DURBAN MUSEUM
Novitates
ISSUED BY THE DURBAN MUSEUM, DURBAN, SOUTH AFRICA

VOL. IX, PART 10 ISSUED 24TH SEPTEMBER, 1971

GEOGRAPHICAL VARIATION IN THE ALPINE SWIFT *APUS* (*TACHYMARPTIS*) *MELBA* (AVES: APODIDAE)

by

R. K. BROOKE
(Salisbury, Rhodesia)

Introduction

As for *Apus affinis* (J. E. Gray) (Brooke, 1971a), geographical variation as a whole has not been considered in *Apus melba* (L.) since Hartert's work was published in vol. 16 of the *Catalogue of Birds in the British Museum*, in 1892. *A. melba*, known as the Alpine or Great Swift, breeds in mountainous areas in Europe north to the Alps, locally in Africa (Mahgreb, Ethiopia to northern Tanzania, and South Africa to south-western Angola), Malagasy, and south-western Asia to Kazakhstan and Ceylon. This paper examines such variation throughout the species' range but with particular reference to the Ethiopian Region; Abdulali (1965) has recently reviewed the position in the Indian Sub-Region. Geographical variation in this swift affects chiefly the shade of brown, the breadth of the brown breast-band and concomitantly the size of the white gular patch, the lengths of wing and culmen, weight, and the degree of emargination of the outermost rectrices. Attention is given to defining ranges in the light of present knowledge. No new forms are proposed, but some not always recognized by other workers are supported. As in my previous papers on swifts, delta-length means the distance between the tips of the fourth and fifth rectrices when the tail is held closed. Most of the work on which this paper is based was done while holding a Frank M. Chapman memorial grant from the American Museum of Natural History, New York. As before, I am obliged to the workers and institutions listed in Brooke (1969a, 1970a, 1971a) for facilities for study and for the loan of material.

The darkest races in *A. melba* are *willsi* in Malagasy and *bakeri* of

Ceylon, both forms of high rainfall areas, and the palest are *tuneti* from Algeria to Iran and Kazakhstan, and *archeri* of northern Somalia, both in semi-desert areas. The intermediate races, *melba* in Europe, Anatolia, the Caucasus and Morocco, *africanus* in tropical Africa east of 5°E. except where the next two races and *archeri* occur, *marjoriae* in South-West Africa, *maximus* on Ruwenzori, *nubifuga* in the Himalayas, and *dorobtatai* in western peninsular India occupy areas of intermediate climate. On a climatic basis *marjoriae* should be paler and *maximus* should be darker than they are. A narrow breast-band is found in *melba*, *tuneti*, *archeri*, *nubifuga*, *marjoriae*, *willsi* and *bakeri*, whereas it is broad in *africanus*, *maximus* and *dorobtatai*. The long-winged races are *melba*, *tuneti* and *maximus*, while *nubifuga* and *africanus* are intermediate, and *bakeri*, *dorobtatai*, *willsi* and *marjoriae* short winged. Culmen length varies little, the shortest being in *willsi*, but in *maximus* it is absolutely longer than in any other race Particularly emarginate fifth rectrices are found in *tuneti* and *willsi* Data on weight are as yet inadequate, but it is apparent that *maximus* is nearly twice the weight of the lightest population, *i.e.*, Angolan *africanus*. Individual specimens are sometimes difficult to place racially owing to the degree of individual variation and the overlaps in mensural characters, and comparative series are usually essential for racial determinations.

Despite the marked degree of attenuation or emargination of the fifth or outermost rectrix between juvenals and adults (Brooke, 1969b) there is little difference in delta-lengths, a situation not previously noted in Old World Apodini. Sexual dimorphism in wing-length is negligible.

Problems in Indian Distribution

Racial variation has been recently discussed by Abdulali (1965) in respect of the Indian Sub-Region. In addition to winter visiting *melba* and *tuneti*, he recognizes *nubifuga* breeding in the Himalayas and its foothills, an unnamed population (resembling by his account *marjoriae* of South-West Africa) in Saurashtra, a new race, *dorobtatai*, in the Western Ghats and the Bombay Deccan, and *bakeri* in Mysore and Ceylon. Unfortunately, I have not seen the same material. Based on a study of the material in New York coupled with a contemporary critical study of his paper, I conclude that the occurrence of *melba* is unproved. The alleged specimen was taken on 4 September when *melba* is still on its European breeding grounds. The occurrence of *tuneti* is more probable, as it only has to come from the lands north and west of the Indus drainage, and it should be accepted as occurring. *A. m. nubifuga* is a fairly dark, narrow breast-banded form of the Himalayas which migrates south

into the range of *dorobtatai* (see Table 1). The Saurashtra form should be named, presumably after its discoverer, since it was he who first drew attention to its distinctness. I have not seen material so cannot formally describe it. The four Mysore specimens in New York should be placed with *dorobtatai*, of which New York has a near topotype, an adult female from Ahwa in the Dangs District. The Mysore birds are slightly smaller and darker than northern *dorobtatai*, but do not approach the dark colour and narrow breast-band of *bakeri* which I do not believe occurs outside Ceylon, a view shared by Vaurie (1959).

I did not measure the width of the breast-band as this varies with the style of preparation of specimens, some having a very contracted or puffed breast and others having an elongated breast. This is shown by the great ranges given by Abdulali (1965) for this character, *e.g.*, 11–29 and 17–37 mm. Such a measurement would only have significance when comparing series prepared by the same hand or school. However, in series the character is readily apparent; see also C. W. Benson's comments quoted under *marjoriae* below.

Brooke (1969b) has shown that in all Old World Apodini, *sensu* Brooke (1970b), there is an increasing emargination of the outermost rectrix with age, and that by this means adults and juvenals can be readily separated, and that immature specimens can also be distinguished in this way in a few species. Abdulali (1965) has not appreciated this as an age character, apparently because the degree of emargination varies racially in *A. melba*, being most marked in *tuneti* and *willsi*.

Synopsis of the Races

In the following synopsis of races, all of which I have examined, detailed localities are given only where it assists in defining boundaries or in the case of localized forms. I have seen material from the places named except where an authority is cited. Races are dealt with starting in the north-west and working round to the south-west.

(*a*) **A. m. melba** (L), 1758: Gibraltar, with synonym *A. m. obscurus* Trischitta, 1939: Sardinia, is a moderately dark, long-winged form (see Table 2) with a narrow breast-band. It may be distinguished from *tuneti*, which breeds to the south and east of its range, only by its darker colour. For distinctions from *africanus* see under that race below. The populations of Sardinia and Crete are intermediate between these two races, but since the distinctions are not great it would seem inadvisable to name them, despite the fact that they are confined to islands and probably seldom interbreed with mainland, Corsican or Cypriot populations.

Vaurie (1965) regards Moroccan breeding birds as *tuneti* despite Hartert's (*op. cit.*) view that they are nominate *melba*. The type-locality of *melba* is Gibraltar, and it seems unlikely that two races of such a wide-ranging species would breed so close together. An examination of material in New York shows that birds taken on their nests in Morocco north and west of the Great Atlas are indistinguishable from Spanish and Swiss birds, and are, therefore, nominate *melba*. From Algeria eastwards breeding birds are *tuneti*. Nominate *melba* has been taken in late March in Algeria south of the Great Atlas, but these are obviously migrants on their northward journey from West Africa to their Palaearctic breeding grounds.

A. m. melba leaves its breeding grounds (Morocco, Spain, the Alps east through Anatolia to the Caucasus, and Mediterranean islands other than Cyprus) in October for Africa north of the Equator and parts of the Middle East and returns in April. I have seen wintering material from Jerusalem, Gulu-Arua in Uganda, and from Faradje and Tschiva in the north-eastern Congo (Kinshasa). There have been so many misapprehensions and misidentifications of this form in the African literature that I am chary of accepting any record I have not personally examined. However, *prima facie* credence may be given to the records in Reichenow (1903) from Lahej, Aden and Sheikh Othman in south-western Arabia, in Sclater & Mackworth-Praed (1919) from Kajo Kaji, Sudan, and Ruwenzori, Uganda, in Jackson & Sclater (1938) from Jinja, Uganda, and in Schouteden (1951) from Ishwa and Dungu, in the north-eastern Congo-Kinshasa. C. W. Benson, *in litt.*, advises that Mr A. D. Forbes-Watson collected one on Mt Nimba in Liberia. The migratory movements noted by Douaud (1957) in early April in Togo surely refer to this race, since there is no evidence for long distance migration in *tuneti*, and *africanus* is not known in West Africa. The difficulties in studying the winter movements and quarters of swifts were discussed in Brooke (1971a under *A. affinis nipalensis* (Hodgson)). There is no evidence for the occurrence of nominate *melba* much south of the Equator, let alone south of the Zambezi. Hoesch & Niethammer (1940) state that there is a South-West African specimen in the British Museum (Natural History) but C. W. Benson, *in litt.*, finds all specimens in the said museum from that territory to be *marjoriae* (see below).

(*b*) **A. m. tuneti** Tschusi, 1904: Tunis, with synonym *A. m. petrensis* Bangs, 1911: Jordan Valley, differs from nominate *melba* only in being paler. It is not recognized by Dementyev, *et al.* (1966), though they give no reasons. However, it appears from their text

as read with Vaurie (1965) that *tuneti* is the more numerous of the two races in the Soviet Union, and, therefore, I have applied their mensural data to *tuneti* only in Table 2, since there is no reason to suppose that *tuneti* and *melba* differ significantly in measurements. *A. m. tuneti* differs from *archeri* by being longer winged (see Table 2) and a somewhat colder brown, and from *marjoriae* likewise in being longer winged and also browner. It shares with *willsi* a more attenuated outer rectrix than is usual in this species. It breeds from Algeria to Kazakhstan and Baluchistan south into Arabia (though how far is uncertain), south and east of the nominate race. It is not known to have any long distance migrations though it abandons some of its breeding stations in winter, particularly in the Soviet Union (Dementyev, *et al.*, 1966). A juvenal was taken as a vagrant in September 1955 by a hurricane to the New World (Barbados). I have examined the specimen in the Academy of Natural Sciences in Philadelphia, and it is mentioned by Bond in one of the supplements to his *Birds of the West Indies*. It is the only west Palaearctic swift to have been recorded in the New World. I have examined the *Type* of *petrensis* and find no basis for distinction from *tuneti*.

(*c*) **A. m. nubifuga** Koelz, 1954: Rathi, Kumaon, Uttar Pradesh, is very similar to the nominate race but is slightly darker in series, with a fractionally broader breast-band, and is shorter winged (see Table 2). It is also isolated from the nominate race by the intervening *tuneti*. It breeds in the Himalayas and migrates to central India for the winter (Abdulali, 1965; Table 1).

(*d*) **A. m. dorobtatai** Abdulali, 1965: Ghoti, Nasik, Maharashtra, is shorter winged (see Tables 1 and 2), somewhat darker, and has a broader breast-band than *nubifuga*, from whose breeding range it is separated by the lowlands of the Punjab and the Ganges valley. It is not as dark as *bakeri* and has a broader breast-band. It is apparently confined to the mountains of western peninsular India, as the species has not been reported from the eastern side. It is resident but shares its range in winter with the migratory *nubifuga*.

(*e*) **A. m. bakeri** Hartert, 1928: Catton Estate, Ceylon, is much darker than *dorobtatai* and has a narrow breast-band but has an equally short wing (see Table 2). The abdomen is perhaps a clearer white than in any other race. As noted above, it appears to be restricted to Ceylon where it is resident.

(*f*) **A. m. willsi** (Hartert), 1896: East Imerina, Malagasy, is the darkest race of all but is otherwise very similar to *bakeri*. The avifauna of Malagasy, where it is resident, is derived from both the Oriental and Ethiopian Regions. However, I do not believe that the very similar appearance of *bakeri* and *willsi* indicates particularly

close relationship, but is more probably due to convergence in humid tropical island habitats. The exaggerated attenuation or emargination of the fifth or outermost rectrix in *willsi* but not *bakeri* suggests that they have reached similarity in colour and size through different genetic paths. Another Malagasy swift, *A. barbatus balstoni* (Bartlett), is also characterized by an extreme development of the fifth rectrix compared with other races of *A. barbatus* (Sclater) (Brooke, 1970a). Malagasy has four breeding swifts: *A. b. balstoni* and *Cypsiurus parvus gracilis* (Sharpe), both clearly derived from the African mainland, *Zoonavena grandidieri* (J. Verreaux), which also breeds in the Comoros has no close relatives but has relict congeners on São Tomé and in the Deccan of India (Brooke, 1970b), while there is no certainty that the fourth swift, *A. m. willsi*, came from Asia rather than Africa.

(*g*) **A. m. archeri** Hartert, 1928: Hargeisa, Somalia, is a short-winged (see Table 2), narrow breast-banded, pale warm brown race, which is distinguished from *tuneti* to the north of its range by its shorter wings. I have seen material from Bihendula, Hargeisa and Wadamago in northern (former British) Somalia and from El Kubar in southern Arabia. Archer & Godman (1961) add a further locality in the summit of the Golis Range, in northern Somalia, and P. L. Britton, *in litt.*, advises that the National Museum of Kenya, Nairobi, has a specimen from Bwa Donjo Gorge, near Galgal, in the same area. North & Gill (1947) record a breeding colony, presumably of this race, in the maritime escarpment of northern (former Italian) Somalia. It appears that this race has a very restricted range, as does the very large *maximus*.

(*h*) **A. m. africanus** (Temminck), 1815: South Africa, restricted to Cape Province by Mackworth-Praed and Grant, with synonyms *A. m. gutturalis* (Vieillot), 1818: South Africa, and *A. m. striatus* (Meinertzhagen), 1937: Nanyuki, Kenya, is somewhat darker than the nominate race, has shorter wings on average (see Table 2) and a broader breast-band. Its breeding range is disjunct: resident with local movements from Eritrea to northern Tanzania, and as a partial intra-African migrant in eastern and southern South Africa (Broekhuysen, 1950), but resident in south-western Angola and extreme northern South-West Africa.

Rudebeck (1955) mentions five specimens from Omaruru in north-western South-West Africa with wing-lengths 204–212 mm., which he places with *africanus* because they differ from the nominate race in being darker, having a broad breast-band and shorter wings. His decision is clearly correct and brings the south-western Angolan population of *africanus* right to the edge of the known range of

marjoriae. Omaruru is *c.* 120 km. west of Okahandja ("Quickborn" Farm), the nearest locality at which *marjoriae* has been taken. Four of the five Omaruru birds were obtained in November, which is in the breeding season (Brooke, 1971b), but they might all be immature birds. Reichenow (1903) also records a specimen of *A. melba* from Omaruru.

Chapin (1939) gives wing-measurements for *africanus* as 197–210 mm., which maximum is too low even for north-eastern Africa (see Table 2), and so long winged individuals of *africanus* have been mistaken for nominate *melba* by workers who have not fully appreciated the importance of the broader breast-band and darker colour. Such specimens are listed in Table 3, from which it is apparent that long winged individuals may be taken at any time of the year and not only in the period November to April when nominate *melba* is in tropical Africa. In addition, nominate *melba* completes its primary wing moult by early December, whereas in south-eastern Africa moult normally starts in November and carries on to about April (Brooke, in prep.). Long winged birds with active primary wing moult in the early months of the year are thus *africanus* and not nominate *melba*. C. W. Benson writes me, "Please note that the wing exceeds 210 mm. in no fewer than five specimens of *africanus* (out of twelve measured). But none of these five has a particularly narrow breast-band and in the Elandspoort specimen it is particularly broad. I should think they are all South African-bred specimens."

A certain amount of wandering takes place into the range of *A. aequatorialis* (von Müller), chiefly in the months May and August to October (see for instance Irwin and Benson (1966) on Rhodesia and Zambia). P. Hougaard (pers. comm.) saw a flock of *c.* 100 over the Gadikwe Lagoon, in the Okavango Swamps, on 9 August, 1970, which is the first record for Botswana. As most wanderers are seen at the beginning of the breeding season (September to January in South Africa (Brooke, 1971b)), the movements appear to be migratory. Tennent (1962) records passage movements in November and February at Kitui, Kenya, *i.e.*, just after and just before the breeding season (Brooke, 1971b) (see also Stoneham (1926) on a November-taken series from Kitgum in Uganda).

A breakdown of measurements for the three breeding areas is given in Table 2. Although, not unexpectedly, the southern African birds are on average longer winged, the overlap in measurements is so great that racial subdivision is not warranted. Neither can I see any constant colour differences. This race is inclined to have dark shafts to the white breast feathers but this varies individually, not geographically. It was on a particularly heavily marked individual

from Nanyuki, Kenya, that *A. m. striatus* was erected by Meinertzhagen in 1937 (Lack, 1956). New York has an old, undated specimen from Cape Town, which states on the label that it is the *Type* of *Cypselus fuscicollis* Brehm, *Naumannia* 1855, p. 270. It is indistinguishable from *africanus*.

(*i*) **A. m. maximus** (Ogilvie-Grant), 1907: Ruwenzori Mountains, is restricted to that mountain range and is darker than *africanus* as well as longer winged, longer billed and heavier (see Table 2), but it shares with it a broad breast-band. It often leaves the mountains to feed at lower altitudes, as Jackson & Sclater (1938) record a bird taken at 0730 hrs. *c.* 70 miles away. Its name *maximus* is more justified on the grounds of bill length and weight than on its greater wing-length. Despite the absolute difference in culmen length, and, probably, in weight, *maximus* is more informatively regarded as a race of *A. melba* than as a separate species since it is clearly derived from the same stock. If biological study shows further differences its placing as an allospecies (of a superspecies *melba*) would be the appropriate category for it.

(*j*) **A. m. marjoriae** (Bradfield), 1935: "Quickborn" Farm, Okahandja, South-West Africa, is distinguished from *africanus* by being paler and greyer (the only greyish race), having a narrow breast-band, and the rump somewhat paler than the mantle. It is distinguished from *tuneti*, with which Hoesch & Niethammer (1940) have confused it, by being greyer, shorter winged (see Table 2) and pale rumped. It is apparent that their alleged *tuneti* from South-West Africa was taken on 5 June during the northern breeding season and went to the British Museum (Natural History). C. W. Benson at my request kindly examined and measured all southern African specimens in that museum. He writes "The South-West African lot are paler and greyer. I do not get the impression that *marjoriae* is a strongly marked race, but think it recognizable. I do not see that the breast-band is narrower in *marjoriae* than in *africanus*, and find that this is an individually variable character. However, on *average* it is narrower in eleven nominate *melba* from Switzerland, southern Spain and Crete."

A. m. marjoriae is known from several localities in Damaraland: I have seen material from "Quickborn" Farm, Okahandja, Spitzkopje, and the Waterberg, and C. W. Benson, *in litt.*, examined material from additional localities; Erongo, Otjimbingwe, Otjosongombe, Schlankopf and Witputs. I have also seen a specimen in the East London Museum from the Aughrabies Falls on the lower Orange River, where Pitman (1967) found a breeding colony. Unlike

the other swift distinctive of Damaraland, *A. bradfieldi* (Roberts), it does not occur in the Huila Province of south-western Angola, where the resident form is clearly *africanus*. Rudebeck (1955), as discussed above, even recorded *africanus* from Omaruru in north-western Damaraland.

Future Work

A. melba is not a well-known species. In southern Asia, the Saurashtra birds are apparently a valid race, while a well-prepared series should be collected in Kerala, in extreme south-western India, in order to determine whether those populations are better placed with *dorobtatai* or *bakeri*. In Africa, the possibility that *maximus* is a separate species requires biological study. It is not known how close breeding colonies of different races can be to each other without perceptible gene-flow leading to intergrades. It is not clear how close breeding colonies of nominate *melba* and *tuneti* are in the Mahgreb and south-western Turkey to north-western Iran, of *tuneti* and *nubifuga* in eastern Afghanistan and adjacent West Pakistan, of *faricanus* and *archeri* in eastern Ethiopia, of *africanus* and *maximus* in Uganda, and of *africanus* and *marjoriae* in extreme north-western South-West Africa. It is not known if *archeri* breeds in south-western Arabia, and if so how close it approaches colonies of *tuneti*. Migratory movements in *tuneti*, *nubifuga* and South African *africanus* need elucidation, as do the more local migrations of *africanus* in north-eastern Africa. The wintering range of nominate *melba*, particularly in West Africa, is unclear. Weight data for most races are required. Breeding biology in the nominate race in Switzerland has been well studied, but no comparable studies have been made on other races in Asia or Africa.

TABLE 1

Age	Sex	Date	Locality	Wing-length
			A. m. nubifuga	
adult	♀	26.5.76	Naini Tal, Uttar Pradesh	206 mm.
,,	♀	9.6.—	Bhum Tal, Uttar Pradesh	215
imm.	o	5.11.80	Khandala, Maharashtra	216
			A. m. dorobtatai	
adult	♀	13.2.54	Ahwa, Dangs, southern Gujerat	207
,,	♂	12.2.40	Jog, Shimoga, Mysore	201
,,	♂	12.2.40	,,	203
,,	♀	12.2.40	,,	203
,,	♀	3.1.40	Devarayadruga hill, Tunkur, Mysore	201

Indian specimens of *A. melba* in the American Museum of Natural History in New York.

TABLE 2

Race and Category	Wing-length in mm.	Delta-length in mm.	Culmen-length in mm.	Weight in gm.	Source
melba					
(*a*) Africa only					
adults		2,5–4,0 av. (4) 3,38			Self
juvenals		1,0–2,5 av. (4) 2,00			"
overall	212–224 av. (17) 220,1		10,0–11,5 av. (6) 10,50		"
(*b*) Europe only					
overall	215–232 av. (10) 229,9				Vaurie 1965
tuneti					
overall	213–222 av. (7) 216,6				Abdulali 1965
"			9-10	95–110	Dementyev *et al.* 1966
♂♂	210–225 av. (14) 222,0				
♀♀	213–227 av. (14) 217,9				"
nubifuga					
overall	212–217 av. (7) 214,0				Abdulali 1965
"	206–216 av. (3) 212,3				Table 1
"	204–223 av. (12) 213.7				Vaurie 1959
dorobtatai					
overall west-central India	194–207 av. (6) 201,0 207				Abdulali 1965 Table 1
overall southern India	196–207 av. (9) 201,2				Abdulali 1965
	201–203 av. (4) 202,0				Table 1
bakeri					
overall	194–207 av. (5) 201,8				Abdulali 1965 Vaurie 1959

willsi					
adult ♂♂	189–203 av. (11) 195,5				Self
adult ♀♀	190–199 av. (7) 195,0				,,
adults		1,0–4,5 av. (18) 2,88			,,
juvenals	186–200 av. (15) 193,1	1,0–3,5 av. (12) 2,13			,,
overall	186–203 av. (36) 194,1		9,5–11,0 av. (35) 10,34		,,
archeri					
overall	193–208 av. (9) 197,1		10,0–11,5		Self
adults		2–4 av. (7) 3,33	av. (9) 10,61		,,
juvenals		2,5–3,0 av. (2) 2,75			,,
africanus					
(*a*) north-eastern Africa					
adults		3 av. (2) 3,00			Self
overall	199–218 av. (10) 207,6				,,
(*b*) south-western Angola					
adults		1–5 av. (10) 2,95			,,
juvenals		1,5–4,5 av. (5) 2,60			,,
overall	190–207 av. (20) 199,8		10–12 av. (19) 11,16	67–87 av. (12) 76,00	,,
(*c*) south-eastern Africa (including C. W. Benson, *in litt.*, on material in the B.M.N.H.)					
♂♂	200–223 av. (18) 210,8				Self
♀♀	203–215 av. (11) 209,0				,,
overall	200–228 av. (44) 210,9				,,
adults		2,0–4,5 av. (4) 3,50			,,
juvenals		3,0–3,5 av. (2) 3,25			,,
maximus					
overall	221–230 av. (9) 226,2	2,5–3,5 av. (4) 3,00	13–14 av. (9) 13,33	127,6	Self
,,	230–235				Archer and Godman 1961
marjoriae (including C. W. Benson, *in litt.*, on material in the B.M.N.H.)					
overall	192–209 av. (15) 202,6		10,5	91	Self

Mensural data on *Apus melba* subspp.

TABLE 3

Wing-length	Date	Locality	Moult
212	3 Jan.	Mowbray, C.P.	worn
212	21 Sept.	Pietermaritzburg, Natal	—
212	17 April	Kuruman, C.P.	—
213	11 Nov.	Touws River, C.P.	worn
213	24 Feb.	Cape Town	active
213	—	Durban, Natal	—
213	3 Aug.	Kilimanjaro	fresh
214	2 Oct.	Bloemfontein, O.F.S.	—
215	20 Sept.	Richmond, Natal	—
215	—	Elandspoort, C.P.	—
215	31 Jan.	Paarl, C.P.	—
216	2 Jan.	Excelsior, O.F.S.	active
218	10 March	Uganda	—
218	15 Nov.	Kilimanjaro	worn
221	—	Cape Town	—
221	21 Sept.	Pietermaritzburg	—
222	23 Nov.	Mamathes, Lesotho	normal
223	19 March	Colenso, Natal	active
228	—	—, South Africa	—

Data on long-winged specimens of *A. m. africanus* which on this character might be *A. m. melba*.

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