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Systematic Notes on Palearctic Birds. No. 32 Oriolidae, Dicruridae, Bombycillidae, Pycnonotidae, Nectariniidae, and Zosteropidae

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The following notes were made during a study of the families named above for a contemplated check list of the birds of the Palearctic region. Among the species included in this paper, those discussed or reviewed in greater detail are: *Oriolus oriolus, Hypocolius ampelinus, Microscelis amaurotis, Pycnonotus leucotis,* and *Zosterops japonica.*

I would like to express my gratitude to Mr. H. G. Deignan, Dr. G. F. Mees, Dr. A. L. Rand, and Dr. R. W. Storer who have kindly helped me in various ways. Mr. Deignan has read the manuscript dealing with the Pycnonotidae, and he and Dr. Rand have furnished me with their notes on the Palearctic members of this family. Dr. Mees sent me his notes on the Palearctic Zosteropidae, and Dr. Storer lent material collected by Dr. Koelz from the collection of the Museum of Zoology of the University of Michigan.

ORIOLIDAE

Oriolus oriolus

The Golden Oriole has been reviewed by Meinertzhagen (1923, Ibis, pp. 57–61) who recognizes two subspecies: nominate *oriolus* Linnaeus, 1758, type locality, Sweden; and *kundoo* Sykes, 1832, type locality, Deccan, peninsular India. These two are very clearly differentiated. Nominate *oriolus* is larger, the wing length of 20 fully adult males of each race measured by me being 149–162 (154.5) in nominate *oriolus*

as against 136–144 (141) in *kundoo*. The wing formula shows also a clear-cut difference worthy of emphasis, although it has been ignored by virtually all authors. This difference consists in the fact that the second outer primary is longer than the fifth in nominate *oriolus*, often by as much as 1 cm., whereas the reverse is true in *kundoo*. In addition, the fourth is slightly shorter than the third in nominate *oriolus*, whereas it is equal to the third or slightly longer in *kundoo*.

There are also some clear-cut differences in coloration: In adult males, the region behind the eye is black in *kundoo*, but in nominate *oriolus* the black is restricted to the lores; in *kundoo* both sexes show larger yellow areas in the tail and on the primary coverts; and female *kundoo* is yellow or yellowish above and below when fully adult, whereas female nominate *oriolus* is greenish above, grayish on the throat, and whitish on the abdomen.

Nominate *oriolus* breeds throughout the greater part of continental Europe, as well as in northwest Africa though in small numbers, in Siberia east to the Yenisei, Iran, southwestern Transcaspia, and north of *kundoo* in Russian Turkestan. The latter ranges from Russian and Chinese Turkestan southward through the northern and eastern half of Afghanistan to northern Baluchistan and India. It has been suggested that *kundoo* and nominate *oriolus* are perhaps full species, and both have been reported as breeding in the western Tian Shan in Chinese Turkestan. However, according to Ludlow (1933, Ibis, pp. 658–659) the two replace each other altitudinally in this region, nominate *oriolus* breeding at higher altitudes than *kundoo* which inhabits the plains.

In view of the fact that these two races are so well differentiated, it is not desirable to recognize other forms which have been described but differ only very slightly. These forms are: *caucasicus* Zarudny, 1918, type locality, northern Iran; *turkestanica* Zarudny and Kudashev, 1918, type locality, Russian Turkestan; and *sibiricus* Hans Johansen (1944, Jour. Ornith., vol. 92, p. 29), type locality, Krasnoyarsk region, Siberia. An additional form has been described. It was named *baltistanicus* by Koelz (1939, Proc. Biol. Soc. Washington, vol. 52, p. 72) with type locality, Baltistan, northern Kashmir, but it appears to be a synonym of *kundoo*.

Caucasicus and *turkestanica* were separated on size differences, *caucasicus* as smaller than nominate *oriolus*, and *turkestanica* as larger than *kundoo*. Zarudny gave no measurements in his description of *caucasicus*, but Stresemann (1928, Jour. Ornith., vol. 76, p. 346) states that three adult males from northern Iran have a wing length of 145,

147, 148, as against 150–161 in males from Europe, and recognizes *caucasicus*. However, I have measured males from Europe with a wing length of 149, and Niethammer (1937, Handbuch der Deutschen Vogelkunde, Leipzig, vol. 1, p. 42) has measured some from Germany with a wing length of 147. It seems to me, therefore, that while birds from northern Iran are somewhat smaller, the difference is too slight to warrant separation.

Zarudny states that the wing length of *turkestanica* is 1 cm. longer than that of *kundoo*. This is not confirmed by specimens that I have measured from Turkestan, Afghanistan, and India. In males, specimens from Turkestan measure 140, 140, 141; from Afghanistan, 140, 141, 141, 143, 144; and from peninsular India, 138, 138, 139, 141, 141, 142, 142, 144. Dementiev (1933, L'Oiseau, p. 749) states that males from Turkestan measure 141–148, and it is probable that a cline of increasing size runs from India northward to Turkestan; but, judging by the measurements available, this cline does not seem sufficiently sharp to warrant the recognition of *turkestanica*. Korelov (1954, Birds of the Soviet Union, vol. 5, pp. 143–153) has synonymized *caucasicus* with nominate *oriolus* and *turkestanica* with *kundoo*. He does not mention *sibiricus* which was separated from nominate *oriolus* by Johansen on the ground that it is larger, "males 153–165, as against 150–160," and purer and brighter yellow, less dull and greenish. The overlap in measurements is very great, and I doubt that the difference in coloration is sufficiently well marked and constant to warrant the recognition of *sibiricus*. Many males that I have examined from Europe were neither dull nor greenish. As stated above, it seems misleading to recognize such slightly differentiated forms as *caucasicus, turkestanica,* and *sibiricus*. It is sufficient to mention the trends in the geographical variation represented by these forms without resorting to nomenclatural separation.

Baltistanicus was based on six specimens (only one of which was adult). It was separated by Koelz from *kundoo* and *turkestanica* on color differences and as being smaller than the latter. I have not seen specimens from Baltistan, but I cannot discern any color differences whatever between specimens in comparative plumage from other parts of Kashmir, Gilgit, Afghanistan, Turkestan, and northern and peninsular India. Whistler (1942, Jour. Bombay Nat. Hist. Soc., vol. 43, p. 36), who has examined some, states, "Specimens from Baltistan in my own collection are not separable from *O. o. kundoo*" and believes *baltistanicus* was based on individual variants. Koelz states that the three specimens he used for comparison, and believes are *turkestanica,*

consist of one female with a wing length of 154 collected on September 10 in Afghanistan and two males with a wing length of 160 collected on September 20 and 21 in Ladak. However, as shown above, birds from Turkestan do not have such an extraordinarily long wing, and these measurements correspond with those of nominate *oriolus* from the eastern part of its range. I did not examine the two males, but I find that the female is nominate *oriolus* as shown incontrovertibly by its typical coloration and wing formula. I believe it is likely that Koelz misidentified the two males also and that they are likewise nominate *oriolus*. All three specimens were collected at the height of the migration, and nominate *oriolus,* though it winters in Africa, occurs on passage as far east as Baluchistan and northwestern India.

DICRURIDAE

The Dicruridae are not a Palearctic family, but nevertheless three of the 20 species are represented in the Paleartic region: the King Crow (*macrocercus*), the Ashy Drongo (*leucophaeus*), and the Spangled Drongo (*hottentottus*). The first invades the Palearctic region most extensively, with two subspecies out of a total of seven occurring there. These are *albirictus,* which breeds as far west as southeastern Iran, and *cathoecus,* which breeds as far north as southern and perhaps central Manchuria. Three of the 14 subspecies of *leucophaeus* breed in the Palearctic region: *longicaudatus* in Afghanistan, *hopwoodi* in Sikang and up to 13,000 feet in northern Yunnan, and *leucogenis* in northern China and southern Manchuria. In *hottentottus* only one of its 30 odd subspecies breeds in the Palearctic region, this subspecies (*brevirostris*) breeding in China north to northern Hopeh.

The family has been reviewed by me in detail (1949, Bull. Amer. Mus. Nat. Hist., vol. 93, pp. 199–342), and a study of its evolution has been published by Mayr and me (1948, Evolution, vol. 2, pp. 238–265). I have now reviewed the Palearctic forms again and made the following notes.

Dicrurus macrocercus

In 1949 I did not include Iran within the range of *albirictus,* mentioning only a record of Zarudny (1911, Jour. Ornith., vol. 59, p. 221) who had listed this species as breeding in Persian Baluchistan. I was not then familiar with the localities where Zarudny had collected, but the two specimens that I listed (p. 236) as being from "Northern Baluchistan" were collected by him on July 23 and 24, 1898, on the Rud i Bampur in Persian Baluchistan, not Baluchistan proper. These two specimens, one of which is, I find, a very young bird, establish with

certainty that the species breeds in Iran. The nearest point at which the Bampur River approaches the frontier of Baluchistan proper is about 200 kilometers.

Koelz (1954, Contrib. Inst. Reg. Explor., no. 1, p. 15) has described a new subspecies from Assam, naming it *tsipi*. Its type locality is Palasbari in the Brahmaputra Valley. He states that in *tsipi* the bill is larger and the tail averages longer than in *albirictus* from the Himalayas, and also that "The gloss is more green; the white rictal patch smaller; the inner surface of wing feathers darker" and that *tsipi* differs from the smaller *cathoecus* of China by having a larger bill but approaches the latter in the color of its gloss and wings. Thanks to the courtesy of Dr. R. W. Storer, I have been able to examine 10 topotypes of *tsipi* collected by Koelz, some of which are paratypes, and I find that *tsipi* is a very poorly differentiated intermediate between *cathoecus* and *albirictus*. I believe it should be synonymized with the latter.

Koelz gave no measurements, but I find that among the 10 topotypes the six that are adult measure: males, wing, 154, 155, 156, 161; tail, 175, 175, 177, 186; bill, 26, 27, 28, 29; females, respectively, 147, 151; 163, 172; 25, 27. As stated in my review of the family, *albirictus* measures: males, wing, 146–159 (153.3); tail, 157–185 (170.4); bill, 24.5–29 (26.27); females, wing, 148–150 (149.5); tail, 150–176 (165.5); bill, 25–28 (26.4). *Cathoecus* measures: males, wing, 142–150 (146.0); tail, 140–154 (145.4); bill, 25–28 (26.3); females, wing, 134–149 (143.3); tail, 136–150 (141.3); bill, 24.5–27 (25.8). We see that the wing and tail measurements of *tsipi* are similar to those of *albirictus* but that the measurements of the bill in all three forms overlap too much to be of diagnostic value. In the three forms the range of individual variation in the thickness and width of the bill is the same.

As Koelz states, the coloration of *tsipi* (gloss and color of the wing lining) approaches that of *cathoecus,* but the gloss is not a very good character, as it is very similar in *cathoecus* and *albirictus,* though averaging a little duller and more greenish in *cathoecus.* The best difference in coloration is the color of the wing lining which is pale in *albirictus* and distinctly darker in *cathoecus.* In two of the six adult *tsipi,* the color of the wing lining is about as dark as in *cathoecus,* and in the others it is slightly paler, but not so pale as in *albirictus.* We see, therefore, that *tsipi* is similar in size to *albirictus* but closer to *cathoecus* in coloration.

As I remarked in my monograph, *cathoecus* and *albirictus* are connected by intermediate and intergradating populations in northern and western Burma. The specimens collected by Koelz now show that the

zone of intergradation extends farther west and includes Assam, at least up to the Brahmaputra Valley. Judging by the specimens collected by Koelz and other older specimens from the valley, it seems best to refer the populations of Assam to *albirictus*. They are not sufficiently well differentiated to warrant their nomenclatural separation.

Dicrurus leucophaeus

The exact status of the Ashy Drongo in peninsular and southern India is not known. Ticehurst (1936, Ibis, p. 276) has stated that it "has not been proved to breed in India proper outside the Himalayas. Birds obtained in the Peninsula of India are, so far as is known, winter visitors there." Salim Ali was unable to throw light on this question in the most recent work on the birds of southern India (1953, The birds of Travancore and Cochin, London, Oxford University Press, p. 106), stating that it is "presumably only a winter visitor" to southern India. In my 1949 paper I stated that there was some evidence that the bird breeds south of the Himalayas, but this evidence is so meager and so uncertain that it is not conclusive.

We are left, however, with the fact that some specimens collected in southern and peninsular India are smaller than the birds breeding in the Himalayas. In the specimens I measured, adults from peninsular and southern India had a wing length of 128–146 (135.88) as against 137–147 (141.17) in males and 135–143 (139.0) in females collected in the Himalayas. The birds from the peninsula and south are also somewhat paler and more bluish, less slaty, but, as I mentioned in 1949, the difference in coloration is slight, and the measurements overlap. In view of the fact that we do not know the origin of these smaller and paler birds, and all the differences are slight, after all, it seems wiser to me now not to recognize any subspecies, at least until we are certain that the bird breeds south of the Himalayas. I consider therefore that *beavani* Vaurie (described in my 1949 paper with type locality eastern Afghanistan) is best synonymized with *longicaudatus* Jerdon, 1862, type locality, Nilgiris. Another synonym is *minimus* Baker, 1918, type locality, Ceylon, based on winter visitors to Ceylon of small size, while *beavani* was based on large birds.

Dicrurus hottentottus

Vorobiev (1954, Birds of the Ussuri Region, Moscow, Akademia Nauk, pp. 213–214) has published a record of *D. hottentottus brevirostris,* collected on November 9, 1947, in southern Ussuriland. He states also that *D. macrocercus cathoecus* was collected on May 26, 1944,

in southern Ussuriland. These two records are the first for Ussuriland and are interesting because they are the northernmost for these two species, though Swinhoe stated long ago that *cathoecus* reaches the Amur River on spring migration, but I do not know the basis for his statement.

In 1955 (Ibis, pp. 153–155) I published a short study of the geographical variation of *hottentottus* in India. Differences in coloration are very slight and not constant, and any nomenclatural separation must be based on size differences alone. However, a critical study of the measurements shows that the variation is clinal and that there is much overlap in measurements. It is best, therefore, to synonymize *chrishna* Gould, 1836, type locality, Nepal, and *londae* Koelz (1939, Proc. Biol. Soc. Washington, vol. 52, p. 70), type locality, Londa, southern Bombay Presidency, with nominate *hottentottus* Linnaeus, the correct type locality of which, as shown by Stresemann (1952, Ibis, pp. 517, 521), is Chandernagor, southern Bengal.

In 1949 I recognized *chrishna* but not *londae*. The latter was subsequently recognized by Ali (*loc. cit.*) but without giving reasons for his decision. As stated in my 1955 paper, I have examined the type and paratypes of *londae,* and the measurements of these and other specimens from southern India overlap a great deal the measurements of topotypical nominate *hottentottus.* The difference in average is very trivial; the former measure 156–168 (163.4) and topotypes of nominate *hottentottus,* 162–170 (165.0).

BOMBYCILLIDAE

Bombycilla garrulus

The Bohemian Waxwing varies geographically, but this variation is slight or relatively slight, and the question has been raised whether subspecies can be recognized. The three currently accepted are nominate *garrulus* Linnaeus, 1758, type locality, Sweden, for the populations of western Eurasia; *centralasiae* Poliakov, 1915, type locality, Zmeinogorsk, Russian Altai, for those of eastern Eurasia; and *pallidiceps* Reichenow, 1908, type locality, British Columbia, for those of North America.

Stegmann (1931, Jour. Ornith., vol. 79, p. 184) recognized *centralasiae,* stating that it was *"merklich grauer und dunkler"* than nominate *garrulus* but the word *"dunkler"* seems to be an error, where *"blasser"* was meant, as it is generally admitted that if *centralasiae* differs at all from nominate *garrulus* it differs from it by being paler, not darker. Stegmann later came to doubt the validity of *centralasiae,* as shown

by his correspondence with Meise who did not recognize *centralasiae* (1934, Abhandl. Ber. Mus. Dresden, vol. 18, no. 2, p. 35), and also with Hartert and Steinbacher (1934, Die Vögel der paläarktischen Fauna, suppl. vol., p. 223) who state that Stegmann informed them that in large series not less than 50 per cent of the specimens from the east are identical with those of the west. Finally, Spangenberg in the "Birds of the Soviet Union" (1954, vol. 6, p. 62) has synonymized *centralasiae* with nominate *garrulus,* while Hartert and Steinbacher (*loc. cit.*) also have questioned that *pallidiceps* is valid.

Good series examined by me show, however, that it is possible to separate the three races, though the differences are not perfectly constant and are slight between *centralasiae* and nominate *garrulus,* but better indicated in the case of *pallidiceps.* I find that nominate *garrulus* is the most richly colored, more vinaceous above and below, while *centralasiae* is the palest, especially on the rump and upper tail coverts. *Pallidiceps* is grayer, less vinaceous above, than nominate *garrulus,* and darker and grayer on the flanks and abdomen, and quite distinctly darker and grayer above and below than *centralasiae.* Nominate *garrulus* and *pallidiceps* are similar in size, while *centralasiae* averages slightly larger. The wing lengths of 10 adult males of each are: nominate *garrulus,* 113–119 (116.2); *pallidiceps,* 113–120 (116.5); *centralasiae,* 116–122 (118.7).

Hypocolius ampelinus

The systematic position of the Gray Hypocolius has puzzled so many authors that scarcely any two have placed it in the same family. It was described by Bonaparte as *Hypocolius ampelinus* and placed by him in the waxwing family, and Delacour and Amadon (1949, Ibis, pp. 427–429) conclude, after a discussion of its characters and habits, that Bonaparte was correct, an opinion supported by Meinertzhagen (1954, Birds of Arabia, London, Oliver and Boyd, p. 175).

Its distribution is not very well known. *Hypocolius ampelinus* occurs on the African coast of the Red Sea but, as Meinertzhagen (*loc. cit.*) states, it is uncertain whether it breeds there or occurs only as a vagrant. If a vagrant, it probably arrives from Arabia, where it is resident and breeds in the west and perhaps other parts of the peninsula. It breeds in Iraq in the valleys of the Tigris and Euphrates from Mosul south to Fao. The population of Iraq is migratory, or partly so, migrating perhaps to northeastern Africa, as suggested by Meinertzhagen (1924, Ibis, p. 613), though it is possible that most birds go no farther than Arabia, where they have been reported from Aden, Oman, and other localities.

It breeds also in southern Iran in Khuzistan and along the coast of the Persian Gulf, according to Zarudny, and it may breed in Baluchistan and southern Afghanistan where it is reported from the Makran coast, Kalat, and the region of Kandahar. Finally it straggles, but very rarely, to Sind and has once reached Bombay.

Koelz (1939, Proc. Biol. Soc. Washington, vol. 52, p. 64) has described as *orientalis* a series of four adult males and two females collected at Kandahar on October 21–24, 1937, stating that they differed from the material in the Rothschild Collection from Fao in southern Iraq "which may be considered the type locality of *ampelinus*" by being "darker above, especially on the crown where in males there is a distinct bluish cast; they have a smaller bill and longer wing." However, the material examined by Koelz was not in comparative condition, and I do not believe that *orientalis* is valid, a conclusion reached already by Meinertzhagen (1954, *loc. cit.*) who states that a specimen from Kandahar in his collection "exactly matches Iraq specimens."

The specimens collected by Koelz in Afghanistan are in extremely fresh plumage, some of them just completing the molt, whereas the specimens from Fao are old, very faded, and extremely worn skins collected in June and July, 1885 and 1893. The tips of their wings are badly worn, except for one specimen in which the wing is of the same length as in the specimens from Afghanistan. A male in fresh plumage collected on November 12, 1953, in northeast Arabia and which, therefore, was not seen by Koelz, matches the specimens from Afghanistan in coloration and size, including the size of the bill. In the specimens from Fao, the bill averages slightly larger.

As stated above, the specimens of *orientalis* were collected at the end of October and cannot be assumed to be local birds. In fact it is quite uncertain that the species breeds in Afghanistan or Baluchistan. Ticehurst (1926, Jour. Bombay Nat. Hist. Soc., vol. 31, p. 694) states that it is only a rare straggler in Baluchistan, and Whistler (1944, Jour. Bombay Nat. Hist. Soc., vol. 44, p. 517) states that the only records for Afghanistan are the specimens collected by Koelz, though, as we have seen, at least one other specimen has been collected in Afghanistan.

The type locality of *ampelinus* Bonaparte is "California," and Heuglin (1868, Ibis, pp. 181–183) who was the first reviser, corrected it to "the low Abyssinian coast-region." Heuglin had specimens from Massaua on the coast of Eritrea, and we know for a fact that the species occurs on the Red Sea coast of Africa, north to at least Jebel Elba on the border of Egypt and the Sudan, from where it is reported by Meinertzhagen (1954, *loc. cit.*). However, Grant and Mackworth-Praed

(1943, Bull. Brit. Ornith. Club, vol. 64, pp. 25–26), and Koelz, as mentioned above, have shifted it to Iraq, Grant and Mackworth-Praed restricting it to the "River Tigris" [Mosul] and Koelz to Fao. Berlioz (1956, Bull. Mus. Hist. Nat. Paris, ser. 2, vol. 28, pp. 177–179) has discussed the question of the correct type locality and inclines for Mosul, but as it is not certain, as Berlioz recognizes, that the specimens in the Paris Museum from "Sennaar" were collected in Iraq and are the types of *ampelinus,* I see no conclusive reason to change the type locality as it was fixed by Heuglin, the first reviser.

Measurements of the wing length of adults are: Afghanistan, Kandahar, males, 101, 104, 105, 105, females, 96, 101 in the specimens collected by Koelz, and 101 in one male reported by Meinertzhagen from Kandahar. Iraq, males, 98, 98, 100, 100 (all worn); females, 100 (worn), 103. Northeast Arabia, latitude 27° N., longitude 45° 50′ E., male, 103.

PYCNONOTIDAE

Microscelis amaurotis

The Brown-eared Bulbul ranges from Hokkaido southward through the main and satellite islands of Japan to the Ryu Kyus, the small islands north of Luzon, and the Borodinos, Bonin, and Volcano Islands, breeding also in a restricted region (Koshun district) at the extreme southern tip of Formosa. Its geographical variation is very strongly clinal in character. A cline of decreasing size accompanied by one of increasing saturation runs southward, though the former is reversed in the southern Ryu Kyus in *stejnegeri* of Ishigaki, Iriomote, and Yonaguni. The populations of the Borodinos (*borodinone*), Bonins (*squamiceps*), and Volcanos (*magnirostre*) are not part of the clines but seem to be more or less closely related to *ogawae* of Amami O Shima; a "cline," however, runs from the Bonins to the Volcanos.

Altogether 11 races are recognized by the "Hand-list of the Japanese birds" (1942, pp. 47–49). To these must be added three races (*batanensis, fugensis,* and *camiguensis*) found on the small islands north of Luzon, and *septentrionalis* Dementiev and Gizenko (1950, Doklady Akad. Nauk, new ser., vol. 70, p. 1081) which is based on three specimens collected in extreme southern Sakhalin on November 6, 12, and 29, 1948.

The material that I have examined is fairly comprehensive and, though it does not include specimens of four forms, permits a brief review of the species. It seems to me that too many stages on the cline have been described. The ones I believe it sufficient to recognize are the following (not including the three races found north of Luzon):

1. *Microscelis amaurotis hensoni* Stejneger, 1892, type locality, Hokkaido, with *septentrionalis* Dementiev and Gizenko, 1950 (*loc. cit.*), type locality, mouth of the Suzuya River, as a synonym. *Hensoni* breeds only in Hokkaido and represents the northern end of the cline, being the palest, grayest, least brown, and largest race. However, individuals with a long wing are found on the Borodinos, Bonins, and Volcanos (see below), and it is possible that these populations, or at least the last two, are about as large as *hensoni,* but the material that I have measured of *hensoni* and from the Bonins and Volcanos is insufficient to be certain. *Hensoni* does not have the largest bill, the bill being considerably more massive, broader, and thicker in *magnirostre* and *squamiceps,* and even in *stejnegeri,* though there are no constant differences in length, or only slight ones.

The three specimens collected in Sakhalin are the first record for that island. They were described as a new subspecies because Dementiev and Gizenko believe they are paler than *hensoni* and were local birds, emphasizing that *hensoni,* though it shows altitudinal movements, is not migratory. However, it is well known that *hensoni* is migratory (see the "Hand-list" and also Austin and Kuroda, 1953, Bull. Mus. Comp. Zool., vol. 109, pp. 521–523, and Austin, 1948, Bull. Mus. Comp. Zool., vol. 101, p. 199). Austin and Kuroda state, "A few birds winter in the neighborhod of Sapporo, but most of the population moves southward, most of them apparently across the Japan Sea to Korea, where the Hokkaido race is a common winter visitor, but not known to breed." *Hensoni* winters also in Hondo and perhaps in the Ryu Kyus where it is listed as a winter visitor by the "Handlist," though, as *hensoni* and nominate *amaurotis* (which is partly migratory) are not very sharply differentiated, it is possible that visitors to the Ryu Kyus are nominate *amaurotis.* I have also examined *hensoni* from Chu Shan Island and Ningpo [= Ninghsien] at the mouth of the Yangtze. As the northern populations of the species are migratory and the species had never been reported before from Sakhalin (though Japanese ornithologists had been active in the southern part of that island), we cannot assume that the three birds reported by Dementiev and Gizenko were local birds. It is possible that these birds, taken in November, were individuals that had wandered north to southern Sakhalin, rather than going south as is normal. In short, I believe that it is best to consider *septentrionalis* a synonym of *hensoni,* at least until it is shown that the species breeds on Sakhalin and breeding birds can be compared.

2. *Microscelis amaurotis amaurotis* Temminck, 1830, type locality,

Japan, with *matchie* Momiyama, 1923, type locality, Hachijo, Seven Islands of Izu, as a synonym. According to Austin (*in* Austin and Kuroda, 1953, *loc. cit.*), *matchie* is "somewhat darker and browner" than nominate *amaurotis* [from Hondo] but the populations of Hachijo, Tanegashima, and Yakushima are inseparable. I had only five specimens from Hondo and two from Hachijo, but I cannot discern any constant or appreciable difference between these specimens and series from Tanegashima and Yakushima. In view of the clinal variation, it is possible that large series would show that the birds are "somewhat darker" on Hachijo, Tanegashima, and Yakushima than those in Hondo, but the geographical variation of the species should be considered as a whole, and the presence of slightly differentiated populations on these three islands does not necessarily warrant their nomenclatural separation.

3. *Microscelis amaurotis ogawae* Hartert, 1907, type locality, Amami O Shima, central Ryu Kyus. This race, which is found on Amami and Tokuno Shima, is clearly darker than nominate *amaurotis,* as well as smaller (see below). It differs also by having a narrow but sharply demarcated band of chestnut across the base of the throat connecting the chestnut areas on the ear coverts. In nominate *amaurotis* the base of the throat is gray, or faintly banded by chestnut in some specimens, but the band is very vague and more or less interrupted.

4. *Microscelis amaurotis pryeri* Stejneger, 1887, type locality, Okinawa, central Ryu Kyus, with *insignis* Kuroda, 1923, type locality, Miyako Shima, northern southern Ryu Kyus, as a synonym. This race is another well-differentiated stage on the cline of increasing saturation and decreasing size, and its chestnut band across the lower throat is much broader than in *ogawae,* invading the upper breast. I did not examine specimens from Miyako, but it seems unnecessary to recognize *insignis* which apparently differs from *pryeri,* according to Kuroda, "only by being a trifle darker." This author states that it is larger than *pryeri* and equal in size to *stejnegeri,* but this is not confirmed by my measurements of these two races. According to Kuroda, three specimens of *insignis* have a wing length of 116–129.5 and an exposed culmen of 21.5–23.5, but in *pryeri* the wing length measures 110–129 and the exposed culmen 22–24, while *stejnegeri* measures, respectively, 116–131 and 24–27. It seems to me that the measurements given by Kuroda are more similar to those of *pryeri.*

5. *Microscelis amaurotis stejnegeri* Hartert, 1907, type locality, Ishigaki, southern Ryu Kyus, with *harterti* Kuroda, 1922, type locality, Botel Tobago, as a synonym. This race represents the extreme in the

cline of increasing saturation but not of size, as *stejnegeri* has a slightly longer wing than *pryeri* and its bill averages even larger than that of *hensoni* at the northern end of the cline. *Stejnegeri* is found on Ishigaki, Iriomote, and Yonaguni in the southern Ryu Kyus, the small islands off eastern Formosa, and on the tip of southern Formosa. *Harterti,* based on three specimens, was described as larger than *stejnegeri,* but the measurements of these specimens as given by Kuroda are identical or virtually so with those of topotypical *stejnegeri,* and it seems to me that *harterti* is not sufficiently distinct to warrant its recognition.[1] According to Kuroda, *harterti* measures: males, bill 32.5, 34, wing 130.5, 132.5, tail 121, 126, tarsus 24, 24.5; and one female, respectively, 31.5, 120, 112, 24. In adult *stejnegeri* the tail measures 110–124 and the tarsus 22.5–24.5, while (see below) the bill measures 30–34 and the wing 116–131.

6. *Microscelis amaurotis borodinone* Kuroda, 1923, type locality, Borodino Islands. This race was not examined, but apparently it does not form part of the clines discussed above. Its nearest relative seems to be *ogawae* on Amami O Shima, but it is said to be more olive above, with darker ear coverts and with a darker band across the lower throat, but the rest of the under parts is "generally paler." *Borodinone,* judging by the measurements given by Kuroda, is larger than *ogawae.* He gives the wing length of *borodinone* as 118–134.5. This race is restricted to the small Borodino Islands, east of the Ryu Kyus.

7. *Microscelis amaurotis squamiceps* Kittlitz, 1831, type locality, Bonin Islands. This race, restricted to the Bonins, seems also to have some affinities to *ogawae,* but it is larger and has a broader but less sharply defined band of chestnut across the lower throat. Its bill is relatively short but more massive than in *ogawae* or any other race, except *magnirostre* in which the bill is the largest and most massive of any race of the species.

8. *Microscelis amaurotis magnirostre* Hartert, 1905, type locality, Dionisio Island [= Minami Iwo Jima], Volcano Islands. This race, as stated, differs by its very heavy bill and is similar in coloration to *squamiceps* except that the band of chestnut across the base of the throat is narrower and its general coloration is paler and grayer.

MEASUREMENTS: The sexes are identical in coloration and it seemed

[1] Since the above was written, I have examined four male specimens from Kasho To Island, off eastern Formosa, which suggest that *harterti* is a slightly differentiated but valid race. These specimens are a little darker rufous on the breast than *stejnegeri* and their wing length averages longer (128.5, as against 123.8 in male *stejnegeri*), but I cannot see any difference in the length of the bill, tail, or tarsus.

obvious that some of the specimens examined were not correctly sexed in view of conspicuous discrepancies between specimens labeled as being of the same sex. Nevertheless, with a few exceptions I accepted the specimens as they were sexed. The bill is measured from the skull.

M. a. hensoni: Males, 131, 137; 31.5, 33; females, 130, 137; 31, 32. Average wing length, 134.

M. a. amaurotis: Hachijo, male, 136, 30. O Shima, female, 126 [27]. Hondo, males, 130, 133, 139; 30, 31, 32; females, 122, 123; 29, 29. Yakushima, males, 129, 131, 134, 136, 139; 30, 31, 32, 32, 33; females, 119, 121, 124; 29, 29, 30, Tanegashima, males, 128, 129, 131, 132, 137; 31, 32, 32, 32, 33; females, 120, 120, 126, 126, 127; 28, 28, 29, 30, 30. Average wing length, 129.

M. a. ogawae: Amami, males, 120 (type), 120, 121, 122, 124, 124, 125, 125; 29 (type), 29, 29, 30, 30, 30, 31; females, 116, 116, 118, 118, 119, 119, 120, 123, 124; 27, 28, 28, 28, 29, 29, 29, 29, 29. Average wing length, 121.

M. a. pryeri: Okinawa, males, 120, 122, 122, 123, 129; 29, 29, 29, 30, 31; females, 110, 110, 110, 112, 114, 114, 115, 116, 119; 27, 27, 27, 27, 27, 28, 28, 28, 29, 29. Average wing length, 117.

M. a. stejnegeri: Ishigaki, males, 119, 120, 121, 124, 125, 126, 131 (type, bill broken); 31, 32, 32, 33, 33, 34; females, 116, 117, 120; 30, 31, 32. Average wing length, 122.

M. a. harterti: Kasho To, males, 124, 128, 131, 131; 30, 31, 32, 33; female, 120, 31. Average wing length, 126.8.

M. a. borodinone: Eleven adults, according to Kuroda (1923, Bull. Brit. Ornith. Club, vol. 43, p. 122), wing, 118–134.5, "entire culmen," 27–29.

M. a. squamiceps: Bonin Island, males, 124, 127, 140; 28, 30, 31; unsexed, 124, 128; 29, 30. Average wing length, 129.

M. a. magnirostre: Minami Iwo Jima, males, 128, 132, 134, 134, 135 (type); 32, 32, 33 (type), 33, 34; female, 128, 32. Average wing length, 131.8.

Pycnonotus leucotis and *Pycnonotus leucogenys*

These two bulbuls are closely related and are usually considered conspecific. It was believed that they replace each other geographically, but specimens collected by Meinertzhagen and by Koelz show that they are sympatric in eastern Afghanistan. Meinertzhagen (1938, Ibis, p. 675) reported that he had collected *humii* (which I believe is conspecific with *leucotis*) at Jalalabad on May 31, 1937, where he found it common and breeding. A few days earlier, on May 25–26, 1937, Koelz had collected a series of *leucogenys* near Jalalabad. He made no mention on the labels whether these specimens were breeding birds or not, but the presumption that they were is strong because the breeding season of *leucogenys* is from April to July. Apparently, *leucogenys* is resident, as it was collected on December 18 and 19, 1937, by Koelz at Jalalabad.

Delacour (1943, Zoologica, vol. 28, pp. 17–28) considers that *leucotis*

and *leucogenys* are separate species, and the specimens collected by Meinertzhagen and Koelz support this opinion. Delacour stated that *leucogenys* occurred in Afghanistan, perhaps on the authority of Stuart Baker, but the first actual record for Afghanistan seems to be the one published by Koelz in 1954 (see below). The only records for Afghanistan were those of *humii* in the east published by Meinertzhagen and older records of nominate *leucotis* in the south.

The fact that *leucotis* and *leucogenys* are separate species is supported also by the fact that they are quite distinct morphologically (see below). Their eggs are different. The difference could be racial, but it seems significant that whereas the eggs of nominate *leucotis* and *humii* are identical, those of *leucogenys* are distinctly smaller and duller, paler, and "not so well and darkly marked" (see Stuart Baker, 1932, Nidification of birds of the Indian Empire, London, Taylor and Francis, vol. 1, pp. 365–367).

Humii requires discussion, as some authors consider it an intermediate connecting link between *leucotis* and *leucogenys*. It is so considered, because generally speaking its range connects that of the other two and because it has a short crest, whereas *leucotis* has none and *leucogenys* has a well-developed one. The bill also is about intermediate in size and shape in *humii*. Nevertheless, as shown below, *humii* is very much more similar to *leucotis* than to *leucogenys* and is not truly intermediate. Moreover, as we have seen, it is sympatric with *leucogenys* in eastern Afghanistan, and I may add that the specimens of the latter collected by Koelz in eastern Afghanistan are typical and show no hint whatever of being intermediate. It is quite probable that *humii* and *leucogenys* are sympatric in other regions as well. The collection of the American Museum of Natural History contains a specimen of *humii* collected on March 11, 1910, at Kalabagh on the Indus River east of Bannu, by C. H. T. Whitehead, who wrote on its label "occurs in company with *M. leucogenys* and *intermedius* [a race of *P. cafer*] in gardens south of bungalow."

We must consider the possibility that *humii* is a hybrid of *leucotis* and *leucogenys*, as it is known that these two birds hybridize with *cafer* and hence may interbreed also with each other. We lack such evidence, however, and it is unlikely that *humii* is a hybrid because, judging by the literature, it occupies an extensive range where one of the putative parents (*leucotis*) does not occur and, though I cannot be certain as I have examined only one specimen, the authors consulted agree that *humii* is a stable form.

Ticehurst (1926, Jour. Bombay Nat. Hist. Soc., vol. 31, p. 695)

mentions a specimen of *humii* collected within the range of nominate *leucotis,* stating that the Quetta Museum contains a specimen that was "locally obtained." However, Ticehurst gives no further information concerning this specimen as it probably lacks adequate data. I believe that nominate *leucotis* and *humii* are not sympatric, because the specimen mentioned by Ticehurst could have been a vagrant, as these bulbuls, though not migratory, are known to wander after the breeding season. It is quite possible also that it may have been an escaped cage bird, as it is well known that in northwestern India these bulbuls are caught and sold in large numbers as cage birds (see Whitehead, 1909, Ibis, p. 113).

The two species resemble each other but only superficially. They differ as follows: *Leucogenys* is a little larger, more robust, has a distinctly larger bill, with more strongly developed rictal bristles, and is greenish on the back and rump in fresh plumage, not grayish brown as in *leucotis.* In *leucogenys* the white area on the cheeks is more restricted, and the coloration and feathering of its crown differ very conspicuously from those of *leucotis.* In *leucogenys* they are brown rather than pure black, and the feathers are greatly elongated, particularly the posterior ones, forming a very conspicuous crest. These crest feathers are narrow, lanceolate in shape, and are bordered by narrow white edges, the white edges being broader and more conspicuous on the feathers in front of and above the eye, thus forming a distinct white superciliary streak. *Leucotis* has no crest, the feathers are not edged with white, it has no white superciliary streak, and, as stated, its crown is black rather than brown. *Humii* is identical with nominate *leucotis,* with the exceptions that its bill is slightly larger and that it has a crest, but this crest is much shorter than in *leucogenys* and its feathers are black, not edged with white, and are broader and rounded. It seems to me therefore that *humii* is not intermediate, despite the fact that the feathers of its crown are elongated. The similarity of its eggs to those of nominate *leucotis* is mentioned above.

Pycnonotus leucotis

Pycnonotus leucotis (the White-eared Bulbul) can be divided into three subspecies: *humii* Oates, 1889, type locality, Jalalpoor near Jhelum, northwestern Punjab; nominate *leucotis* Gould, 1836, type locality, Sind, with *farahensis* Koelz (1939, Proc. Biol. Soc. Washington, vol. 52, p. 64), type locality, southern Afghanistan, as a synonym; and *mesopotamiae* Ticehurst, 1918, type locality, Basra, southern Iraq,

with *dactylus* Ripley (1951, Postilla, no. 9, p. 8), type locality, Dammam, Saudi Arabia, as a synonym.

Humii is discussed above. Its range is extreme northwestern Punjab west of the Jhelum River, westward to eastern Afghanistan south of the Hindu Kush, south to Kohat and the region of Bannu in North West Frontier Province. Nominate *leucotis* ranges from western United Provinces and the western border of Central Provinces westward, south of *P. leucogenys* and *humii* in the Punjab, through Rajputana, Sind, Baluchistan, and southern Afghanistan to about the border of Iran where it grades into *mesopotamiae.* The latter ranges from southern Iran westward to southern Iraq and down the coast of Arabia to the region of Hofuf and differs chiefly and constantly from nominate *leucotis* only in that it shows a very narrow yellow eye ring that is lacking in that form. It is said also that *mesopotamiae* is rather darker and grayer below, slightly larger, and has a bigger bill. However, the differences in coloration of the plumage and in the size of the bill are slight, and the measurements of the bill and wing overlap.

It is difficult to establish with certainty where *mesopotamiae* and nominate *leucotis* replace each other, as the differences between them are relatively very slight but, more or less arbitrarily, one can select Persian Baluchistan as the region where they grade into each other. Ticehurst (*loc. cit.*) stated that a specimen from Mand on the Persian-Baluchi border is *mesopotamiae* and was puzzled because Hartert had informed him that specimens from father west (from Persian Baluchistan in the Rothschild Collection) are indistinguishable from typical nominate *leucotis.* It is true that these specimens do not show a yellow eye ring, but even in perfectly prepared skins the ring is very narrow and not conspicuous and the specimens from Persian Baluchistan were not well prepared. One cannot be certain, but, in view of the fact that specimens from Persian Baluchistan average somewhat smaller in wing length and in size of the bill, it seems reasonable to conclude that the two races grade into each other in that region.

The validity of *farahensis* has been denied by Whistler (1944, Jour. Bombay Nat. Hist. Soc., vol. 44, p. 517) who compared specimens from Kandahar and India. I have examined the type and paratypes of *farahensis* and agree with Whistler that it is not separable from nominate *leucotis.* These specimens consist of two from Farah and seven from Kandahar and one of the two from Farah has the bill very slightly larger than in the rest of the series. This specimen suggests that at Farah (about 350 kilometers west of Kandahar and not far from

the Persian border) we approach the zone of intergradation mentioned above.

Meinertzhagen (1954, Birds of Arabia, London, Oliver and Boyd, p. 180) holds that *dactylus* Ripley is not sufficiently well differentiated from *mesopotamiae* to warrant its recognition. He states: "I have compared Bahrein and Dahran birds with a large series from Iraq. In most cases they agree perfectly; in a few cases Dahran and Hufoof birds are almost imperceptibly paler below, a character I do not consider sufficient for validity." Two specimens of each were examined by me from Arabia and Iraq but, as the latter are soiled and sooty below, they throw no light on the question whether or not the birds of Arabia are paler and less smoky below than those of Iraq, as Ripley believes. Judging, however, by the observations of Meinertzhagen, the difference between the two populations is not constant and seems much too slight to warrant the recognition of *dactylus*.

When Meinertzhagen discussed *humii,* which he believes is conspecific with *leucogenys,* he remarked (1938, *loc. cit.*) that it was "Not noted at Kabul or elsewhere, which is curious as it has been observed frequently in Russian Turkestan." Lest this statement lead to error, I may remark that *"leucogenys"* may not occur north of the Hindu Kush and that records for Turkestan are open to doubt. Apparently, only two records exist for Turkestan and are those of birds [seen ?] by Zarudny on June 16 and September 15, 1910, in Tadzhikistan. The Russian ornithologists, however, strongly question these "records," stating (1954, Birds of the Soviet Union, vol. 6, p. 72) that the bird has never been observed in Turkestan, and they doubt that it was collected by Zarudny as they have been unable to find or trace specimens.

Pycnonotus leucogenys

The White-cheeked Bulbul increases somewhat in size as its populations range farther west, but the geographical variation is clinal and slight, and there are no differences in coloration. Koelz (1954, Contrib. Inst. Reg. Explor., no. 1, p. 11) has, however, described as *picru* (type locality, Afghanistan) the birds of the Punjab, Kashmir, and Afghanistan on the basis that they are larger than those of Darjeeling, which he believes is the type locality of *leucogenys* Gray, 1835. His measurements and those I have taken are listed below. They show much overlap, and the birds of the Punjab are perfectly intermediate. The populations differ slightly in average size, but many specimens are indistinguishable, and it seems best to me not to recognize any subspecies.

The correct type locality of *leucogenys* Gray (1835, *in* Hardwicke,

Illustrations of Indian ornithology) seems to be Kashmir and not Darjeeling. The plates in Hardwicke's book were supplied with scientific names by Gray, but no text accompanies the plates, and the correct type locality becomes the first definite locality supplied by a subsequent author. Apparently Blyth (1845, Jour. Asiatic Soc. Bengal, vol. 14, p. 567) is the first author to mention a definite locality, stating that *leucogenys* Gray is "common in the Himalaya, and in Kashmir." "Himalaya" is a general term, but Kashmir is a definite one, and I accept it, therefore, as the correct restricted type locality. I believe that Koelz was probably misled by Stuart Baker (1921, Jour. Bombay Nat. Hist. Soc., vol. 27, p. 469; and 1922, Fauna British India, London, Taylor and Francis, vol. 1, p. 389) who states that the type locality is Darjeeling, but it is noteworthy that Baker in his corrected synonymies (1930, *op. cit.*, vol. 7, p. 80) made no further mention of Darjeeling. To be sure, Baker made no mention of Kashmir, or any other locality, in 1930, but it is probable that he had become aware that Darjeeling was not the correct type locality.

Individual measurements of the wing length of males are: Koelz: Afghanistan and Kashmir, 94, 94, 95, 96, 96, 97, 97, 97, 97, 97, 99, 99, 99 (96.7); Himalayan Punjab, 88, 88, 90, 90, 91, 92, 93, 93, 94, 94, 94, 95, 95, 95, 96, 96, 97, 98 (93.3); Nepal and Darjeeling, 86, 88, 89, 89, 89, 89, 89, 89, 90, 90, 91, 92 (89.3). Vaurie: Afghanistan, 94, 94, 95, 97, 97, 97, 98 (96); Kashmir (unsexed adults), 94, 98, 99 (97); Himalayan Punjab, 91, 93, 94, 96, 99 (94.6); Sikkim (unsexed adults), 90, 91, 92, 97 (92.5).

NECTARINIIDAE

Nectarinia pulchella

The Beautiful Sunbird penetrates into the southern fringes of the Palearctic region, breeding north to the northern Aïr Massif and the Ennedi Massif in the southern Sahara. Nominate *pulchella* Linnaeus, 1766, type locality, Senegal, breeds across the grasslands north of the Guinea forest from Senegal and Portuguese Guinea to Kordofan in the Sudan, and, according to Niethammer (1955, Bonner Zool. Beiträge, vol. 6, pp. 73–74), north to the Ennedi. In the Sudan, east of Kordofan, it is replaced by *lucidipectus* Hartert (1921, Novitates Zool., vol. 28, p. 123), type locality, Wad Medani, eastern Sudan, which ranges eastward to Eritrea, and south to southwestern Uganda (west to Lake Albert in the Belgian Congo) to Lake Edward and about central Kenya. In the Aïr Massif, south to the region of Kano in northern Nigeria, is found *aegra* Hartert (1921, *op. cit.*, p. 122), type locality, Timia, in the Aïr north of Mt. Baguezane.

The validity of the two races described by Hartert has been questioned recently. Villiers (1950, Mém. Inst. Français d'Afrique Noire, no. 10, p. 380) states that he considers *aegra* to be *"sans valeur,"* and Cave and Macdonald (1955, Birds of the Sudan, London, Oliver and Boyd, p. 349) do not recognize *lucidipectus,* stating that it "is based on characters not clearly evident to us." However, Hartert was a conservative taxonomist, and I find, after studying his and other comparative material, that *aegra* and *lucidipectus* are valid. They are not very sharply differentiated but are easily distinguishable. In *aegra* the bill is distinctly smaller than in nominate *pulchella,* and the red breast patch of the males is slightly duller. The bill length (measured from the nostril for greater accuracy) measures in 20 males from Senegal: 14, 14, 14, 14.2, 14.5, 14.5, 14.5, 15, 15, 15, 15, 15, 15, 15, 15.5, 15.5, 15.5, 16, 16, 16.5 (15), and in nine males from the Aïr: 12.5, 13, 13, 13.5, 13.5, 13.5, 13.5, 14, 14, (13.4). The difference is certainly not great, and there is a slight overlap in individual measurements, but in *aegra* the bill is altogether distinctly smaller, narrower at the base, and more slender throughout. This difference, taken together with the difference in coloration, seems to warrant the recognition of the race. In *lucidipectus,* on the other hand, the bill is as large as in nominate *pulchella,* but as Chapin states (1954, Bull. Amer. Mus. Nat. Hist., vol. 75B, p. 269) "the red in the middle of the breast and the yellow at the sides [are] noticeably brighter." Chapin recognizes *aegra* also, and Niethammer (*loc. cit.*) *lucidipectus.*

I did not study the other forms that are usually considered to be races of *pulchella.* They are *melanogastra, nectarinioides,* and *erlangeri* in east Africa. The ranges of the first two require further study, and some authors hold they overlap. If so, two species are probably involved.

ZOSTEROPIDAE

Zosterops japonica

The Japanese White-eye is distributed throughout the Japanese Archipelago, including the Seven Islands of Izu, the islands between Japan and Korea, the Bonins, Volcanos, Ryu Kyus, and the Borodinos. It breeds also on Formosa, the islands off eastern Formosa, Luzon and some small islands north and south of Luzon, China from Hopeh south to Yunnan and northern Indochina, and on Hainan. It varies geographically and in my opinion can be divided into 10 subspecies (see below), but the Japanese ornithologists recognize additional ones which I believe are not valid or much too slightly differentiated for

their recognition to be warranted. The "Hand-list of the Japanese birds" (1942, pp. 31–33) recognizes 11 races, not counting three extralimital races (*simplex, hainana,* and *meyeni*), and to these must be added another form described by a Japanese author in 1951, making a total of 15 forms that must be considered.

My study has been based on about 325 specimens from virtually all parts of the range, and I have also had the benefit of receiving some notes from Dr. G. F. Mees of Leiden who has made a specialty of the study of the zosterops of Asia. He has examined much material from European collections not available to me.

The over-all pattern of the geographical variation is simple and may be briefly described. On the main islands of Japan (nominate *japonica*), and on Tanegashima and Yakushima (*insularis*), the populations are relatively dark green above, washed with isabelline brown below, and are moderate in size. The two races are exceedingly similar, differing only very slightly in coloration and the fact that *insularis* has a somewhat longer bill. Austin (1953, *in* Austin and Nagahisa Kuroda, Bull. Mus. Comp. Zoöl., vol. 109, pp. 577–578) speaks of a color cline, the populations becoming "progressively darker through the several races recognized down the Ryukyu chain to Formosa." However, I cannot see any evidence whatever of this cline, at least south of Tanegashima and Yakushima; in fact, in the Ryu Kyus (*loochooensis*) and Formosa (*simplex*), the populations are very definitely paler above and below, certainly not darker. On the Seven Islands of Izu (*stejnegeri*), Bonins and Volcanos (*alani*), Borodinos (*daitoensis*), and on Botel Tobago and Kasho To off eastern Formosa and on Batan Island north of Luzon (*batanis*) are found four distinctive races, the first two with long and wide bills. *Simplex* is a small race with a short bill and is found in China and on Formosa, and is, as stated, very definitely paler than nominate *japonica* or *insularis,* and paler than *loochooensis.* The race of Hainan (*hainana*) is barely separable from *simplex* and about as poorly differentiated from the latter as *insularis* is from nominate *japonica,* while the race of Luzon (*meyeni*) is the smallest and palest of all.

I have measured a large number of the specimens I examined (table 1 and list of individual measurements), as measurements have been used most extensively in the diagnoses of the various forms—more so than coloration. A large series of measurements shows, however, that the range of variation is rather narrow, generally speaking, though of course the difference between the extremes (*stejnegeri* the largest, and *meyeni* the smallest) is very well marked.

1. *Zosterops japonica japonica* Temminck and Schlegel, 1847, type locality, Japan, with the following synonyms: *ijimae* Nagamichi Kuroda, 1917, type locality, Tsushima; and *yesoensis* Nagahisa Kuroda (1951, Bull. Biogeogr. Soc. Japan, vol. 15, no. 2, p. 5), type locality, Hokkaido. *Ijimae* was separated from *insularis* on the sole basis of being larger, but I can see no differences whatever between the measurements of it as given by Kuroda and those of a long series of *insularis*. Kuroda states that the wing length of five adults is 59–62 and the length of the exposed culmen 12.5–13. In 10 adults of *insularis* that I have picked at random the exposed culmen measures 11.5, 11.5, 12, 12, 12.5, 12.5, 12.5, 13, 13, 13, and it measures 12.5 in the type of *insularis*, a male. I certainly agree with Mees, therefore, that "not the slightest reason exists to maintain *ijimae*." Mees considers it a synonym of *insularis*, but in the topotype of *ijimae* that I have examined the coloration is identical with that of nominate *japonica*, and the difference in the length of the bill is not significant, as it measures only half of a millimeter longer than that of the specimen of nominate *japonica* with the longest bill measured. It seems best to me to synonymize *ijimae* with nominate *japonica*, but the differences between the latter and *insularis* are relatively so slight that *ijimae* could be synonymized as well with *insularis*.

Nagahisa Kuroda had only one specimen when he described *yesoensis*, which he says is paler than nominate *japonica*, but Austin (*loc. cit.*) believes it is valid. Austin states, however, that the material he has examined from Hokkaido is very old and may be faded, as it was collected between 1854 and 1885. He implies he is not certain that *yesoensis* is valid, and Mees mentioned to me that in current Japanese publications the validity of *yesoensis* has been denied. I have not seen specimens from Hokkaido, but I follow Mees who believes it is best not to recognize it.

The range of nominate *japonica* embraces the following islands: Hokkaido, Hondo, Shikoku, Kyushu, Dagelet, Tsushima, Iki, Quelpart, and probably Sado and Oki where it has been reported and may breed. Austin (1948, Bull. Mus. Comp. Zoöl., vol. 101, p. 248) believes that the species does not breed in Korea but is only a transient. Nominate *japonica* is not truly migratory, or is only slightly so. It shows some seasonal movements and wanders and has reached, in addition to Korea, the islands of Tanegashima, Yakushima, Amami O Shima, Okinawa and some surrounding islands, and the Seven Islands of Izu. As the "Hand-list" mentions, it is difficult, however, to be certain about the Seven Islands. Apparently, the smaller race of Japan is a better singer than the native *stejnegeri* and is imported to the Seven

Islands as a cage bird. It is possible that the specimens of nominate *japonica* reported from these islands were birds that had escaped.

2. *Zosterops japonica insularis* Ogawa, 1905, type locality, Tanegashima and Yakushima. The type, in the collection of the American Museum of Natural History, is from Tanegashima. As stated above, this race, which is restricted to Tanegashima and Yakushima, is only slightly differentiated from nominate *japonica*. The best difference seems to be in the length of the bill which averages about 2 mm. longer in *insularis*. In addition, the birds of Tanegashima and Yakushima are a little darker and duller green above, and a little darker, richer yellow on the throat, but all the color differences are very slight and not constant.

3. *Zosterops japonica loochooensis* Tristram, 1889, type locality "Loo Choo Islands," with the following synonyms: *yonakuni* Nagamichi Kuroda, 1923, type locality, Yonaguni Island, southern Ryu Kyus; and *iriomotensis* Nagamichi Kuroda, 1923, type locality, Iriomote Island, southern Ryu Kyus. The material of *iriomotensis* and *yonakuni* examined by Mees or myself is insufficient, but it suggests that it is best not to recognize these forms.

Kuroda states that *yonakuni* resembles *batanis*, but this is not made evident in the description which, in fact, suggests that *yonakuni* does not differ appreciably from *loochooensis*. Kuroda states that *yonakuni* differs from *loochooensis* by being darker on the flanks and by having "on an average" a longer and stouter bill. Mees tells me, however, that specimens from Yonaguni Island differ from *loochooensis* only by "being very slightly greener and duller" on the back, and I find that three specimens from Ishigaki Island (the population of which is called *yonakuni* by the "Hand-list") are identical with *loochooensis*.

Kuroda separated *iriomotensis* on the ground that it has a shorter tail than *loochooensis*, "36.5–40.5 as against 39–43.5," but I have examined a number of specimens of *loochooensis* with a tail of 36, and a paratype of *iriomotensis* is identical with the latter in size and coloration with the exception that it shows some rusty spots in its plumage. These spots are mentioned by Kuroda who states that in *iriomotensis* "the upper parts are generally patched or sometimes uniformly washed with rusty." He is inclined to believe that this is a subspecific character, but I doubt this, in as much as individuals that are irregularly patched with rust are found in nominate *japonica*, *insularis*, and *loochooensis*. The cause of these rusty spots or washes is not clear, but they may be associated with feeding habits, as they are found chiefly on the head and, more rarely, on the back. This is not certain, however, as Kuroda mentions that in one paratype of

iriomotensis the entire upper parts are uniformly rusty "without any olive-green parts." In the paratype examined irregular traces of rust are present on the forehead, nape, and throat, and the sides of the head are washed with rust but a little more so on one side. Ogawa (1905, Annot. Zool. Japonenses, vol. 5, p. 187) mentioned that 28 of his 55 specimens of *insularis* (Tanegashima and Yakushima) showed rusty areas variable in size and distributed irregularly throughout the plumage. Rusty spots or traces of them are shown by 12 of my 35 specimens from these two islands. They are chiefly found on the forehead and crown, less frequently on the ear coverts and throat, and are present on the back in two specimens.

Mees did not examine *iriomotensis* but wrote to me that he did not believe it was valid. As shown above, it does not differ from *loochooensis* in size, and a difference in coloration is open to question.

Loochooensis, including *yonakuni* and *iriomotensis,* has been examined by me or reported from the following islands: Amami, Kikai, Tokuno, Okono Erabu, Yoron, the Iheya group, Okinawa, Kume, the Kerama group, Miyako, Ishigaki, Iriomote, and Yonaguni.

4. *Zosterops japonica daitoensis* Nagamichi Kuroda, 1923, type locality, Borodino Islands. I believe that this race, which is restricted to the Borodinos, is related to *loochooensis* and not to *batanis* as Kuroda believes, or at any rate is closer to *loochooensis.* It is similar to the latter, but it is very slightly paler and more yellow-green above and is more yellow on the lores and on the forehead at the base of the bill. It appears also to be blacker in front of and below the eye, but this character may not be constant, as I can match perfectly well in this respect a paratype of *daitoensis* with specimens of *loochooensis.*

5. *Zosterops japonica simplex* Swinhoe, 1861, type locality, southern China, with the following synonyms: *peguensis* Baker (1922, Ibis, p. 144), type locality, Moulmein, Burma; and *taivaniana* Momiyama, 1927, type locality, Formosa. The species is only a winter visitor to Burma, and *peguensis* was based on winter visitors of *simplex.* I agree with Mees that the population of Formosa cannot be separated from *simplex,* and Hartert (1923, Die Vögel der paläarktischen Fauna, Nachtrag, p. 33) had already reached the same conclusion. Stresemann (1931, Mitteil. Zool. Mus. Berlin, vol. 17, p. 208) believes, however, that the populations of Formosa and Hainan are so extremely similar that they should be combined under the same name. The difference between *simplex* and *hainana* is very slight, but in my opinion the birds of Formosa are *simplex.*

Simplex differs from the preceding valid races by being paler, more yellowish, above and slightly paler below than *loochooensis* or *daitoen-*

sis and much paler than *insularis* or nominate *japonica;* it usually shows a little yellow on the lores and on the forehead and is smaller than all the preceding races. It ranges from Hopeh, at least from the south, and Shantung southward to Shensi, Szechwan, eastern Sikang, Yunnan, Kwangsi, Kwangtung, and northern Indochina, and, as stated, Formosa. It is partly migratory, winter visitors reaching northern Siam, eastern and southern Burma south to Tenasserim, Indochina, and Hainan.

6. *Zosterops japonica hainana* Hartert, 1923, type locality, Hainan. This race, which is restricted to *Hainan,* is very poorly differentiated, but it averages a little smaller than *simplex* and is usually somewhat darker and richer yellow on the throat.

7. *Zosterops japonica meyeni* Bonaparte, 1850, type locality, Philippines. This race, which is found on Luzon, Calayan Island north of Luzon, and on Lubang, Verde, and Banton Islands south of Luzon, is of the same size as *hainana* but has a somewhat shorter bill. With the exception of *batanis,* it is the palest of all the races and the most yellowish above. The yellow of its throat is pure and bright and shows a tendency to invade the cheeks to a variable extent, being less sharply defined than in the other races.

8. *Zosterops japonica batanis* McGregor, 1907, type locality, Batan Island, north of Luzon. This race is similar to *meyeni* in coloration, pale and bright yellow-green above, but the yellow area on the lores and on the forehead is larger and purer in shade and is more extensive on the throat also, the yellow pigment invading the upper breast. *Batanis* is distinctly larger than *meyeni* and has a much larger bill, thicker, wider at the base and about 4 mm. longer. In addition to Batan Island, it is found also on the small islands of Botel Tobago (Koto Sho) and Kasho To, off southeastern Formosa.

9. *Zosterops japonica stejnegeri* Seebohm, 1891, type locality, Hachijo, Seven Islands of Izu. This race, which inhabits the Seven Islands of Izu, is the largest race of all and has a conspicuously large and long bill. It is similar to nominate *japonica* in coloration, being washed with isabelline brown below but is very slightly paler and brighter green above.

10. *Zosterops japonica alani* Hartert, 1905, type locality, San Dionisio Island [= Minami Iwo Jima], Volcanos. This race is similar to nominate *japonica* above but distinctly paler below, and therefore paler also than *stejnegeri,* being washed with grayish or very pale isabelline brown. It is intermediate in size, including the bill, between the smaller nominate *japonica* and the large *stejnegeri.* This race inhabits the Volcano and Bonin Islands.

TABLE 1

MEASUREMENTS OF ADULTS IN *Zosterops japonica*

Race and Population	*N*	Wing	Tail	Bill
Nominate *japonica*				
Hondo and	7 ♂	59–62 (60.3)	40–42 (41)	14–16 (15)
migrants	5 ♀	59–62 (60.4)	38–43 (40.2)	14–15.5 (14.9)
Tsushima	1 ♂	61	42	16.5
insularis				
Tanegashima	8 ♂	58–62.5 (60.4)	38–43 (40.1)	16–17.5 (16.9)
	7 ♀	57–61 (59.7)	38–41 (39.6)	16–17.5 (16.9)
Yakushima	10 ♂	58–63 (60.3)	38–42 (40.6)	16.5–18 (17.2)
	10 ♀	59–62 (60.0)	38–44 (39.7)	16–18 (17.1)
loochooensis				
Kikai Shima	8 ♂	58–60 (58.6)	36–39 (37.9)	15–16 (15.4)
	3 ♀	58, 58, 58	38, 39, 40	14.5, 15, 15.5
Amami O Shima	9 ♂	56–61 (58.4)	39–42 (40.2)	14.5–16.5 (15.5)
	9 ♀	56–61 (57.2)	36–42 (39.2)	14–15.5 (14.9)
Tokuno Shima	1 ♀	57	39	15.2
Iheya Shima	2 ♀	57, 58	40, 41	15, 15
Kerama Retto	2 ♂	58, 59	41, 42	14, 15.5
Okinawa	5 ♂	58–61 (59.4)	37–40 (39)	14–16 (15.1)
	6 ♀	55–61 (58.2)	37–43 (39.8)	14–16 (15.1)
Ishigaki	3 ♂	57, 60, 60	38, 39, 39	15, 15, 15.5
Iriomote	1 ♂	57	40	14.5
daitoensis				
Daito Shima	1 ♀	60	43	14.5
simplex				
Eastern China	10 ♂	55–58 (56.4)	32–37 (34.6)	12.5–13.5 (13.1)
	10 ♀	55–58 (56.0)	34–37 (35.3)	12–14 (12.8)
Formosa	10 ♂	54–57 (55.1)	34–38 (35.9)	12.5–14 (13.2)
	10 ♀	53–56 (53.9)	33–39 (36.2)	12.5–14 (13.3)
hainana				
Hainan	11 ♂	52–54 (52.5)	32–37 (35.0)	12.5–14 (13.5)
	2 ♀	51, 54	35, 36	14, 14
meyeni				
Luzon	6 ♂	52–56 (53.3)	32–35 (33.6)	11–13 (12.0)
	2 ♀	53, 54	32, 34	13, 13
	5[a]	51–54 (52.6)	32–36 (34.1)	12–14 (13.0)
batanis				
Batan Island	1 ♂	57	39	16
	1 ♀	60	40	16
stejnegeri				
Seven Islands	4 ♂	63–66 (64.7)	42–46 (44)	19.5–20.5 (20.0)
	2 ♀	61, 61	40, 44	20, 20
alani				
Minami Iwo Shima	4 ♂	61–64 (62.5)	45–46 (45.5)	16.8–17 (16.9)
	6 ♀	62–64 (63.1)	44–47 (45.6)	16.5–17.5 (16.9)
Chichi Shima	2[a]	64.5, 65	48, 48	16, 16

[a] Unsexed.

Individual Measurements Not Given in Table 1

Nominate *japonica*

Wing, males, 59, 59, 60, 61, 61, 61, 62; females, 59, 59, 60, 62, 62. Tail, males, 40, 40, 41, 41, 41, 42, 42; females, 38, 38, 40, 42, 43. Bill, males, 14, 14.5, 14.5, 15, 15, 15.5, 16; females, 14, 14, 15, 15, 15.5.

Zosterops j. insularis

Tanegashima: Wing, males, 58, 59, 60, 60, 60, 61, 62, 62.5; females, 57, 59, 60, 60, 60, 61, 61. Tail, males, 38, 38, 38, 40, 41, 41, 42, 43; females, 38, 38, 39, 40, 40, 41, 41. Bill, males, 16, 16, 16.5, 16.5, 17, 17, 17.5, 17.5; females, 16, 16, 16.5, 16.5, 17, 17.5, 17.5. The type of *insularis*, a male, included in this series measures 62.5, 43, 17.

Yakushima: Wing, males, 58, 58, 59, 60, 60, 60, 61, 62, 62, 63; females, 59, 59, 59, 60, 60, 60, 60, 61, 61, 62. Tail, males, 38, 39, 40, 41, 41, 41, 41, 41, 42, 42; females, 38, 38, 39, 39, 39, 39, 40, 41, 41, 44. Bill, males, 16.5, 16.8, 17, 17, 17, 17.2, 17.2, 17.5 18, 18; females, 16, 16.2 17, 17, 17, 17, 17, 17.8, 18, 18.

Zosterops j. loochooensis

Kikai Shima: Males, wing, 58, 58, 58, 58, 59, 59, 59, 60; tail, 36, 37, 37, 38, 38, 39, 39, 39; bill, 15, 15, 15, 15, 15.5, 16, 16, 16.

Amami O Shima: Wing, males, 56, 58, 58, 58, 58, 58, 59, 60, 61; females, 56, 56, 56, 57, 57, 57, 57, 58, 61. Tail, males, 39, 39, 40, 40, 40, 40, 41, 41, 42; females, 36, 37, 39, 39, 39, 40, 40, 41, 42. Bill, males, 14.5, 15, 15, 15.2, 15.5, 15.5, 16, 16.5, 16.5; females, 14, 14.2, 14.5, 14.5, 15, 15, 15.5, 15.5, 15.5.

Okinawa: Wing, males, 58, 58, 59, 61, 61; females, 55, 57, 57, 59, 60, 61. Tail, males, 37, 39, 39, 40, 40; females, 37, 39, 39, 40, 41, 43. Bill, males, 14, 15, 15, 15.5, 16; females, 14, 15, 15, 15.5, 15.5, 16.

Zosterops j. simplex

China: Wing, males, 55, 55, 56, 56, 56, 57, 57, 57, 57, 58; females, 55, 55, 55, 55, 56, 56, 56, 57, 57, 58. Tail, males, 32, 33, 33, 33, 34, 35, 36, 36, 37, 37; females, 34, 34, 34, 35, 35, 35, 36, 36, 37, 37. Bill, males, 12.5, 12.8, 13, 13, 13, 13.2, 13.2, 13.5, 13.5, 13.5; females, 12, 12.2, 12.5, 12.5, 12.5, 12.5, 13, 13.2, 13.5, 14.

Formosa; Wing, males, 54, 54, 54, 55, 55, 55, 55, 56, 56, 57; females, 53, 53, 53, 53, 54, 54, 54, 54, 55, 56. Tail, males, 34, 34, 35, 35, 36, 36, 37, 37, 37, 38; females, 33, 34, 35, 36, 36, 37, 37, 37, 38, 39. Bill, males, 12.5, 12.5, 13, 13 13, 13.5, 13.5, 13.5, 14, 14; females, 12.5, 12.5, 13, 13, 13, 13.5, 13.5, 14, 14, 14.

Zosterops j. hainana

Hainan: Males, wing, 52, 52, 52, 52, 52, 52, 52.5, 53, 53, 53, 54; tail, 32, 34, 35, 35, 35, 35, 35, 36, 36, 36, 37; bill, 12.5, 13, 13, 13, 13, 13.5, 13.5, 14, 14, 14, 14. The type of *hainana*, included in this series, measures 53, 35, 13.

Zosterops j. meyeni

Wing, males, 52, 52, 53, 53, 54, 56; unsexed, 51, 52, 53, 53, 54. Tail, males, 32, 33, 34, 34, 34, 35; unsexed, 32, 33, 35, 35, 36. Bill, males, 11, 11.5, 12, 12, 12.5, 13; unsexed, 12, 13, 13, 13, 14.

Zosterops j. stejnegeri

Males, wing, 63, 65, 65, 66; tail, 42, 43, 45, 46; bill, 19.5, 20, 20, 20.5.

Zosterops j. alani

Wing, males, 61, 62, 63, 64; females, 62, 63, 63, 63, 64, 64. Tail, males, 45, 45, 46, 46; females, 44, 45, 45, 46, 47, 47. Bill, males, 16.8, 17, 17, 17; females, 16.5, 16.5, 16.8, 17, 17, 17.5. The type of *alani*, a male, included in this series, measures 62, 46, 17.

Zosterops palpebrosa

The Oriental White-eye ranges from India and Yunnan eastward to the southern and central Philippines and Flores and penetrates a little way into the Palearctic region, reaching eastern Afghanistan in the region east of Kabul and south of the Hindu Kush. It has been divided into about 20 subspecies, four of which inhabit India: nominate *palpebrosa, salimalii, nilgiriensis,* and *egregia.*

Mees is of the opinion that *egregia* Madarász, 1911, type locality, Ceylon, is the race most widely distributed in India, inhabiting the Laccadives, Ceylon, and all India with the exception of the more arid parts of the northwest and of the regions occupied by the three other races. Of these, *nilgiriensis* inhabits the Nilgiris and other hills of the southwest to Travancore, *salimalii* the Eastern Ghats north to the Godavari, and nominate *palpebrosa* Nepal, Bengal, Orissa, and eastern India eastward to Burma and Yunnan. Mees believes that *occidentis* Ticehurst (1927, Bull. Brit. Ornith. Club, vol. 47, p. 88), type locality, Simla, is a synonym of *egregia* and not of nominate *palpebrosa,* stating that Ripley (1950, Jour. Bombay Nat. Hist. Soc., vol. 49, p. 411) was incorrect when he synonymized *occidentis* (called *occidentalis* inadvertently by Ripley) with nominate *palpebrosa.* He considers that *remota* Koelz (1939, Proc. Biol. Soc. Washington, vol. 52, p. 76), type locality, Jalalabad, Afghanistan; and *amabilis* Koelz (1950, Amer. Mus. Novitates, no. 1452, p. 9), type locality, Kathiawar, are synonyms of *egregia.* I follow Mees as his opinions seem well founded.