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BIRDS OF THE NATAL ALPINE BELT

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INTRODUCTION

The great escarpment of the Drakensberg mountain range in Natal starts at Royal Natal National Park in the north and runs south-east for some 95 km, then turns south-west at Giant's Castle and enters the Transkei about 80 km further south. The Natal Drakensberg reaches its greatest heights between Mount-aux-Sources and Bushman's Neck with an average altitude of about 3 000 m (9 840 ft) and the highest peak, Injasuti, rising to 3 459 m (11 350 ft). The watershed on top of the escarpment forms the boundary between Natal and Lesotho. The distance between the watershed (and thus the border) and the escarpment edge varies from 0–3 km in width.

Killick (1963) divided the Drakensberg into three belts based on the distribution of climax vegetation communities. These are (a) the Montane Belt, 1 280 to 1 829 m (4 200 to 6 000 ft), (b) the Subalpine Belt, 1 829 to 2 865 m (6 000 to 9 400 ft) and (c) the Alpine Belt, above 2 865 m (9 400 ft). These belts coincide with the three terraces in the Drakensberg, namely the river systems, the Little 'Berg and the summit area of the Drakensberg respectively.

During the course of fieldwork on raptors in the Drakensberg all three belts were visited frequently. It became apparent that the avifauna of the Alpine Belt differed significantly from that of the rest of Natal, and that this region was extremely poorly documented. This is hardly surprising as access to the area is limited to a single four-wheel drive track at Sani Pass, and a number of steep passes accessible only on foot. No work dealing exclusively with the avifauna of the Natal Alpine Belt exists to our knowledge, but publications on adjacent or similar areas in Natal and Lesotho (mainly annotated species lists and taxonomic notes) have some relevance to this area (Bonde, 1981; Clancey, 1957; Cyrus & Robson, 1980; Jacot-Guillarmod, 1964; Symons, 1919).

The data represented here were obtained from 14 visits to the Natal Alpine Belt (bird counts being made on nine of these visits) from November 1980 to December 1982 (CJB), and from regular visits over the past 40 years (PRB).

STUDY AREA AND METHOD

The Natal Alpine Belt has a total area of approximately 22 294 ha. The administration and theoretical control of this area are the responsibilities of the department of Forestry (66,5%), the Natal Parks Board (20,9%), Kwa Zulu Government (11,9%) and private ownership (0,6%). In practice the Basotho consider the land to the edge of the escarpment to be part of Lesotho, and this area is subject to the same grazing pressures by their domestic stock and the same gathering of "fynbos" for their cooking fires as are the Lesotho highlands. The only small areas escaping these pressures are the free-standing peaks such as Cathedral and Cathkin Peaks.

The structure of the Drakensberg is remarkably homogeneous, a result of a uniform geology throughout its length (King, 1972). Basaltic lavas are the only formation of the Alpine Belt, forming dark cliffs on the escarpment, giving way to rounded slopes and ridges on the summit, but being exposed in

numerous places as horizontal outcrops. The thin tufty soil, classified as Mountain Black Clay (van der Merwe, 1941), becomes boggy in summer and freezes in winter. The climate is severe and altitudinal drought conditions prevail (Killick, 1963). At these high altitudes the lower atmospheric pressure results in lower air temperatures and an increase in the intensity of insolation which causes high temperatures by day. At night surfaces cool very rapidly resulting in a wide range of soil temperatures; frost occurs between the end of autumn and early spring.

Rain falls mainly from September to April. An annual rainfall of 1 609 mm was recorded at the Organ Pipes Pass at 2 926 m (9 600 ft) (Killick, 1963). Rainfall decreases westwards, Mokhotlong recording about 560 mm per year. The relative humidities are high during the wet season with almost daily cloud formation and local thunderstorms, but low during the dry season with high evaporation rates. Snowfalls have been recorded in all months of the year in the Alpine Belt, but are most common between April and September; snow may lie for up to two months in sheltered places. High winds occur throughout the year in the Apine Belt, but are strongest and most frequent in late winter and spring.

The vegetation of the Natal Alpine Belt is remarkably homogeneous, consisting of climax heather communities dominated chiefly by low woody species of *Erica* and *Helichrysum* interspersed with alpine grassland dominated by species of *Festuca, Danthonia* and *Pentaschistis*. The influence of the harsh climate is seen in the xeromorphic character of the vegetation, and the words "Alpine Fynbos" indicate the affinities with vegetation found in the southwestern Cape Province (Edwards, 1967).

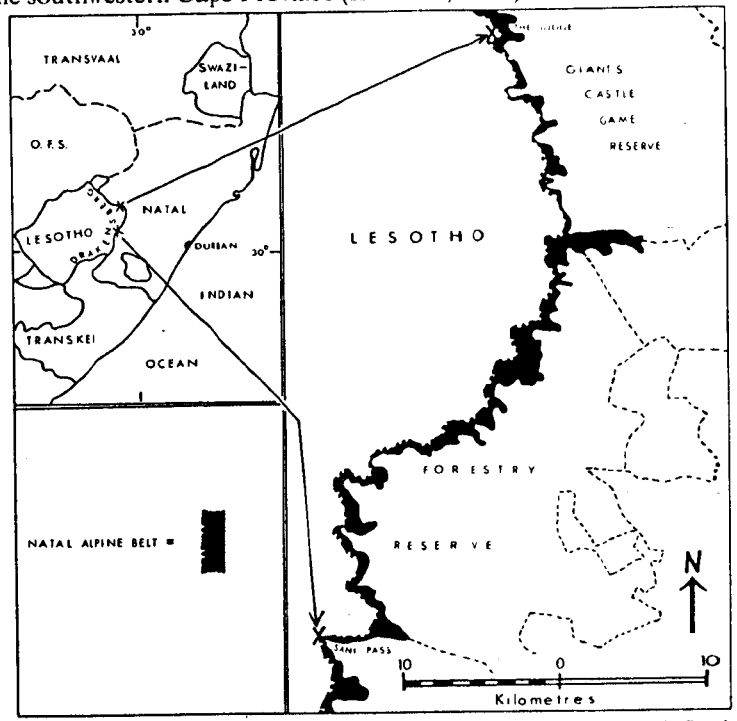

Figure 1. The Natal Alpine Belt, from Sani Pass in the south to The Judge in Giant's Castle Game Reserve.

During all visits to the Natal Alpine Belt all species of birds seen were listed and signs of breeding activity were recorded. On nine of these visits counts of all "ground birds" were made. "Ground birds" refer here to the passerines, excluding the swallows and martins (family Hirundinidae), and include the francolins (family Phasianidae), the pigeons (family Columbidae) and the woodpeckers (family Picidae). All observations were made on foot, between Sani Pass and the Judge in Giant's Castle Game Reserve (GCGR), a distance of approximately 50 km (Fig. 1), while traversing the escarpment edge looking for raptor nests. Thus all likely habitats in this belt were covered, though it must be stressed that these observations, though accurate, were secondary to other projects.

The nine counts covered 128 hours on 26 different days, and were made in the following months: February (5 days), March (1 day), June (3 days), July (3 days), September (2 days), November (8 days) and December (4 days). The counts for November to March were grouped as summer figures, and June to September were grouped as winter figures.

The years in which these counts were made were particularly warm and dry (PRB pers. obs.), with light snowfalls that melted within a few days. These mild conditions may have resulted in atypical patterns of bird movements.

RESULTS

Table 1 lists the 54 species recorded in the Natal Alpine Belt with the following comments on their status:

(1) Non-breeding migrants
(2) Breeding migrants
  (a)Intra-African migrants
  (b)Altitudinal migrants
    (i) long distance (absent from Drakensberg in winter)
    (ii) lower altitude species extending range up in summer
    (iii) higher altitude species extending range down in winter
(3) Resident species.

For those species recorded breeding in the Natal Alpine Belt the months and clutch sizes are given. Breeding dates are backdated where necessary to the incubation period.

Four species, namely the thickbilled lark, sicklewing chat, Layard's titbabbler and yellow canary are recorded under "Rarer Species and Vagrants" in the Bird Atlas of Natal, and the grey tit was not recorded in the province from 1970 to 1979 (Cyrus & Robson, 1980).

Winter and summer counts of the 25 "ground bird" species are presented n Table 2, with the percentage composition of each species and the numbers of each species seen per hour. Although insufficient data were obtained for statistical analysis of individual species, general trends can be seen (Fig. 2). The rock pigeon was the most common species observed in the Alpine Belt, using the area primarily for nesting and roosting but rarely for foraging. The other "ground birds" all actively forage in the Alpine Belt. The Drakensberg siskin and sicklewing chat were the next most abundant species (16,3% and 12,1% of the total "ground bird" count respectively), followed by the white-necked raven (7,6%), rock jumper (7,0%), thickbilled lark (5,5%), greywing francolin (5,3%), sentinel rock thrush (4,8%), black crow (4,0%) and the Cape bunting (3,5%). The remaining species each constituted less than 3% of the count.

The total "ground bird" counts for the summer months were higher than those for the winter months (7,82 and 6,89 birds per hour respectively), though these figures are not significant. If the rock pigeon figures are ex-

Table 1. A checklist of the birds of the Natal Alpine Belt, their status, breeding dates and clutch sizes.

a Species		b Status	c Breeding Dates	d Clutch Size 1	2	3	4	5
Grey heron	*Ardea cinerea*	3	Dec		1	1		
Hamerkop	*Scopus umbretta*	3	Dec				1	
Black stork	*Ciconia nigra*	3	Jul, Sep					
White stork	*Ciconia ciconia*	1	–					
Bald ibis	*Geronticus calvus*	3	Sep, Nov		2			
Black duck	*Anas sparsa*	3	Aug					1
Cape vulture	*Gyps coprotheres*	3	Jun, Jul	36				
Lanner falcon	*Falco biarmicus*	3	Sep			1		
Eastern redfooted kestrel	*Falco amurensis*	1	–					
Rock kestrel	*Falco tinnunculus*	3	Sep, Nov, Dec			1	2	
Black eagle	*Aquila verreauxii*	3	May, Jun, Jul		5			
Bearded vulture	*Gypaetus barbatus*	3	Jun, Jul, Aug	2	9			
Jackal buzzard	*Buteo rufofuscus*	3	Jul to Oct		3			
Steppe buzzard	*Buteo buteo*	1	–					
Black harrier	*Circus maurus*	2b(ii)	?					
Greywing francolin	*Francolinus africanus*	3	Feb					1
Redwing francolin	*Francolinus levaillantii*	2b(ii)	?					
Rock pigeon	*Columba guinea*	3	Nov, Dec, Feb		4			
European swift	*Apus apus*	1	–					
Black swift	*Apus barbatus*	2b(i)	Nov					
Whiterumped swift	*Apus caffer*	2a	Nov, Dec		1			
Horus swift	*Apus horus*	2b(i)	Dec					
Alpine swift	*Apus melba*	2b(i)	?+					
Ground woodpecker	*Geocolaptes olivaceus*	2b(ii)	Oct, Nov			1		
Thickbilled lark	*Galerida magnirostris*	3	Oct, Nov, Dec		2			
Redcapped lark	*Calandrella cinerea*	3	?+					
Greater striped swallow	*Hirundo cucullata*	2a	Oct to Jan			5		
Rock martin	*Hirundo filigula*	3	Oct, Nov, Dec			3	1	
African sand martin	*Riparia paludicola*	?(3)	Dec					
Black crow	*Corvus capensis*	3	Sep, Nov					
Whitenecked raven	*Corvus albicollis*	3	Sep, Oct					
Grey tit	*Parus afer*	3	Nov, Dec				1	
Rock jumper	*Chaetops aurantius*	2b(iii)	Sep to Dec			4		
Sentinel rock thrush	*Monticola explorator*	3	Nov, Dec			4		
Sicklewing chat	*Cercomela sinuata*	2b(iii)	Oct, Nov, dec		2	4	1	
Stonechat	*Saxicola torquata*	3	Jan				1	
Cape robin	*Cossypha caffra*	?[2b(iii)]	Dec			1		
Ayres' cloud cisticola	*Cisticola ayresii*	2b(ii)	?					
Wailing cisticola	*Cisticola lais*	2b(ii)	Dec			2		
Karoo prinia	*Prinia maculosa*	?(3)	Dec				1	
Layard's titbabbler	*Parisoma layardi*	2b(iii)	Dec			1		
Fairy flycatcher	*Sienostira sciita*	2b(i)	Dec			1		
Cape wagtail	*Motacilla capensis*	3	Oct to Jan			2		
Richard's pipit	*Anthus novaeseelandiae*	3	Dec, Jan		1	1		
Nicholson's pipit	*Anthus similis*	2b(ii)	?					
Bokmakierie	*Telophorus zeylonus*	?(3)	Dec			2		
Redwinged starling	*Onychognathus morio*	3	Nov, Dec			1	2	
Malachite sunbird	*Nectarinia famosa*	2b(i)	Nov, Dec		4			
Cape sparrow	*Passer melanurus*	3	Dec, Jan			2	1	
Quail finch	*Ortygospiza atricollis*	?(3)	Dec				1	
Drakensberg siskin	*Serinus symonsi*	2b(iii)	Nov, Dec, Jan			2	3	
Yellow canary	*Serinus flaviventris*	3	Jan					1
Rock bunting	*Emberiza tahapisi*	3	Dec			1		
Cape bunting	*Emberiza capensis*	3	Oct, Nov, Jan			1		

a. Names according to SAOS checklist (Clancey, 1980).
b. Status : 1= Non-breeding migrant;
  2= Breeding migrant – a= intra-African
  – b= altitudinal
  – (i) = long distance (away from Drakensberg in winter)
  – (ii) = extends range up in summer
  – (iii) = extends range down in winter
  3= Resident.
c. Breeding dates and clutch sizes were included only if specifically from the Natal Alpine Belt. Data from adjacent areas were not included. Breeding dates refer to the incubation period, backdated where necessary. Breeding data was obtained from the following sources: Bonde (1981), Dean (1971), Jacot-Guillarmod (1964), Symons (1919), PRB (pers. obs.) and CJB (pers. obs.).
d. Figures represent the number of records of each clutch size.

Table 2. Relative adundance of "ground birds" of the Natal Alpine Belt.

Species[a]	Time:-	Summer 18 days/86,5 hours			Winter 8 days/41,5 hours			Totals 26 days/128 hours		
		No.	%	No/h	No.	%	No/h	No.	%	No/h
Greywing francolin		32	4,7	0,37	19	6,6	0,46	51	5,3	0,40
Redwing francolin		6	0,9	0,07	0	–	–	6	0,6	0,05
Rock pigeon		103	15,2	1,19	65	22,7	1,57	168	17,5	1,31
Ground woodpecker		6	0,9	0,07	0	–	–	6	0,6	0,05
Thickbilled lark		37	5,5	0,43	16	5,6	0,39	53	5,5	0,41
Redcapped lark		6	0,9	0,07	5	1,7	0,12	11	1,1	0,09
Black crow		30	4,4	0,35	8	2,8	0,19	38	4,0	0,30
Whitenecked raven		50	7,4	0,58	23	8,0	0,55	73	7,6	0,57
Grey tit		4	0,6	0,05	2	0,7	0,05	6	0,6	0,05
Rock jumper		47	7,0	0,54	20	7,0	0,48	67	7,0	0,52
Sentinel rock thrush		31	4,6	0,36	15	5,2	0,36	46	4,8	0,36
Sicklewing chat		81	12,0	0,94	35	12,2	0,84	116	12,1	0,91
Stonechat		18	2,7	0,21	3	1,0	0,07	21	2,2	0,16
Ayres' cloud cisticola		8	1,2	0,09	0	–	–	8	0,8	0,06
Wailing cisticola		16	2,4	0,18	2	0,7	0,05	18	1,9	0,14
Layard's titbabbler		3	0,4	0,03	0	–	–	3	0,3	0,02
Fairy flycatcher		2	0,3	0,02	1	0,3	0,02	3	0,3	0,02
Cape wagtail		10	1,5	0,12	4	1,4	0,10	14	1,5	0,11
Richard's pipit		11	1,6	0,13	3	1,0	0,07	14	1,5	0,11
Nicholson's pipit		3	0,4	0,03	0	–	–	3	0,3	0,02
Redwinged starling		16	2,4	0,18	7	2,4	0,17	23	2,4	0,18
Malachite sunbird		8	1,2	0,09	0	–	–	8	0,8	0,06
Drakensberg siskin		114	16,9	1,32	43	15,0	1,04	157	16,3	1,23
Yellow canary		9	1,3	0,10	6	2,1	0,14	15	1,6	0,12
Cape bunting		25	3,7	0,29	9	3,1	0,22	34	3,5	0,27
Totals		676	100,1	7,82	286	99,5	6,89	962	100,1	7,52

a. All species which constitute more than 5% of the total "ground bird" count are printed in bold type.

cluded from the totals (on the grounds that this species rarely forages in the Alpine Belt, and the relative increase in numbers in winter being probably due to a shortage of food in the Lesotho interior resulting in the birds moving to the escarpment edge from where they descend into Natal to forage), then the summer and winter totals (6,62 and 5,33 birds per hour respectively) are significantly different (chi^2 test; $p < 0,05$). Six species (eight species if the September figures are not included in the "winter" grouping) recorded in summer were not recorded during the winter months.

NON-BREEDING MIGRANTS

Four species recorded in the Natal Alpine Belt are non-breeding Palearctic migrants, being recorded along the Drakensberg from October to March. These are the white stork, eastern redfooted kestrel, steppe buzzard and European swift. White storks were seen on the ground on only one occasion, when two birds were observed standing on the edge of a small stream. Otherwise, only large flocks (largest 168) were seen soaring overhead. The other three species were all observed actively foraging in the Alpine Belt.

BREEDING MIGRANTS

(a) Intra-African migrants

Only two species occurring in the Naltal Alpine Belt are intra-African migrants, namely the whiterumped swift and the greater striped swallow. They are recorded in the Drakensberg from October to April (Cyrus & Robson, 1980). Both species have been found breeding in the Alpine Belt.

(b) Altitudinal migrants

(i) Long distance (absent from the Drakensberg in winter)

Black swift; recorded in the Natal Drakensberg from September to April

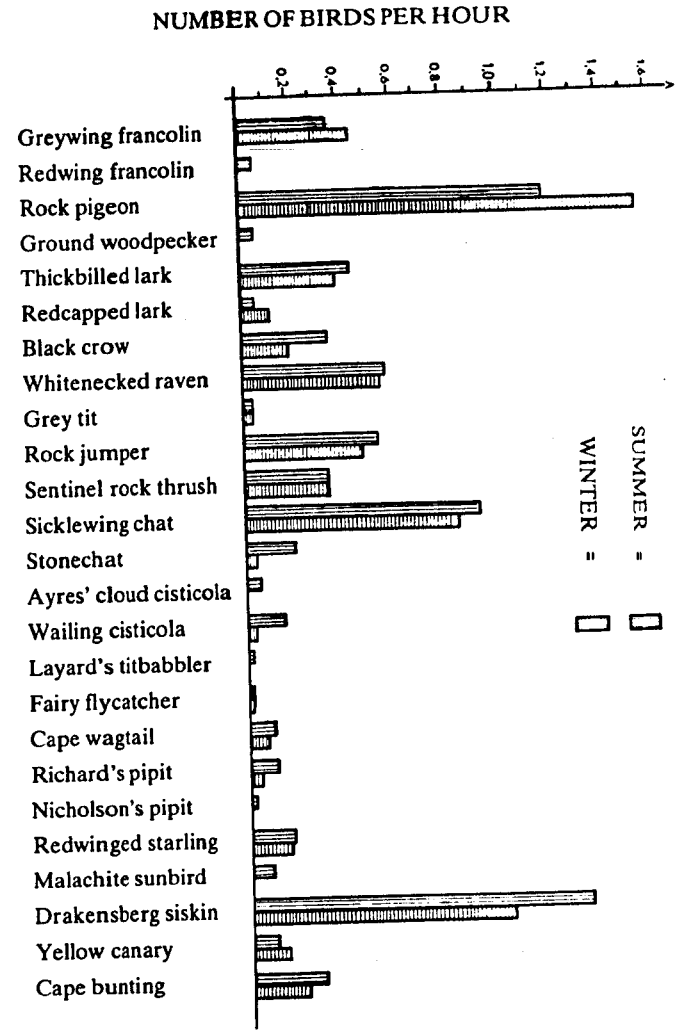

Figure 2. Numbers of each species seen per hour in summer and winter in the Natal Alpine Belt.

(Cyrus & Robson, 1980). Found breeding in November at 3 171 m (10 400 ft) in the crevices of a north-east facing cliff.

Horus swift; present in the Natal Drakensberg from October to May. Uncommon in the Alpine Belt. Recorded breeding in December.

Alpine swift; a roving species, occasionally recorded in GCGR in small numbers during the winter months, but not observed in the Alpine Belt during this season. Recorded as a common summer visitor to Lesotho (Bonde, 1981), and to the Natal Drakensberg. Not as yet recorded breeding in the Alpine Belt, but likely to do so.

Fairy flycatcher; recorded in Natal below the escarpment in GCGR from April to October, moving up to the Alpine Belt from September to April.

Breeds in the Alpine Belt, a three egg clutch being recorded in December. This species constitutes less than 1% of the "ground bird" counts; the "winter" record is for September.

Malachite sunbird; recorded in GCGR from October to April. Records for the Alpine Belt are from November to February with breeding records for November and December.

(ii) Species extending their range to higher altitudes in summer

Six species recorded in GCGR throughout the year were recorded in the Alpine Belt only during the summer months. These species expand their ranges during the warmer months to higher altitudes, returning to lower altitudes with the onset of winter.

Black harrier; recorded in GCGR throughout the year. Observed in the Alpine Belt in November and December at approximately 2 927 m (9 600 ft). These appear to be the first records for the Natal Alpine Belt, though Maclean (pers. comm.) recorded it in the Subalpine Lesotho highlands.

Redwing francolin; not previously recorded from the Alpine Belt, and Bonde (1981) suggests that it be removed from the Lesotho list. Only one covey of six birds was observed, in December, at the top of the Langalibalele pass. Probably an uncommon visitor to these altitudes.

Ground woodpecker; recorded in the Natal Alpine Belt only in summer, though records from the Maluti mountains suggest that it is resident there throughout the year. Breeding records from the Alpine Belt are for October and November.

Ayres' cloud cisticola; contitutes just over 1% of the summer "ground bird" count. Also recorded in the Maluti mountains (Jacot-Guillarmod, 1964).

Wailing cisticola; constitutes almost 2,5% of the summer counts, the "winter" counts being for September. Occurs mainly in the long grass at the heads of passes, up to an altitude of 3 110 m (10 200 ft). Recorded throughout Lesotho (Bonde, 1981), breeding in the Maluti mountains (Jacot-Guillarmod, 1964). Found breeding in the Natal Alpine Belt in December.

Nicholson's pipit; recorded in the Lesotho Drakensberg by Symons (1919) and said to be common in the highlands (Bonde, 1981). Constitutes less than 1% of the summer "ground bird" count.

(iii) Species extending their range to lower altitudes in winter

Five species occuring commonly in the Natal Alpine Belt have been recorded to extend their ranges regularly or occasionally to lower altitudes during the winter months and sometimes during particularly cold periods in summer.

Rock jumper; recorded in GCGR on scree slopes, rocky gullies and passes, in summer down to 2 439 m (8 000 ft). In winter can regularly be seen down to 2 073 m (6 800 ft). In the Alpine Belt it constitutes 7% of the "ground birds" in both summer and winter, but it is seen more often in summer (possibly due to a lower concentration in winter when birds are spread over a larger range). Breeding in the Alpine Belt from September to December.

Sicklewing chat; constitutes 12% of both summer and winter counts. Not recorded below the Alpine Belt except during periods of extreme cold and heavy snowfalls. On three occasions large numbers were observed at about 2 073 m (6 800 ft) immediately after snowfalls in the Alpine Belt. This species appears to replace the familiar chat *Cercomela familiaris* at high altitudes, the latter being recorded in GCGR up to about 2 744 m (9 000 ft). Both Clancey (1957) and Bonde (1981) state that the winter quarters of the Sicklewing chat are not known, suggesting that some regular altitudinal movement takes place. The presence of very similar summer and winter numbers during

the period of the "ground bird" count however would indicate that they remain at high altitudes throughout the year, descending for short periods only after heavy snowfalls. In severe winters large numbers descend to the Lesotho lowlands (PRB pers. obs.). Found breeding in the Alpine Belt in December.

Cape robin; not recorded on the Natal side of the Alpine Belt during the count period, but seen in the Lesotho Drakensberg at 3 110 m (10 200 ft) and 2 957 m (9 700 ft) in July and August 1981 respectively. Clancey (1981) states that "in the high east of its range (= Drakensberg), many winter at lower elevations, then reaching the Natal and Zululand coasts". As Cape robins were observed at high altitudes in winter, and as they are recorded along the Drakensberg for all months of the year (Cyrus & Robson, 1980) only part of the population appears to move to lower altitudes.

Layard's titbabbler; an uncommon species in the Natal Alpine Belt, with only three records during the period for which counts were made, though recorded fairly commonly in the Maluti mountains (Clancey, 1957; Jacot-Guillarmod, 1964), usually on higher ground. In GCGR recorded down to 2 439 m (8 000 ft) in summer, and in winter, down to 1 768 m (5 800 ft). Recorded breeding in the Alpine Belt in December.

Drakensberg siskin; constitutes 17% of the summer, and 15% of the winter "ground birds" in the Alpine Belt. Recorded down to about 2 622 m (8 600 ft) in summer, decending to 2 073 m (6 800 ft) in winter, and during particularly cold and wet periods in summer. The less frequent observations in winter may be due to lower densities resulting from their expanded range. A common breeding species of the Lesotho highlands, this species has been recorded breeding in the Alpine Belt from November to January.

RESIDENT SPECIES

The remaining 32 species may (at the state of present knowledge) be regarded as resident. These fall broadly into three categories;

(1) montane species,
(2) species confined to southern Africa, and
(3) wide ranging (often polytypic) species.

The "montane" species include the bald ibis and bearded vulture, both of which breed in the Natal Alpine Belt, but may descend to lower altitudes to forage. Although species in categories 2 & 3 are recorded in the Alpine Belt throughout the year, part of the population of some of these species (particularly the smaller ones) may move to lower altitudes during the winter months. These include the thickbilled lark, black crow, stonechat and Richard's pipit. All but the first mentioned species are common residents in GCGR. The thickbilled lark has not been recorded below the escarpment in Natal, and if part of the population moves to lower altitudes during the winter (as the counts seem to indicate), these birds must move westward only, possibly because there is no suitable habitat ("open country where the vegetation is sparse", McLachlan & Liversidge, 1978) in the Natal foothills.

The greywing francolin and rock pigeon were both recorded more commonly in winter than in summer in the Natal Alpine Belt. For the former species this was due to high September counts of 0,67 birds per hour. The figure for the remaining winter months was 0,39 birds per hour, which is very similar to the figure obtained in summer (0,37 birds per hour). This influx of birds along the escarpment edge may be due to the earlier spring experienced at lower altitudes, with birds from Lesotho descending into Natal to feed. The high winter counts for rock pigeons suggests a similar movement of birds to the escarpment edge, descending each day to forage in Natal.

No population movements for the remaining species were detected. This could be due to the small sample size, to the mild winters during the study or to the sedentary nature of the species. Some of these species warrant comment.

African sand martin; a pair were observed in the Alpine Belt at 2 927 m (9 600 ft) in November, hawking insects over a small stream. Recorded in small numbers throughout the year in GCGR, and in the lowlands of Lesotho. Not previously reported from the highlands. Found breeding (in the bank of a stream) in December.

Grey tit; six records for this species were obtained in the Natal Alpine Belt during the count period. Two pairs were seen near Sani Pass, one in February and one in July, and a pair was seen in December at the top of the Langalibalele pass. Recorded as "not uncommon" in the Maluti mountains, usually below 2 744 m (9 000 ft) (Jacot Guillarmod, 1964).

Sentinel rock thrush; Clancey (1957) writes that the subspecies *M. e. tenebriformis* "is confined as a breeding bird to the high mountains of Basutoland, and winters in Natal, Zululand, southern Portuguese East Africa and adjacent regions". The winter and summer counts for this species are exactly the same suggesting that no movement from the Alpine Belt took place during the study period. Either the birds recorded wintering in the above-mentioned areas are from some other region (i.e. not from the Lesotho highlands) or this winter movement only takes place in years of extreme cold and heavy snowfalls. The sentinel rock thrush has been recorded breeding in November and December. One nest was built in a crevice between boulders and concealed by a tuft of grass.

Redwinged starling; recorded roosting and breeding on cliffs in the Alpine Belt, usually descending each day to the forests of Natal to forage. Records from the Sehlabathebe National Park suggest they move away in winter (Bonde, 1981). This is not supported by the figures obtained in the Alpine Belt.

Cape sparrow; recorded as common in Lesotho (Bonde, 1981) though rarely above 2 439 m (8 000 ft) (Jacot-Guillarmod, 1964). In the Alpine Belt, one pair was recorded (for summer and winter months) at the Lesotho border post at the top of Sani Pass at about 2 927 m (9 600 ft). They were found nesting in December and January, under the eaves of a building.

Yellow canary; not particularly common in the Natal Alpine Belt, recorded singly or in pairs. More common at slightly lower altitudes in Lesotho, particularly around kraals and cultivated fields where flocks of up to 65 birds have been observed. Never recorded below the Alpine Belt in Natal.

DISCUSSION

The Natal Alpine Belt shares with the highlands of Lesotho a small and numerically sparse avifaunal population which differs markedly from that of the rest of Natal. The Drakensberg siskin and sicklewing chat, both of which are uncommon below the Drakensberg escarpment, are the most abundant species (apart from the rock pigeon) together making up 28% of the "ground birds".

The origins of this avifauna appear to be fairly heterogeneous, being composed of the following;

1) montane species e.g. bearded vulture, Drakensberg siskin;
2) wide-ranging raptor species e.g. lanner falcon, black eagle;
3) widely distributed (often polytypic) species e.g. rock pigeon, stonechat;
4) species confined to southern Africa, and described by Clancey (1957) as being important components of the "old Cape" fauna e.g. sentinel rock thrush, yellow canary. A similarity of the "fynbos" vegetation of these two areas is apparent. Some of these species appear to also be important components of the drier regions such as the Karoo e.g. sicklewing chat, thickbilled lark, the "altitudinal drought" conditions experienced in the Alpine Belt probably causing similar conditions to those experienced in areas of low rainfall.

Seasonal movements by many birds of the Natal Alpine Belt have been shown to take place. These movements range from Palearctic migrations in some species to altitudinal movements of varying distances in other species. Apart from the long distance migrants, very little information is available on the reasons for these observed movements. Detailed study is required to determine the factors causing the local movements, as in most cases they are not immediately apparent and may be complex. Possible contributing factors are:

1) Temperature: An average decrease of 0,5°C is experienced with each 100 m increase in altitude. Thus a descent of 1 000m would result in a 5°C increase in temperature. Also, the temperatures of the Alpine Belt would be considerably lowered when the "chill factor" due to wind is taken into consideration. Below the escarpment, wind velocity is generally lower and more shelter is available. No temperature data are available for the Alpine Belt, but data from Cathedral Peak at 1 860 m (6 100 ft) reveal daily min. and max. temperatures between about 4°C (June, July) to 12,5°C (December, January, February) and 15°C (June, July) to 21°C (December, January, February) respectively. Absolute max. and min. temperatures measured in a Stevenson screen were 31°C (November) and –3°C (July) respectively, with the absolute min. grass level temperature of approximately –16°C (July) (Killick, 1957). Extrapolation of Alpine Belt temperatures at 3 050 m (10 000 ft) gives absolute max. and min. temperatures (Stevenson screen) of 25°C and –9°C respectively, with the absolute min. grass level temperature of about –22°C. Summer conditions in the Alpine Belt may allow some species to exploit this area, but they may be unable to withstand winter temperatures, thus being forced to descend to lower altitudes. Alpine species with high metabolic rates adapted to the cold conditions may be able to desend to the lower levels in winter (the area under effective Alpine conditions having extended to lower altitudes), but in summer these species may be unable to withstand the higher temperatures, thus having to return to the Alpine belt.
2) Snowfall: Following heavy snowfalls in the Alpine Belt, large numbers of sicklewing chats were observed on the spurs of the Little 'Berg below the snow line. Snow must prevent access to food on the ground, cover sheltering sites and perhaps cause substantial insect mortality.
3) Food Supply: In the Alpine Belt a more severe climate is experienced than at lower altitudes, resulting in longer winters and shorter summers. The food supply (both insect and seed) is therefore likely to fluctuate between summer and winter far more than at lower altitudes. This allows a large influx of birds during the summer months. However, as winter approaches and the food supply decreases, a movement out of the Alpine Belt takes place, with birds either migrating to lower altitudes (e.g. fairy flycatcher, malachite sunbird), or being forced to expand their range into neighbouring (and perhaps not ideal) areas (e.g. rock jumper, Drakensberg siskin).
4) Habitat: – (a) Feeding: In winter birds may be forced to descend to the Subalpine Belt (as described in 3 above) due to a poor food supply in the Alpine Belt. However, foraging conditions may not be suitable e.g. longer

grass, no Alpine heath, less rock, few open patches of stony ground, and as soon as the food supply in the Alpine Belt increases, birds soon return. Also, favoured food items of the different species may not be available below the Alpine Belt.

– (b) Nesting: Nest sites may not be suitable for Alpine species below this belt , causing birds to move up to breed.

5) Competition: As the food supply diminishes with the advance of winter, inter– and intraspecific competition between Alpine birds may increase, forcing some to move down to neighbouring areas. With the approach of summer and the return of altitudinal migrants, competition at lower altitudes may increase, which, with the corresponding increase in food, causes these species to return to the Alpine Belt.
6) Fire: The sparsity of the vegetation of the Natal Alpine Belt is a result of the shallow soil and rocky substrate, the harsh climate, overgrazing by domestic stock and the gathering of woody shrubs by the Basotho. Sporadic veld fires, started in summer by lightning and towards the end of winter by the Basotho, burn out relatively small areas resulting in very localised bird movements. Insects have been found to survive fires in fair numbers, and insectivorous animals such as rodents (Rowe-Rowe & Lowry, 1982) and birds are the first to recolonize burnt veld. Unless large areas of the Alpine Belt were burnt, fire would be unlikely to cause any altitudinal movement.

The effects of these and other as yet unidentified factors on the movements observed in some Alpine species are not fully understood, but are presented here as ideas for consideration.

Four breeding species of the Natal Alpine Belt are listed as requiring conservation in the S.A. Red Data Book – Aves (Siegfried *et al.*, 1976). These are:

1) Black stork;"probably no more than 100 breeding birds" in southern Africa. Two pairs breeding in the Alpine Belt of GCGR. Extrapolating to the entire Natal Alpine Belt, this area could support about 15 pairs.
2) Bald ibis; endemic to South Africa (including Lesotho and Transkei). Recorded as "rare and localised". At least three pairs breeding in the GCGR Alpine Belt. Total for the Natal Alpine Belt – unknown.
3) Cape vulture; endemic to southern Africa, recorded as "threatened and vulnerable". At least 790 birds on the cliffs of the Natal Alpine Belt, with a minimum of 400 birds breeding.
4) Bearded vulture; restricted to mountainous terrain, recorded as "rare and threatened". Approximately 30 pairs breeding in the Natal Alpine Belt.

Acocks' (1953) classification of South African veld and vegetation types was used by Edwards (1974) to determine the adequacy of existing conservation areas. The *Themeda-Festuca* Alpine Veld type was classed as "outstandingly well conserved", with over 20% of their area under conservation. Acocks' "Alpine Veld" type encompasses the area between about 1 830 m (6 000 ft) and the summit of the Drakensberg. Acocks failed to recognise that the vegetation of the summit (Alpine Belt) differed from that of the Subalpine Belt, but stated that "when the species change, a new Veld Type must be established". Thus the Alpine (fynbos) heath, which is distinct from other veld types, should be classed separately. Even though 87% of the Natal Alpine Belt falls within Forestry and Natal Parks Board reserves, in practice, due to their inaccessibility, these areas receive no conservation management or protection. Although large areas of Lesotho fall within the Alpine zone, none of these areas (nor indeed any other Alpine area in southern Africa) have any conservation status.

The avifauna alone, with its unique and interesting composition and its important populations of Red Data species, justifies the provision of adequate active conservation management of the Natal Alpine Belt. The presence of other biological organisms, as well as the importance of water conservation in this region further substantiate this claim.

SUMMARY

The Natal Alpine Belt is that region of the Natal Drakensberg above 2 865 m (9 400 ft) in altitude, and covers an area of about 22 300 ha. The climate is severe and altitudinal drought conditions prevail, these being reflected in the xeromorphic character of the vegetation.

54 bird species were recorded in the Natal Alpine Belt. Four are non-breeding migrants, two are intra-African migrants and 16 are altitudinal migrants. Altitudinal migrants were divided into (i) long distance migrants (absent from the Drakensberg in winter), (ii) species extending their range to higher altitudes in summer, and (iii) species extending their range to lower altitudes in winter. Possible reasons for these movements are discussed. The remaining 32 species were regarded as resident, though some movements within their ranges may take place. Where available, breeding dates and clutch sizes are given.

Counts of the 25 "ground birds" show that after the rock pigeon, the Drakensberg siskin, sicklewing chat, whitenecked raven and rock jumper were the most abundant species. Excluding the rock pigeon, summer counts were significantly higher than winter counts, suggesting a higher carrying capacity and an influx of birds during this season.

The ecological importance of the Natal Alpine Belt is stressed. The unique avifaunal composition and the important populations of Red Data species such as the bearded vulture (about 30 breeding pairs) and the Cape vulture (about 800 birds) justifies adequate conservation managment of this area.

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