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AVIAN DIVERSITY IN RURAL AND URBANIZED HABITATS IN LESOTHO

Grzegorz Kopij

Abstract. During the years 1996–2002, a transect line method has been employed to study the relative abundance of breeding bird species in 14 villages and 4 towns in Lesotho. In total, 74 bird species were recorded as breeding there. The average number of resident bird species in towns was 38.8, while in rural areas – 13.4. The average number of bird species clearly increased with the increase in altitude. In rural areas, eight species were distinguished as dominants: two *Streptopelia*-species (Cape Turtle and Laughing Doves), three *Passer*-species (Cape, Grey-headed and House), Speckled Pigeon, Common Fiscal and Cape Canary. In the mountain urban areas, the number of dominant bird species was similar in each town (7–8 species) and the group included: Cape Sparrow, Cape Canary, Southern Bald Ibis, Speckled Pigeon, House Sparrow, Grey-headed Sparrow, Long-tailed Widow, Laughing Dove and Cape Turtle Dove. Species diversity in mountain towns has been shown as being higher than in neighboring grasslands, while that in the rural areas increased with the increase in altitude.

Key words: fauna, southern Africa, urban ornithology, number, dominance.

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Разнообразие птиц в городах и селах Лесото. - Г. Копий. - Беркут. 20 (1-2). 2011. - Исследования проводились методом линейных трансектов в 1996–2002 гг. в 14 селах и 4 городах во всех 4 физико-географических зонах страны. Всего было зарегистрировано 74 гнездящихся вида птиц. В среднем на город приходилось 38,8 вида, на село – 13,4. Количество видов увеличивалось с повышением высоты над уровнем моря. В селах преобладали 8 видов: южноафриканская и малая горлицы, южноафриканский, сероголовый и домовый воробьи, крапчатый голубь, сорокопут-прокурор, канареечный вьюрок. В горных городах группа доминирующих видов была сходной для всех (7–8 видов): южноафриканский воробей, канареечный вьюрок, южный лысый ибис, крапчатый голубь, домовый воробей, сероголовый воробей, огненный ткач, малая и южноафриканская горлицы. Видовое богатство было выше, чем в окружающей саванне.

Introduction

Urban ornithology plays increasingly important role in human ecology, as more and more people live in cities and towns. This holds true especially in regard to Africa, where towns and cities have develop extremely rapidly in the course of the 20th century. For example in Lesotho, till the end of 19th century there was only one small town Maseru, and virtually no permanent settlements in the Maloti region. In the end of 20th century, there were already 12 towns and about 10 larger settlements, like Morija, Masitise, Mazenod, Marakabei etc. with town infrastructure

To date, bird communities were investigated in two Lesotho towns, i.e. Maseru (Kopij, 2000) and Roma (Ambrose, Mapisa, 1999; Kopij, 2001) and in one such settlement, Morija (Kopij, 2006a). However, no studies on bird assemblages in rural areas have been conducted to date. In this paper data on species composition and relative abundance of resident bird species are provided for several other towns and some villages in all physiographical zones in this country.

Study area

Studies were conducted in selected settlements in Lesotho, a mountain country (30 300 km^2) in southern Africa. Traditionally this country is divided into four physiographical zones: lowlands (1500–1800 m a.s.l.), foothills (1800–2000 m a.s.l.), mountains (1800–3482 m a.s.l.) and Senqu/Orange Valley (1388–1800 m a.s.l.).

The lowlands and lower part of the Senqu Valley are covered by the Highveld Grassland, and the remaining land by the Afromontane Grassland (Acocks, 1975). Most of the Highveld Grassland is at present transformed into cultivated fields (mostly maize) and it is densely populated since the end of the 19th

Table 1

Characteristics of urban and rural areas in Lesotho
Характеристика городов и сел в Лесото

Settlement	District	Mean altitude	Population size	Number of bird species	Counting dates
Berea	Tetateyaneng	L	sT	15	03.09.2001
Thaba Bosigo	Maseru	L	M	11	16.08.2001
Nazareth	Maseru	L	V	7	02.01.1999
Matšebo	Maseru	L	V	10	18.09.1999
Van Rooyen	Mafeteng	L	V	5	01.01.1997
Tloekeng	Maseru	H	M	16	24.12.2002
Marakabei	Maseru	H	V	17	23.12.2000
St. Theresa	Maseru	H	M	20	18.01.2002
Qachas Neck	Qachas Nek	F	T: 4 797	26	11.01.2001
Ramabanta	Maseru	F	V	10	16.12.1999
St. Bernard	Maseru	F	M	10	28.10.2000
Masitise I	Quthing	V	V	16	26.02.2001
Masitise II	Quthing	V	V	14	27.02.2001
Quthing	Quthing	V	T: 9 858	11	27.02.2001
Semonkong	Maseru	H	sT	53	28.02.1996, 26.12.1996, 11.01.1999, 09.01.1999, 12.01.1999, 03.12.2000, 31.12.2000
Thaba Tseka	Thaba Tseka	H	T: 4 449	37	02.03.2001, 04.03.2001 (morning), 04.03.2001 (afternoon), 05.03.2001, 23.01.2002, 24.01.2002
Mokhotlong	Mokhotlong	H	T: 4 275	26	23.12.2001, 25.12.2001, 26.12.2001
Morija	Maseru	L	sT	39	21.12.1996, 12.09.2000, 08.06.2001, 03.07.2001, 03.11.2001

Explanations: T – town, data on population size from 1996 Census are given, sT – small town (2 000–4 000 people), V – large village (1 000–2 000 people), M – medium-sized village (300–1000 people); L – lowlands, H – highlands, V – Senqu Valley, F – foothills.

century. In the Afromontane Grassland the human settlements are much sparsely distributed and most of the natural vegetation is well-preserved, although heavily grazed by cattle, sheep, horses and goats. In the late 1990's, about 2.2 mln people lived in Lesotho (Ambrose et al., 2000).

Four towns and 14 villages located in all physiographical zones of Lesotho were selected for this study. Three towns were located in the highlands and one in the lowlands (Table 1). Among 14 villages, 5 were located in the lowlands, 4 in the highlands, 2 in the foothills and 3 in the Senqu/Orange Valley. Small brick houses with zink roofs prevail in all these settlements. Small yards around these houses are usually in the form of gardens with vegetables and peach trees. In some yards, enclosures and

Table 2

Results of bird counts (number of potentially breeding pairs) in rural areas in Lesotho
Результаты учетов птиц (число потенциально гнездящихся пар) в селах Лесото

Species	Berea	Thaba Bosigo	Nazareth	Matsebo	Van Rooyen	Tlaekeng	Marakabei	St. Theresa	Qachas Neck	Ramabanta	St. Bernard	Masitise I	Masitise II	Quthing	Total number	Frequency of occurrence	Index
	Lowlands					Highlands				Foothils		Senqu Valley			Whole country		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Streptopelia capicola	1	0	4	2	1	3	5	5	28	1	0	4	4	18	76	85.7	100.0
S. senegalensis	2	3	6	1	0	1	3	7	1	1	0	4	1	4	34	85.7	44.7
Passer diffusus	3	4	0	5	0	1	8	0	14	0	5	0	4	0	44	57.1	57.9
P. melanurus	1	0	0	2	0	13	9	16	0	0	2	0	0	0	43	42.9	56.6
Serinus canicollis	2	5	5	2	0	1	4	3	18	1	2	0	0	0	43	71.4	56.6
Columba guinea	3	8	1	4	0	1	3	4	4	0	0	1	1	1	31	78.6	40.8
Passer domesticus	3	1	0	3	0	14	3	1	0	0	3	0	0	0	28	50.0	36.8
Lanius collaris	0	0	0	6	0	1	2	2	4	1	6	0	0	6	28	57.1	36.8
Streptopelia semitorquata	0	0	1	0	0	0	0	0	11	0	0	0	3	3	18	28.6	23.7
Pycnonotus nigricans	1	3	0	0	0	0	0	0	0	0	0	3	4	5	16	35.7	21.1
Telophorus zeylonus	0	1	0	1	0	0	1	2	4	0	1	1	0	4	15	57.1	19.7
Cassypha caffra	0	0	0	0	0	0	0	7	1	4	1	1	1	0	15	42.9	19.7
Hirundo semirufa	0	0	0	0	1	1	0	0	0	1	0	8	3	0	14	35.7	18.4
Spreo bicolor	0	0	0	0	0	1	1	0	5	0	3	0	0	0	10	28.6	13.2
Zosterops virens	0	1	0	0	0	0	1	0	3	0	0	4	1	0	10	35.7	13.2
Onychognathus morio	1	3	0	0	0	0	2	0	1	0	0	0	0	0	7	28.6	9.2
Ploceus velatus	1	0	0	1	0	1	3	1	0	0	0	0	0	0	7	35.7	9.2
Hirundo spilodera	1	1	0	0	0	0	0	0	0	2	1	1	0	0	6	35.7	7.9
Crithagra gularis	0	0	0	0	0	0	0	0	3	0	0	1	1	0	5	21.4	6.6
Corvus capensis	0	0	0	0	0	1	0	1	0	0	1	1	0	1	5	35.7	6.6
Emberiza tahapisi	0	0	0	0	0	0	0	1	0	1	0	1	2	0	5	28.6	6.6
Prinia hypoxantha	1	0	1	0	0	0	0	0	0	2	0	1	0	0	5	28.6	6.6
Prinia maculosa	0	0	0	0	0	3	1	1	0	0	0	0	0	0	5	21.4	6.6
Euplectes orix	0	0	0	0	5	0	0	0	0	0	0	0	0	0	5	7.1	6.6
Cisticola ruficapilla	1	1	1	0	0	0	1	0	0	0	0	1	0	0	5	35.7	6.6
Colius striatus	0	0	0	0	0	0	0	0	0	0	0	1	1	3	5	21.4	6.6
Ploceus capensis	0	0	0	0	0	1	3	0	0	0	0	0	0	0	4	14.3	5.3
Cisticola ayresii	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	7.1	5.3
Turdus olivaceus	0	0	0	0	0	0	0	0	1	0	0	1	1	0	3	21.4	3.9
Scopus umbretta	0	0	0	0	0	0	0	1	2	0	0	0	0	0	3	14.3	3.9
Ortygospia atricollis	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	7.1	3.9
Anthus richardi	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	7.1	3.9
A. crenatus	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2	14.3	2.6
Bostrychia hagedash	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	7.1	2.6
Cuculus solitarius	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	7.1	2.6
Corvus albus	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2	14.3	2.6
C. albicollis	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	14.3	2.6
Emberiza capensis	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2	14.3	2.6
Nectarinia famosa	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7.1	2.6

End of the Table 2

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Anthus hoeschi	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	14.3	2.6
Riparia paludicola	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	7.1	1.3
Crithagra atrogularis	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	7.1	1.3
Coturnix coturnix	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	7.1	1.3
Scleroptila africana	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	7.1	1.3
Tachybaptus ruficollis	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	7.1	1.3
Fulica cristata	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	7.1	1.3
Falco rupicolus	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	7.1	1.3
Accipiter rufiventris	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	7.1	1.3
Tyto alba	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	7.1	1.3
Oenanthe monticola	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7.1	1.3
Saxicola torquata	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	7.1	1.3
Burhinus capensis	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	7.1	1.3
Total	24	31	19	27	9	45	51	59	119	15	25	34	28	47	533		

shags for sheep, goats, cattle and poultry are also established.

Methods

Studies were conducted during the years 1996–2002. The line transect method in American version (Bibby et al., 1992) has been employed to assess species diversity and relative abundance of resident (breeding) birds. Transect were fixed along roads in rural or urbanized areas. Counts were conducted in different times of the day. They lasted 0.5 to 4 hours, most counts lasted about one hour. For Semonkong, Thaba Tseka, Mohotlong and Morija 3–7 counts in each town were conducted, while in the rural areas only single counts were carried out in each settlement.

Based on the number of recorded potentially breeding pairs, an index of relative abundance was calculated for each species. The highest value '100' has been given to the most numerous species, and then index of relative abundance for all remaining species was calculated as the percentage of the highest value. The frequency of occurrence for birds resident in the rural areas was calculated as the proportion of areas, where a given species was recorded, to the total number of areas (N = 14) surveyed, expressed as the percentage.

In towns, birds were counted several times. The average number of breeding pairs was calculated in two ways: 1) as the sum of pairs recorded in all counts, 2) as the maximal number of pairs recorded in whichever count.

Dominant species is defined as that which comprised at least 5%, subdominant 2.0–4.9% of all pairs recorded. Bird nomenclature follows that of Hockey et al. (2005).

Results and discussion

In total, 74 bird species were recorded as breeding in urban and rural areas in Lesotho; 63 of them were recorded in highland towns (Semonkong – 53, Thaba Tseka – 37 and Mokhotlong – 26) while 39 species in a lowland town, Morija (Table 1). The average number of resident bird species in these four towns was 38.8 (sd = 11.1).

The average number of resident bird species per rural area was 13.4 (N = 14; sd = 5.5), being higher in the larger (x = 17.3; sd = 7.8; n = 3) than in the smaller areas (x = 12.4; sd = 5.6, n = 11). This average clearly increased with the increase of altitude: in lowlands it was 9.6 (sd = 3.9; n = 5); foothills – 10.0 (sd = 0.0; n = 2); Senqu Valley – 13.7 (sd = 2.5; n = 3) and in mountains – 19.8 (sd = 4.5; n = 4).

In 14 rural areas, eight species were distinguished as dominants: two *Streptopelia*-species (*S. capicola*, *S. senegalensis*), three

Table 3

Results of bird counts in urban areas in Lesotho
Результаты учетов птиц в городах Лесото

Species	Semonkong				Thaba Tseka				Mokhotlong				Morija			
	Sum		Max.		Sum		Max.		Sum		Max.		Sum		Max.	
	N	Ind.	N	Ind.	N	Ind.	N	Ind.	N	Ind.	N	Ind.	N	Ind.	N	Ind.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Passer melanurus	**54**	**100**	**24**	**100**	**153**	**100**	**52**	**100**	**64**	**100**	**30**	**100**	0	0.0	0	0.0
Serinus canicollis	42	77.8	16	66.7	66	43.1	20	38.5	49	76.6	25	83.3	14	28.0	7	36.8
Streptopelia capicola	13	24.1	4	16.7	46	30.1	17	32.7	35	54.7	15	50.0	**50**	**100**	**19**	**100**
S. senegalensis	6	11.1	3	12.5	67	43.8	27	51.9	21	32.8	11	36.7	31	62.0	12	63.2
Geronticus calvus	40	74.1	20	83.3	45	29.4	45	86.5	4	6.3	4	13.3	0	0.0	0	0.0
Columba guinea	48	88.9	15	62.5	34	22.2	15	28.8	20	31.3	13	43.3	10	20.0	7	36.8
Passer domesticus	39	72.2	14	58.3	36	23.5	11	21.2	46	71.9	16	53.3	0	0.0	0	0.0
Euplectes orix	3	5.6	1	4.2	66	43.1	50	96.2	20	31.3	10	33.3	0	0.0	0	0.0
Passer diffuses	10	18.5	4	16.7	35	22.9	17	32.7	22	34.4	17	56.7	4	8.0	4	21.1
Lanius collaris	0	0.0	0	0.0	10	6.5	6	11.5	9	14.1	6	20.0	31	62.0	13	68.4
Zosterops virens	5	9.3	4	16.7	3	2.0	2	3.8	1	1.6	1	3.3	30	60.0	17	89.5
Spreo bicolor	24	44.4	12	50.0	3	2.0	2	3.8	6	9.4	5	16.7	0	0.0	0	0.0
Ploceus capensis	23	42.6	10	41.7	6	3.9	2	3.8	2	3.1	2	6.7	2	4.0	1	5.3
Hirundo semirufa	6	11.1	4	16.7	18	11.8	7	13.5	6	9.4	6	20.0	0	0.0	0	0.0
Onychognathus morio	3	5.6	1	4.2	2	1.3	1	1.9	6	9.4	5	16.7	20	40.0	8	42.1
Cassypha caffra	10	18.5	4	16.7	5	3.3	3	5.8	5	7.8	3	10.0	10	20.0	3	15.8
Pycnonotus nigricans	2	3.7	2	8.3	0	0.0	0	0.0	0	0.0	0	0.0	23	46.0	11	57.9
Streptopelia semitorquata	0	0.0	0	0.0	11	7.2	5	9.6	1	1.6	1	3.3	9	18.0	6	31.6
Anthus hoeschi	14	25.9	10	41.7	5	3.3	4	7.7	0	0.0	0	0.0	0	0.0	0	0.0
Telophorus zeylonus	2	3.7	1	4.2	1	0.7	1	1.9	8	12.5	5	16.7	7	14.0	3	15.8
Ploceus velatus	11	20.4	5	20.8	2	1.3	2	3.8	2	3.1	2	6.7	1	2.0	1	5.3
Coturnix coturnix	10	18.5	8	33.3	5	3.3	2	3.8	0	0.0	0	0.0	0	0.0	0	0.0
Motacilla capensis	7	13.0	3	12.5	8	5.2	3	5.8	0	0.0	0	0.0	1	2.0	1	5.3
Bostrychia hagedash	4	7.4	3	12.5	3	2.0	2	3.8	1	1.6	1	3.3	3	6.0	3	15.8
Scopus umbretta	5	9.3	2	8.3	5	3.3	3	5.8	0	0.0	0	0.0	3	6.0	2	10.5
Cisticola ayresii	9	16.7	7	29.2	2	1.3	1	1.9	0	0.0	0	0.0	0	0.0	0	0.0
Nectarinia famosa	7	13.0	7	29.2	0	0.0	0	0.0	0	0.0	0	0.0	1	2.0	1	5.3
Ortygospia atricollis	9	16.7	6	25.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Euplectes progne	10	18.5	4	16.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Hirundo albigularis	3	5.6	1	4.2	2	1.3	2	3.8	1	1.6	1	3.3	1	2.0	1	5.3
Anthus richardi	4	7.4	4	16.7	1	0.7	1	1.9	0	0.0	0	0.0	1	2.0	1	5.3
Cisticola ruficapilla	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	6	12.0	6	31.6
Serinus atrogularis	1	1.9	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	5	10.0	4	21.1
Turdus olivaceus	2	3.7	2	8.3	3	2.0	1	1.9	1	1.6	1	3.3	0	0.0	0	0.0
Corvus albus	2	3.7	2	8.3	0	0.0	0	0.0	0	0.0	0	0.0	3	6.0	2	10.5
Corvus capensis	1	1.9	1	4.2	0	0.0	0	0.0	2	3.1	2	6.7	2	4.0	1	5.3
Cercomela familiaris	3	5.6	2	8.3	1	0.7	1	1.9	0	0.0	0	0.0	1	2.0	1	5.3
Prinia maculosa	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	5	10.0	4	21.1
Saxicola torquata	2	3.7	2	8.3	2	1.3	1	1.9	0	0.0	0	0.0	1	2.0	1	5.3
Eremopterix leucotis	4	7.4	4	16.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Colius striatus	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	5	10.0	2	10.5
Macronyx capensis	2	3.7	2	8.3	1	0.7	1	1.9	0	0.0	0	0.0	0	0.0	0	0.0

End of the Table 3

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Oenanthe monticola	1	1.9	1	4.2	0	0.0	0	0.0	2	3.1	2	6.7	0	0.0	0	0.0
Falco rupicolus	1	1.9	1	4.2	2	1.3	1	1.9	0	0.0	0	0.0	0	0.0	0	0.0
Hirundo spilodera	1	1.9	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	1	2.0	1	5.3
Scleroptila africana	0	0.0	0	0.0	1	0.7	1	1.9	0	0.0	0	0.0	1	2.0	1	5.3
Fulica cristata	0	0.0	0	0.0	1	0.7	1	1.9	0	0.0	0	0.0	1	2.0	1	5.3
Accipiter rufiventris	0	0.0	0	0.0	0	0.0	0	0.0	3	4.7	1	3.3	0	0.0	0	0.0
Prinia hypoxantha	0	0.0	0	0.0	0	0.0	0	0.0	2	3.1	2	6.7	0	0.0	0	0.0
Cisticola tinniens	0	0.0	0	0.0	3	2.0	1	1.9	0	0.0	0	0.0	0	0.0	0	0.0
Acridoteres tristis	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	4.0	2	10.5
Ardea melanocephala	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	4.0	2	10.5
Charadrius tricollaris	0	0.0	0	0.0	2	1.3	1	1.9	0	0.0	0	0.0	0	0.0	0	0.0
Chrysococcyx caprius	2	3.7	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Tyto alba	2	3.7	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bubo africanus	2	3.7	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Elanus caeruleus	2	3.7	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Vanellus coronatus	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	4.0	1	5.3
Indicator indicator	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	4.0	1	5.3
Riparia paludicola	1	1.9	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Anas sparsa	1	1.9	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Alopochen aegyptiacus	1	1.9	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Emberiza tahapisi	1	1.9	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Acrocephalus baeticatus	1	1.9	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
A. graiclirostris	0	0.0	0	0.0	1	0.7	1	1.9	0	0.0	0	0.0	0	0.0	0	0.0
Monticola explorator	1	1.9	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Chaetops aurantius	1	1.9	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Euplectes capensis	1	1.9	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Galerida magnirostris	1	1.9	1	4.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Anas undulata	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	2.0	1	5.3
Trachyphonus vaillantii	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	2.0	1	5.3
Upupa africana	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	2.0	1	5.3
Emberiza flaviventris	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	2.0	1	5.3
E. capensis	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	460		231		657		313		339		187		295		155	

Explanations: N – number of potentially breeding pairs; Ind. – Index of relative abundance.

Passer-species (*P. diffuses*, *P. melanurus*, *P. domesticus*), Speckled Pigeon (*Columba guinea*), Common Fiscal (*Lanius collaris*) and Cape Canary (*Serinus canicollis*). In the mountain urban areas, the number of dominant bird species was similar in each town (7–8 species). The group included: Cape Sparrow (*Passer melanurus*), Cape Canary, Southern Bald Ibis (*Geronticus calvus*), Speckled Pigeon, House Sparrow (*Passer domesticus*), Grey-headed Sparrow (*Passer diffuses*), Long-tailed Widow (*Euplectes oryx*), Laughing Dove (*Streptopelia senegalensis*) and Cape Turtle-Dove (*S. capicola*) (Table 2). In the lowland town Morija, the group was composed of Laughing Dove, Cape Turtle-Dove, Common Fiscal, Cape White-eye (*Zosterops virens*), Red-winged Starling (*Onychognathus morio*) and Red-eyed Bulbul (*Pycnonotus nigricans*) (Table 3).

The group of subdominants was represented in rural areas by the Cape White-eye, Pied Starling (*Spreo bicolor*), Bokmakierie

(*Telophorus zeylonus*), Red-eyed Bulbul and Red-breasted Swallow (*Hirundo semirufa*). In mountain towns, the following species were subdominants: Speckled Pigeon, Cape Weaver (*Ploceus capensis*), Cape Robin-chat (*Cossypha caffra*), Mountain Pipit (*Anthus hoeschi*), Pied Starling, Southern Red Bishop (*Euplectes orix*) and Bokmakierie, while in the lowland town of Morija, the group of subdominant species included the Cape Canary, Speckled Pigeon, Bokmakierie, Cape Robin-chat and Red-eyed Dove (*Streptopelia semitorquata*).

Of special interest is relative abundance of some congeneric species. In rural areas the proportion among *Streptopelia*-doves (N = 128) was as follow Cape-Turtle: 1.00, Laughing: 0.45, Red-eyed Dove: 0.24; among *Passer*-sparrows (N = 115): Grey-headed: 1.00, Cape: 0.98, House: 0.64. In the three mountain towns the proportions were respectively as: 1.00 : 0.99 : 0.13 among the *Streptopelia*-doves (N = 201), and as 0.48 : 1.00 : 0.53 among *Passer*-sparrows (N = 459); while in Morija (lowland town) among doves: 1.00 : 0.62 : 0.18 (N = 90), while among sparrows, only the House Sparrow was recorded.

It is apparent that the avian species diversity in urban areas increases with the size of the urbanized area. In the largest town of Lesotho, Maseru (c. 130 000 people), over 100 breeding species were recorded (Kopij, 2000). In much smaller towns, such as Thaba Tseka, Mohotlong or Qacha's Nek, the number of bird species recorded was much lower (this study). This discrepancy is partly also because the study period and intensity of studies was much higher in Maseru than in any other Lesotho town hitherto investigated.

As expected, the number of resident bird species in highland towns declines with the increase of the altitude. This decline has been also demonstrated for birds associated with pure grasslands in this country (Kopij, 2006b, 2010). However, it has been shown, that the species diversity in mountain towns is higher than in neighboring grasslands. The town offers probably a wide range of microhabitats, such as tree clumps, gardens, buildings, water bodies. A town can also provide better protection against predators. For some species, town can also be a source of supplementary food.

Contrary to expectations, the number of resident bird species in the rural areas increased with the increase in altitude (avian diversity in natural habitats declines with the increase in altitude in Lesotho (Kopij 2006b, 2010)). The role of rural areas as the source of food and shelter probably increases with the altitude, hence also the number of resident species increases.

In conclusion, avian diversity is relatively high in urban and rural areas, both in Lesotho lowlands and highlands. In these habitats birds may benefit from the abundance of nesting places, shelters and food. For some bird species, they may constitute, therefore, important refuges, especially during prolonged rains and colds.

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