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MISCELLANEOUS TAXONOMIC NOTES ON AFRICAN BIRDS

XXII

by

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1. RACIAL VARIATION IN BENNETT'S WOODPECKER *CAMPETHERA BENNETTII* (SMITH)

Campethera bennettii (Smith), 1836: "about and beyond Kurrichaine", i.e., western Transvaal, was first discovered by the intrepid Dr. Andrew Smith during the course of his expedition for exploring central Africa from the Cape of Good Hope, and was described in the report of that pioneering effort. In South Africa, *C.bennettii* is one of the rarer woodpeckers, and it is only in the *Brachystegia* biome of Southern Rhodesia and areas to the north of the sub-continent that the species becomes tolerably common. At the present time two and sometimes three races are admitted by workers. Of two of these there is no doubt in the minds of most workers, though the ranges accorded both *C.b.bennettii* and *C.b.capricorni* Strickland have never been adequately worked out and vary according to the authority consulted. The populations strictly attributable to nominotypical *C.bennettii* are restricted to the eastern half of zoogeographical South Africa by workers who admit a northern race,

C.b.uniamwesica (Neumann), 1908: Kakoma, Tanganyika, notably Sclater, *Syst.Av.Aethiop.*, part i, 1924, p. 294, and Chapin, *Birds Belgian Congo*, part ii, 1939, p. 566, or else, in the case of most other specialists, are believed to include all those of the species with the exception of the ones attributed to *C.b.capricorni*. Fairly recently a fourth taxon was proposed in the form of *C.b.vincenti* Grant and Mackworth-Praed, 1953: 60 m. N. of Tete, Moçambique (vide *Bull. Brit. Orn. Club*, vol. lxxiii, 5, 1953, pp. 55, 56), which was later synonymized with nominate *C.bennettii* by Benson, *Bull. Brit. Orn. Club*, vol. lxxx, 6, 1960, p. 105, though again recognised by Mackworth-Praed and Grant, in their own *Birds Southern Third of Africa*, vol. i, 1962, p. 575. These latter authors ascribe a microscopic range to the taxon, namely, "Portuguese East Africa from sixty miles north of Tete to Zobué and Nyasaland from Kapiriuta to Zomba", but otherwise follow current convention in merging *C.b.uniamwesica* with *C.b.bennettii*, which latter has its range generally extended northwards to include Angola, the southern Congo and the western half of Tanganyika. But current arrangements of the populations of Bennett's Woodpecker into races are so irregular and patently unsatisfactory that I have felt constrained to go into the whole matter *de novo* on the basis of the pooled material resources of the South African Museum, Cape Town, the Durban Museum, the Transvaal Museum, Pretoria, the National Museum of Southern Rhodesia, Bulawayo, and the Rhodes-Livingstone Museum, Livingstone. Study of the assembled material of just over one hundred skins prompts me to acknowledge the findings of Sclater and Chapin in admitting three races of *C.bennettii*, with the addition of *C.b.vincenti*, which is accorded a fairly extensive range in the arrangement presented below.

Variation in *C.bennettii* affects general size, the intensity of the dorsal barring, the colouration of the rump and upper tail-coverts, the colour of the ground to the ventral surface and the degree to which it is speckled, and, in the female, the shade of the brownish auricular and throat patches. Generally speaking the smallest-sized birds are found in the lower Zambesi River valley and the largest in northern South-West Africa and Angola, but variation in this character is clinal and rather irregular and it is of small use in arranging the populations into acceptable racial units. Variation in ventral spotting ranges from relatively heavily speckled populations in the moist east and north of the species' range to a condition in which the underside is strongly suffused in fresh dress with deep straw yellow, the speckling absent or vestigial, this extreme being

reached in the populations of Ovamboland and adjacent southern Angola. Associated with this increase in lipochrome to the underparts and loss of speckling is a marked whitening of the rump and upper tail-coverts and a darkening of the auricular and gular patches in females. It will also be appreciated from what I have already written that the size variable shows a somewhat similar disposition.

In studying *C.bennettii* it should be appreciated that the lipochrome of the plumage is unstable, and birds only slightly worn are frequently less deeply pigmented than examples in pristine condition from the same sample area. There is also irregularity in the wearing and bleaching rates of populations of the same race inhabiting relatively open and seasonally dry or closed and generally moist habitats, and in arriving at my conclusions I have relied largely on material collected between the months of March and July. Study of this woodpecker is also complicated by the fact that samples from single localities from south of the Zambesi River consist in the main of singletons, but fortunately a good sample of ten neatly prepared skins was formed on the Charama Plateau, in the Gokwe district of Southern Rhodesia, in July, 1964, by members of the staffs of the Durban Museum and the National Museum of Southern Rhodesia, Bulawayo, study of which shows that this woodpecker is not highly variable within the limits of a population.

The populations of Bennett's Woodpecker may be arranged in four races, the names, characters and ranges of which are as follows:

(*a*) **Campethera bennettii uniamwesica** (Neumann)

Dendromus bennetti uniamwesicus Neumann, *Ornith. Monatsber.*, vol. xvi, 1908, p. 27: Kakoma, south-east of Tabora, Tanganyika.

Male with forehead, crown and nape Carmine (pl. i), the feather bases slate; back and scapulars about Medal Bronze (pl. iv), crossed by narrow wavy Pinard Yellow (same pl.) bars; rump dull greenish white, heavily barred with Olive-Citrine (pl. xvi). Malar streaks Carmine. On underside, throat creamy white; rest of underside about Barium Yellow (pl. xvi), the breast often with a buffy overlay, and the breast and lateral surfaces boldly spotted with black, the flanks somewhat transversely barred in most. Wings with tertials about Olive (pl. xxx), boldly but incompletely crossed by narrow yellowish bars. *Female.* As male but with forehead and fore-crown black spotted with white, the red restricted to the hind crown and nape. On face, lores, areas below eyes and auriculars warm brown (ranging

from about Cinnamon-Brown (pl. xv) to Buckthorn Brown (same pl.); chin and upper and mid-throat similar.

Measurements: Wings of 7 ♂♂ 120-124 (122.2), culmens from base 28-30.5 (29.3), tails 65-69 (67.1), wings of 7 ♀♀ 117-127 (121.3), culmens 28-30 (28.4), tails 62-70 (66.5) mm.

Material examined: 18. *Congo*, 1 (Elizabethville). *Northern Rhodesia*, 16 (Salujinga, 1; Mwinilunga, 2; Pokola, Kabompo R. 1; Kabompo, 1; Solwezi, 1; Rufunsa, 1; Kalulushi, 1; Kasama, 3; Mulema (10° 30′ S., 31° 42′ E.), 2; Luano Valley at 14° 40′ S., 29° 55′ E., 1; Fort Rosebery, 1; Lundazi, 1). *Northern Nyasaland*, 1 (Livingstonia).

Range: The plateau of Angola north of the range of *C.b.capricorni* from Cuanza Sul and Huambo to Malanje, southern Lunda and northern Moxico (*vide* Traylor, *Check-list of Angolan Birds*, 1963, p. 109), the southern Congo in the Katanga, Northern Rhodesia (Zambia) in the north-western, western, central and northern districts, to northern Nyasaland (Livingstonia), Tanganyika in the Southern Highlands and western district, and Rwanda and Burundi to the southern shore of Lake Victoria. Intergrades to the south of its range in the west with *C.b.capricorni* and further east with the nominate race and *C.b.vincenti*.

Type: In the Zoological Museum, Berlin.

Remarks: Compared with the nominate race, with which it is often synonymized, *C.b.uniamwesica* presents a more golden or citrine washed facies to the dorsal surface, the pale transverse interspaces on the back yellower. The wings are also less dark, the barring incomplete, and the auriculars and gular patch in ♀♀ are lighter. The differences between *C.b.uniamwesica* and *C.b.vincenti* are less salient, but worthy of recognition.

(*b*) **Campethera bennettii vincenti** Grant and Mackworth-Praed.

Campethera bennettii vincenti Grant and Mackworth-Praed, *Bull. Brit. Orn. Club*, vol. lxxiii, 5, 1953, p. 55: 60 m. N. of Tete: Moçambique.

Differs from the previous race in being markedly darker and less golden or citrine suffused on the upper-parts, the transverse barring coarser. Mantle feathers about Dark Olive (pl. xi), the pale interspeces off-white or dull greenish yellow. Wings rather darker, and

whitish transverse barring bolder and complete, less citrine tinged and broken medially. Auricular and throat patches in female similar.

Measurements: Wings of 10 ♂♂ 117.5-126 (122.1), culmens 26.5-31.5 (28.2), tails 65-69.5 (67.2), wings of 10 ♀♀ 116-126.5 (122.4), culmens 26-30.5 (28.4), tails 62-74 (67.8) mm.

Material examined: 59. *Northern Zululand,* 1 (Maputaland). *Swaziland,* 3 (near Stegi). *Eastern Transvaal,* 16 (Mokeetsi, 1; Hector Spruit, 2; Leydsdorp, 1; Sabi R., 1; Silati, 1; Newington, 10). *Southern Rhodesia,* 14 (Bindura, 1; Nuanetsi R., 1; Maringua, Sabi R., 1; Chitza's, Sabi/Lundi confluence, 1; Charama Plateau, Gokwe district, 10). *Nyasaland,* 5 (Edingeni, Mzimba, 2; Chinde, Mzimba, 1; 8 m. S. of Mzimba, 1; 20 m. N.W. of Kasungu, 1). *S. and S.E. Northern Rhodesia,* 20 (Katete (14° 04′ S., 32° 04′ E.), 1; Fort Jameson, including Kalichero, 9; Luangwa Valley, 8; Mazabuka, 1; Choma, 1).

Range: The Luangwa R. valley and southern Northern Rhodesia (west to the Kariba Basin), and Nyasaland to the west of the Rift and south of about Mzimba, to the plateau of Southern Rhodesia (mainly in *Brachystegia*), and southern Moçambique from the districts of Tete and Manica e Sofala south to the eastern lowveld of the Transvaal; eastern Swaziland and Zululand. Intergrades with the nominate race to the west of its range.

Type: In the British Museum (Nat. Hist.), London. B.M. Reg. No. 1933.31.416.

Remarks: Benson, *Ostrich,* vol. xxiii, 3, 1952, pp. 152, 153, records some measure of intergradation between *C.b.vincenti* and *C.scriptoricauda* (Reichenow), which he considers to be conspecific with *C.bennettii*. *C.scriptoricauda,* described from Bumi, in the Morogoro district of Tanganyika, is more like *C.nubica* (Boddaert) than *C. bennettii* subspp., differing only in having the chin and throat speckled in both sexes. From *C.bennettii*, *C.scriptoricauda* differs in having, in the male, the areas below the eyes and the ear-coverts heavily streaked with grey, not plain creamy white as in the former, and on the ventral surface the chin and throat are medially spotted with black. In the female of *C.scriptoricauda* the brownish facial and throat patches of Bennett's Woodpecker are lacking, the face being buffy white, the areas below the eyes and the ear-coverts white streaked with grey, as in the male, and the chin and throat are white, medially spotted with black. *C.scriptoricauda* is on the whole

smaller and shorter winged than *C.bennettii* races, and has the proximal half of the lower mandible distinctly yellowish. The form seems to link the *C.bennettii* and *C.nubica* groups, but according to Benson, *loc. cit.*, the calls are as in *C.bennettii*, not *C. nubica*, with its harsh "kekking" form of duetting. Van Someren, *Novit. Zool.*, vol. xxix, 1922, p. 63, over forty years ago, argued that as *C.scriptoricauda* and *C.n.pallida* (Sharpe) overlap without intergrading (?) in the coastal districts of Kenya it should be given specific rank, and this view has recently been followed by Mackworth-Praed and Grant, *Birds Southern Third of Africa*, vol. i, 1962, pp. 575, 576. Benson's findings on some southern Nyasaland birds seem conclusive, and the alleged sympatry of *C.scriptoricauda* and a race of *C.nubica* in coastal Kenya may simply be the result of chance sampling in an area of true intergradation. This much is certain, the woodpeckers of the *C.bennettii*, *C.scriptoricauda* and *C.nubica* sequence are very closely allied, almost certainly conspecific, but until more is known about the enigmatic *C.scriptoricauda*, especially of the reactions of its terminal populations where they impinge on forms of *C.bennettii* in the south and east and *C.nubica* in the north, I believe it advisable to consider these woodpeckers semispecies in a superspecies.

(*c*) **Campethera bennettii bennettii** (Smith)

Chrysoptilus Bennettii A. Smith, *Report Exped. Explor. Cent. Afr.*, 1836, p. 53: "about and beyond Kurrichaine". Zeerust, western Transvaal, may be proposed as a restricted type-locality.

Similar to *C.b.vincenti* but rather colder and slightly less ochraceous tinged above, the pale transverse interspaces on the upperparts usually greener, and the white transverse bars on the tertials still more fully developed. In fresh dress tends to be more strongly yellowish tinged below, but the best distinction is shown by the female, which has the areas below the eyes and auricular and throat patches much darker brown (about Mummy Brown (pl. xv), as against Cinnamon-Brown or Buckthorn Brown in both *C.b.vincenti* and *C.b.uniamwesica*). White spotting on forehead and fore-crown in female coarser.

Measurements: Wings of 9 ♂♂ 122-127 (123.7), culmens 28-30 (29.3), tails 66-70 (68.1), wings of 8 ♀♀ 120-126.5 (123.5), culmens 28-30 (28.8), tails 65.5-71 (68.7) mm.

Material examined: 24. *Transvaal*, 7 (Zeerust, 1; Zoutpan, Pretoria, 2; Buffelsdraai, Pretoria, 1; Zoutpansberg, 2; Klein Letaba, 1). *Bechuanaland*, 2 (Tsotsoroga Pan, 1; Gomodimo, 1 (inclining towards

C.b.capricorni). *Southern Rhodesia*, 5 (Sentinel Ranch, Beit Bridge, 3; Fort Tuli, Tuli R., 1; Victoria Falls, 1). *South-West Africa*, 2 (Quickborn Farm, Okahandja). *Northern Rhodesia*, 8 (Livingstone, 1; Nangweshi, Barotseland, 1; Choma, 1; Mfubakazi, Senanga, 1; Kalabo, 2 (one intermediate towards *C.b.capricorni*); Kasempa, 1; Solwezi, 1 (? migrant)).

Range: Extends from the low rainfall areas of the northern and western Transvaal and southern and western Matabeleland through the Bechuanaland Protectorate to central Damaraland (Rehoboth, Okahandja), and north to Barotseland and adjacent parts of south-western Northern Rhodesia. There is some evidence that this race is partially migratory, as I have examined typical examples (♀♀) from north of its breeding range, as for instance from Kasempa and Solwezi, in Northern Rhodesia, the specimen from the last locality a very typical example indeed. Intergrades with *C.b.capricorni* in parts of northern Damaraland and in Bechuanaland to the north-west of the Kalahari.

Type: Present whereabouts not known.

Remarks: This is a xeric race, with well-marked whitish barring to the tertials and the facial and throat patches dark brown as in *C.b.capricorni*. It seems to be numerically sparse throughout its wide range, and material currently available in museums is disappointingly small.

(*d*) **Campethera bennettii capricorni** Strickland

Campethera capricorni Strickland, in Jardine's *Contr. Ornith.* for 1852, 1853, p. 155: Damaraland.

Separable from nominotypical *C.bennettii* in being slightly more yellowish on the upper-parts, the barring on the whole coarser and lighter, and the pale interspaces yellow, less greenish white; rump and upper tail-coverts very whitish and often vinaceous tinged and almost unbarred (especially in Ovamboland birds). On the underside strongly suffused with deep buffish yellow (about Apricot Yellow (pl. iv)), the spotting greatly reduced, the individual spots much smaller and in extremes, as shown by Ovamboland birds, the whole under surface may be quite without spotting. In the female, the facial and throat patches are dark brown (Mummy Brown) as in *C.b.bennettii*, and the white spots on the forehead and fore-crown are larger than in *C.b.uniamwesica* or *C.b.vincenti*, and even larger than in *C.b.bennettii*. Larger in size than the other three forms.

Measurements: Wings of 9 ♂♂ 126-131 (128.4), culmens 29-32 (30.8), tails 62-73 (67.8), wings of 3 ♀♀ 125.5-134 (130.1), culmens 28.5-31 (30.1), tails 69-72.5 (70.5) mm.

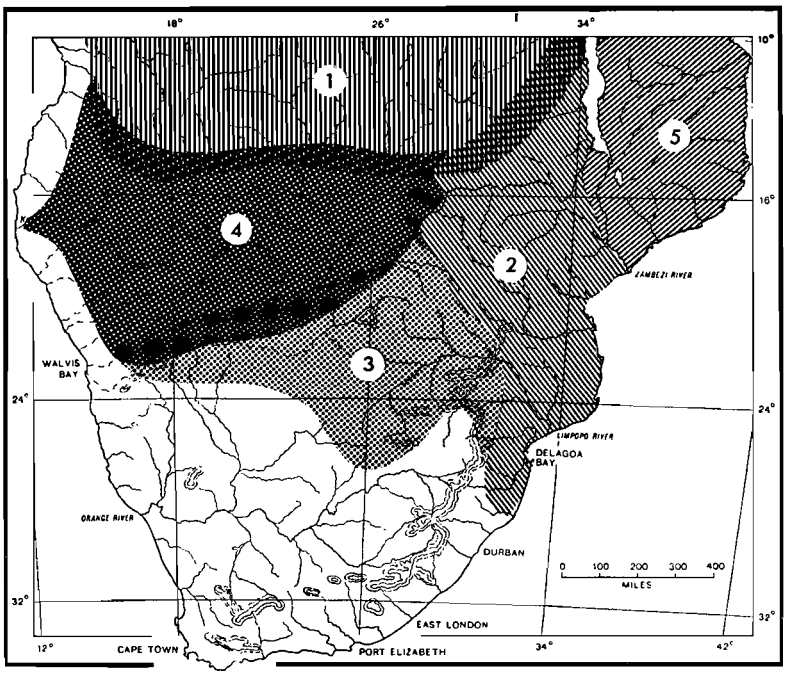
Material examined: 12. *South-West Africa*, 8 ("Friedericksw ald", Swakop R., 1; Okahandja, 2; Ondonga, 2; Ochikanga, 1; Ochimbora, 1; Omlola (an Eriksson bird, and perhaps the same as Omrora, which is in Huila, Angola (see also Rudebeck, *loc. cit.* (below), p. 431), 1. *Bechuanaland*, 1 (Gomodimo). *Northern Rhodesia*, 3 (Sikongo, Barotseland, 1; Kasempa, 1; Kafue Gorge at 15° 50′ S., 28° 20′ E., 1).

Range: Central and northern Damaraland and north-western Bechuanaland in Ngamiland, northwards to southern Angola where it is wide-ranging in the Cunene and Cubango drainage systems of southern Bie and Huila; also extends some way eastwards into the western parts of Barotseland. Birds referable to this race in the greatly reduced spotting to the underside but not in the depth of the yellow on the ventral surface have been examined from still further east, *i.e.*, from Kasempa and Kafue Gorge. These may simply reflect genetic instability in this region of Northern Rhodesia, though there is every likelihood that they are off-season wanderers from further west, as there is evidence of migratory movement in dry area populations of this woodpecker.

Type: In the Cambridge University Museum, No. 1925a. The chest is fairly well spotted, but the rump is yellowish white, according to Roberts, *Ann. Transv. Mus.*, vol. xviii, 3, 1936, p. 265.

Remarks: Rudebeck, *South African Animal Life*, vol. ii, 1955, pp. 502-505, has already discussed the situation presented by the birds of central and northern Damaraland and areas to the northward. It is not necessary for me to add to these comments, which adequately reflect the situation presented by the material available to me. I will, however, remark that there seems no justification for the sub-division of *C.b.capricorni* on the basis of the finding that Damaraland birds have the breast moderately speckled, the Ovamboland birds not. While material is limited, that which has been available for this revision suggests that *C.b.bennettii* and *C.b.capricorni* meet and intergrade in central Damaraland — witness the two typical examples of *C.b.bennettii* from "Quickborn", Okahandja, collected by Bradfield and now in the Transvaal Museum collection —and the *Type* of *C.capricorni* is presumably from this zone of intergradation (see *Ibis*, 1869, pl. ix, facing p. 320). As remarked

earlier, there is evidence that nominotypical *C.bennettii* is to some extent migratory, some birds moving north of the breeding range in the cold dry winter (when food is scarce), and *C.b.capricorni* is almost certainly also subject to such movements. This would account in part for the finding of *bennettii*-like birds in the breeding range of *C.b.capricorni* and other forms, which gave rise in the old literature to conflicting opinions as to the validity of *C.b.capricorni* as a tenable race. Rudebeck also suspected that the dry country populations might be subject to migratory movements (p. 505), and Andersson, *Birds of Damara Land*, 1872, p. 221, definitely states that in his opinion the species is a migrant in Damaraland and all the northern territories of South-West Africa traversed by him, being absent in the "dry season", *i.e.*, the winter months.



Map I

Sketch-map showing the ranges of the four races of Bennett's Woodpecker and of the allied *C.scriptoricauda* (Reichenow)

1. *Campethera bennettii uniamwesica* (Neumann)
2. *Campethera bennettii vincenti* Grant and Mackworth-Praed
3. *Campethera bennettii bennettii* (Smith)
4. *Campethera bennettii capricorni* Strickland
5. *Campethera scriptoricauda* (Reichenow)

Heavily cross-hatched areas represent zones of intergradation.

As *C.scriptoricauda*, which is known in the south of its range from Boror, Quelimane district, Moçambique, and the lower Shiré R. valley of southern Nyasaland (Chiromo and Port Herald), almost certainly ranges into zoogeographical South Africa in the lower Zambesi R. valley region I treat it in some detail below. The following are the nomenclatural, physical and range attributes of the form:

Campethera scriptoricauda (Reichenow)

Dendromus scriptoricauda Reichenow, *Ornith. Monatsber.*, vol. iv, 1896, p. 131: no locality. *Type* from Bumi, Morogoro district, eastern Tanganyika.

Similar to *C.b.vincenti* as defined above, but male differs in having the areas below the eyes and the ear-coverts heavily streaked with grey, not pure creamy white as in *C.b.vincenti*, and centre of chin and throat with a narrow line of round black spots, which links up with the spots on the lower throat and breast. *Female.* Differs from *C.b.vincenti* in having still smaller white spots on the head-top. Face without the brown areas over the lower lores, areas below the eyes and ear-coverts, which surfaces are off-white streaked with grey; malar streaks more streaked with blackish, and on the chin and throat the brown of *C.b.vincenti* is replaced by creamy white, the medial plane dotted with round black spots (just as described in the case of the male). In both sexes the basal half of the lower mandible is yellowish, not black as in forms of *C. nubica* and *C. bennettii*, and the size inclines to be small: wings of ♂♀ 109-115 mm.

Range: Coastal Kenya from about Lamu (van Someren, *loc. cit.*) and the eastern districts of Tanganyika southwards to the Southern Province, northern Mocambique and southern Nyasaland. Extends a little to the west of the southern part of the Rift in Nyasaland (L. Nyasa littoral of Dedza district), Benson, *loc. cit.*, recording, birds variably intermediate between *C. scriptoricauda* and *C.b.vincenti* from areas immediately to the west of the Rift. This form almost certainly ranges into adjacent zoogeographical South Africa.

Remarks: Dendromus albifacies Gunning and Roberts, *Ann. Transv. Mus.*, vol. iii, 1911, p. 112: Villa Pereira, Boror, Quelimane district, northern Moçambique, is a synonym, though in the event of racial variation being adequately demonstrated, this name is available for the southern populations, which may be less saturated and brownish above than in the case of East African topotypes of *C.scriptoricauda*.

2. SUBSPECIATION IN THE BLACK TIT *PARUS NIGER* VIEILLOT

In an earlier study reported in the *Ibis*, vol. c, 3, 1958, pp. 451, 452, the present author proposed to recognise two geographical races within the species *Parus niger* Vieillot, *sens. strict.*, the forms being *P.n.niger* Vieillot, 1818: Sundays R., eastern Cape Province, and *P.n.xanthostomus* Shelley, 1892: Zambesi R., Moçambique. Hall, *Ibis*, vol. cii, 1, 1960, p. 117, expressed the view that the variation in the amount of white in the wings of adult Black Tits—the character employed by Clancey to arrange the populations of *P. niger* in two subspecific taxa—varied individually and variation in its extent had no geographical connection. Two independent studies of this question by assembled members of the S.A.O.S. List Committee resulted in the findings of Clancey (1958) being confirmed (see "Sixth Report of the S.A.O.S. List Committee", *Ostrich*, vol. xxxiii, 1, 1962, p. 17).

During the course of a recent visit to Salisbury, I was able to examine the Bechuanaland collection in the possession of Mr. Rudyerd Boulton, Director of the Atlantica Ecological Research Station, near Salisbury, which contained some three or four female specimens of *P.niger* which struck me at the time as being inordinately pallid and cinereous below. Even more recently I have been able to re-survey the variation exhibited by *P.niger* in the Durban Museum, utilizing the pooled specimen resources of several museums, some 396 specimens being critically examined. For the loan of material to augment that already in the Durban Museum I am grateful to the following institutions: East London Museum (through Mr. C. D. Quickelberge), Natal Museum, Pietermaritzburg, Transvaal Museum, Pretoria (through Mr. O. P. M. Prozesky), and the National Museum of Southern Rhodesia, Bulawayo (through Mr. M. P. Stuart Irwin). During the latter part of June, July and the first week of August, 1964, a party from the Durban Museum operated in the field in various parts of Matabeleland, Southern Rhodesia, collecting tits at every opportunity, and the material brought together has been of considerable value in throwing additional light on the incidence of pallid, greyish ventralled females in the dry interior of southern Africa.

Despite opinion to the contrary, *P.niger* shows quite marked geographical and surprisingly little individual variation within its widely distributed populations, the variation affecting corporal mass, as revealed by a study of variation in wing-length as an

indication of size, the amount of white displayed over the coverts and remiges of the wings, and in the extent to which the female is pigmented with melanin ventrally. In the nominate race of the south, which ranges from the eastern Cape, through Pondoland and Natal to Zululand and south-eastern Swaziland, the wings of ♂♂ measure (coastal birds) 82-85, ♀♀ 76.5-81 mm., females are dark sooty brown or blackish slate below, and birds in basic plumage show black over the upper series of the lesser-coverts; the secondary-coverts are narrowly edged ventrally and more broadly tipped with white, and the white edging to the outer webs of the remiges exhibits a dusky shadow over the major secondaries and primaries, as opposed to the tertials. This condition results in the tertial stripe being more prominent in these austral populations than in those occurring further north. In studying the wings of *P.niger*, care must be taken to see that the specimens are in basic and not pre-basic dress, as in the latter plumage the yellowish edged secondaries (not tertials) and primaries of the juvenile plumage are retained along with the rectrices after the rest of the plumage has been moulted. Birds in pre-basic dress can usually be recognised by the faded and brownish tips to the remiges, which stand out in sharp relief to the deep black and white of the other wing-parts. Another factor which tends to make much available material unsuitable for study of this particular character is that in many museums the study material has been prepared by unskilled, primitive hands, and the ulna and radius have been crudely "stripped", resulting very often in the disarraying of the coverts and in general disfigurement of the whole facies of the wing. In arriving at my decisions I have utilized mainly material which I have personally collected in different parts of southern Africa, or which has been prepared under my immediate supervision.

To the north of the range of *P.n.niger*, from eastern Swaziland and the Maputo district, of Sul do Save, southern Mozambique, a demonstrable shift occurs in some of the variable characters. The wings of birds in basic dress show much more white. The upper series of lesser-coverts is less extensively black and more white, and the white edging and tipping to the secondary coverts is broader, the black on the innermost bank of feathers being completely obscured by white, resulting in the wing exhibiting a large white patch. In the case of the remiges, the margins to the primaries and secondaries are uniformly white with the broad lateral edging to the tertials, the dusky shadow present in *P.n.niger* absent.

In my 1958 report I showed that birds with more extensive white

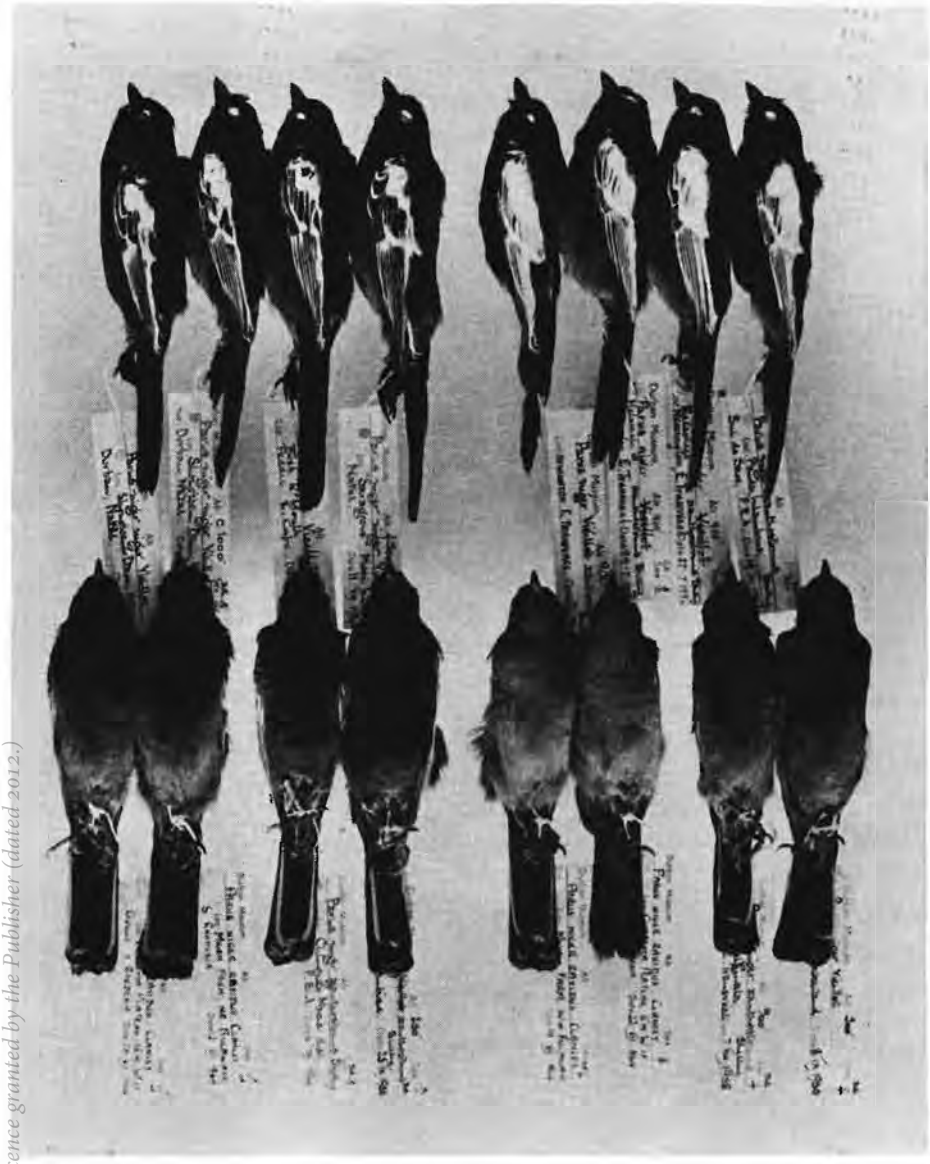
in the wings in basic dress ranged from north-eastern Swaziland, the Transvaal and southern Moçambique to the eastern and northern Bechuanaland Protectorate, Southern Rhodesia, parts of Northern Rhodesia, southern Nyasaland and northern Moçambique (to about the Lurio R.), placing all these populations in a new taxon, *P.n. xanthostomus*.

With the much more extensive material now available from this vast region, I find that there is more variation of significance than realized at the time of my earlier study. The populations of the eastern tropical littoral of southern Africa, *i.e.*, from the eastern Transvaal lowveld and the region of Delagoa Bay northwards in Moçambique, have wings in ♂♂ 80-86, ♀♀ 77-82 mm., whereas in the birds of the plateau to the west, particularly from western Southern Rhodesia, Bechuanaland, and south-western Northern Rhodesia, the birds are distinctly larger, the wings of ♂♂ 84-91, ♀♀ 80-86 mm. While this variation in size is statistically significant, no arrangement of lowland and plateau populations into races on the basis of this character alone is feasible, owing to the wide range of overlap, and the rather irregular pattern presented by this variable in association with the more important criterion of variation in the colouration of the ventral surfaces of females, with which I will now deal.

As noted in the introductory section to this report, females of *P.niger* show variation in the extent to which the underparts are pigmented. In a critical study of the fine panel of Southern Rhodesian Black Tits available for research it was observed that a preponderance of females from the low rainfall areas of western Matabeleland were distinctly lighter and greyer, often quite bluish grey in freshly moulted condition, much less brown and sooty than those from Mashonaland, Northern Rhodesia, and the eastern littoral plain. While the material of female *P. niger* in the National Museum from parts of Bechuanaland noted for their plethora of discrete griseous races is inconclusive, specimens from critical areas in Bechuanaland in the collection of the Atlantica Ecological Research Station show, when studied in conjunction with the extensive western Matabeleland material available, that the populations of *P.niger* resident in northern and eastern Bechuanaland, the western Transvaal, western Southern Rhodesia and the Caprivi Strip, of north-eastern South-West Africa, must be treated as a distinct race, separable both from *P.n.niger* and *P.n.xanthostomus* on the basis of the lighter and clearer grey ventral surface of females.

In the populations resident in the desertic interior of southern Africa and immediately adjacent areas, the males likewise show demonstrable divergent characters in comparison with those of the populations resident in more mesic or hygric biomes. In the populations of *P.n.ravidus*, described below, the adult males likewise reveal the general trend towards greyness in the plumage more lucidly exhibited in females by revealing a marked extension of the greyish wash over the flanks and lateral body surfaces, the black over the medio-ventral and caudad parts being restricted to an ill-defined abdominal stripe, adumbrating a condition found in various non-melanistic species of *Parus*, such as *P.major*, *P.afer*, *P.griseiventris*, etc. (see photo).

In deciding to admit three races of *P.niger* in our formal grouping of the populations into races, the exact type-locality of Shelley's *Parus xanthostomus* requires to be ascertained. Shelley, *Bull.Brit. Orn.Club*, vol. i, 1, 1892, p. 6, gives the provenance of his new species, *P.xanthostomus*, as "Zambesia", but in his *Birds of Africa*, vol. ii, 1900, p. 236, states that the *Type* was "procured by (Dr.) Bradshaw during his travels between the Limpopo and Zambesi rivers, and when it passed into my (Shelley's) collection I noted it as coming from the Zambesi on account of the number on the label attached to that specimen." The so-called Yellow-mouthed Tit is simply based on a juvenile example of *P.niger*, the "specific" characters being those of immaturity, but the name is available for the northern populations of the Black Tit with the ventral surfaces in females and juveniles sooty brown or slaty black, as revealed by the Grönvold coloured figure in the *Birds of Africa*, vol. ii, pl. x, fig. 1. Dr. Bradshaw travelled widely in the western parts of Southern Rhodesia and eastern and northern Bechuanaland, and struck the Zambesi R. valley on its middle reaches, probably near the present town of Livingstone, the Victoria Falls, or towards the Chobe-Zambesi confluence, but as far as can be ascertained never collected in the district of Zambesia, in the southern part of northern Portuguese East Africa. I believe, therefore, that we should restrict the type-locality of *P.n.xanthostomus* to the Victoria Falls sector of the Zambesi R. Irwin, *Bull.Brit.Orn.Club*, vol. lxxvii, 1, 1957, p. 9, shows that most of Bradshaw's birds were taken south of the Zambesi R., in the Makalaka country, in the south-west of present Southern Rhodesia, the skins not being labelled at the time of collecting. The unlabelled collection was sold as a job-lot from the "Zambesi R." and in the interests of stability in the nomenclature of *P.niger* subspp., I believe we should acknowledge that the *Type*



Parus niger Vieillot, *sens.strict.*, races

Upper series; Left ♂♂ *Parus niger niger* Vieillot
Right ♂♂ *Parus niger xanthostomus* Shelley

Lower series; Extreme left ♂♂ *Parus niger ravidus* Clancey
Centre left ♂♂ *Parus niger xanthostomus* Shelley
Centre right ♀♀ *Parus niger ravidus* Clancey
Extreme right ♀♀ *Parus niger xanthostomus* Shelley

In the upper series note greater extent of white over the wings in the case of *P.n.xanthostomus*. In the lower series, the extensive grey flanks and adumbrated abdominal stripe in *P.n.ravidus* ♂♂ should be noted. The light greyish ventral surface of ♀♀ *P.n ravidus* likewise shows up clearly in the photograph (centre right pair) when compared with *P.n xanthostomus* (extreme right). All specimens in Durban Museum collection.

(*Photo:* Dennis Cleaver)

of *P.xanthostomus* came from the Zambesi R. and not elsewhere. A series of females from riverine cover in the Victoria Falls area shows that this adjustment of the type-locality leaves the name available for the northern populations in which the female is predominantly sooty brown and not light bluish grey underneath.

The populations of the Black Tit can be arranged in three geographical races, the nomenclature, characters and ranges of which are as hereunder given:

(*a*) **Parus niger niger** Vieillot

Parus niger Vieillot, *Nouv.Dict.d'Hist.Nat.*, vol. xx, 1818, p. 325: "Africa". Type locality restricted to Sundays River, eastern Cape Province, *ex* Levaillant, *Hist.Nat.Ois.d'Afr.*, vol. iii, 1805, pl. 137, figs. 1 and 2 (La Mésange noire).

Male with head all round and entire upperparts deep Blackish Slate (Ridgway, *Color Standards and Color Nomenclature*, 1912, pl. liii) with distinct bluish sheen. Under-parts similar, but greyish over the caudad surfaces of the flanks, and under tail-coverts black, broadly fringed with white. Wings with lower lesser- and median-coverts white; secondary-coverts narrowly fringed and rather more broadly tipped with white; remiges edged with greyish white, the tertials broadly margined on outer webs with pure white.

Female much as in the male, but with a duller sheen to the upperparts, and with face and under-parts dull sooty brown, the breast laterally blackish (breast colouration about Mouse Grey or Deep Mouse Grey (pl. li). In pristine condition often with a leaden bloom.

Measurements: Wings of 15 Natal low elevation ♂♂ 82-85 (83.7), tails 69-73.5 (70.8) wings of 10 ♀♀ 76.5-81 (79.0), tails 64.5-71 (67.5) mm.

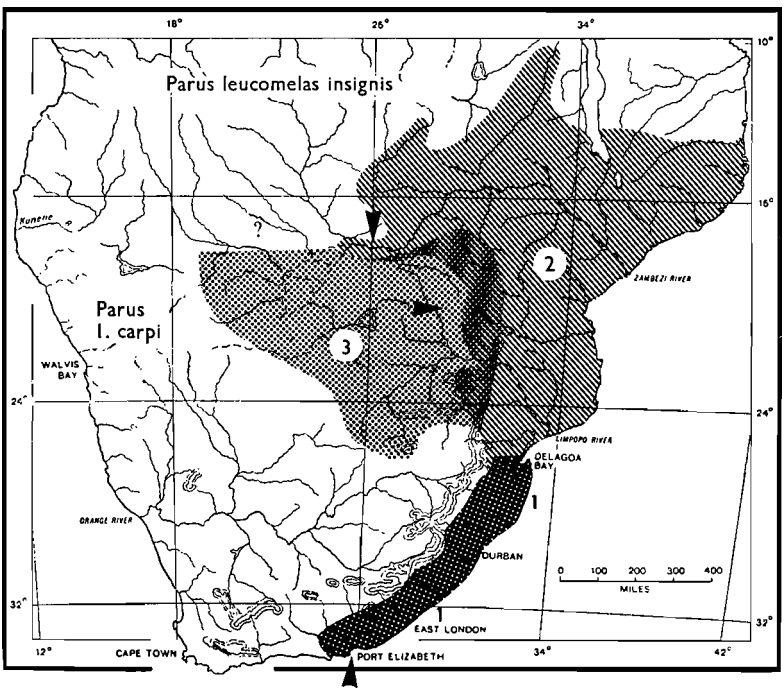
Material examined: 90. *Eastern Cape Province*, 38 (Fish River mouth, 4; Committees, Albany, 3; Grahamstown, 4; Debe Nek, 2; Kei Road, 2; Fort Jackson, 2; Bathurst, 3; Elliotdale, 1; Fort Beaufort, 2; East London, 4; Komgha, 1; Kei Bridge, 3; Peddie, 1; Cala, Tembuland, 1; Mt. Ayliff, 1; Ngqeleni, 1; Port St. Johns, 3). *Natal and Zululand*, 47 (near Scottburgh, 8; Nungwana Falls, Umbumbulu, 1; 10 m. S.W. of Richmond, 3; Ingeli Forest, near Harding, 1; Durban, 1; Inanda, Durban, 3; Hillcrest district, 8; Pietermaritzburg district, 14; Mooi River, 3; Estcourt, 1; Pongola R. at Candover, 2; Ingwavuma, Lebombo Mts., 1; Tschemula Pont, Pon-

gola R., 1). *S.E. Swaziland*, 5 (Lubuli, near Nsoko, 2; Sipofaneni, 3 (intergrades)).

Type: None. Based on the Levaillant reference cited.

Range: The eastern Cape Province from the valleys of the Sundays and Gamtoos Rivers, north-eastwards through Pondoland and East Griqualand to Natal, Zululand and the southern part of eastern Swaziland. Intergrades with *P.n.xanthostomus* in eastern Swaziland and the Maputo district, Sul do Save, Moçambique.

Remarks: This race shows some size variation in association with altitude, as revealed in a series of measurements of Natal birds. Coastal ♂♂ have wings 82-85, two adult males from Mooi River, at c.4,500 ft. a.s.l., having wings 87 and 89 mm.



Map II

Sketch-map showing the ranges of the three races of the Black Tit *Parus niger* Vieillot

1. *Parus niger niger* Vieillot
2. *Parus niger xanthostomus* Shelley
3. *Parus niger ravidus* Clancey

Type-localities are indicated by means of black arrowheads. The cross-hatching between "2" and "3" indicates zone of intergradation.

(*b*) **Parus niger xanthostomus** Shelley

Parus xanthostomus Shelley, *Bull.Brit.Orn.Club*, vol. i, 1, 1892, p. 6: Zambesia. Type-locality restricted to the Victoria Falls, Zambesi R., Northern/Southern Rhodesia border (see above).

Male and female in basic dress showing more white over the wings than in *P.n.niger*. White over lesser-coverts more extensive, and white edging and tipping to secondary-coverts broader, the white on the innermost bank of feathers so broad as to completely hide the black, forming a distinct white patch; in remiges, primaries and secondaries uniformly white on the margin of the outer web with the tertials, not distinctly greyish in contrast to the broad white lateral tertial stripe. Female inclined to be a little less dark sooty brown below in series.

Measurements: Wings of 20 ♂♂ 80-88 (84.7), tails 66.5-74.5 (71.5) wings of 20 ♀♀ 77-82 (79.9), tails 64-72.5 (68.3) mm. (eastern Transvaal, Moçambique and southern Nyasaland birds measured).

Material examined: 205. *Eastern Swaziland*, 12 (Big Bend area, 5; Stegi district, 7). *Southern Portuguese East Africa*, 22 (Bela Vista (intergrades), 4; Manhiça, 2; Chimonzo, Macia, 2; Panda, Inhambane, 9; Mzimbiti, near Beira, 2; Chineziwa, 60 m. N. of Beira, 1; Msussa, Zambesi R., 1; Messenguese, Zambesi R., 1). *Nyasaland*, 8 (Chididi Hills, 1; Chiromo, 2; Kanyimbe, Tangadzi, 2; Bwangu, Tangadzi, 1; Masona, Port Herald, 1; Mlakah Hill (not traced), 1). *Transvaal*, 23 (Newington, 20; Louws Creek, Barberton, 1; Hanglipberg at 24° 20′ S., 28° 35′ E., 2). *Southern Rhodesia*, 92 (Birchenough Bridge, 5; Chipinda Pools, 1; Sabi-Lundi confluence, 5; Banket, 1; Bindura, 1; Headlands, 1; Wedza, 2; Rusape, 3; Sabi R., 1; Hartley, 1; Sentinel Ranch, near Beit Bridge, 14; Selukwe, 7; Nuanetsi R., 12 (some near *P.n.ravidus*); Lonely Mine, 3; Gwelo R., 1; 30 m. N.W. of Que Que, 1; Ruenya R., Chikurro Res., 1; Chilo, Shashi R., 1; Urungwe R., 2; Ngadi, Semokwe Res., 1; Hwali R., 2; Redbank, 1; Victoria Falls, 12; Makwa, Zambesi R., 2; Nampini, Zambesi, 4; Chirundu, 3; Mlibisi-Siambolo confluence, 1; Gwaai Res., 3). *Northern Rhodesia*, 44 (Nangweshi, Barotseland, 1; Mashi, Barotseland, 2; Katima Mulilo, 1; Mambova, 2; Livingstone, 2; Sesheke, 1; Chiawa, 1; Feira, 2; Maweni, 1; Chiolola, 1; Kafue R. (mainly Chunga), 4; Mulanga, 1; Kalomo, 1; Nakabula, 2; Ngoma, 2; Choma, 3; Munyumbwe (16° 39′ S., 27° 47′ E.), 1; Namwala, 1; Lochinvar, 1; Rufunsa, 1; Chilanga, 5; Serenje, 2; Mpika, 3; Broken Hill, 1; Katete, 1; Fort Jameson, 1). *Northern Bechuanaland*,

4 (Kasane, Chobe R., 2 (21st October, 1953); Mabeleapudi, S.W. of L. Ngami, 2 (♂♀ dated 9th May, 1930. ? Wanderers). (*Note:* Some of the samples from Southern Rhodesian localities clearly show the influence of *P.n.ravidus*, while in the case of ♂♂ it has not always been possible to allocate worn or badly prepared specimens with certainty as to race).

Type: In the British Museum (Nat. Hist.), South Kensington, London. Formerly in the Shelley collection *ex* Bradshaw.

Range: Extends from north-eastern Swaziland and the eastern and northern Transvaal to the midlands and eastern districts of Southern Rhodesia, Moçambique from Delagoa Bay northwards to about the Lurio River in the north of the territory, southern Nyasaland, and Northern Rhodesia (mainly in the valleys of the Luangawa, Kafue and Zambesi), ranging to west Barotseland, Northern Bechuanaland on the Chobe (Kasane), and, presumably, the adjacent districts of the Caprivi Strip and Angola in riverine cover.

Remarks: Intergradation between *P.n.xanthostomus* and *P.n. ravidus* occurs over a wide area in Matabeleland, and greyish ventralled females occur in populations as far east as the middle Nuanetsi R. The influence of *P.n.ravidus* is also observable in the populations of south-western Northern Rhodesia in dry woodland associations as opposed to riverine cover, and there may be some interdigitation or fragmentation of the ranges of the races *P.n. xanthostomus* and *P.n.ravidus* along ecological lines in this region.

As in the case of Natal *P.n.niger*, there is some size variation within the present race in association with altitude, eastern littoral males reaching the upper limits of wing-length at 86, whereas western plateau birds occasionally range to as much as 92 mm. There is also some variation in bill mass, lower Zambesi R. and southern Nyasaland birds having rather finer and less swollen bills in series when compared with high elevation examples, but wide overlap in both variables precludes any formal subspecific recognition being accorded such variation.

(*c*) **Parus niger ravidus,** subsp. nov.

Type: ♀, adult. Mkien Farm at 19° 57′ S., 28° 36′ E., near Bulawayo, Southern Rhodesia. 14th July, 1964. Durban Museum Expedition. In the collection of the Durban Museum. D.M.Reg. No. 16359.

Diagnosis: Similar to *P.n.xanthostomus* in the extent of the white in the wings, but which is not always quite so well developed, and like the plateau populations in size, *i.e.*, ranging larger in size than the littoral populations and *P.n.niger*, but male differs from either of the aforementioned taxa in having a greater amount of greyish wash to the flanks and lateral body surfaces, the black over the medial and caudad ventral surfaces tending to form an abdominal stripe. Subspecific differences better marked in the female, which has the face and entire under surface distinctly lighter and more bluish or leaden grey in colour, less brownish or sooty than in either *P.n.xanthostomus* or *P.n.niger*. (Neutral/Deep Neutral Gray (pl. liii)).

Measurements: Wings of 20 ♂♂ 84-91.5 (87.3), tails 74-78 (75.6), wings of 10 ♀♀ 81-85.5 (83.1), tails 71-75 (73.3) mm.

Material examined: 102. *Western Southern Rhodesia*, 75 (Bulawayo district, 24; Syringa, 6; Matopos, 11; Sawmills, 2; Umguza Forest Reserve, 3; Nkai, 1; Fort Tuli, 1; Turgwe R., 2; Shangani R., 1; Matetsi, 1; Charama Plateau, c. 15-40 m. W. of Gokwe, 17; Malimasimbi, W. of Charama Plateau at 18° 20′ S., 28° 12′ E., 7). *Bechuanaland Protectorate*, 19 (Bathoen Dam, Kanye, 1; Francistown, 3; Nata, 3; Jehundi Well, 1; Sedibe, 1; Old Tati, 1; Tsane, 4; Kedia, Lake Dow, 1; Maun, 1; Toteng, 1; Nokaneng, 1; Tsodilo Hills, 1). *Transvaal*, 8 (Crocodile R., Pretoria, 1; Oliphants R., Pretoria, 1; Waterberg, 4; Ellisras, 1; Derdepoort at 24° 53′ S., 26° 10′ E., 1).

Measurements of the Type: Wing (flattened) 83, culmen from base 13, tarsus 19.5, tail 76 mm.

Range: From south-eastern Angola and the adjacent Caprivi Strip and north-eastern South-West Africa to Ngamiland, south-eastwards to the Makarikari and Lake Dow areas and the eastern districts of Bechuanaland, south certainly as far as Kanye, the dry western Transvaal, and low rainfall areas of western Matabeleland. In the north of Matabeleland east to the Sebungwe in dry *Brachystegia* woodland on Kalahari sand. Intergrades with *P.n.xanthostomus* to the east and north-east of its stated range.

Remarks: The female depicted in Roberts, *Birds of South Africa*, 1940, pl. xxxiv, is based on an example of *P.n.ravidus*.

The trinomial name is from the Latin *ravidus*, tending to greyness,

greyish, in allusion to the greyness of the ventral parts, particularly in females.

Note

For the purpose of this revision, the forms of the *Parus leucomelas* Rüppell group of black tits are considered to be specifically discrete from those assembled in *P.niger, sens.strict.* In south-central and south-western Africa *P.l.insignis* Cabanis, 1880: Malanje, Angola, and *P.l.carpi* Macdonald and Hall, 1957; Warmquelle, Kaokoveld, South-West Africa, replace *P.niger* subspp. to the west and north. In the forms of the *P.leucomelas* assemblage the sexes are virtually alike, whereas in *P.niger* the female is greyer or browner over the face and entire ventral surface, which parts are glossed blue-black in female *P.leucomelas* subspp. There is also a reduction or loss of white in the tail, and in *P.l.carpi* a marked reduction in size and bill mass.

In proposing *P.l.carpi*, Macdonald and Hall, vide *Ann.Transv. Mus.*, vol. xxiii, 1, 1957, pp. 32, 33, describe it as a race of *P.niger*, though it is clearly a member of the *P.leucomelas* coterie of races, the under-parts of females being glossed black in fresh condition, though the face in two females in the Durban Museum is distinctly browner than either the upper- or under-parts. Traylor, *Check-list of Angolan Birds*, 1963, p. 126, following Hall, *loc. cit.*, continues to keep *carpi* as a race of *P.niger* and not *P.leucomelas*, though the form rightly belongs with the *P.leucomelas* group.

3. ON THE SOUTH AFRICAN RACES OF THE LONG-BILLED PIPIT *ANTHUS SIMILIS* JERDON

When I reviewed the South African races of the Long-billed Pipit *Anthus similis* Jerdon in 1956 (*vide Durban Mus.Novit.*, vol. iv, 17, 1956, pp. 284-288) limited material compelled me to follow convention in placing the Southern Rhodesian populations as *A.s.nicholsoni* Sharpe, 1884: Sigonell=Makwassi, near Wolmaransstad, south-western Transvaal (see also Smithers *et al.*, *Check List Birds Southern Rhodesia*, 1957, p. 97). In the same revision, I placed a single dark coloured specimen from Gemsbok Pan, Bechuanaland Protectorate, as representing *A.s.nyassae* Neumann, 1906: between Sangesi and Songea, Southern Province, Tanganyika, noting that White and Winterbottom, *Check List Birds Northern Rhodesia*, 1949, p. 77, had suggested that Barotseland birds were deserving of further

study. During the course of a collecting trip to Southern Rhodesia in June-August, 1964, material of *A.similis* was collected in *Brachystegia* woodland on the Charama Plateau, in the Gokwe district, where it was noted that in Southern Rhodesia *A.similis* is purely a woodland bird, and not a species of stony hillsides and grassland with outcrop rock and stunted bushes as in South Africa. A study of the material collected by the Durban Museum party at Gokwe shows that this marked difference in the biomes inhabited by the topotypical population of *A.s.nichosoni* and those of Southern Rhodesia and, presumably, elsewhere in adjacent zoogeographical South Africa, *e.g.*, northern Bechuanaland, is reflected in the existence of good subspecific differences. The Southern Rhodesian populations must be removed from *A.s.nicholsoni* and placed in a new race, which may be known as

Anthus similis frondicolus, subsp. nov.

Type: ♂ adult. Charama Plateau, c. 15 W. of Gokwe, north-western Southern Rhodesia. 22 July, 1964. Collected by Durban Museum Expedition. In the collection of the Durban Museum, D.M. Reg. No. 16677.

Diagnosis: Similar to *A.s.nicholsoni* of south-central South Africa but differs in having the upper-parts distinctly darker and colder (somewhat resembling *A.s.petricolus* Clancey of the mountains of the southern and eastern Cape and Basutoland), the feather centres of the mantle being about Sepia (pl. xxix), the pallid edges Isabella Color (pl. xxx), and with the rump and upper tail-coverts much less ochraceous or reddish, being about Light Brownish Olive (pl. xxx), as against Tawny-Olive (pl. xxix) in *A.s.nicholsoni*. Face and throat whiter, less buffy, the dark streak from the lores to the upper auriculars darker, and the supercilium distinctly whitish. On underparts generally lighter and less buffish or ochraceous washed from below the zone of spotting across the breast to the crissum. In the tail, the buffy white wedge-shaped mark on the inner web on the outer two pairs of rectrices is much more extensive, and in the wings, the pallid edging and tipping to the coverts and remiges is lighter, less deeply ochraceous. Bill-length distinctly shorter, thus: bills from skull in 4 ♂♂ 17-18 (17.4), 2 ♀♀ 17, 17.5, as against 19-21 (20.2) in 12 ♂♂ of *A.s.nicholsoni*, 6 ♀♀ 18-20 (19.4) mm.

A.s. nyassae, described from southern Tanganyika, is redder and more saturated throughout than *A.s.frondicolus*, redder than even *A.s.nicholsoni*, but is similarly short-billed. *A.s.leucocraspedon*

Reichenow, 1915: Windhoek, South-West Africa, is much paler and more vinaceous or ochraceous tinged above than *A.s.frondicolus.* but is long-billed like *A.s.nicholsoni;* the breast spotting is vestigial,

Measurements: Wings of 4 ♂♂ 92-99 (96.2), culmens 17-18 (17.4), tails 71-77.5 (73.9), wings of 2 ♀♀ 89.5, 91, culmens 17, 17.5, tails 68.5, 70.5 mm.

Material examined: A.s.frondicolus, 8; *A.s.nicholsoni*, 20; *A.s. petricolus*, 25; *A.s.leucocraspedon*, 20; *A.s.nyassae*, 2. *A.s.pallidi-tinctus* Clancey not examined in present study.

Measurements of the Type: Wing 97, culmen 17.5, tarsus.26, tail 71 mm.

Range: A woodland form, found characteristically in *Brachy-stegia* associations, of the plateau of Southern Rhodesia and northern Bechuanaland, presumably extending further to the north-west in the Caprivi Strip, South-West Africa, and adjacent territories. Replaced to the south of its range by *A.s.nicholsoni*, to the north by *A.s.schoutedeni* and *A.s.nyassae*, and to the west by *A.s.leuco-craspedon*. The ecological requirements of *A.s.frondicolus* are so dis-similar to those of the first and last named that intergradation between them may not exist.

Remarks: The paratypical series of *A.s.frondicolus* was taken in a patch of cleared land in *Brachystegia* woodland on Kalahari sand, where it was common, occurring freely alongside *Anthus vaalensis chobiensis* Roberts.

The name chosen for the new taxon is descriptive of its predilection for the leafy cover of woods.

In the light of the above description, our racial arrangement of the populations of the Long-billed Pipit in zoogeographical South Africa requires to be somewhat modified. The extensive new material gathered since 1956 has also shown the necessity of adjustment being made to the ranges of some of the forms admitted in my original paper. The characters and ranges of the South African sub-species of *A.similis* may now stand as hereunder given:

(*a*) **Anthus similis petricolus** Clancey, 1956: Mamathe's, near Teyateyaneng, Basutoland.

Darkest race. Upper-parts with feather centres deep Sepia, the paler fringes Saccardo's Umber (pl. xxix). Under-parts Pinkish Buff (pl. xxix), the lower throat and breast heavily streaked with blackish brown spots. Wings of ♂♂ 95-101, ♀♀ 91.5-97.5, culmens of ♂♀ 18.5-21 mm.

Range: The western and south-western Cape, eastwards through the southern mountains of the province to East Griqualand, Eastern Cape, Basutoland, the interior and upper districts of Natal and adjacent districts of the Orange Free State and south-eastern Transvaal.

(*b*) **Anthus similis nicholsoni** Sharpe, 1884: Sigonell=Makwassi, near Wolmaransstad, south-western Transvaal.

Lighter and more ochraceous tinged on the upper-parts than *A.s.petricolus*, the feather centres lighter sepia, the fringes about Tawny-Olive, which colour overlies the whole rump and upper tail-coverts. On under-parts deeper and more ochraceous-buff in series, this suffusion extending over the face. Wings and tail lighter. Size similar. Wings of ♂♂ 94-102, ♀♀ 92-97.5, culmens of ♂♀ 18-21 mm.

Range: Extends from Bushmanland and the northern Karoo districts of the Cape (south to about De Aar) to the northern Cape in parts of Gordonia, the Asbestos Mountains and Kuruman district east to the Vaal, dry western and northern Orange Free State (intergrading with *A.s.petricolus* near Glen and Bloemfontein), the Transvaal and western Bechuanaland Protectorate. Perhaps ranging to parts of southern Matabeleland in the middle Limpopo R. drainage, and reaching Griqualand East (Mt. Currie, Kokstad, and Matatiele) in winter as a non-breeding visitor. Intergrades to the south of its range with *A.s.petricolus*, and to the north-west with *A.s.leucocraspedon* (intergrading series from Kuruman).

(*c*) **Anthus similis leucocraspedon** Reichenow, 1915: Windhoek, Damaraland, South-West Africa.

Still lighter coloured than *A.s.nicholsoni*, in fresh dress often quite vinaceous or sandy tinged on the upper-parts, the feather centres less dark (mantle feathers about umber, edged with Ochraceous-Buff (pl. xv)). On under-parts lighter, less saturated buff, than *A.s.nicholsoni*, and with the speckling over the breast greatly reduced

and usually vestigial. Size about the same, but bill often a little longer. Wings of ♂♂ 94-99, ♀♀ 92-96, culmens of♂♀ 19.5-22 mm.

Range: The mountains of Damaraland, South-West Africa, south through Great Namaqualand and western Bechuanaland to the lower Orange River and north-western Cape, and in the northern Cape in northern Gordonia east to about Kuruman, where it meets *A.s.nicholsoni*.

(*d*) **Anthus similis palliditinctus** Clancey, 1956: Zesfontein, Kaokoveld, north-western South-West Africa.

Still lighter and rather greyer above than *A.s.leucocraspedon*, the mantle without the sandy or vinaceous suffusion. Wings of 2 ♂♂ 96, 97, culmens of♂♀ 19.5-20.5 mm.

Range: Known at present only from the Kaokoveld, South-West Africa. Almost certainly extends northwards into south-western Angola and parts of Ovamboland.

(*e*) **Anthus similis frondicolus** Clancey, 1964: Charama Plateau, W. of Gokwe, north-western Southern Rhodesia.

Darker and colder in colour above than *A.s.nicholsoni*, the rump greyish umber, not Tawny-Olive. Face and throat whiter, the dark streak from the lores to the auriculars more prominent and supercilium whiter. On underside whiter from below breast streaking to crissum. Wings and tail less ochraceous tinged, and the outer two pairs of tail-feathers with more extensive buffy white over the inner webs. Size similar to *A.s.nicholsoni*, but bill distinctly shorter. Wings of ♂♂ 92-99, ♀♀ 89.5, 91, culmens of ♂♀ 17-18 mm.

Range: A woodland form currently known to extend from the plateau of Southern Rhodesia (above 3,000 ft. a.s.l., *vide* Smithers *et al.*, *loc. cit.*, p. 97) to northern Bechuanaland, and may be expected to range into all adjacent territories. North of its range replaced by *A.s.nyassae* and *A.s.schoutedeni* Chapin, 1937: Kwamouth, on the middle reaches of the Congo River, Congo.

Note

The ranges of *A.s.nyassae* and *A.s.schoutedeni* are by no means clear from the literature, which is largely contradictory insofar as the subspecific status of the Northern Rhodesian populations is concerned, and White, in Peters' *Check-List Birds of the World*, vol. ix, 1960, p. 155, places the latter in the synonymy of the

former, which reflects the view followed in Benson and White, *Check List Birds Northern Rhodesia*, 1957, p. 70. On the other hand, both Chapin *Birds Belgian Congo*, part iii, 1953, pp. 77-80, and Traylor, *Check-list of Angolan Birds*, 1963, p. 172, uphold *A.s. schoutedeni* as being distinct from *A.s.nyassae*, the latter and more recent author giving its general range as "Middle Congo to Angola and northwest Northern Rhodesia".

I have not access to sufficient series to review this matter, but the populations grouped in *A.s.nyassae* and *A.s.schoutedeni* by the aforementioned workers are all redder and more saturated in general colouration than *A.s.frondicolus*, being forms of high rainfall areas, the latter less strongly buffish below than the former, though some of the characters attributed to *A.s.schoutedeni* are likewise found in *A.s.frondicolus*, *e.g.*, short bill, whiter ventral parts and long wedge-shaped whitish area to the inner web of the penultimate rectrix. Topotypical *A.s.schoutedeni* is, judging by the wing-measurements given by Chapin, *loc. cit.*, namely 83-92 mm., distinctly smaller than *A.s.frondicolus*, which in males has wings 92-99 mm.

Traylor, *Bull.Brit.Orn.Club*, vol. lxxxii, 4, 1962, p. 77, has recently proposed *Anthus moco* from Mt. Moco, Angola, which is closely allied to forms of *A.similis*, and is confined to the summit of Mt. Moco. Apparently not a woodland form, occurring on bare, short-grass slopes.

4. RACIAL VARIATION IN THE FOREST CANARY *SERINUS SCOTOPS* (SUNDEVALL)

Following Roberts, *Ann.Transv.Mus.*, vol. x, 3, 1924, p. 186, it is customary to admit two racial divisions of the Forest Canary, a species of fringillid peculiar to the forested districts of southern and south-eastern Africa, these being *S.s.scotops* (Sundevall), 1850: Pietermaritzburg, Natal, and *S.s.transvaalensis* Roberts, 1940; Woodbush Forest Reserve, Zoutpansberg, northern Transvaal, the last named never really formally described. In his pioneer work, Roberts believed the heavily spotted north-eastern populations to represent the nominate race, and described the southern birds as new under the name *S.s.pondoensis* Roberts, 1924: "Natal and to Knysna", but *Type* from Port St. Johns, Pondoland. Sclater, in *Syst.Av.Aethiop.*, part ii, 1930, p. 816, treats the species binominally, denying the racial divisions of Roberts, and places *S.s.pondoensis*

in synonymy. Roberts, in his own *Birds of South Africa*, 1940, p. 365, leaves *S.s.pondoensis* in the synonymy of the nominate race, but follows his 1924 findings in recognising two races, naming the Transvaal highland populations as a new subspecies (*S.s.transvaalensis*). This arrangement of the populations of the Forest Canary in two races is admitted by Skead *et al.*, *Canaries, Seedeaters and Buntings of Southern Africa*, 1960, pp. 40-43, and McLachlan and Liversidge, *Roberts' Birds of South Africa*, 1957, p. 461, but again denied by Mackworth-Praed and Grant in the uncritical *Birds of the Southern Third of Africa*, vol. ii, 1962, p. 684. A recent study of the variation shown by this canary throughout its attenuated range carried out in the Durban Museum, utilizing pooled specimen resources of one hundred skins from the South African Museum, Cape Town, the East London Museum, the Durban Museum, the Natal Museum, Pietermaritzburg, the Transvaal Museum, Pretoria, and the National Museum of Southern Rhodesia, Bulawayo, shows that three races and not two must be admitted in our formal grouping of the populations into subspecies.

Variation in the Forest Canary affects the intensity of the colouration and the degree and extent of the ventral striations. The paratypical material of *Crithagra scotops* Sundevall was collected by the Swedish traveller-cum-naturalist, J. A. Wahlberg, near Pietermaritzburg, Natal, in August, 1841, and of the topotypical population limited but adequate material is currently available. The nominate race of *S.scotops* as understood on the basis of these topotypes is characterized by the yellowish olive-green upper-parts, the dark feather centres moderately well developed. On the under-parts the olive breast patch of the male is almost plain, but only moderately longitudinally streaked in females, but in both sexes the flanks and lateral body surfaces are fairly heavily striated with blackish, and the wing-length (both sexes) is 65-70 mm. Populations referable to the nominate race on these characters range from the temperate evergreen forests of western Zululand and Natal, south to Pondoland, East Griqualand and the eastern Cape Province.

While the populations separated as *S.s.transvaalensis* have not been adequately collected, and the material currently available is limited, that available does confirm the characters given by Roberts. On the upper-parts *S.s.transvaalensis* is like *S.s.scotops*, but below the lower throat and breast are distinctly spotted, less finely streaked, this also evident in the male, and the flanks and lateral body surfaces are also more heavily striped. There is no difference

in size, the wings of the sample available measuring 65.5-69 mm. The range of *S.s.transvaalensis* is not well-known, but material available indicates that it extends from about Barberton in the south-eastern Transvaal northwards to the Zoutpansberg. Like some other forest endemics of this part of south-eastern Africa, such as *Pogonocichla stellata transvaalensis* (Roberts) and *Erythropygia signata oatleyi* Clancey, it may also range south through western Swaziland to the Ngome and associated forests of the Louwsburg-Nongoma area of northern Zululand, which general area is still poorly collected.

To the west of the south-western populations of the nominate race occur others resident in the evergreen forests of the winter rainfall region of the south-western and southern Cape. Material studied from this area, from Swellendam, the Jonkersberg and Knysna, reveals that these occidental populations are darker and less yellowish green on the upper-parts, the dark feather centres more fully developed than in either *S.s.scotops* or *S.s.transvaalensis*. On the underside males show rather more dilute yellow over the mid-throat and belly, and the olive breast patch is darker. Females on the other hand, show a strong dusky or greyish intrusion to the chin and throat, the yellow of the ground is markedly dilute, and the breast is darker and greyer than in *S.s.scotops*. The darkness and dullness of the birds of the winter rainfall region seem to be sufficiently well marked in the samples available as to justify the creation of a third subspecies, which is formally introduced and described below under the name *S.s.umbrosus* mihi, subsp. nov. There is no difference in size.

The populations of the Forest Canary can be arranged in three subspecies, the nomenclature, characters and ranges of which are given below:

(*a*) **Serinus scotops umbrosus,** subsp. nov.

Type: ♂, adult. Nature's Valley, Knysna, southern Cape Province. 30 April, 1958. Collected by E. Hayden. In the collection of the East London Museum. E.L.Mus. No. 5474.

Diagnosis: Similar to *S.s.scotops*, as described hereunder, but both sexes darker green above (duller than Serpentine Green (pl. xvi)), less bright yellowish olive-green, the male with the rump streaked as in the female, not almost plain, and less brightly yellowish; feather centres larger and deeper black, imparting a more heavily

streaked effect. On face, short yellow supercilium duller and less extended caudadly. On underside, male with the yellow throat spot paler in series, and also paler, more dilute yellow over the centre of the lower breast, abdomen and crissum, but breast patch darker and duller (about pure Serpentine Green). *Female.* More dusky or greyish steaked over the chin and upper throat, the yellow throat spot more constricted or obscured; yellow of throat spot and of the lower breast, abdomen and crissum paler, but breast darker, though streaking about the same as in *S.s.scotops*. Averaging a little smaller in size.

Measurements: Wings of 6 ♂♂ 64-69 (66.1), tails 50-52.5 (51.1), wings of 6 ♀♀ 64.5-67.5 (66.1), tails 49-53.5 (51.1) mm.

Material examined: 20. *Southern Cape,* (Grootvadersbosch, Swellendam, 2; Jonkersberg, 2; Ruiterbos, Mossel Bay, 1; Knysna and district, 13; Storms River, 2).

Measurements of the Type: Wing 64, culmen from base 13.5, tarsus 17, tail 51 mm.

Range: The south-western Cape Province from about Caledon, eastwards in the forested districts of the southern mountains to George, Knysna and Plettenberg Bay. The influence of this dark race is observable in a sample from coastal forest at Alexandria (East London Mus. coll.), but a good panel of skins from Patensie, on the Gamtoos River, is applicable to the nominate race, though even here a certain darkening of the dorsal surfaces is observable in some.

Remarks: The name bestowed on this new subspecies is from the Latin *umbrosus*, shady, dusky, in allusion to the dark, suppressed tones of the form.

(*b*) **Serinus scotops scotops** (Sundevall)

Crithagra scotops Sundevall, *Oefv. K.Sv.Vet.-Akad. Förhandl.*, vol. vii, 1850, p. 98: Caffraria inferiore. *Type* from Pietermaritzburg, Natal.

Synonym: Serinus scotops pondoensis Roberts, *Ann.Transv.Mus.*, vol. x, 3, 1924, p. 186: "Natal and to Knysna"; *Type* from Port St. Johns, Pondoland, eastern Cape Province.

Male adult with entire upper-parts bright yellowish olive-green (about Warbler Green (pl. iv)), the feathers centres blackish fuscous, forming striations, though rump in present race is almost plain and inclined to be brighter yellow than remainder of surface (Pyrite Yellow (pl. iv)). Before and above the eye a short yellow supercilium; distal portion of face blackish, grading to yellowish olive-green proximally. Below, chin black; centre of throat bright Lemon Chrome (same pl.); across the lower throat and breast a band or patch of dull Pyrite Yellow, usually faintly streaked with dusky; rest of under-parts bright Lemon Chrome, the lateral surfaces and flanks heavily streaked with blackish. Wings and tail blackish brown, the feathers edged and tipped Warbler Green, the tipping to the secondary-coverts forming a wing-bar. *Female.* Like the male but with a reduced and whiter supercilium, and with the rump as the back. Greyer, less black, over the face and chin, rather less vibrant yellow below, the breast more distinctly streaked, but the lateral surfaces and flanks about the same.

Measurements: Wings of 10 ♂♂ 66-69 (68.0), tails 51-53.5 (52.1), wings of 10 ♀♀ 65-70 (66.9), tails 49-53.5 (50.8) mm.

Material examined: 74. *Eastern Cape Province*, 57 (Patensie, 10; Alexandria forest, 4; Port Elizabeth, 1; Grahamstown, 1; Committees Drift, 1; Port Alfred, 1; East London district, 10; Need's Cape, King William's Town, 2; Debe Nek, 2; Inthloyana, Elliotdale, 1; Kei Bridge, 1; Tonti forest, Transkei, 1; Kambi forest, 20 m. N. of Umtata, 1; Mt. Ayliff, 2; Ngqeleni, W. Pondoland, 2; Port St. Johns, 17). *Natal*, 13 ("Natal", 1; Ingeli forest, Umzimkulu-Kokstad, Alfred County, 2; Pietermaritzburg, 5; Donnybrook, 2; Hillcrest, 1; Pinetown, 1; Dargle, 2). *Southern Transvaal*, 2 (Zuurbron).

Range: From east of the range of *S.s.umbrosus* from about the Gamtoos R., through the eastern Cape to Pondoland and East Griqualand, and in Natal (absent from most districts below 1,500 ft. a.s.l., though taken as a winter visitor on the coast by the Woodward brothers many years ago), and the western districts of Zululand in temperate evergreen forest; also to the south-eastern Transvaal (Wakkerstroom and Zuurbron).

Remarks: Skead *et. al., loc. cit.*, record that the *Type* is a mounted bird in the Naturhistoriska Riksmuseum, Stockholm. It was collected by J. A. Wahlberg, probably about the time he assisted in laying out the city of Pietermaritzburg for the Boers, and was taken in or near that centre on 11 August, 1841.

(*c*) **Serinus scotops transvaalensis** Roberts

Serinus scotops transvaalensis Roberts, *Birds of South Africa*, 1940 p. 365; "eastern Transvaal to Zoutpansberg". *Type* from Woodbush Forest Reserve, Zoutpansberg, northern Transvaal.

Similar to nominotypical *S.scotops*, as defined above, but differs in both sexes in having the lower throat and breast with the dark feather centres greatly developed, resulting in a more heavily spotted facies, this condition especially marked in the female; lateral body surfaces and flanks also more heavily streaked. Averaging a little smaller in size than *S.s.scotops*.

Measurements: Wings of 2 ♂♂ 68.5, 69, tails 48.5, 51, wings of 4 ♀♀ 65.5-67.5 (66.6), tails 47-51 (49.7) mm.

Material examined: 6. *Eastern and northern Transvaal* — Barberton, 1; Groot Spelonken, 1; Woodbush, 4.

Range: Highland evergreen forest from about Barberton, northwards to the Zoutpansberg, northern Transvaal. Conceivably ranges south in similar habitat through western Swaziland to the Ngome and associated forests in the Louwsburg/Nongoma district of northern Zululand (which area shows strong faunistic affinity with the Transvaal highlands).

Remarks: The *Type*, which has kindly been loaned to me by Mr. O. P. M. Prozesky for this revision, was taken by F. Vaughan-Kirby in the Woodbush Forest Reserve on 17 January, 1908. In the Transvaal Museum collection, No. 3954.

The only material of *S.s.transvaalensis* available is still the paratypical material of Austin Roberts, and it is highly desirable that a fresh series be brought together.