Фауна і населення	Беркут	19	Вип. 1-2	2010	39 - 48

SANDSTONE PLATEAUS AS BIRD REFUGIA IN LESOTHO LOWLANDS, SOUTHERN AFRICA

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Abstract. Breeding bird communities were quntified by means of the line transect method in three plateaus (Masite, Qeme, Qoatsaneng) located in Lesotho lowlands, southern Africa. Studies were conducted both on plains (mainly *Cymbopogon-Themeda* grassland) and slopes (bushy vegetation) of these plateaus and both in dry and wet season. In total 61 species were recorded in the large plateau (Qeme), 57 – in the medium-sized (Masite), and 40 – in small plateau (Qoatsaneng). The index of bird community similarities between slopes and plains was 0.83; between dry and wet season on slopes S = 0.75 and S = 0.44 on plains; between dry and wet seasons was S = 0.76, and between two consecutive years S = 0.94. The most common species were: Laughing Dove, Speckled Pigeon, Spotted Prinia, Karoo Scrub Robin, Cape Robin-Chat, Cinnamon-breasted Bunting, Cape Bunting, Red-winged Starling, Red-eyed Bulbul, Layard's Tit-Babbler, Rock Martin, Cape Canary, Bokmakierie, Niddicky. To date species such as the Karoo Scrub Robin, Swee Waxbill, Cape Batis, Streaky-headed Seedeater, Yellow Canary, Layard's Tit-Babbler, Fairy Flycatcher, Pied Barbet, Pied Crow and White-necked Raven were regarded as rare in Lesotho lowlands. It appears, however, that in the bushy vegetation around plateaus in the lowlands they are relatively common. Plateaus play an important role in the protection of birds of prey, ciconid and corvid species. The bushy vegetation around such plateaus may preserve a sizable populations of the Helmeted Guineafowl, Swainson's Francolin, Ground Woodpecker, Pied Barbet, Karoo Scrub Robin, Cape Rock Thrush, Streaky-headed Seedeater, Black-throated Canary, Layard's Tit-Babbler, Malachite Sunbird, Fiscal Flycatcher, Fairy Flycatcher, Cape Batis, and Swee Waxbill. The Masite Plateau is postulated to be protected as a nature reserve, while the huge Qeme Plateau as a game reserve.

Key words: bird community, number, habitat, rare species, nature conservation.

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Песчаниковые плато как птичьи рефугиумы на равнинах Лесото, Южная Африка. - Г. Копий. - Беркут. 19 (1-2). 2010. - Исследования проводились на трех плато в 1999–2001 гг. Птиц учитывали методом линейных трансектов как на травянистых равнинах, так и на покрытых кустарниками склонах, в сухой и влажный сезоны года. На плато большого размера было учтено 61 вид птиц, на среднем – 57, на маленьком – 40. Сходство населения птиц определяли по индексу Съеренсена. Индекс сходства между равнинами и склонами составлял 0,83, между сухим и влажным сезонами – 0,75 на склонах и 0,44 на равнинах, в целом между сезонами – 0,76, между двумя последовательными годами – 0,94. Плато играют большую роль для охраны птиц, прежде всего хищников, аистовых и врановых. Кустарниковая растительность вокруг плато служит местом обитания больших группировок обыкновенной цесарки, турача Свенсона, земляного дятла и многих других видов. Предлагается создание охраняемых природных территорий.

INTRODUCTION

The lowlands of Lesotho constitute a part of the greater High Veld, originally vegetated with grasslands. Several millions years ago, this zone was covered by basalt, which have been largely removed by erosion and weathering. As a result, the older sedimentary rocks are now exposed at the surface in the forms of flat-topped plateaus, capped by a thick horizontal sandstone layer. Because this rock is very resistant to erosion and weathering, there is often almost vertical cliff around the top of these hills. This cliff is an attractive breeding site for a number of bird species. Below the cliff there are debris slopes with boulders, covered usually with a luxuriant bushy vegetation. This vegetation is also a preferred breeding habitat for birds and other animals.

Such plateaus are in Lesotho lowlands located amidst intensively used farmlands, often heavily eroded, densely populated and avoid of indigenous vegetation (i.e. *Cymbopogon-Themeda* grassland). They can be viewed therefore as ecological islands and wildlife refugia, playing an important role in nature conservation (Kopij, 2001). So far, this has not been, however, demonstrated.

These plateaus are scattered all over Lesotho lowlands and they very in size from very small (< 10 ha) to very large (> 1500 ha). Very large plateaus include: Leribe, Makoa-

rane, Berea, Qeme, Thabana Morena, 10 are medium-sized (200–1500 ha) and the remaining dozen or so are small (< 200 ha). Most of these plateaus range in altitude between 1900 and 2100 m a.s.l. So far, no quantitative studies have been conducted on any components of the wildlife of any of these plateaus. In this study, bird assemblages in three of them (large, medium-sized and small) have been quantified.

STUDY AREA

For the purpose of this study three out of about 30 plateaus were selected: Masite, Qeme, and Qoatsaneng. All are located in the south-western part of Maseru district, western Lesotho. The potential vegetation around these plateaus comprises the *Cymbopogon-Themeda* Grassveld (Acocks 1988; Low, Rebelo 1996), being, at present, almost entirely converted into cultivated fields.

The Masite Plateau

It is located at 29º 36´ S and 27º 27´ E, with a surface area of c. 1000 ha. Slops arise at 1800 m, rising to 2081 m, while the plateau is between 2000 m and 2081 m a.s.l.

About ¼ of the plateau is covered with rocks, the remaining is mainly *Leucosidea serice* bush and karroid vegetation, and smaller parts are occupied by natural *Cymbopogon-Themeda* grassland. There are also two small pans and five small streams joining Sehutlong River. The plateau is used as pasture and so called initiation school (September – February).

Slopes are covered with bushy natural vegetation dominated by species such as the Nana Berry (*Rhus dentate*), Broom Karee (*R. erosa*), Common Taaibos (*R. pyroides*), Blue Guarri (*Euclea crispa*), Cape Myrtle (*Myrsine africana*), and Dogwood (*Rhamnus prinoides*). Over 17 other less common species were identified in this bush (Talukdar, 1995). There is also an eucalypt woodlot, c. 30 ha, on the western slope.

Besides birds the following other vertebrate species have been recorded in this area: Rock Dassie (*Procavia capensis*), Burchell's Sand Lizard (*Pedioplanis burchelli*), Southern Rock Agama (*Agama atra*).

The Qeme Plateau

It is located between 29º25´ – 29º31´ S and 27º22´ – 27º31´ E. Its surface area is c. 2000 ha. It arises from the flat terrain at 1800 m a.s.l. and its highest point is at 2027 m a.s.l. The area includes: 1) slopes, normally with base at 1550 m to 1650 m rising to 1850 m; used for grazing by sheep and goats, woodlots and villages along some streams; 2) summit plateau at c. 1850 to 2027 m, used for grazing by cattle, horses, sheep and goats, and for so called initiation schools (September – February). The Qeme Plateau is composed of massive sandstone of the Clarens Formation of the Aeolian origin, while the lower slopes are sedimentary rocks of the Elliot Formation.

Slopes are covered with bushy vegetation dominated by species such as the Nana Berry, Broom Karee, Common Taaibos, Blue Guarri, Cape Myrtle, and Dogwood. Over 17 other less common species were identified in this bush (Talukdar, 1995). There is a vast grassy plain (*Cymbopogon-Themeda* Grassveld) on the top of this pateau.

Besides birds the following other vertebrate species have been recorded: Grey Slender Mongoose (*Galerella sanguinea*), Rock Dassie, Burchell's Sand Lizard, Southern Rock Agama, Thread Snake (*Leptotyphlops* sp.).

The Qoatsaneng Plateau

It is centrally situated in Maseru (29º19´ S; 27º29´ E), surrounded by built-up area. In the northern part a complex of buildings was erected in 1978, known today as Lesotho Sun Hotel.

The plateau (c. 70 ha) is an undulating Clarens formation, consisting of unconsolidated cover of sandstone below the cave sandstone. Deep and mainly loamy and sandstone residium covers the plateau depressions, while the hill top has stony soil on bare rock surfaces. The edges of the plateau consist of sandstone scarps. Adjacent slopes below the sandstone scarps contain rocks from the refreating scarps.

Before 1904, the Qoatsaneng was treeless, but soon after, a mixed indigenous and exotic (mainly gums *Eucalyptus* spp., Blue Wattle (*Acacia dealbata*) and pines *Pinus* sp.) vegetation around the hotel begun to develop. Today it forms a thick woodlot (Ambrose, 1993). The central part of the plateau is composed of two bare hills with TV towers, while the peripheral parts (slopes) are covered with indigenous shrubby vegetation, with the following main species: *Rhus burchellii, R. lancea, R. dentate, R. divericata, R. erosa, Euclea crispa, Grewia occidentalis, Olea europea, Celtis africana, Heteromorpha trifolium*. The most southern part constitutes overgrazed grassland with *Themeda triandra, Aristida difussa, Eragrostis curvula, E. capensis, Cymbopogon plurinodis* and *Hyparhenia hirtea*. There is a lack of rivers, streams or water-bodies in the area.

No larger mammals, fish and amphibians were recorded in the Qoatsaneng Plateau, but there are a number of reptile species, such as Burchell's Sand Lizard, Cape Skink (*Mabuya capensis*), Southern Rock Agama and a gecko. Part of the area is used as pasture for cattle and sheep.

METHODS

The line transect method in American version (Bibby et al., 1992) has been employed to assess the species composition and dominance structure in bird assemblages. In the Masite Plateau, studies were conducted in two major vegetation types, viz. bushes on the slopes and grass mixed with patches of bushes and karroid vegetation on the top. In the Qeme and Qoatsaneng Plateaus studies were conducted on the slopes only.

In the Masite Plateau, the studies were conducted on the following days:

11.05.2000 (slope: 10^{45}–14^{55}; top: 14^{55}–16^{45}) – dry season;

30.09.1999 (slope: 9^{45}–14^{00}, top: 14^{00}–17^{15}) – wet season;

14.10.2000 (slope: 10^{10}–13^{30}; top: 13^{30}–17^{15} – wet season.

In the Qeme Plateau, during the 1999/2000 wet season, counts were conducted on the following days:

28.09.1999, from 8^{45} to 12^{00};

2.10.1999, from 8^{30} to 11^{10};

2.10.1999, from 11^{10} to 16^{00};

6.11.1999, from 7^{00} to 11^{30}.

During the consecutive 2000/2001 wet season, counts on the same were conducted as follow:

26.09.2000, from 10^{00} to 14^{00};

3.10.2000, from 9^{30} to 12^{00};

3.10.2000, from 12^{00} to 16^{30};

4.11.2000, from 9^{00} to 13^{00}.

In the Qoatsaneng Plateau, counts were conducted on the following days of the wet season:

30.11.2000, from 9^{00} to 11^{40};

14.12.2000, from 7^{40} to 10^{30};

29.01.2001, from 7^{00} to 9^{00};

12.02.2001, from 7^{00} to 9^{00}.

The maximum number of breeding pairs of given species recorded in one of the 3–4 surveys conducted was assumed as representing the actual number of breeding pairs on this transect (cf. Bibby et al., 1992). The average walking speed on the slopes was about 1 km per 0.5 hour.

Only resident species were counted. A pair of a resident species was a census unit. Records of single birds or families were interpreted as one pair.

The index of bird community similarity was calculated using the Sorensen's Quotient of Similarity:

$$S = 2z/[x+y],$$

where z – the number of species common for the two habitats compared, x – the number of species in the habitat x, y – the number of species in the habitat y). The 'S' value changes from 0 (complete lack of similarity) to 1 (identical habitats).

The systematics, and English and scientific nomenclature of birds follow that of Hockey et al. (2005). Eudominant species is defined here as being represented by at least 10% of the total number of all breeding pairs recorded, dominant: 5–9.9%, and subdominant 2–4.9%.

Table 1

Bird assemblages on slopes and plain of the Masite Plateau during the dry and wet season
Население птиц на склонах и равнине плато Масите в сухой и влажный сезоны

Species	Dry season				Wet season			
	Slopes		Plain		Slopes		Plain	
	P	D	P	D	P	D	P	D
1	2	3	4	5	6	7	8	9
Prinia hypoxantha	12	3.8	1	2.3	**36**	**15.1**	**16**	**10.7**
Columba guinea	**35**	**11.0**	0	0.0	**14**	**5.9**	5	3.3
Erythropygia coryphaeus	17	5.3	8	18.2	20	8.4	15	10.0
Streptopelia senegalensis	**41**	**12.9**	2	4.5	4	1.7	2	1.3
Emberiza capensis	9	2.8	**8**	**18.2**	**20**	**8.4**	**10**	**6.7**
Pycnonotus nigricans	**24**	**7.5**	0	0.0	**18**	**7.5**	1	0.7
Onychognathus morio	**32**	**10.0**	**3**	**6.8**	2	0.8	2	1.3
Emberiza tahapisi	**27**	**8.5**	**3**	**6.8**	1	0.4	0	0.0
Zosterops pallidus	13	4.1	0	0.0	11	4.6	5	3.3
Cossypha caffra	9	2.8	0	0.0	**14**	**5.9**	5	3.3
Parisoma layardi	**19**	**6.0**	0	0.0	5	2.1	3	2.0
Serinus canicollis	**17**	**5.3**	0	0.0	5	2.1	4	2.7
Telophorus zeylonus	6	1.9	2	4.5	**13**	**5.4**	5	3.3
Hirundo fuligula	17	5.3	0	0.0	4	1.7	4	2.7
Anthus crenatus	4	1.3	1	2.3	8	3.3	**8**	**5.3**
Cisticola subruficapilla	3	0.9	0	0.0	**15**	**6.3**	1	0.7
Nectarinia famosa	3	0.9	0	0.0	11	4.6	3	2.0
Estrilda astrild	0	0.0	0	0.0	2	0.8	**12**	**8.0**
Ortygospiza atricollis	0	0.0	**10**	**22.7**	0	0.0	0	0.0
Cisticola lais	0	0.0	0	0.0	5	2.1	5	3.3
Francolinus africanus	0	0.0	1	2.3	0	0.0	**9**	**6.0**
Serinus albogularis	2	0.6	1	2.3	5	2.1	2	1.3
Hirundo cucullata	1	0.3	0	0.0	2	0.8	5	3.3
Geocolaptes olivaceus	2	0.6	0	0.0	4	1.7	2	1.3
Tracholaema leucomelas	7	2.2	0	0.0	0	0.0	0	0.0
Oenanthe monticola	0	0.0	1	2.3	2	0.8	4	2.7
Numida meleagris	1	0.3	0	0.0	0	0.0	5	3.3
Colius striatus	4	1.3	0	0.0	2	0.8	0	0.0
Francolinus swainsonii	0	0.0	0	0.0	1	0.4	3	2.0
Falco tinnunculus	0	0.0	0	0.0	3	1.3	1	0.7
Stenostira scita	2	0.6	0	0.0	2	0.8	0	0.0
Streptopelia capicola	2	0.6	0	0.0	0	0.0	1	0.7
Sigelus silens	2	0.6	0	0.0	0	0.0	1	0.7
Sphenoeacus afer	0	0.0	0	0.0	3	1.3	0	0.0
Falco biarmicus	1	0.3	0	0.0	1	0.4	1	0.7
Corvus albus	2	0.6	0	0.0	1	0.4	0	0.0
Cercomela familiaris	1	0.3	0	0.0	0	0.0	1	0.7
Macronyx capensis	0	0.0	1	2.3	0	0.0	1	0.7
Apus barbatus	1	0.3	0	0.0	1	0.4	0	0.0
Estrilda melanotis	1	0.3	0	0.0	1	0.4	0	0.0
Anthus cinnamomeus	0	0.0	1	2.3	0	0.0	0	0.0
Charadrius tricollaris	0	0.0	1	2.3	0	0.0	0	0.0

End of the Table 1 Окончание таблицы 1

1	2	3	4	5	6	7	8	9
Malcorus pectoralis	0	0.0	0	0.0	0	0.0	1	0.7
Monticola rupestris	0	0.0	0	0.0	0	0.0	1	0.7
Polyboroides typus	0	0.0	0	0.0	0	0.0	1	0.7
Ciconia nigra	0	0.0	0	0.0	0	0.0	1	0.7
Buteo rufofuscus	0	0.0	0	0.0	0	0.0	1	0.7
Serinus atrogularis	0	0.0	0	0.0	0	0.0	1	0.7
Ploceus capensis	0	0.0	0	0.0	0	0.0	1	0.7
Sturnus vulgaris	0	0.0	0	0.0	0	0.0	1	0.7
Corvus albicollis	0	0.0	0	0.0	1	0.4	0	0.0
Urocolius indicus	1	0.3	0	0.0	0	0.0	0	0.0
Mirafra curvirostris	1	0.3	0	0.0	0	0.0	0	0.0
Passer domesticus	0	0.0	0	0.0	1	0.4	0	0.0
Corvus capensis	0	0.0	0	0.0	1	0.4	0	0.0
Number of pairs	**319**		**44**		**239**		**150**	
Number of species	**33**		**16**		**35**		**40**	

Note. In Tables 1–3: P – number of resident pairs, D – dominance (%). The dominant species are indicated with bold case.

RESULTS

Masite Plateau

A total of 56 breeding resident bird species were recorded in the Masite Plateau, including 44 on slopes and 45 on the plain (Table 1). Only on the plain 10 species were recorded (Quail Finch (*Ortygospiza atricollis*), Karoo Scrub Robin (*Erythropygia coryphaeus*), Cape Longcalw (*Macronyx capensis*), African Pipit (*Anthus cinnamomeus*), Tree-banded Plover (*Charadrius tricollaris*), Rufous-eared Prinia (*Malcorus pectoralis*), Cape Rock Thrush (*Monticola rupestris*), Black-throated Canary (*Serinus atrigularis*), Cape Weaver (*Ploceus capensis*), Common Starling (*Sturnus vulgaris*)), while only on slopes seven species (Speckled Mousebird (*Colius striatus*), Red-faced Mousebird (*Urocolius indicus*), Fairy Flycatcher (*Stenostira scita*), Grassbird (*Sphenoaecus afer*), Long-billed Lark (*Mirafra curvirostris*), Swee Waxbill (*Estrilda melanotis*), House Sparrow (*Passer domesticus*)). Although the Black Crow (*Corvus capensis*), Pied Crow (*C. albus*), White-necked Raven (*C. albicollis*), Black Swift (*Apus barbatus*), Gymnogene (*Polyboroides typus*), Jackal Buzzard (*Buteo rufofuscus*) and Black Stork (*Ciconia nigra*) were recorded on slopes, they were associated with the sandstone cliffs as nesting habitat. Therefore, the index of bird community similarity between slopes and plain was S = 0.83.

In wet season, dominant species (> 5% of all pairs recorded) on slopes included the Spotted Prinia (*Prinia hypoxantha*), Karoo Scrub Robin, Cape Bunting (*Emberiza capensis*), Red-eyed Bulbul (*Pycnonotus nigricans*), Bokmakierie (*Telophorus zeylonus*), Cape Robin-Chat (*Cossypha caffra*) and Niddicky (*Cisticolla fulvicapilla*). In the dry season, the following ones were dominant: Laughing Dove (*Streptopelia senegalensis*), Speckled Pigeon (*Columba guinea*), Red-winged Starling (*Onychognathus morio*), Red-eyed Bulbul, Cinnamon-breasted Bunting (*Emberiza tahapisi*), Layard's Tit-Babbler (*Parisoma layardi*), Rock Martin (*Hirundo fuligula*) and Cape Canary (*Serinus canicollis*) (Table 1). The index of bird community similarity on slopes between the dry and wet season was S = 0.75, while that on plain was S = 0.44. This index be-

Table 2

Bird assemblages in Qeme Plateau during the wet season of 1999/2000 and 2000/2001
Население птиц на плато Кверме во влажные сезоны 1999/2000 и 2000/2001 гг.

Species	1999/2000		2000/2001	
	P	D	P	D
1	2	3	4	5
Columba guinea	37	9.6	121	**29.4**
Serinus canicollis	39	10.1	22	**5.3**
Prinia hypoxantha	**24**	**6.2**	16	3.9
Emberiza capensis	**24**	**6.2**	12	2.9
Streptopelia senegalensis	**26**	**6.7**	8	1.9
Onychognathus morio	13	3.4	20	4.9
Cossypha caffra	16	4.1	15	3.6
Zosterops pallidus	17	4.4	11	2.7
Erythropygia coryphaeus	19	4.9	9	2.2
Cisticola subruficapilla	10	2.6	16	3.9
Passer domesticus	6	1.6	15	3.6
Nectarinia famosa	8	2.1	10	2.4
Pycnonotis nigricans	11	2.8	5	1.2
Telophorus zeylonus	11	2.8	4	1.0
Spreo bicolor	3	0.8	12	2.9
Colius striatus	4	1.0	8	1.9
Passer griseus	5	1.3	7	1.7
Hirundo cucullata	6	1.6	6	1.5
H. rupestris	7	1.8	4	1.0
Passer melanurus	1	0.3	10	2.4
Cisticola lais	8	2.1	3	0.7
Anthus crenatus	6	1.6	5	1.2
Serinus atrigularis	5	1.3	6	1.5
Geocolaptes olivaceus	7	1.8	3	0.7
Apus barbatus	8	2.1	2	0.5
Estrilda astrild	5	1.3	5	1.2
Emberiza tahapisi	6	1.6	3	0.7
Streptopelia capicola	6	1.6	2	0.5
Serinus gularis	3	0.8	5	1.2
Lanius collaris	2	0.5	5	1.2
Oenanthe monticola	4	1.0	3	0.7
Sphenoaecus afer	2	0.5	4	1.0
Parisoma layardi	5	1.3	1	0.2
Cercomela familiaris	2	0.5	3	0.7
Corvus albus	3	0.8	2	0.5
Apus melba	5	1.3	0	0.0
Corvus capensis	2	0.5	2	0.5
Falco tinnunculus	1	0.3	3	0.7
Serinus flaviventris	1	0.3	3	0.7
Francolinus swainsonii	4	1.0	0	0.0
Motacilla capensis	2	0.5	2	0.5
Tracholaema leucomelas	2	0.5	1	0.2
Geronticus calvus	2	0.5	1	0.2

End of the Table 2 Окончание таблицы 2

1	2	3	4	5
Ploceus velatus	1	0.3	2	0.5
Batis capensis	1	0.3	2	0.5
Corvus albicollis	1	0.3	1	0.2
Serinus albogularis	1	0.3	1	0.2
Sigelus silens	0	0.0	2	0.5
Ciconia nigra	0	0.0	1	0.2
Falco biarmicus	0	0.0	1	0.2
Numida meleagris	1	0.3	0	0.0
Turdus olivaceus	1	0.3	0	0.0
Polyboroides typhus	1	0.3	0	0.0
Gypaetus barbatus	1	0.3	0	0.0
Stenostira scita	0	0.0	1	0.2
Hirundo albigularis	0	0.0	1	0.2
Buteo rufofuscus	0	0.0	1	0.2
Bostrychia hagedash	0	0.0	1	0.2
Scopus umbretta	0	0.0	1	0.2
Oena capensis	0	0.0	1	0.2
Monticola rupestris	0	0.0	1	0.2
Total number of pairs recorded	**386**	**100.0**	**412**	**100.0**

tween bird community (both on slopes and on the plain) in dry and wet season was S = 0.76.

Qeme Plateau

Among 61 species recorded in 1999 and 2000 summers (Table 2), in both years the Speckled Pigeon and Cape Canary were dominants, while in 2000/2001 the following other belonged to the group: Cape Bunting, Spotted Prinia and Laughing Dove. However, the general proportion of dominants was much the same in both seasons compared (38.8% against 34.7%).

Other common species in both years were: Red-winged Starling, Cape Robin-Chat, Cape White-eye (*Zosterops pallidus*), Karoo Scrub Robin, Neddicky, Malachite Sunbird (*Nectarinia famosa*), Red-eyed Bulbul, Bokmakierie, Rock Pipit (*Anthus crenatus*), Ground Woodpecker (*Geocolaptes olivaceus*), Grassbird and Layard's Tit-Babbler. Among rare and endangered species were the Southern Bald Ibis (*Geronticus calvus*) and Black Stork.

In total, 45 species nested both in 1999/2000 and 2000/2001 seasons; only in 1999/2000 – 51 species, while only in 2000/2001 – 55 species. The index of bird community similarity between the two years compared was therefore calculated at S = 0.94. The Speckled Pigeon was much commoner in 2001/2002 than in 1999/2000, while the reverse is true in respect to doves. Canaries as a group were commoner in 1999/2000 than in 2000/2001.

Qoatsaneng Plateau

A total of 166 breeding pairs represented by 40 species have been recorded (Table 3). Dominant species were represented by the Neddicky, Laughing Dove, Cape White-eye, Red-eyed Bulbul, Southern Masked Weaver (*Ploceus velatus*), Spotted Prinia and Cape Turtle-Dove (*Streptopelia capicola*). Together these species composed 57% of all breeding pairs recorded. Nine species (including three pairs of the Common Starling, two pairs of the Greater Striped Swallow (*Hirundo cucculata*) and all the species with 0.5 pairs in Table 1) had nests located outside the study area, but parts of their territories were located within the Qoatsaneng Plateau.

Eight non-breeding species were also recorded during the study period, namely three summer visitors, i.e. the Spotted Flycatcher (*Muscicapa striata*), Lesser Kestrel (*Falco*

Table 3

Breeding bird community of the Qoatsaneng Plateau in austral summer 2000/2001
Население птиц плато Коатсаненг южным летом 2000/2001 гг.

Species	Pairs	Dominance
Cisticola ruficapilla	24	**14.5**
Streptopelia senegalensis	15	**9.1**
Zosterops pallidus	15	**9.1**
Pycnonotis nigricans	11	**6.7**
Ploceus velatus	10	**6.1**
Prinia hypoxantha	**10**	**6.0**
Streptopelia capicola	**9**	**5.4**
Lanius collaris	8	4.8
Cercotrichas coryphaeus	6	3.6
Hirundo fuligula	5	3.0
Serinus canicollis	5	3.0
Columba guinea	4	2.4
Urocolius indicus	4	2.4
Onychognathus morio	4	2.4
Turdus olivaceus	4	2.4
Colius striatus	3	1.8
Scleroptila swainsonii	2	1.2
S. semitorquata	2	1.2
Telophorus zeylonus	2	1.2
Spreo bicolor	2	1.2
Anthus cinnamomeus	2	1.2
Emberiza tahapisi	2	1.2
Cercomela familiaris	2	1.2
Sturnus vulgaris	1.5	0.9
Bostrychia hagedash	1	0.6
Upupa africana	1	0.6
Trachyphonus vaillantii	1	0.6
Calandrella cinerea	1	0.6
Geocolaptes olivaceus	1	0.6
Hirundo cucullata	1	0.6
Serinus albogularis	1	0.6
S. atrogularis	1	0.6
Emberiza capensis	1	0.6
Passer diffusus	1	0.6
Cuculus solitarius	0.5	0.3
Chrysococcyx caprius	0.5	0.3
Lybius leucomelas	0.5	0.3
Oenanthe monticola	0.5	0.3
Lamprotornis nitens	0.5	0.3
Acridotheres tristis	0.5	0.3
Total	**165.5**	**100.0**

naumanni), Amur Falcon (*F. amurensis*) and five regular visitors from the neighbouring breeding areas, i.e. the Black-shouldered Kite (*Elanus careruleus*), Black Swift, Little Swift (*Apus affinis*), Alpine Swift (*Tachymarptis melba*), Lanner Falcon (*Falco biarmicus*) and Cattle Egret (*Bubulcus ibis*).

There are some data on birds of the Qoatsaneng Plateau from previous years. In 1996, the Natal Spurfowl (*Pternistis natalensis*) and Rufous-chested Sparrowhawk (*Accipiter rufiventris*) were also recorded in the Qoatsaneng Plateau as visitors (Kopij, 2000; D. Ambrose, pers. com.). The Cinnamon-breasted Buntings and African Hoopoes (*Upupa africanus*) nested on the plateau also during the years 1996–1999. On other hand, the Fairy Flycatcher, suspected to breed during the years 1996–1999 (Kopij, 2000), was not recorded in 2000/2001 summer. During the years 1996–1999, only single pairs of the Karoo Scrub Robin were suspected to breed on the hill, the 2001 survey revealed that it is actually a common breeding resident on the Qoatsaneng Plateau and probably on the neighbouring Qoaling Plateau. Till 1999, the African Pipit, Red-capped Lark (*Calandrella cinerea*), Cape Bunting and Mountain Chat (*Oenanthe monticola*) were regarded as vagrants or visitors to Maseru (Kopij, 2000). In 2000/2001 summer single breeding pairs were recorded in the Qoatsaneng Plateau.

DISCUSSION

The number of pairs recorded in each transects should be treated as a minimal number of actually resident (breeding) pairs. The real number is probably much underestimated in the case of silent and elusive, more secretive and less mobile species. It can be expected, therefore, that the numbers the Layard's Tit-Babbler, Fairly Flycatcher or Fiscal Flycatcher

Table 4

Estimated number of resident (breeding) pairs of selected bird species in the Masite, Qeme and Qoatsaneng Plateaus during the years 1999–2001
Оценка численности некоторых гнездящихся видов птиц на трех плато в 1999–2001 гг.

Species	Status	Masite	Qeme	Qoatsaneng
Ciconia nigra	R	1	1	–
Geronticus calvus	R	–	2	–
Bostrychia hagedash		–	1	1
Scopus umbretta		–	1	–
Polyboroides typhus	R	1	1	–
Buteo rufofuscus		1	1	–
Falco biarmicus		1	1	–
F. tinnunculus		2–3	3–5	–
Numida meleagris	R	5–8	1–3	–
Francolinus africanus		3–6	–	–
F. swainsonii	R	3–5	–	2
Charadrius tricollaris		1	–	–
Oena capensis		–	1	–
Tracholaema leucomelas	R	5–7	2–4	0–1
Geocolaptes olivaceus		6–9	7–12	1
Malcorus pectoralis	R	1–2	–	–
Cossypha caffra		20–30	15–40	–
Erythropygia coryphaeus	R	30–50	20–40	4–7
Parisoma layardi	R	20–30	5–20	
Telophorus zeylonus		10–15	10–13	2
Corvus albicollis	R	1	1	–
C. albus	R	1–2	2–3	–
C. capensis		1–2	2–4	–
Estrilda melanotis	R	1–2	–	–
Serinus albogularis	R	5–10	1–3	1
S. atrogularis		1–3	5–10	1

Note. Status: R – rare in Lesotho.

(*Sigelus silens*) are in fact much higher. Numbers may only be slightly underestimated for species such as the Bokmakierie, Cape Robin-Chat, Red-eyed Bulbul, Southern Masked Weaver or Malachite Sunbird.

To date, the Swee Waxbill, Streaky-headed Seedeater (*Serinus gularis*), Yellow Canary (*S. flaviventris*), Layard's Tit-Babbler, Fairy Flycatcher, Pied Barbet (*Tracholaema leucomelas*), Red-faced Mousebird, Pied Crow and White-necked Raven were regarded as rare in Lesotho lowlands (Osborne, Tigar 1990; Bonde, 1993). It appears, however, that in the bushy vegetation around plateaus in the lowlands they are relatively common. As they are, probably, also in the bushy vegetation along the sandstone-cliffs on the borderline between the lowlands and the foothills. The Karoo Scrub Robin, which proved to be a dominant species in the bushy vegetation around the plateaus, was before virtually unknown as breeding species in Lesotho (Osborne, Tigar 1990). The breeding localities of the Rufous-eared Warbler at Masite Plateau and Cape Batis at the Qeme Plateau are the only known sites of these species in this country.

Plateaus play an important role in the protection of some bird species in the Lesotho

lowlands. First of all they can be viewed as natural refugia and suitable nesting sites for birds of prey (Gymnogene, Lanner Falcon, Rock Kestrel (*Falco tinnunculus*), Jackal Buzzard), ciconid (Southern Bald Ibis, Black Stork) and corvid species (White-necked Raven, Pied Crow, Black Crow). The bushy vegetation around these plateaus may preserve a sizable populations of the Helmeted Guineafowl (*Numida meleagris*), Swainson's Francolin (*Francolinus swainsonii*), Ground Woodpecker, Pied Barbet, Karoo Scrub Robin, Cape Rock Thrush, Streaky-headed Seedeater, Black-throated Canary, Layard's Tit-Babbler, Malachite Sunbird, Fiscal Flycatcher, Fairy Flycatcher, and Swee Waxbill.

All plateaus investigated have still relatively well-preserved natural vegetation, among others, unique in Lesotho *Rhus lancea* bushes (Talukdar, 1995), which may preserve a rich invertebrate communities (Lepidoptera, Coleoptera, Hymenoptera, Araneae) (Kopij, 2001). The plateaus harbour also a sizeable populations of the Rock Dassie, a species seriously endangered in Lesotho (Kopij, 2001).

In addition, there are in the Qeme Plateau sites with fossil bones of dinosaurs and their footprints, nine sites with Bushmen rock paintings, and a historic site with an inscription in High Dutch, left by the Boers, when Lesotho became British Protectorate in 1868 (Kopij, 2001). There are also some geological peculiarities, i.e. a spectacular waterfall along the Lilibaneng Stream, springs and pans. In rock pools located on both plateaus, interesting branchipod species occur (Kopij, 2001).

As all the plateaus investigated are located close to the capital of Lesotho, they also may play an important role in ecological education (Kopij, 2001). The Masite Plateau is postulated to be protected as a nature reserve, while the Qeme Plateau as a game reserve, modeled on the Franklin Game Reserve in Bloemfontein city centre (Kopij, De Swardt, 1998). The Qatsenang Plateau may play a role as a city park or garden. Conservation measures to be considered in these areas include controlled grazing, prohibition of shrub removal, anti-erosion measurers along streams, and special protection of sites with rock paintings.

Similar studies on avian communities, and other components of the local fauna and flora, should be undertaken in other plateaus in Lesotho lowlands (especially Leribe, Berea, Khamolane, Thaba Tšoeu, Thabana Morena and Maboloka) to document their possibly crucial importance in the nature conservation in Lesotho.

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