of the white-eyes of these islands are not what might be expected.

Flesh colors of our two Aneiteum birds are recorded as follows: iris, brown; bill, black above, white at the base of the mandible; feet and legs, dark greenish.

***Zosterops tenuirostris* Gould**

Zosterops tenuirostris GOULD, 1837, 'Synops. Birds Austr. and Adj. Isls.,' Part 1, Pl. XVIII (Murrumbidgee River, error = Norfolk Island).

Nesozosterops tenuirostris MATHEWS, 1928, 'Birds of Norfolk and Lord Howe Islands,' p. 52, Pl. XXVII.

MEASUREMENTS.—(12 males and females): wing, 64–71 (67); tail, 45–49 (46.8); exposed culmen, 14.8–15 (15); tarsus, 20–21 (20.5) mm.

Specimens from Norfolk Islands, May 25–29, 1926.

Iris, brown; bill, brown above, horny on the mandible; legs and feet "greenish" or "grayish-green." Gonads in various stages of development.

***Zosterops albogularis* Gould**

Zosterops albogularis GOULD, 1837, 'Synops. Birds Austr. and Adj. Isls.,' Part 1, Pl. XVIII (Murrumbidgee River, error = Norfolk Island).

Nesozosterops albogularis, MATHEWS, 1928, 'Birds of Norfolk and Lord Howe Islands,' p. 51, Pl. XXVII.

MEASUREMENTS.—(12 males and females): wing, 74–79 (77); tail, 51–55 (52.8); exposed culmen, 14.6–15 (14.9); tarsus, 22–23 (22.4) mm.

Specimens from Norfolk Island, May 24–29, 1926.

This species has been thoroughly described in the literature. Females, however, do not differ from males in the color of the lores, as stated by Mathews. To judge from our series, the sexes are entirely indistinguishable. The gonads were in various stages on the dates of collection, some birds being breeding. Iris, brown; bill, black; feet and legs, "grayish-green."

Aside from its large size, this species is characterized by a relatively short bill and elongate tail; the latter is two-thirds the length of the wing.

***Zosterops lateralis* (Latham)**

It has become clear that several forms of *Zosterops* distributed among the islands to the eastward of Australia, and described under a variety of names, should be regarded as representative subspecies of Latham's *lateralis*, the type-locality of which is New South Wales.

Finsch (1901) states that this species, and presumably he meant the typical form, has extended its range by natural means from Australia to New Zealand since 1856, and that still more recently it has wandered to the Chatham Islands, five hundred miles farther eastward. Mathews (1923) goes at some length into this question, and also that of the somewhat complicated taxonomy of the species. He concludes that the bird is "eccentric" both in its wanderings and in the variability of its plumage,

and that its ability to cross large tracts of water has enabled it to extend its range widely.

Our specimens of birds which are closest to Australian examples were, unfortunately, not among those sent to the British Museum for examination by the junior author. They agree substantially with published descriptions, however, and we are regarding them provisionally as the southern Australian, or typical, race.

Zosterops lateralis lateralis (Latham)

Sylvia lateralis LATHAM, 1801, 'Index Ornith.,' Suppl., p. lv, (New South Wales).

Zosterops caerulescens, SHARPE, 1884, 'Cat. Birds Brit. Mus.,' IX, p. 153.

Zosterops lateralis FINSCH, 1901, 'Tierreich,' Lief. XV, p. 39; MATHEWS, 1923, 'Birds Austral.,' XI, Part 3, p. 136.

MEASUREMENTS.—(8 males and females, 4 from each of the localities listed): wing, 60–64 (62); tail, 41–44 (42.7); exposed culmen, 10.7–11 (11); tarsus, 17–18 (17.6) mm.

Three specimens from Rangatira, or Southeast Island, and one from Round Island, Chatham Group, March 15, 1926; six specimens from Norfolk Island, March 26–29, 1926.

The Norfolk Island birds differ from the four from the Chatham Islands in having slightly more greenish yellow on the throat. The difference appears to be within the range of individual variation, however, and in other respects the birds are indistinguishable. Mathews's plate of southern Australian birds portrays a more brightly yellow throat than that of any of our specimens.

Iris, brown; bill, horny brown; legs and feet, "grayish." Gonads reduced in all specimens from either locality.

Plotted diagrams of average measurements show that these birds have relatively long wings when compared with other forms of *Zosterops* of equivalent size. Also, the outermost primary is but little shorter than the second, third, and fourth, a different condition from that found in such sedentary subspecies of *lateralis* as those inhabiting New Caledonia, the Fiji Islands, and the New Hebrides.

Zosterops lateralis flaviceps Peale

Zosterops flaviceps PEALE, 1848, 'U. S. Explor. Exped.,' VIII, p. 95 (Vanua Levu Island, Fiji Group); FINSCH, 1881, 'Rep. Voy. "Challenger,"' Zoöl., II, Part 8, p. 48, Pl. xiv, fig. 1.

Zosterops caerulescens var. *kandavensis* RAMSAY, 1876, Proc. Linn. Soc. N. S. Wales, I, p. 71 (Kandavu, Fiji Group).

SUBSPECIFIC CHARACTERS.—Differs from *Zosterops lateralis lateralis* in that the flanks and sides of the belly are much paler, being close to avellaneous instead of

chestnut-brown; the yellow of the throat, moreover, extends farther caudad, sometimes tinging the anterior part of the breast; *flaviceps* also averages slightly larger in all dimensions except length of wing.

MEASUREMENTS.—(34 males and females, from the 27 islands listed below): wing, 57–62 (59.8); tail, 41–45 (43.4) exposed culmen, 11–12 (11.4); tarsus, 17.5–19 (18.2) mm.

RANGE.—All islands of the Fiji Group.

Specimens from 27 islands of the Fiji Archipelago, as follows:

1. Islands near the type-locality of Vanua Levu: Yendua, January, 1925; Kioa, Rambi, December, 1924; Taviuni, November, December, 1924; Namena, February, 1925.

2. The Yasawa cluster of islets, northwest of Viti Levu: Yasawa, Nathoulla, Naviti, Waia, Viwa, Yanuya, January, 1925.

3. Viti Levu and its adjacent islands: Viti Levu, June, 1924, May, 1925; Vatu Leile, November, 1924; Mbenga, Mbatika, Nairai, Ngau, February, 1925; Ovalau, Wakaya, Makongai, October, 1924; Malaki, January, 1925.

4. Kandavu and its outliers: Kandavu, November, 1924; Vuro, Vanua Kula, Yankuve, October, 1924.

5. The relatively large and isolated islands of Koro, December, 1924; Moala, July, 1924.

The Fijian white-eyes in our large series make up a very uniform aggregation. They are similar to birds from the New Hebrides, but separable by smaller size, apparently a constant character. No conclusions can be drawn from the state of the gonads, except that some birds were breeding during all of the seasons represented. A nestling taken at Kioa Island on December 5 is assuming plumage identical with that of adults.

Iris, brown; bill, light brown, horny on the mandible; feet and legs, marked "flesh," "light brown," or "gray" on various labels.

***Zosterops lateralis vatensis* Tristram**

Zosterops vatensis TRISTRAM, 1879, Ibis, p. 444 (Vate = Efate Island, New Hebrides Group).

SUBSPECIFIC CHARACTERS.—Similar to *Z. l. flaviceps*, but uniformly larger in all dimensions.

MEASUREMENTS.—(31 males and females from all of the islands listed below): wing, 62–68 (64.7); tail, 41–49 (45.2); exposed culmen, 12.5–14 (13); tarsus, 18–20.5 (19.5) mm.

RANGE.—The New Hebrides Archipelago from Efate northward, and including the Banks and Torres Islands, with the exception of the small island of Valua in the Banks Group.

Specimens from the following 16 islands, all collected during 1926: (New Hebrides proper) Efate, June, July; Malekula, Pauuma, Lopevi, Ambrym, Malo, August; Espiritu Santo, September; Epi, August, December; (Banks Group) Meralav or Melapav, Gaua, September; Ureparapara or Bligh, November; (Torres or Vava Group) Toga or Tog or South or Puka Puka, November; Low Island, November.

Since the New Hebrides white-eyes average about eight per cent larger than those of the Fiji Islands, we have recognized Tristram's name *vatensis*. Whether or not the New Hebrides race is different from that of New Caledonia, which bears an earlier name, remains for future determination, no specimens from the latter island being yet available in the American Museum. Sharpe (1900, Ibis, p. 346) has decided in the negative on this question, but subsequent study of these insular forms has shown that comprehensive series are necessary before such conclusions can be final.

We believe, furthermore, that Tristram's statement regarding the absence of yellow on the under tail-coverts of *vatensis* is not necessarily due to the preservation of his specimens in alcohol, as assumed by Sharpe. As a matter of fact, most of our fresh birds from Efate and other islands of the New Hebrides have very pale under tail-coverts, in some cases with scarcely a trace of yellow or even buffy. That the character is not constant, however, is abundantly shown by scattered specimens from various localities in the group, including those from the Banks and Torres Islands. Our judgment is that the yellow of the under tail-coverts is subject to rapid fading after the moult.

The variations of this subspecies throughout the archipelago that extends from Efate to the Torres or Vava Islands are very interesting. Were it not for the large number of islands, and the wealth of specimens in our series, a systematist might consider that he had data for describing three or more subspecies. The variable feature is the extent and intensity of gray on the back, which seem to find their maximum at Efate, and to be somewhat reduced as we go northward through Epi, Malekula, Espiritu Santo, etc., toward the Torres Islands. The birds from the latter group have, on the average, less gray and more green on the back than those from Efate, but intergradation is so subtle, continuous, and overlapping that there seems to be no locality in which the line can be drawn. We are, therefore, treating all of these birds as a single race, with an acknowledgment that they express a certain amount of geographic variation that can hardly be indicated by sound nomenclature.

At the single small island of Valua in the north-central part of the Banks Group we find, curiously enough, a fixed variant, which is so striking in its characters that it must of necessity be recognized as a subspecies. In fact, were it not for the type of variation already described, the Valua bird might be called a species, or at least would have been so described by any ornithologist of a previous generation. In the Valua form the dorsal surface is almost entirely green, with only a suggestion of the blue-gray band across the interscapulars. This race is also buffier on the under surface than any examples of *vatensis*, whether from Efate in the south, Torres Islands at the other extreme, or intermediate localities. It also has more distinctly yellow under tail-coverts, and on the average a brighter yellow throat. The curious point is that this distinct form seems to be confined exclusively to Valua. Specimens from Meralav and Gaua, in the Banks Group, are closer to typical *vatensis* than they are to the Valua birds, while a single specimen from Ureparapara is more definitely intermediate than any of the others.

The correlation between the range of variation just described and the geographic succession of islands is very interesting, because the bluest-backed among all the birds are undoubtedly those from Efate, with a very slight increase of the green coloration toward the Torres Islands, and an abrupt change in the same direction at Valua. Both of the last-named localities are at the opposite end from Efate of an archipelago of more than thirty islands.

Flesh colors in this form agree with those of Fijian birds. Likewise the gonads seem to have been indiscriminately small or enlarged at all seasons.

***Zosterops lateralis valuensis*, new subspecies**

SUBSPECIFIC CHARACTERS.—Differs from *Z. l. vatensis* in the almost complete suppression of the plumbeous gray of the back, the entire dorsal surface being warbler green save for a suggestion of green-tipped gray feathering in the interscapular region.

TYPE.—No. 214,063, Amer. Mus. Nat. Hist.; ♀ ad.; Valua Island, Banks Group, of the New Hebrides; September 17, 1926; R. H. Beck.

MEASUREMENTS.—(6 males and females): wing, 63–65 (63.3); tail, 43–46 (44.3); exposed culmen, 13–13.5 (13.2); tarsus, 20 mm.

RANGE.—Apparently restricted to the small island of Valua.

Eight specimens from Valua Island, September, 1926. The subspecies has been sufficiently discussed above.

***Zosterops explorator* Layard**

Zosterops explorator LAYARD, 1875, Proc. Zool. Soc. Lond., p. 29 (Kandavu Island, Fiji Group); FINSCH, 1881, 'Rep. Voy. "Challenger," Zool., II, Part 8, p. 48, Pl. XIV, fig. 2; SHARPE, 1884, 'Cat. Birds Brit. Mus.,' IX, p. 172; FINSCH, 1901, 'Tierreich,' Lief, 15, p. 13.

MEASUREMENTS.—(18 males and females, from the five islands listed below): wing, 58–63 (60.3); tail, 32–39 (35); exposed culmen, 12–13 (12.4); tarsus, 18.5–19 (18.7) mm.

RANGE.—The larger islands of the Fiji Group.

Specimens from Kandavu, November, 1924; Viti Levu, June, 1924, May, 1925; Ovalau, October, 1924; March, 1925; Vanua Levu, December, 1924, January and February, 1925; Tavuni, December, 1924.

Finsch states that this species ranges throughout the Fiji Group, but the stations on record are confined to the larger islands, and the fact that members of the Whitney Expedition did not find it at any of the smaller islets, upon which *Z. lateralis flaviceps* abounds, constitutes presumptive evidence. It is a pity that the Whitney Expedition birds from the Fijis lack notations of altitude upon their labels. The two species of *Zosterops* that resemble each other so closely may inhabit different zones, though the fact that specimens of each were taken on the same date by one collector might argue against this assumption.

Sharpe's description in the 'Catalogue' is excellent, and includes Layard's notes on the flesh colors. Our labels record: iris, brown; bill, blackish brown, horn-color at base of mandible; legs and feet, gray. Gonads large or small during all of the periods listed.

The white eye-ring is a little narrower than in *Z. l. flaviceps*, especially along the lower lid. It seems also to be continuous, while that of *flaviceps* is broken by a hiatus at the inner canthus. In both species the lower arc of the eye-ring is outlined by black feathers, but in *flaviceps* these extend forward into the lores, while the lores of *explorator* are yellow. The outstanding difference between the two species is one of proportion, *explorator* having a relatively very short tail. They are of the same general size, with wings of the same length; in *Z. explorator* the tail is 60 per cent as long as the wing, in *Z. l. flaviceps*, 70 per cent.

Nestlings from Kandavu, taken during November, show that the juvenal plumage is only slightly paler than that of adult birds.

***Zosterops samoensis*, new species**

SPECIFIC CHARACTERS.—A small, greenish, plain-colored *Zosterops*, with a reduced white eye-ring and a yellow iris.

ADULTS (sexes alike).—Dorsal surface, including sides of head and lesser wing-coverts, yellowish olive, slightly lighter on the upper tail-coverts; quills of wing and

tail, dorsally sooty black, the primaries, secondaries, and outer rectrices, externally edged with yellowish olive, the tertials and greater coverts more generally tinged with the same color; remiges, internally margined with whitish, except toward their tips; bend of wing, baryta yellow; lining of wing, whitish; lores, faintly tinged with yellowish; a reduced circumorbital ring of white feathers, not closely spaced; chin and anterior part of throat, barium to citron yellow, the same color in some instances appearing on the shafts of the cheek-feathers, which are otherwise but slightly yellower than the crown: remainder of ventral surface, whitish, heavily tinged with baryta yellow, yellowish olive, and, on the flanks and sides of breast, with indistinct gray and buffy tones; under tail-coverts, barium to citron yellow. Iris, light yellow (so marked on every label); bill, horny brown on the maxilla, darkest toward the tip, and yellow on the mandible; legs and feet, "grayish" or "greenish."

TYPE.—No. 206,312, Amer. Mus. Nat. Hist.; ♀ ad.; Savaii Island, Samoa; May 23, 1924; R. H. Beck.

MEASUREMENTS.—(14 males and females): wing, 57–62 (58.6); tail, 35–38 (36.3); exposed culmen, 11–12.5 (11.9); tarsus, 16–17 (16.7) mm.

RANGE.—Known only from Savaii Island, Samoan Group.

Twenty-four specimens, collected at Savaii, May 19 and 23, 1924.

It is surprising to find at Samoa this interesting, rather obscurely colored *Zosterops*, which has been overlooked so long. The labels give no indication as to whether the species is generally distributed or whether it is confined to the mountains of Savaii, which are well over five thousand feet in altitude.

Perhaps the most interesting feature of *Zosterops samoensis* is the fact that it has a "light yellow" iris, most or all of the other Pacific species having brown eyes.

Compared with *Z. explorator*, *Z. flavifrons*, and the races of *Z. lateralis*, it is characterized by a short tarsus. With the exception of the color of the iris, the shortness of the tarsus, and much smaller size, *Z. samoensis* bears an extraordinary resemblance to *Z. sanctæ-crucis* of the Santa Cruz Group.

Many of our specimens were in breeding condition when collected.

Zosterops sanctæ-crucis Tristram

Zosterops sanctæ-crucis TRISTRAM, 1894, Ibis, p. 31 (Santa Cruz Island, Santa Cruz Group); FINSCH, 1901, 'Tierreich,' Lief. 15, p. 42.

MEASUREMENTS.—(6 males, 5 females): wing, 65–72 (68); tail, 39–43.5 (41); exposed culmen, 13–13.8 (13.3); tarsus, 21–22 (21.7) mm.

RANGE.—Known only from Santa Cruz (Ndendi, Nitendi, or Egmont) Island.

Twenty-two specimens, Santa Cruz, October, 1926, February, 1927.

This hitherto little-known species bears an astonishing resemblance to the bird we have just described as *Zosterops samoensis*. The single islands inhabited by the respective forms are twelve or thirteen hundred

miles apart, but, were it not for a marked difference in the proportional length of the tarsus, it would be natural to regard the two as representative races of one species. When graphs of the dimensions are juxtaposed, however, *sanctæ-crucis* is shown to have a relatively much longer tarsus and relatively shorter bill.

Z. sanctæ-crucis is about 17 per cent larger than *Z. samoensis*, as reckoned from average lengths of wing. It is definitely of lighter hue on the dorsal surface, though both birds show the same peculiar glaucous tone on their olive plumage. Ventrally, *sanctæ-crucis* is more evenly yellow than *samoensis*; in other respects they are much alike, even to such subtle details as the marginal coloration of the quills. The white eye-ring, almost vestigial in *samoensis*, has retrograded still further in *sanctæ-crucis*, and has, in fact, been practically replaced by dusky feathers that fill the lores and completely surround the orbital region. This feature, and the brown iris, supply a distinct contrast with *samoensis*.

Tristram called attention to the striped appearance of the pileum, evident in many of our specimens and due to exceedingly faint yellowish shaft-markings.

The gonads were either small or enlarged among birds taken during both periods represented. Iris, brown; bill, black, but basally whitish on the mandible; feet and legs, "bluish."

SANFORDIA, new genus

Extremely long-billed Zosteropidæ, the exposed culmen being more than 80 per cent of the length of the tarsus and approximately 25 per cent of that of the wing. Resembling the genus *Woodfordia*, but with feathered lores and circumorbital region, a longer and slightly more compressed bill, and narial opercula similar to those of typical *Zosterops*. The type species is *Sanfordia lacertosa*.

Sanfordia lacertosa, new species

SPECIFIC CHARACTERS.—An extremely large, nearly unicolor, exceedingly long-billed species, with feet and legs relatively as well as absolutely stouter than is usual in the family. It superficially resembles *Woodfordia superciliosa* but is larger, in addition to the differences noted above. In coloration it is apparently not unlike *Zosterops finschi* (Hartlaub), of the Pelew Islands. From other large Pacific Zosteropidæ, such as *Z. albogularis*, it differs in having a relatively much shorter tail, as well as heavier legs and feet, and the strikingly elongate bill.

ADULTS (sexes alike).—Dorsal surface, mainly Saccardo's umber, blending into sepia on the pileum and reddening to Prout's brown on the upper tail-coverts, the whole, however, tinged with a faint suggestion of greenish or olivaceous, making a hue that cannot be matched exactly in Ridgway's 'Color Standards'; lighter feather-shafts on the crown produce a faintly streaked effect; at the base of the nostrils and

across the anterior border of the forehead are a few antrorse, buffy feathers, distinctly lighter than those of crown and back; quills of wing and tail, blackish brown (1), with a definitely reddish bloom, and externally margined with tawny, most conspicuously on the middle primaries and the secondaries; wing-coverts, like remiges, but with tawny borders only on the distal row; quill shafts, white in ventral aspect; the same surface of the quills, mouse gray, with reddish reflections; lining of wing mainly mouse gray, but with a few ochraceous feathers along the bend; lores and circumorbital region, dirty whitish, most pronounced above the eye where it forms a faint suggestion of a superciliary stripe which blends with the indistinct light color of the lores and narial plumage; an obsolete eye-ring of silky, grayish rather than white, feathers; cheeks, slightly lighter than the dorsal plumage, owing chiefly to the presence of indistinct whitish feather-shafts, which extend forward beneath the eye to the bill, and to a lesser extent across the throat; entire ventral surface, generally cinnamon-buff to clay color, more rufous on the flanks and under tail-coverts, but with an indistinct olivaceous wash on the throat and breast, and frequently with a grayish mottling at points where the concealed plumbeous portions of the feathers appear at or near the surface. Iris, brown; bill, "straw color" (whitish or ivory in the dried specimens); feet and legs, "straw color" or "light yellow."

TYPE.—No. 222,157, Amer. Mus. Nat. Hist.; ♂ ad.; Santa Cruz Island, Santa Cruz Group; February 26, 1927; R. H. Beck.

MEASUREMENTS.—(17 males and females): wing, 79–86 (83.1); tail, 46–53 (49); exposed culmen, 20–22 (21); tarsus, 24.5–25.6 (25) mm.

RANGE.—Known only from Santa Cruz (Ndendi, Nitendi, or Egmont) Island.

Eight males, nine females, Santa Cruz Island, February 23–27, 1927.

The wealth of the South Sea Islands is again indicated by the discovery of a second endemic representative of the Zosteropidæ on a body of land not more than fifteen miles in length. *Sanfordia lacertosa* is a very striking bird, with its elongate bill, entirely light in color except for the dark narial opercula. The bill is distally more attenuate than that of *Woodfordia*, and slightly less decurved, both showing the characteristic subterminal notch on the maxilla. *Woodfordia* is in effect a "green" bird, *Sanfordia* a "brown" bird, but one can not escape a feeling that their relationship is not remote. The characters upon which the genus *Woodfordia* were based forbid congeneric treatment of the Santa Cruz species. On the other hand, the disproportionately long bill of *lacertosa* makes it out of place in the genus *Zosterops*, in addition to which the long and heavy legs and feet are very distinctive.

The gonads were in various stages on the dates of capture, some specimens being marked as breeding.