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Notes on Flowerpeckers (Aves, Dicaeidae) 5. The Genera *Oreocharis*, *Paramythia*, and *Pardalotus* (except the Superspecies *Pardalotus striatus*)[1]

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The present paper deals with the three genera *Oreocharis, Paramythia,* and *Pardalotus,* apart from the superspecies *Pardalotus striatus,* to be discussed later. These three genera are considered the most specialized of the dicaeids and appear to belong to a distant offshoot of the family. *Oreocharis* and *Paramythia* are fruit eaters, while *Pardalotus* is insectivorous. The three genera differ from all other flowerpeckers in lacking the serration of the bill. The outer (tenth) primary is vestigial, a character that the three genera share with the genus *Dicaeum.* The tongue structure is simple, and the tarsus is "booted" (except basally), as in the genera *Melanocharis* and *Rhamphocharis.* The range of *Oreocharis* and *Paramythia* is restricted to New Guinea; that of *Pardalotus,* to the Australian continent and Tasmania.

OREOCHARIS SALVADORI, 1876

This monotypic genus is characterized by the rather short and stout bill, similar to that in *Melanocharis,* the robust body, and the square and short tail. The flanks have distinct filoplumes. In appearance,

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general structure, and coloration *Oreocharis* resembles a titmouse (*Parus*); in its variegated color pattern the male is astonishingly similar to a Great Tit (*P. major*). There is very pronounced sexual dimorphism. The male has the head and throat glossy black, strongly contrasting with the olive-green upper parts and wings and with the sulphur-yellow under parts and large cheek patch. The median parts of the breast and abdomen are chestnut, the tail is bluish, and the secondaries have a large lemon-yellow spot on the tip of the outer web. In the female the throat and the sides of the head are grayish, the upper parts, including the crown, green, the under parts supplied with narrow dark fringes on the whitish or cream-colored feathers, producing a more or less pronounced scaly pattern, the flanks yellowish green, the wings and tail like those of the male.

The contrasting light terminal spots on the remiges suggest the color pattern in many species of *Pardalotus* and undoubtedly indicate relationship.

Oreocharis arfaki (A. B. Meyer), 1875

TYPE LOCALITY: Arfak Mountains, Vogelkop Peninsula.

An inhabitant of the mountains in New Guinea, where it is found at altitudes between 1600 and 2900 meters. It has always been held to be a monotypic species, but recently Gyldenstolpe (1955, Arkiv Zool., ser. 2, vol. 8, no. 1, p. 174) separated the Arfak population from that of the remaining parts of New Guinea, calling the latter *bloodi*. However, the differences between the two populations are too weak to justify a separation of subspecies.

Gyldenstolpe (*loc. cit.*) based his new form on one male and one female, which he compared with two males and four females from the Arfak Mountains. I have examined the material in the American Museum of Natural History, the British Museum, the Zoological Museum (Berlin), the Zoological Museum (Copenhagen), and Naturhistoriska Riksmuseet, Stockholm, including the type of *bloodi* in the last-named museum. This material comprises specimens from all the mountain ranges in which the species is known to occur. In the American Museum of Natural History there are more than a hundred specimens, including a series of males from the Arfak Mountains, but unfortunately only one Arfak female, which is an old and very bad skin. In addition to these specimens I have examined the following ones from the Arfak Mountains: one male and one female in the British Museum, two males and one female in the Zoological Museum, Berlin, and one male and three females in Naturhistoriska Riksmuseet, Stockholm. Having exam-

ined this material, I cannot recognize *bloodi*. According to Gyldenstolpe, the females from Arfak have narrower bars on the feathers of the sides of the breast, and a paler ground color on the breast and abdomen, which are almost whitish, paler yellow flanks, and a paler grayish throat than do those from eastern New Guinea (*bloodi*). The Arfak males are stated to be less heavily marked with chestnut on the under parts and paler yellow on the sides of the face and the ear coverts. The differences between the males are very slight and not constant; those between the females are more pronounced but are also not constant. Even in my small series of Arfak birds some specimens exactly match *bloodi*. Most of the differences described by Gyldenstolpe are of the sort due to individual variation, as is easily seen from the long series in the American Museum of Natural History. The statement of Mayr and Rand (1937, Bull. Amer. Mus. Nat. Hist., vol. 73, p. 239) that in southeast New Guinea "some females have more whitish bellies, others more grayish bellies" is noteworthy in this connection. On the other hand, Mayr (1931, Mitt. Zool. Mus. Berlin, vol. 17, p. 670) states that females from Arfak appear to be paler than those from eastern New Guinea, but evidently he did not find the differences great enough for a subspecific separation.

PARAMYTHIA DE VIS, 1892

This is another monotypic genus restricted to the mountains of New Guinea. It is a thrush-sized bird with a long nuchal crest and a long, strongly graduated tail. The bill is essentially like that of *Oreocharis*. The flanks are supplied with distinct filoplumes, as in *Oreocharis*. The two sexes are similar, unlike the condition in *Oreocharis*. The color pattern is variegated and, as emphasized by Mayr (1933, Ornith. Monatsber., vol. 41, p. 112), bears a remarkable resemblance to that of male *Oreocharis*. Common to the two genera are the black head and throat, the green, contrasting upper parts and wings, the bluish tail, and the yellow under tail coverts. The main difference in coloration is the exchange of yellow with blue on the abdomen, breast, and cheeks in *Paramythia*. I agree with Mayr (*loc. cit.*) in the view that the two genera are rather closely allied and that *Paramythia* constitutes a higher evolutionary stage than *Oreocharis*.

Paramythia montium

This species is an inhabitant of the high mountains of New Guinea, where it occurs in the subalpine zone from about 2000–2300 meters to the timber line at about 3800–4100 meters. The eastern and western birds differ so considerably that it is convenient to separate them as two

groups, each with two subspecies. The striking differences between the *montium* group and the *olivaceum* group do not appear from the original description of *olivaceum* by Van Oort (1910, Notes Leyden Mus., vol. 32, p. 213), but have been stressed by subsequent students (Rothschild, 1931, Novitates Zool., vol. 36, p. 256; Ogilvie-Grant, 1915, Ibis, ser. 10, Jubilee Suppl. no. 2, p. 41; Stresemann, 1923, Arch. Naturgesch., vol. 89, div. A, no. 7, p. 46; Stresemann and Paludan, 1936, Mitt. Zool. Mus. Berlin, vol. 21, p. 200). Ogilvie-Grant (*loc. cit.*) found the two groups so different that he kept them separate as species.

Olivaceum Group

The feathers of the neck are longish, forming part of the crest, and are pure white, with strongly contrasting, glossy black tips. The white supra-auricular patch extends frontally at most to the anterior border of the eye. The upper parts and wings are olive-green, the flanks uniform blue, like the breast and abdomen, and the under tail coverts sulphur-yellow.

Paramythia montium olivaceum Van Oort, 1910

Type Locality: Hellwig Mountains, Oranje Range (2500 meters).

This form inhabits the Weyland Mountains and the Nassau and Oranje ranges, where it is distributed in the lower parts of the subalpine zone, from 2000 meters upward, usually to at least 2500 meters. It is distinguished from the next form, *P. m. alpinum,* by its much smaller size, shorter tarsus, and the more olive-green upper parts. A long series in the American Museum of Natural History collected in the Weyland Mountains at altitudes of from 2200 meters to 2500 meters have a wing length of 98–108 mm. and a tarsus length of 30.0–31.5 mm. The males are on the average slightly larger than the females, but unfortunately I did not separate the two sexes when taking these measurements. Stresemann and Paludan (*loc. cit.*) give the wing lengths of a series from Sumuri (2400–2500 meters) in the Weyland Mountains as males 100, 104, 104, 105, 108; females 101, 106, 106 mm. Part of their material is included in the collections of the American Museum of Natural History measured by me. Junge (1939, Nova Guinea, new ser., vol. 3, p. 70) gives the wing length of the type and cotypes of *olivaceum,* collected in the Hellwig Mountains (Oranje Range) at an altitude of about 2500 meters, as male 108, females 104, 104, 105 mm., and of a series from Treub Mountains (Treubbivak, at 2365 meters) as males 103, 105, 107, female 99 mm. This locality is situated only a few kilometers from the type locality (cf. Junge, 1937, Nova Guinea, new ser., vol. 1, map p. 185). The single specimen collected at Utakwa River at about 2450 meters (cf. Ogilvie-Grant, 1915,

Ibis, ser. 10, Jubilee Suppl. no. 2, p. 41) also belongs to this subspecies. On the north side of these great mountains this form has been collected by the Archbold Expeditions on the slopes of the Idenburg River at 2150 meters (cf. Rand, 1942, Bull. Amer. Mus. Nat. Hist., vol. 79, p. 512). The birds from this locality have the following wing lengths: males 107, 107, females 97, 103 mm. The measurements given above show that there is virtually no altitudinal variation within this subspecies.

Paramythia montium alpinum, new subspecies

TYPE: A.M.N.H. No. 343294; adult male; 4 miles east of Wilhelmina Summit, Oranje Range, Snow Mountains, New Guinea; altitude, 3600 meters; August 29, 1938; Archbold Expeditions.

This is the form of the upper slopes of the Oranje Range, where it is distributed from timber line (about 4100 meters) down to at least 3200 meters on the south side, and to 2200 meters on the north side, of the mountains. It may occur also on the upper slopes of the Weyland Mountains, which rise to about 3750 meters, but no collecting has as yet been done higher than 2500 meters; as high as that point *P. m. olivaceum* still occurs.

Rand (*loc. cit.*), having stressed the differences between the Weyland birds and those from the upper slopes of the Oranje Range, adds that "it is inadvisable to separate these populations as races." This conclusion is surprising. The differences between *olivaceum* and *alpinum* in size are clear cut and are almost as pronounced as those between the species *Peltops blainvillii* and *P. montana* or those between *Ptiliprora guisei* and *P. perstriata,* which replace each other at different altitudes in the mountains, as do the two subspecies of *Paramythia montium.* In addition, no intergradation between *alpinum* and *olivaceum* has as yet been found.

The wing length of *P. m. alpinum* is, in eight males, 114–123 (average 116.8) mm., in seven females 108–120 (average 113.7) mm., as compared with 100–108 mm. in males and 97–106 mm. in females of *olivaceum.* The tarsus length of *alpinum* is, in eight males, 33–35 (average 34.4) mm., in four females 32.5–33.0 (average 32.8) mm., compared with 30.0–31.5 mm. in both sexes of *olivaceum.* In addition, the upper parts are more clear green in *alpinum,* not so olive-green as in *olivaceum.*

This new form has been collected only in the mountain regions surrounding Mt. Wilhelmina. The Archbold Expeditions collected it at Bele River, Lake Habbema, and on Mt. Wilhelmina, at localities situated at altitudes of from 2200 meters to 4100 meters and within an area of only about 50 kilometers in diameter. The lower limit of the distribution of this form (2200 meters) appears to be an important boundary be-

tween mid-mountain (subtropical) and subalpine (temperate) species of birds (Archbold, Rand, and Brass, 1942, Bull. Amer. Mus. Nat. Hist., vol. 79, p. 285).

Altitudinal variation is very slight, as is the case in the small subspecies, *olivaceum*. According to Rand (*loc. cit.*) birds (which I consider *alpinum*) collected above an altitude of 3000 meters have a wing length of 114–123 (average 118.3) mm. in males, 108–120 (average 114.8) mm. in females, while those collected below 3000 meters measure 114–117 (average 115.2) mm. in males, 110–116 (average 112.3) mm. in females. These measurements are based on the material in the American Museum of Natural History, examined and re-measured by me.

The collecting ground of the Archbold Expeditions near Wilhelmina Top approached or even overlapped that of the Netherlands South New Guinea Expedition 1912–1913, as described by Archbold, Rand, and Brass (1942, Bull. Amer. Mus. Nat. Hist., vol. 79, p. 277). This expedition collected a female of *alpinum* at Watervalbivak at an altitude of 3450 meters, which is situated less than 20 kilometers south of the collecting camps of the Archbold Expeditions. Another female was collected in the Hubrecht Mountains at about 3200 meters, situated about 10 kilometers south of Watervalbivak. The wing lengths of these two females are 111 mm. and 110 mm., according to Junge (1939, Nova Guinea, new ser., vol. 3, p. 70). About 12 kilometers south of the Hubrecht Mountains, the locality Treubbivak is situated, in the much lower Treub Mountains, inhabited by the small form *olivaceum*.

It is possible that *alpinum,* with its comparatively restricted range on the uppermost slopes of the mountains, is at least partially isolated from *olivaceum*. On the north slope the latter is found in the mountains south of the Idenburg River, and these mountains are separated from the higher main mountain chain by the wide valley of the Balim River, which, at an elevation of only 1500–1700 meters, is below the lower limit of the range of *Paramythia montium*. Similarly, on the south slope the depression between the high mountains (Hubrecht Mountains, Weber Mountains) and the much lower Treub Mountains and Hellwig Mountains has a general elevation of 1900–2000 meters, according to the map published by Junge in 1937 (*loc. cit.*), and this altitude is probably also below the lower limit of the range of *Paramythia montium*.

Montium Group

The feathers of the neck are short, not participating in the formation of the crest, and are uniform gray. The white supra-auricular patch proceeds frontally onto the lores. The upper parts and wings are grass-green,

and the flanks have a large golden yellow patch, contrasting with the blue breast and abdomen. The under tail coverts are more olive-yellow, and the coloration of the upper and under parts is generally darker than that of the members of the *olivaceum* group.

Paramythia montium montium De Vis, 1892

TYPE LOCALITY: Mt. Suckling, southeastern New Guinea.

This is the form of the mountains in southeastern New Guinea. It ranges westward to the Central Highlands (Kubor Mountains, Hagen Mountains, Bismarck Mountains). In southeastern New Guinea it is distributed from 2300 meters to timber line (3800 meters), in the Central Highlands from 2000 meters to timber line (3500 meters), and is in the upper parts of its range everywhere one of the most common birds.

This form equals *P. m. olivaceum* in size. Southeastern birds have the following wing lengths: 14 males 95–107 (average 101.5) mm., 12 females 91–102 (average 97.9) mm., according to Mayr and Rand (1937, Bull. Amer. Mus. Nat. Hist., vol. 73, p. 239). Birds from the Central Highlands are slightly larger; 19 males have the wing length 98.5–112.5 mm. (cf. Mayr and Gilliard, 1954, Bull. Amer. Mus. Nat. Hist., vol. 103, p. 371). Gyldenstolpe (1955, Arkiv Zool., ser. 2, vol. 8, no. 1, p. 175) gives the following wing measurements of birds from the Central Highlands: Wahgi Divide, male, 105 mm.; Mt. Hagen, male, 115 mm.; Kubor Mountains, female, 103 mm. Mayr and Gilliard (*loc. cit.*) state that in the birds of the Central Highlands the under tail coverts are lighter, more lemon-yellow, less dull golden yellow, than are those of birds of southeastern New Guinea, but this difference is only slight and is not constant.

The American Museum of Natural History is particularly rich in specimens of this subspecies. In addition to the series collected by Gilliard in the Central Highlands, described by Mayr and Gilliard (*loc. cit.*) and those collected by the Archbold Expeditions, described by Mayr and Rand (*loc. cit.*), there is the large collection from southeastern New Guinea belonging to the former Tring Museum. I have examined all these birds, as well as those of Gyldenstolpe in Naturhistoriska Riksmuseet, Stockholm.

While in the western mountains (Oranje Range) there are two distinct altitudinal subspecies (*olivaceum* and *alpinum*), the populations of *montium* continue from the lower limit of their distribution right to timber line without undergoing appreciable changes. This forms an interesting parallel to the variation in *Rhipidura albolimbata,* in which the birds of the southeastern mountains do not show any altitudinal variation,

while in the Oranje Range a distinct high-mountain form is found (*lorentzi;* cf. Rand, 1942, Bull. Amer. Mus. Nat. Hist., vol. 79, pp. 479–480). However, while in *Rhipidura albolimbata* the subspecific variation is clinal, *albolimbata* gradually merging into *lorentzi,* the corresponding forms of *Paramythia montium* are separated by clear-cut characters.

There is in *P. m. montium* a slight altitudinal variation in size, as pointed out by Mayr and Rand (*loc. cit.*), as far as the southeastern birds are concerned. The population of Mt. Tafa, at the lower limit of the range of nominate *montium* (2300 meters), has the following wing length: males, 95–104 mm.; females, 91–97 mm., while that from timber line (3800 meters) on Mt. Albert Edward measures: males, 99–107 mm.; females, 101–102 mm.

Paramythia montium brevicauda Mayr and Gilliard, 1954

TYPE LOCALITY: Saruwaged Mountains.

This form is found in the Saruwaged Mountains, Huon Peninsula, where it was collected by Keysser in 1914 (Stresemann, 1923, Arch. Naturgesch., vol. 89, div. A, no. 7, p. 46) and by Mayr in 1929 (Mayr, 1931, Mitt. Zool. Mus. Berlin, vol. 17, p. 652). It ranges up to an altitude of about 3650 meters.

Paramythia m. brevicauda is very similar to nominate *montium,* differing only in its slightly shorter tail. I have measured Mayr's series (in the Zoological Museum, Berlin), which has the following tail measurements: males, 89, 91, 94, 97 mm.; females, 93, 93, 95 mm. The type specimen, a male, in the American Museum of Natural History, measures 95 mm. In nominate *montium* the tail measures 96–109 mm., usually 102–105 mm. The wing length in *brevicauda* does not differ from that in *montium,* a fact that Mayr (1931, *loc. cit.*) has already shown. I have taken the following wing measurements: males, 100, 102, 103, 104, 105 mm.; females, 101, 102, 103, 103 mm.

PARDALOTUS VIEILLOT, 1816

Although agreeing structurally with *Oreocharis* and *Paramythia* in many ways (vestigial first primary, booted tarsus, no serration on bill), *Pardalotus* differs widely from these two genera. The pardalotes are small, agile birds, in general appearance superficially resembling species of *Dicaeum.* The bill is characteristic, being short, blunt, laterally somewhat compressed, with the culmen strongly arched. The tail is square and very short, the under tail coverts reaching almost to the end of the tail. The wings are pointed and rather long, the second (outermost) primary forming the wing tip together with the third and fourth and be-

ing distinctly longer than the fifth, while both *Oreocharis* and *Paramythia* have very rounded wings, the second primary in *Oreocharis* being smaller than the sixth, and in *Paramythia* even shorter than the eighth.

The coloration of the plumage in *Pardalotus* is variegated, with contrasting bright red or yellow patches and with characteristic white dots or streaks, which have given rise to the vernacular name, diamond birds.

The nest building is remarkable and probably unique in birds. The nest is dome-shaped or, at least, a covered-over structure, and is placed in a hollowed-out chamber at the end of a tunnel, excavated by the breeding pair in the ground, in the side of a bank, or similar places. It is noteworthy that the only species that differs in nesting habits is the most primitive one within the genus, namely, *P. quadragintus*. This species builds a cup-shaped nest placed in a tree hole. However, *P. striatus* and *P. substriatus* often place their dome-shaped nests in a tree hole, and in some areas appear even predominantly to use this form of nest.

Unlike all other flowerpeckers, the pardalotes are mainly insectivorous.

The genus *Pardalotus* consists of eight species, of which three (*quadragintus, punctatus, xanthopygus*) have white spots on the wings and on the crown (*quadragintus* not on the crown), while four other species (*striatus, substriatus, ornatus, melanocephalus*) have white streaks on the wings and on the crown (*melanocephalus* not on the crown) and, further, have yellow or red contrasting tips on the primary coverts and a loral reddish or yellow spot. The eighth species (*rubricatus*) combines the characters of the spotted and the striated pardalotes, having white spots on the crown and a red loral spot. However, all eight species are closely related and morphologically and ecologically so similar that it is not justifiable to recognize more than one genus. Mathews' attempt to split up the group into four genera (*Pardalotus* for *punctatus* and *xanthopygus, Neopardalotus* for *quadragintus, Dipardalotus* for *rubricatus,* and *Pardalotinus* for the remaining species) was utterly superfluous and has not been followed by other students.

The pardalotes are interesting birds from a zoogeographical viewpoint. In their distribution and relationships they illustrate many points in the faunal history of Australia, and, in addition, they exhibit various stages of speciation, in this way substantially contributing to an understanding of the evolutionary processes.

Pardalotus quadragintus

This Tasmanian species is the most primitive among the pardalotes. The sexes are alike. The plumage is rather nondescript, resembling the

female dress of *punctatus,* but even plainer, with olive greenish upper parts and pale yellowish under parts, and with the black wings supplied with distinct contrasting white spots on the tips of the remiges and the wing coverts. Even the nesting biology is primitive, as described above, and I am therefore not in agreement with Mayr and Amadon (1947, Amer. Mus. Novitates, no. 1360, p. 30), who consider the primitive coloration of this species to be due to a secondary generalization. The fact that both morphology and nesting habits are primitive tends to show that the primitive characters are original and not a secondary phenomenon. *Pardalotus quadragintus* is undoubtedly a close ally of *P. punctatus* and represents an older phylogenetic stage. Isolated in Tasmania, *P. quadragintus* retained the ancient characters, while *P. punctatus,* inhabiting Australia, deviated considerably and reached a much more advanced stage. At a comparatively recent date *P. punctatus* colonized Tasmania, where the two species now live side by side.

Pardalotus quadragintus is an inhabitant of the deep forests, where it keeps to the topmost foliage of the trees, rarely descending to the ground, and is more retiring in its habits than the other pardalotes.

Pardalotus quadragintus quadragintus Gould, 1838

TYPE LOCALITY: Tasmania.

This is the form of Tasmania proper. I have examined only four specimens (two males and two females) in the American Museum of Natural History. The form appears to be rarer than the other pardalotes.

Pardalotus quadragintus rex (Mathews), 1923

TYPE LOCALITY: King Island, Bass Strait.

According to Mathews (1923, Austral Avian Rec., vol. 5, p. 37) this form, which is restricted to King Island, differs from nominate *quadragintus* in having "the back more yellowish green and the ear-coverts yellower and the under-surface darker." Unfortunately the type (and probably only specimen known) has been lost, as it is not present in the Mathews collection in the American Museum of Natural History. The description does not sound convincing, and I seriously doubt that this subspecies is separable. Still, I recognize the form provisionally, pending new material from King Island.

Pardalotus punctatus (Shaw and Nodder), 1792

TYPE LOCALITY: New South Wales.

This gaily colored species displays a pronounced sexual dimorphism

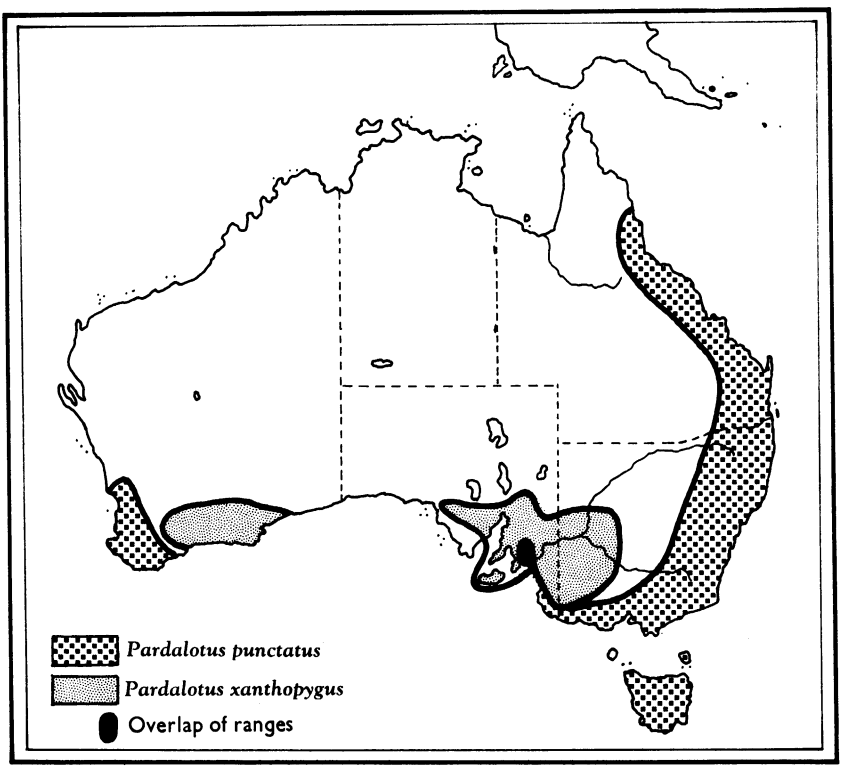

FIG. 1. The distribution of *Pardalotus punctatus* and *P. xanthopygus*.

in coloration, while the two sexes are exactly similar in proportions. It is an inhabitant of the rain forests and the sclerophyllous forests, and ranges from Cairns in eastern Queensland through eastern New South Wales and Victoria to southeastern South Australia, westward to the Adelaide Plains. It also inhabits Tasmania, and, according to Mellor and White (1913, Emu, vol. 12, p. 163), Flinders Island. In addition, it is found in southwestern Western Australia, eastward to the Stirling Range and northward to Moora, widely separated from its range in eastern Australia. Its distribution is shown in figure 1.

North (1907, Australian Mus. Special Cat., no. 1, vol. 2, p. 225) has examined material of this species from most parts of its breeding range, from Bellenden Ker (close to Cairns) in northeastern Queensland to southwestern Australia and Tasmania, and he found all populations precisely similar. Nevertheless, a few years later Mathews (1912, Novitates Zool., vol. 12 (1911), p. 389) described the following three subspecies:

TABLE 1

WING MEASUREMENTS (IN MILLIMETERS) OF *Pardalotus punctatus*
(The means are given in parentheses. Unless otherwise stated, the specimens belong to the American Museum of Natural History.)

	Males	No. of Specimens	Females	No. of Specimens
North Queensland[a]	54–57 (55.3)	3	—	—
South Queensland[b]	56–59 (57.8)	4	—	—
New South Wales	57–60 (58.3)	10	—	—
Victoria	54–69 (57.3)	18	—	—
New South Wales and Victoria	—	—	56–59 (57.7)	6
Tasmania[c]	57–58 (57.3)	3	57–59 (58.1)	6
South Australia	56–60 (57.3)	3	—	—
Western Australia	57–58 (57.3)	3	—	—

[a] Herbert River, Barron River, and Bowen.

[b] Warwick.

[c] The Tasmanian males belong to the British Museum (Natural History).

Pardalotus punctatus interjectus, with type locality Ringwood, Victoria, stated to be paler than nominate *punctatus.* The original description gives only Victoria as type locality, but the type specimen, examined by me in the American Museum of Natural History, originates from Ringwood.

Pardalotus punctatus leachi, with type locality Tasmania, is said to be darker than the nominate form.

Pardalotus punctatus whitlocki, with type locality Wilson's Inlet, southwest Australia, is stated to differ from nominate *punctatus* in being "more buffy below" and in having "the rump not so red."

Later Mathews (1912, Austral Avian Rec., vol. 1, p. 96) added *Pardalotus punctatus millitaris,* with type locality Cairns, which he stated was darker above and lighter below than nominate *punctatus* and differed in having a much heavier bill, shorter wing, and a more yellowish vent.

I have studied the extensive material of this species in the American Museum of Natural History, including Mathews' collection with the types of all his alleged subspecies, mentioned above. A careful examination of these large series reveals no geographical variation whatever, not even a slight clinal differentiation, apart perhaps from a very shallow, somewhat uncertain cline in wing length mentioned below. It is not possible, therefore, to recognize any of Mathews' proposed subspecies, and his names, listed above, become synonyms of *punctatus.* The buffy color on the under parts, as well as the light brown tinge on the upper parts, is

subject to some individual variation, being darkest in freshly molted specimens, but the variation does not follow any geographical trend. The same is true of the slight variation in bill size. It is probable, however, that the birds from northern tropical Queensland have on the average slightly shorter wings than those inhabiting New South Wales, while those of Victoria, South Australia, Tasmania, and Western Australia again are slightly smaller, but these differences in proportions are much too small to give rise to subspecific separation, which is apparent from the measurements given in table 1. The specimens measured belong to the American Museum of Natural History, but, as males from Tasmania are not represented in this museum, a small series has been measured in the British Museum and the measurements inserted in table 1. The type of the Tasmanian *leachi* is a female, and I have therefore added the measurements of females from Tasmania and those of a comparable series from New South Wales and Victoria. There is an old specimen (male) in the American Museum of Natural History from "N. Queensland," not belonging to the Mathews collection, with a wing length of 59 mm. The provenance of this specimen is not quite certain, and, because its wing length is distinctly larger than that of the other north Queensland specimens, I have not included this specimen in table 1. If, however, this bird actually originated from north Queensland, the average wing length in birds from this region becomes 56.3 mm., which is very near that of the Victoria birds.

It is noteworthy that the birds inhabiting Western Australia are exactly similar to those inhabiting the eastern region, from which they are isolated by a distance of more than 1800 kilometers. This tends to show that the separation of the two populations has been comparatively recent.

Pardalotus xanthopygus McCoy, December 29, 1866

TYPE LOCALITY: Swan Hill, northwestern Victoria.

This species is a very close ally of *P. punctatus*. It differs in both sexes from *punctatus* in having bright cadmium-yellow, not chestnut, rump and paler, grayish, not buffy, coloration on the mantle and back and on the under parts below the yellow throat. The proportions are slightly larger than those of *punctatus,* the wing length of seven males from Victoria and South Australia being 58–61 (average 59.0) mm.

Pardalotus xanthopygus replaces *P. punctatus* in the *mallee* (dwarf eucalypt) areas. It ranges from southwestern New South Wales and northwestern Victoria into southeastern South Australia, where it extends westward to the Gawler Range and Eyre Peninsula, southward

roughly to a line from Cowell to Streaky Bay, northward to Port Augusta and Wilpena Creek. It is found also on Kangaroo Island, where *P. punctatus* does not occur. It is also distributed in the *malee* country of Western Australia, westward to Tambellup and Lake Grace, northward to Norseman. The range is shown in figure 1. North (1907, Australian Mus. Special Cat., no. 1, vol. 2, p 227) mentions an old record from Lithgow, eastern New South Wales, but this place is far removed from the normal range of *xanthopygus,* and the specimen in question must have been a straggler.

Generally speaking, *P. punctatus* and *P. xanthopygus* are allopatric, and in Western Australia they probably only occasionally come into contact. In South Australia, however, the ranges of the two species overlap in the Mt. Lofty region and the adjacent parts of the Adelaide Plains (fig. 1).[1] North (*loc. cit.*) states that in this region *punctatus* and *xanthopygus* "frequent the same localities" and mentions skins of both species from Happy Valley, near Blackwood. Terrill and Rix (1950, South Australian Ornith., vol. 19, p. 92) state that the two species "occur in the same areas in some parts of the Mt. Lofty Ranges" and mention skins of *punctatus* from Blackwood and Clarendon and of *xanthopygus* from the Eden Hills and Happy Valley. I have examined specimens of both species from Tea Tree Gully, collected by B. H. Perks about 1890 (in the British Museum), and from Gawler, collected by E. Thorup about 1870 (in the Zoological Museum, Copenhagen).

The overlap in the ranges of *punctatus* and *xanthopygus* may be a secondary phenomenon, owing to clearing and deforestation following settlement, but it has probably been established for at least a hundred years, as demonstrated by the coexistence of the two species at Gawler in about 1870. Consequently, it is not possible to consider them conspecific, so that they must be treated as full species. Although this course was taken in "The official checklist of the birds of Australia" (1926, p. 92), the two forms have been regarded, incorrectly, as conspecific by many subsequent students (e. g., Mathews, 1927, Systema avium Australasianarum, p. 722; Mayr and Amadon, 1947, Amer. Mus. Novitates, no. 1360, p. 30).

From a zoogeographical point of view the relation between *P. punctatus* and *P. xanthopygus* demonstrates some interesting problems. The two species differ from each other virtually in the same way as the *melanocephalus* group does from the *uropygialis* group within the species *P.*

[1] There is possibly even a range overlap in southwestern New South Wales (Hobbs, 1961, Emu, vol. 61, p. 49).

melanocephalus. This parallelism is probably due to the fact that the two species groups have had a similar history. In both groups two populations some time in the past became separated from each other, and during the isolation one of them changed considerably, acquiring a paler plumage and replacing the chestnut phaeomelanin on the rump with yellow lipochrome. This radical change must undoubtedly have required a long period of isolation. Subsequently, the two populations came again into contact, which produced a very different reaction in the *punctatus-xanthopygus* group and the *melanocephalus-uropygialis* group. The two populations of the former group had drifted so far apart that they had developed into two species, which are mainly allopatric, but, as described above, are able to live side by side in a restricted area, reproductively completely isolated, without interbreeding. *Pardalotus melanocephalus* and *uropygialis,* on the contrary, retained their capability of interbreeding, possibly because they were separated from each other for a shorter period. At any rate, they have produced a hybridization zone of considerable extent, in which hybrids predominate, while the two parental forms are extremely rare.

The development of populations with pale coloration and with yellow lipochromes instead of melanins is a widespread phenomenon in Australian birds, perhaps most strikingly developed within the family Meliphagidae. In all such cases the lipochromatic species are inhabitants of dry regions, as is the case in *P. xanthopygus* and *P. uropygialis,* and belong to the so-called Eyrean and Torresian faunal elements, according to the terminology of Baldwin Spencer (1896, Report on the work of the Horn scientific expedition to central Australia; summary results, p. 197). It is obvious that such populations have been isolated in areas with an arid environment, while their counterparts (the Bassian species) inhabited humid or subhumid forest regions.

Serventy (1953, Emu, vol. 53, p. 131) was the first to recognize *P. punctatus* and *P. xanthopygus* as a Bassian-Eyrean species pair. The relation between the components of the Bassian and Eyrean fauna and the agencies that have caused their separation have recently been discussed by many students, e. g., Serventy (*loc. cit.*) and Keast (1958, Emu, vol. 58, p. 247). An important point is the fact that there is a strong Bassian element in the fauna of the humid southwestern region of Western Australia. The composition of this fauna has been the subject of an excellent discussion by Serventy and Whittell (1948, Handbook of the birds of Western Australia, pp. 44–60). In the case of the spotted pardalotes, it is noteworthy that both the Bassian species (*punctatus*) and the Eyrean one (*xanthopygus*) possess a population in southwestern

Australia which is isolated from that of the east. Originally they both had a continuous range, that of *punctatus* extending right across southern Australia. When the climate became more arid, the central parts of southern Australia were deserted by *punctatus,* the range of which, consequently, was cut in two. When the barrier between *punctatus* and *xanthopygus* broke down, the latter approached *punctatus,* colonizing areas between the two isolated ranges of *punctatus,* occupying the ecologically suitable parts of the country. Subsequently, with increasing desiccation, the Nullarbor Plain reached a stage in which it became uninhabitable even for *xanthopygus,* so that this species also was divided into an eastern and a western population, isolated from each other. Such is the situation at present. The two isolated populations of *xanthopygus* are morphologically precisely alike, which is the case also with the two populations of *punctatus.* This tends to show that the whole faunal change described above must have taken place in the comparatively recent past.

Pardalotus xanthopygus is monotypic, as is *punctatus,* as mentioned above. I have examined a large series in the American Museum of Natural History and smaller ones in the British Museum (Natural History) and the Zoological Museum, Copenhagen, without being able to discover any geographical variation. No subspecies names have been proposed for any population of this species.

The designation *Pardalotus leadbeateri* Ramsay, 1867, is often quoted in the synonymy of *xanthopygus,* but it is a *nomen nudum,* although actually intended for this species. The rather funny story of the naming of this species has been given by North (1907, Australian Mus. Special Cat., no. 1, vol. 2, p. 227), Mathews (1923, Birds of Australia, vol. 11, pt. 3, p. 192) and Hindwood (1950, Emu, vol. 49, p. 205). The last-named author states (p. 207) that the original description of *xanthopygus* was first published in the Melbourne newspaper "The Australasian" on December 29, 1866.

Pardalotus rubricatus

In this species the sexes are precisely similar in coloration and virtually also in body size; the wing length of 30 males of nominate *rubricatus* is 61–66 (average 63.1) mm.; of 13 females, 61–64 (average 62.8) mm. The sexual difference in size is so slight that it has not been considered in the statement of wing measurements of the subspecies given below. In keeping the sexes together it is possible to include in the series the large number of unsexed specimens. The individual measurements according to sex and locality are given in table 2.

TABLE 2

WING MEASUREMENTS (IN MILLIMETERS) OF *Pardalotus rubricatus*

	Males	Females	Unsexed
P. r. rubricatus			
Southwest Queensland[a]	62, 63, 64	62, 64, 64	—
"Queensland"	—	—	63
Central Australia[b]	61, 62, 62, 62, 63, 63, 64, 64, 64, 64, 66	61, 62, 63, 63, 64	63, 64
Pilbara Goldfield[c]	61, 61, 64	64	—
Midwestern coastland[d]	62, 62, 62, 62, 62, 63, 64, 64, 64, 64, 65, 65	61, 62, 63, 63	—
Winton, Queensland	64	—	—
P. r. parryi			
Kimberley Division[e]	61, 61, 61, 62, 63, 63, 63, 64, 64, 66, 67	61, 61, 62, 62, 62, 62, 63, 64	61, 61, 63, 63, 66
Northwest Queensland[f]	61, 65	—	—
P. r. carpentariae			
Normanton	60, 61, 62	61, 61, 62	60, 60, 60, 62
P. r. yorki			
Cape York Peninsula[g]	60	59	—

[a] Roseberth, Dickaree Water Hole, Birdsville.
[b] Oodnadatta, Musgrave Range, Everard Range, Finke River, Running Water.
[c] Marble Bar, Nullagine.
[d] De Grey River, Ashburton River (at Onslow), Fortescue River, Point Cloates.
[e] Parry's Creek, Derby, Mt. Alexander, Mungi.
[f] Leichhardt River.
[g] Cape York, Jardine River.

In contrast to the previously mentioned species of this genus, *Pardalotus rubricatus* has a pronounced geographical variation. This reflects in a most interesting way the moisture belts, being in agreement with the differences in rainfall between the habitats, as is the case with so many other Australian birds, such as *Acanthiza chrysorrhoa* and *A. pusilla* (Mayr and Serventy, 1938, Emu, vol. 38, pp. 281–285), *Smicrornis brevirostris* (Keast, 1958, Australian Jour. Zool., vol. 6, p. 152), *Meliphaga penicillata,* and others. There is a pale form (nominate *rubricatus*) in the arid region, a slightly darker one (*parryi*) in the semi-arid zone, a much darker and more variegated form (*carpentariae*) in the subhumid zone, and, finally, a still darker one (*yorki*) in the humid region. The distri-

bution of these forms, as compared with the situation of the moisture belts, is shown in figure 2.

Pardalotus rubricatus is an inland species, frequenting the drier parts of the continent, approaching the coast only in the western part of its range and in the northeast, at the Gulf of Carpentaria. The latter area is the only place in which this species penetrates into more humid regions. It frequents eucalypts, particularly white gum, and other timber growing along watercourses, but also smaller shrubs.

This species has been recently revised by Condon (1951, South Australian Ornith., vol. 20, p. 58), but he had only a small amount of material, and my arrangement differs from his in many ways. My study is based on an examination of 83 skins of adult birds and seven skins of juveniles, including a number of types of subspecies described by Mathews and Campbell, the whole material in the possession of the American Museum of Natural History.

Pardalotus rubricatus rubricatus Gould, 1838

TYPE LOCALITY: New South Wales.

This is the palest form. The upper parts are pale grayish brown, with indistinct, dusky, narrow shaft streaks, the upper tail coverts yellowish olive, the under tail coverts very faintly tinged with yellow, in some specimens being almost white. The wing length of 46 specimens (both sexes) is 61–66 (average 63.0) mm.

This form corresponds to the nominate form in Condon's review (*loc. cit.*), according to his description. Condon examined specimens from Yanko, southwest Queensland, and Coniston and other localities in southern Northern Territory. There are, however, many other populations that must be united with those mentioned. Evidently, nominate *rubricatus* comprises a number of populations completely or partially isolated by desert-like, treeless areas, which prevent, or at least considerably hamper, gene flow. One population is restricted to the area from Gascoyne to Pilbara Goldfield in Western Australia, another to central Australia (from southern Northern Territory to northern South Australia), a third one to southwestern Queensland, and so on. It is a common phenomenon that such populations differ from one another morphologically, owing to differences in the selection pressure of the environment, but in the case of *P. rubricatus* the morphological differentiation is too slight to give rise to a separation of further subspecies.

The palest birds are those from the Birdsville area of southwestern Queensland and those of the Pilbara Goldfield of Western Australia. These two populations are very similar. Campbell (1909, Emu, vol. 8,

p. 142) separated the birds from mid-western Australia as *Pardalotus pallida*. The range was stated to be the "region of Coongan and De Grey Rivers." The type, in the American Museum of Natural History, which is from Marble Bar, Pilbara Goldfield, is an exceptionally pale bird, while the remaining series from this area, including topotypical material from Marble Bar, are indistinguishable from southwest Queensland birds.

The population that inhabits northern South Australia (Musgrave Range, Everard Range) and the adjacent parts of Northern Territory is characterized by having generally darker and warmer brown upper parts, slightly deeper yellow upper tail coverts, and a faint isabella-colored tinge on the under parts, strongest on the flanks. Quite a few of these specimens are indistinguishable from the subspecies *parryi*. The population of central Australia has received the name *musgravi* by Mathews (1916, Bull. Brit. Ornith. Club, vol. 36, p. 91). In his original description Mathews compared this form only with his *leichhardti* (=*parryi*) and gave the correct differences, but he did not compare it with the nominate form. Condon (*loc. cit.*) recognized *musgravi,* describing it as differing from nominate *rubricatus* by having white under tail coverts, duller yellow rump, more grayish back, and grayish sides to the body. However, the differences are too inconsiderable and not constant enough to warrant any subdivision. At most it can be said that the central Australian population approaches *parryi* in it characters.

The most divergent population is that inhabiting the coastal areas of middle Western Australia, from the De Grey River southward to Point Cloates. The specimens belonging to this population are similar to the central Australian birds in the color of the upper parts and have also a conspicuous isabella-colored, sandy tinge on the under parts, stronger than in the central Australian birds, while the yellow color on the upper and under tail coverts is of the same shade as in nominate *rubricatus* or even still more reduced. This population was correctly described by Condon (*loc cit.*) as differing from nominate *rubricatus* in the following way: "the flanks a brighter brownish buff, and the upper and under tail-coverts with the yellowish wash reduced." This description was based on a study of five skins from Fortescue River, and Condon separates these birds as *pallidus* Campbell. As shown above, they are, however, not *pallidus,* which inhabits the interior country (Pilbara Goldfield) and is identical with the nominate form. If the coastal population should be separated, it requires a new name. Still the differences are too slight, and the variation is too patchy.Some of the paler specimens have a sandy tinge on the under parts of exactly the same shade as in

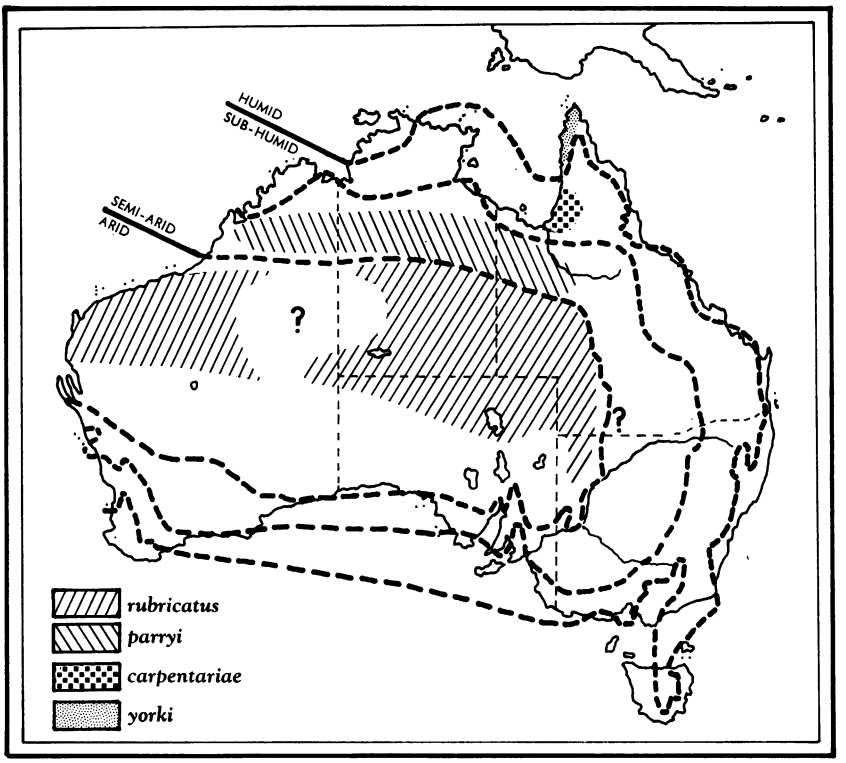

FIG. 2. The distribution of *Pardalotus rubricatus*. The dashed lines indicate the situation of the moisture belts.

the central Australian birds and are virtually indistinguishable from them.

There is a single specimen from Winton, central Queensland, a locality that constitutes the northeastern corner of the range of nominate *rubricatus*. The upper parts of this specimen are virtually as dark as those of *carpentariae* and have a similar color pattern, although not quite so scale-like. It resembles nominate *rubricatus* in the pure yellow pectoral patch, the pale yellowish olive upper tail coverts, the almost whitish under tail coverts, and the considerable wing length (64 mm.). Although this specimen is obviously closest to nominate *rubricatus,* it may represent another subspecies, inhabiting the areas on the verge of the semi-arid zone.

Gould's type specimen, which according to the colored plate (1846, Birds of Australia, vol. 2, pl. 36) was a very dark bird, is of unknown

origin, and the type locality is usually given as New South Wales. It is not necessary to restrict it further to Sydney or to the upper Hunter River, as has been done, because in New South Wales this bird occurs only in the westernmost parts. I have followed Condon (*loc. cit.*) in regarding the pale birds as representing the nominate form, but I wish to add that there is in the American Museum of Natural History a specimen labeled only "Queensland," which does not resemble any other specimens and comes near the dark shade of the bird pictured on the color plate of Gould. The upper parts are dark grayish brown, with rather distinct shaft streaks and only a faint olive-green tinge on the upper tail coverts, and the under parts are grayish white, without any yellow on the under tail coverts and with grayish brown, not pale buffy, flanks. This fits Gould's original description very well. Possibly this specimen represents the nominate form, which in that case differs considerably from the pale form. This latter should then be called *P. r. pallidus* Campbell. The range of this hypothetical nominate form would probably cover the area between Charleville and Bourke (in a semi-arid environment), whence no specimens have been examined by any student.

This form inhabits the arid zone of Australia, where it has an extensive distribution, although it is absent in the southern part of the zone. The range, as far as known, is outlined in figure 2.

Pardalotus rubricatus parryi Mathews, 1912

TYPE LOCALITY: Parry's Creek, Kimberley Division.

Very similar to *P. r. rubricatus,* but the upper parts are slightly darker and warmer brown, the upper tail coverts more bright yellow, and the under tail coverts have a slightly stronger yellow tinge. The wing length is similar to that in nominate *rubricatus,* being 61–67 (average 62.8) mm. in 26 specimens.

Admittedly this is a poor subspecies, but typical specimens show the difference well. When compared with southwest Queensland or Pilbara Goldfield specimens, the characters usually hold, but specimens from the coastal region of middle Western Australia (from the De Grey River to Point Cloates) are often as dark on the upper parts as Kimberley specimens, but differ in their paler yellow color on the under and upper tail coverts, while some central Australian specimens may be very similar to *parryi* in all respects.

Mathews (1913, Austral Avian Rec., vol. 2, p. 10) separated the population of the Leichhardt River area in northwestern Queensland as *leichhardti.* The type of this form (in the American Museum of Nat-

ural History) is quite similar to *parryi,* although slightly paler, more grayish, on the upper parts, in this respect being similar to the nominate form. Another topotypical specimen of *leichhardti,* collected on the same day as the type, is, however, indistinguishable from *parryi* (cf. fig. 3). The yellow color on the under and upper tail coverts is, in the type specimen, slightly brighter than in *parryi,* but the difference is microscopic. Mathews, in his description of *leichhardti,* compared it only with *yorki,* which is a very different bird. Condon (*loc. cit.*) recognizes *leich-*

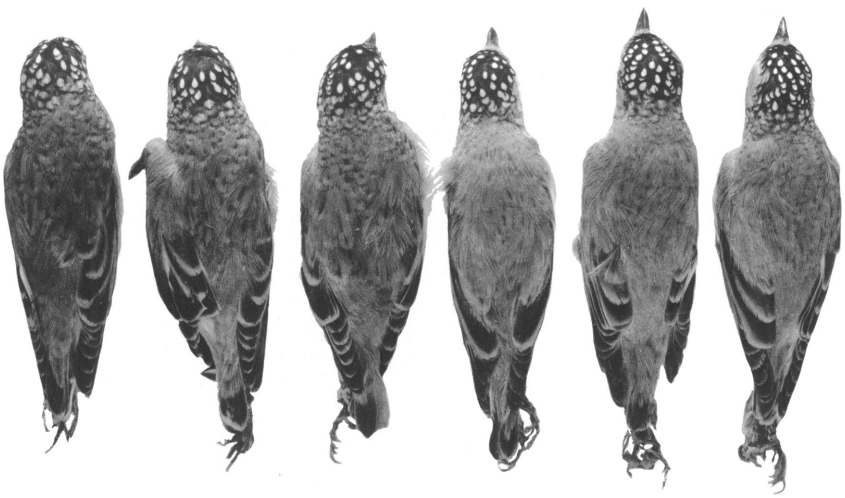

FIG. 3. The first three specimens from the left are *Pardalotus rubricatus carpentariae;* the three specimens on the right, *P. r. parryi.* The fourth specimen from the left is a topotypical specimen of *leichhardti.* Note the scaly pattern and dark ground color in *carpentariae.* Photograph by the American Museum of Natural History.

hardti, stating it to be a brighter bird than the nominate race, with the under tail coverts washed with deep yellow. The description was based on birds from Cloncurry, northwest Queensland. The characters given by Condon for *leichhardti* are exactly those mentioned above for *parryi* from Kimberley, but Condon had no material from there other than a single bird from Fitzroy River, which he united with his *pallidus.* I see no reason for separating *leichhardti* from *parryi,* even if some specimens have slightly more yellow on the tail coverts than topotypical *parryi.* This character forms an approach to the neighboring *carpentariae,* and, on the other hand, marks the end of a cline starting with typical *parryi* in northwestern Australia.

This form ranges across northern Australia, inhabiting the semi-arid parts north of the area inhabited by nominate *rubricatus,* from which it differs only slightly. In the western parts of its range it is distributed from the Derby area south to Mt. Alexander and Mungi, and, according to Söderberg (1918, K. Svenska Vetensk. Akad. Handl., vol. 52, no. 17, p. 101), to nearby Mowla Downs; in the eastern part it is known from the Leichhardt River and Cloncurry, while its distribution in Northern Territory is little known.

Pardalotus rubricatus carpentariae, new subspecies

TYPE: A.M.N.H. No. 699185; adult male; Normanton, northern Queensland; March 2, 1914; collected by Robin Kemp.

Differs strikingly from the preceding forms in having the upper parts darker brownish and more variegated; the dusky shaft streaks broader and darker, each feather with a narrow black apical cross bar and a large, subapical, pale, yellowish white spot, which gives a pronounced scaly pattern (cf. fig. 3); the upper tail coverts and the lower rump with slightly more yellow than in *parryi,* the outer edges on the secondaries slightly deeper orange, the pectoral patch slightly more orange, not pure yellow; the under tail coverts bright canary-yellow, strongly differing from the pale yellow color of the preceding forms. The proportions are slightly smaller than those of the preceding subspecies, the wing length of 10 specimens being 60–62 (average 60.9) mm.

A single bird in juvenile plumage has the under parts distinctly darker yellow than those of juvenile *parryi* and *rubricatus* and has much more yellow on the under tail coverts and slightly more olive-yellow on the upper tail coverts. The outer edges of the secondaries are deeper orange and the upper parts slightly darker olive-brown.

The scaly pattern produced by the pale spots and the apical cross bars on the feathers of the upper parts makes this form strikingly different from *parryi* and nominate *rubricatus,* and the deep yellow color of the under tail coverts and the dark color of the upper parts also serve to distinguish it at once. The scaly pattern is approached in a few specimens of nominate *rubricatus* from southwest Queensland.

This form is known only from the type locality, which is situated in the subhumid zone of northwestern Queensland. *Pardalotus rubricatus* is apparently not present in the subhumid coastal areas of northern Western Australia and Northern Territory, but in northwestern Queensland *carpentariae* is distributed in this zone and probably ranges all the way up along the western part of Cape York Peninsula, where it intergrades with *yorki* of the humid zone.

Pardalotus rubricatus yorki Mathews, 1913

TYPE LOCALITY: Cape York.

This is a still darker form than *carpentariae,* differing from it in having the upper parts distinctly darker and more olive-brown, and in having a conspicuous buffy tinge on the entire under parts, particularly strong on the flanks. In *carpentariae* the under parts are grayish white like those of *parryi.* The terminal cross bars on the feathers of the upper parts are even more prominent than in *carpentariae,* but the pale subapical spots are lacking, and the upper parts, therefore, do not have such a scale-like pattern as does *carpentariae.* The color of the upper and under tail coverts and of the outer edges of the secondaries does not differ from that in *carpentariae.* The proportions are apparently slightly smaller than those of *carpentariae;* the wing length of the only two specimens examined is 59, 60 mm.

This form is restricted to northern Cape York Peninsula. Its saturated coloration is undoubtedly correlated with the fact that it inhabits areas with a tropical humid climate.

TYPE SPECIMENS EXAMINED

Oreocharis arfaki bloodi Gyldenstolpe, 1955 = *O. arfaki.* In Naturhistoriska Riksmuseet, Stockholm.

Paramythia montium alpinum Salomonsen, 1961 = *P. m. alpinum.* In the American Museum of Natural History.

Paramythia montium brevicauda Mayr and Gilliard, 1954 = *P. m. brevicauda.* In the American Museum of Natural History.

Pardalotus punctatus interjectus Mathews, 1912 = *P. punctatus.* In the American Museum of Natural History.

Pardalotus punctatus leachi Mathews, 1912 = *P. punctatus.* In the American Museum of Natural History.

Pardalotus punctatus whitlocki Mathews, 1912 = *P. punctatus.* In the American Museum of Natural History.

Pardalotus punctatus millitaris Mathews, 1912 = *P. punctatus.* In the American Museum of Natural History.

Pardalotus pallida Campbell, 1909 = *P. rubricatus rubricatus.* In the American Museum of Natural History.

Pardalotus rubricatus musgravi Mathews, 1916 = *P. rubricatus rubricatus.* In the American Museum of Natural History.

Pardalotus rubricatus parryi Mathews, 1912 = *P. r. parryi.* In the American Museum of Natural History.

Pardalotus rubricatus leichhardti Mathews, 1913 = *P. rubricatus parryi.* In the American Museum of Natural History.

Pardalotus rubricatus carpentariae Salomonsen, 1961 = *P. r. carpentariae.* In the American Museum of Natural History.

Pardalotus rubricatus yorki Mathews, 1913 = *P. r. yorki.* In the American Museum of Natural History.