

BIRDS

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**THE BIRDS
OF THE
NOUABALÉ-NDOKI
NATIONAL PARK
CONGO**



**Report on a preliminary study of species richness
by Alick Cruickshank and Jerome Mokoko-Ikonga
for the Wildlife Conservation Society.**



Summary

A preliminary study of the avifauna of eastern section of the Nouabalé-Ndoki National Park found 213 species of birds from 45 families. The study was found to coincide with breeding for many of the 38 species from 12 families caught in mist nets. Few migratory species were recorded.

Introduction

The Nouabalé-Ndoki National Park is situated in the north of the Congo Republic to the east of the Congo/Central African Republic border. The park is bordered by the rivers Ndoki to the south-west and Mokala-Motaba to the north-east. To the south east lie the swamps of the Likouala-aux-herbes river system. The area between the Rivers Sangha and Ndoki, to the south of Bomassa and the border, forms part of the buffer zone which is also part of this study.

There is one main dry season from December to April and the study was undertaken during a thirty-day period from 11/5 - 9/6/95. The aim of the study was to carry out an initial prospection of the avifauna of the Nouabalé-Ndoki National Park, concentrating on the areas around Bomassa, Ndoki and Mbeli Camps and including the exposed sandbanks along the River Sangha.

Locations visited

Wali Bai (2°14'N, 16°12'E): Flooded natural clearing with the appearance of a small lake with some marshy edges rather than a salt lick or marsh. Situated to the north of the village of Bon Coin.

Sangha: The river Sangha, including narrower passages between islands, exposed rocks and sandbanks, mostly between Bomassa and Bounda.

Bounda Bank (2°12'N, 16°5'E): A large sandbank opposite the village of Bounda. One of the last areas of exposed sand to be covered by rising water but holding the largest numbers of birds even when other sandbanks are exposed.

Bomassa camp (2°12'N, 16°11'E): Situated on the Sangha riverbank opposite an island from which it is separated by a channel of about 60m, mixed-species forest with the understorey cleared to install the camp. Many big trees remain and seem to support a rich and visible canopy avifauna.

Bon Coin (2°13'N, 16°11'E): Small village situated between Bomassa Camp and Wali Bai bounded by the Sangha to the west, *Gilbertiodendron dewevrei* forest to the north and plantations and mixed-species forest to the east and south.

Bomassa Village: Larger village to the south of Bomassa Camp with much larger areas of clearing and cultivation.

Bomassa Plantations: Cultivated zone along the footpath between Bomassa Camp and Bomassa Village.

Road from Bomassa Camp to Ndoki Camp: Old forestry road reopened as a vehicle track through secondary growth, passes through an area covered by mostly mixed-species forest.

Ndoki Camp (2°12'N, 16°24'E): Situated in an old forestry clearing next to the River Ndoki. The clearing was enlarged recently and was surrounded by low, dense, secondary growth. The camp is bordered to the north and south by *Gilbertiodendron* forest, to the east by riverine swamp forest and to the west by mixed-species forest.

Mbeli Camp (2°14'N, 16°24'E): A small clearing in closed-canopy *Gilbertiodendron* forest closely bordered by mixed-species forest to the east and separated from the River Mbeli by riverine swamp forest.

River Mbeli at Mbeli Camp: A small patch of open water with riverine swamp forest on the left bank and low, open-canopied mixed-species forest on the right bank.

Path to Mbeli Bai. 4km of path following the *Gilbertiodendron* forest / riverine swamp forest ecotone for most of its length.

Mbeli Bai (2°15'N, 16°25'E): A large, treeless marshy clearing along the River Mbeli (upriver from Mbeli Camp) with a dense cover of grasses and sedges. Dotted with pools and areas of open marsh.

Mbeli River: Area of low, open canopied mixed-species forest and riverine swamp forest around the bridge crossed by the main path to Mbeli Camp from the River Ndoki.

Mombongo village and camp (2°10'N, 16°8'E): Open, cultivated area around the tiny settlement of Mombongo on the Sangha riverbank. Mostly dense low secondary growth and cultivation with several large, dead trees and some smaller thickets.

Forestry road near Mombongo Camp: Open lorry road lined by secondary growth passing within 1km of Mombongo village and camp. Observations were carried out over a 4km section of the road centred on the spot where the path to Mombongo Bai crosses the road. Along this section the road passes through mixed species forest and *Gilbertiodendron* forest and includes an area where dead trees stand in a pool formed by the road blocking the natural drainage system.

Mombongo Bai: A system of small clearings in *Bertinia* sp. forest to the south of Mombongo. Some clearings are thickly carpeted with grasses and sedges, others have patches of open water and bare mud.

Molongodi (2°15'N, 16°10'E). Indicates here the River Sangha beyond the rocky area of Molongodi proper.

Kabo (2°2'N, 16°5'E): Large village and forestry camp on the Sangha.

Kabo Airfield: Sparsely grassed open area with some bare earth, the only dry clearing of large surface area visited.



Methods

Sight identification by direct observation using 8 x 30 binoculars and a 22 x 60 telescope. The following reference works were used; Brosset and Erard (1986), Christy and Clark (1994), Mackworth-Praed and Grant (1970 & 1973) and Serle, Morel and Hartwig (1977).

Identification of species-specific calls and songs from prior knowledge of the species was often possible. Sound recordings made in the field were used to confirm identification of species-specific calls and songs. Comparison was made with an existing reference collection consisting of the published work of C. Chappuis and a compilation of other published recordings and personal recordings provided by F. Dowsett-Lemaire. In addition sound recordings made in the field were used to stimulate vocalisation, often attracting singing birds from cover so that observations could be made.

Mist nets were set at each of the three main sites (Bomassa, Ndoki and Mbeli) and checked hourly. Birds thus captured were identified to species, sexed (where possible), and examined for reproductive state and moult. Photographs were taken of each species and of each sex in species with visible sexual dimorphism. All birds were then released.

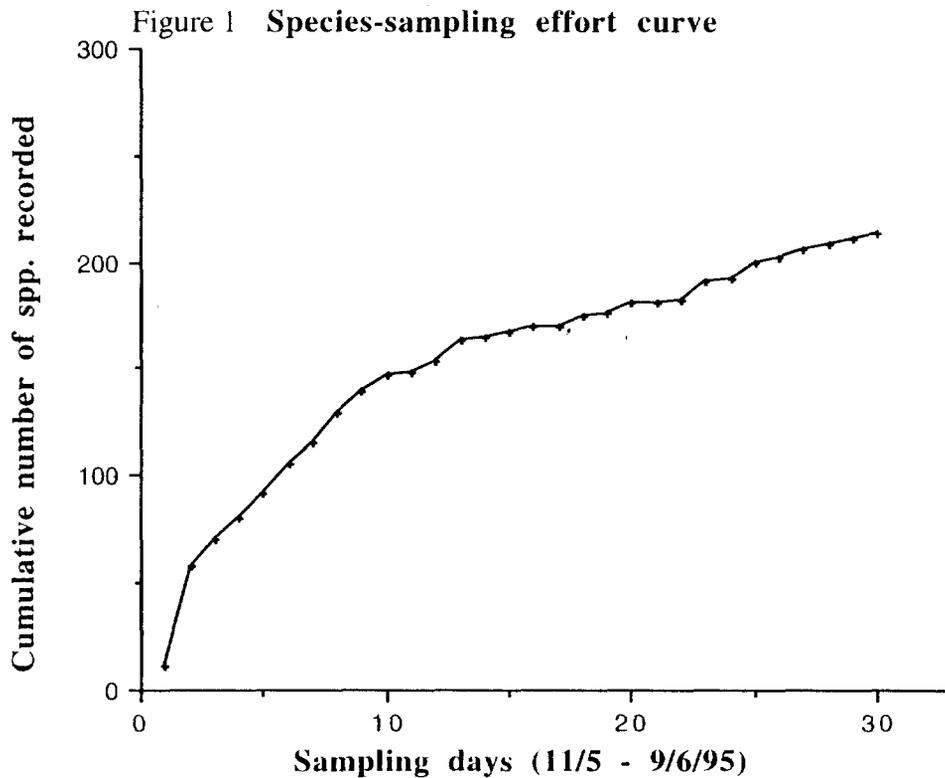
Results

Appendix 2 lists the species identified during the course of the study and gives the location and date of sighting. Frequency of observation can thus be seen for all species.

A total of 213 species from 45 families were identified over the 30-day period.

Appendix 3 lists the species identified in the hand after being caught in mist nets. A total of 38 species from 12 families were caught, 5 of which species were not otherwise recorded. Evidence of breeding in the form of well-developed brood patches was found in 16 of these species and none of the captured birds showed any wing or tail moult.

Appendix 4 presents a list of 59 species previously recorded in the area but not recorded during this study. Considered together the two lists give us a total of 272 species recorded in the area.



A plot of the cumulative species list against the number of sampling days, the *species sampling-effort curve* (figure 1) shows a reduction in the rate of addition of species from the 13th day of the study but the list continues to grow steadily without reaching an obvious asymptote. Between the 13th and 30th days the rate of addition seems fairly stable (no. of new spp. / days = $38/17 = 2.24$ spp. per day).

Fluctuations in the rate of addition can be seen where the study moved into new habitat e.g. the move from Ndoki to Mbeli on the 12th day of the study 22/5/95, or where observations were facilitated by local phenomena e.g. birds attracted to termite swarms at Mombongo on the 25th day of the study, 4/6/95.

Discussion

Constraints to identification of bird species.

1. Nocturnal species. Owls (Strigidae) and Nightjars (Caprimulgidae) are usually active at night and hidden by day making their vocalisations the most important means of detecting their presence. Few owl species and only one nightjar were heard during the study, hinting that perhaps the study coincided with a period of reduced vocal activity for these species. Several species of nightjars which are inter-African migrants have been recorded in other west-central African forest areas but they are generally detected at night using lights, on areas of open, bare ground. Such areas were rare in the study area.

2. Migratory species. These species spend only part of the year in any one place and therefore will only be detected if a study is timed to cover the period of their passage or more extended presence. Very few palearctic migrant species were detected in this study indicating that any north-bound spring passage had come to an end before the study began. No obvious passage of known inter-African migrant species was noted either although the reasons for this are less evident due to lack of information on how these species use the area.

Given the north-south orientation of the R. Sangha and the timing of the exposure of large areas of sandbanks (when most palearctic migrant species are moving north) it may seem reasonable to assume that these sandbanks will attract many species with a preference for waterside and wetland habitats.

In the forest of the interior of the park the open *bais* probably represent an important habitat for both palearctic and inter-African migrant species. In west-central Africa few migrants are believed to use the interior of the forest (with the possible exception of the hymenopteran-eating Honey Buzzard *Pernis apivorus*). The open *bais* and their associated edge habitat may therefore prove important, providing feeding and resting areas for species migrating across the forest on a broad front.

3. Seasonality of breeding. Detection of many of the the more elusive forest species is dependent on their behaviour. Understorey species are easily detected if they are vocally active, as they are in the early stages of breeding behaviour. They seem more discreet when nesting and during the post-breeding moult. Some small and elusive species of the forest canopy are

perhaps more easily detected outwith their breeding season when they are more likely to join mixed-species feeding parties.

Evidence from captured birds and observations suggests that this study began when the breeding season for many of the forest bird species was already under way. Birds generally begin moult on completion of breeding. The absence of moulting birds suggests that breeding was fairly well synchronised across the range of species captured. Such a synchronisation may indicate that the end of the dry season is a good time for birds to attempt breeding. This phenomenon has been described elsewhere in west-central Africa and seems to be related to an abundance of insects following the arrival of the rains. Insects provide protein-rich food for young birds in the nest. These insects are even exploited by birds which usually feed on fruit in other seasons.

Conclusions

Although a snapshot in time, this study is an effective preliminary investigation of the avifauna of the western part of the Nouabalé Ndoki National Park, especially with regard to resident forest species. A further complimentary study could be timed to cover the end of the long dry season and the beginning of the rains, and be of longer duration. The most interesting period would be from early March to mid May. During this study time could be set aside for a preliminary prospection in the eastern section of the park.

In the longer term an investigation of the use of the R. Sangha and the open *bais* would probably advance our understanding of bird migration in this region.



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Appendix 1

Itinerary

- 11/5 Ouesso to Bomassa by dugout canoe up the River Sangha.
- 12/5 Prospection of the the R. Sangha sandbanks, visit to Wali Bai (AJC).
- 13/5 Prospection around Bomassa Camp, visit to Wali Bai.
- 14/5 Prospection around Bomassa Camp, drive to Ndoki Camp and prospection by canoe of R. Ndoki.
- 15/5 Prospection around Ndoki Camp and on the Bomassa to Ndoki road.
- 16-21/5 Prospection around Ndoki Camp and on the Bomassa to Ndoki road.
- 22/5 Prospection around Ndoki Camp, travel to Mbeli Camp, prospection around Mbeli Camp.
- 23/5 Prospection around Mbeli Camp, visit to Mbeli Bai (AJC).
- 24/5 Prospection around Mbeli Camp, AJC to Mbeli Bai for overnight stay.
- 25/5 Mbeli Bai to Mbeli Camp (AJC), Prospection around Mbeli Camp.
- 26/5 Prospection around Mbeli Camp, visit to Mbeli Bai (AJC).
- 27/5 Prospection around Mbeli Camp.
- 28/5 Prospection around Mbeli Camp.
- 29/5 Prospection around Mbeli Camp then back to Ndoki Camp. Prospection along the road, then to Bomassa Camp.
- 30/5-2/6 Prospection around Bomassa Camp.
- 3/6 Prospection around Bomassa Camp then AJC to Mombongo down Sangha. M-I J prospection around Bomassa Camp.
- 4/6 AJC Mombongo, M-I J Bomassa Camp.
- 5/6 AJC Mombongo, M-I J Bomassa Camp.
- 6/6 M-I J Bomassa Camp. AJC Mombongo, back to Bomassa evening.
- 7/6 Bomassa Camp, then visit to Mombongo.
- 8/6 Bomassa Camp, M-I J to Kabo.
- 9/6 M-I J Kabo, AJC Bomassa Camp, then to Kabo.

Appendix 2

Abbreviation Location

wb	Wali Bai
nr	Ndoki river
sa	Sangha
sabb	Bounda Bank
bc	Bomassa Camp
BC	Bon Coin
Bv	Bomassa Village
bp	Bomassa Plantations
pbn	Road from Bomassa Camp to Ndoki Camp
nc	Ndoki Camp
mbc	Mbeli Camp
mer	River Mbeli at Mbeli Camp
pmb	Path to Mbeli Bai
mbb	Mbeli Bai
mbr	Mbeli River
mm	Mombongo village and Camp
rmm	Forestry road near Mombongo Camp
mmb	Mombongo Bai
mgj	Molongodi
ko	Kabo
tak	Kabo Airfield

N.B. Where locations are separated by a comma i.e. *mm, mmr* this means that the species was recorded at both locations. Where the locations are separated by a slash e.g. *BC / bc* then the species was identified on the way between the two locations.

Species	11/5	12/5	13/5	14/5	15/5	16/5	17/5	18/5	19/5	20/5	21/5	22/5	23/5	24/5	25/5	26/5	27/5	28/5	29/5	30/5	31/5	1/6	2/6	3/6	4/6	5/6	6/6	7/6	8/6	9/6	
Laniidae																															
<i>Dryoscopus sabinii</i>													mbr							pbn											
<i>D. senegalensis</i>																															
<i>Laniarius leucorhynchus</i>									nc			nc			mbc	mbc	mbc	mbc													
<i>Malaconotus cruentus</i>																															
Oriolidae																															
<i>Oriolus brachyrhynchus</i>		bc	bc	bc		nc	mbc	pbn	bc	bc	bc	bc	bc	mm	mm	bc	bc	bc													
Dicruridae																															
<i>Dicrurus adsimilis</i>				bc,nc				nc	nc	nc	nc	nc	nc	mbc																	
<i>D. atripennis</i>																	mbc	mbc	nr / mbr												
<i>D. ludwigii</i>																															
Sturnidae																															
<i>Onycognathus fulgidus</i>		bc																													
<i>Lamprotornis splendidus</i>		bc																													
<i>L. purpureiceps</i>				bc																											
<i>Buphagus africanus</i>														mbb		mbb	mbb														
Campephagidae																															
<i>Coracina azurea</i>					nc				nc							mbc	mbc														
Pycnonotidae																															
<i>Pycnonotus barbatus</i>	bc	bc	bc	bc																bc	bc	bc	bc	bc	bc	mm	mm	mm	bc	bc	bc, kc
<i>Andropadus virens</i>		bc	bc	bc	nc	mbc	mbc	mbc	mbc	mbc	mbc	pbn	bc	bc	bc	bc	bc	mm	mm	mm	mm	bc	bc	bc							
<i>A. latirostris</i>		bc	bc		nc		nc	nc	nc	nc	nc	nc	mbc	mbc	mbc	mbc	mbc	mbc	pbn	bc	bc	bc	bc	mm	mm	mm	mm				
<i>A. gracilis</i>								nc	nc								mbc	mbc	pbn												
<i>A. gracillirostris</i>																														bc	
<i>A. curvirostris</i>																														bc	
<i>Thestelocichla leucopleura</i>																															
<i>Phyllastrephus icterinus</i>								nc		nc	nc	nc	nc		mbc	mbc	mbc	mbc	mbc							mm	mm				
<i>P. xavieri</i>																															
<i>P. albigularis</i>																															
<i>Bleda exima notata</i>								nc						mbc	mbc	mbc	mbc	mbc													
<i>B. syndactyla</i>				wb / BC				nc			nc			mbc			mbc	mbc													
<i>Calyptocichla serina</i>						nc																									
<i>Baepogon indicator</i>		bc	wb / BC	nc	nc			nc	nc	nc	nc	nc		mbc	mbc																
<i>B. clamans</i>																															
<i>Ixonotus guttatus</i>		bc	bc	nc	nc	nc	nc	nc	nc	nc	nc	nc																			
<i>Criniger chloronotus</i>		wb / BC																													
<i>C. calurus</i>			wb / BC		nc	nc	nc																								
<i>C. olivaceus</i>																															
<i>Nicator chloris</i>		sa						nc	nc	nc	nc	nc																			
<i>N. vireo</i>			BC/bc	bc				nc	nc	nc	nc	nc																			
Turdidae																															
<i>Alethe diademata</i>						nc	nc																								
<i>A. poliocephala</i>																															
<i>Sheppardia cyornithopsis</i>																															

Species	11/5	12/5	13/5	14/5	15/5	16/5	17/5	18/5	19/5	20/5	21/5	22/5	23/5	24/5	25/5	26/5	27/5	28/5	29/5	30/5	31/5	1/6	2/6	3/6	4/6	5/6	6/6	7/6	8/6	9/6	
<i>Stiphornis erythrorhox</i>					nc	nc	nc	nc	nc	nc					mbc		mbc							mmr	mmr						
<i>Neocossyphus rufus</i>												nc / mbc			mbc								bc			mmr					
<i>N. poensis</i>									nc	nc							mbc	mbc	mbc							mmr	mmr				
<i>Stizorhina fraseri</i>					nc	mbc	mbc	mbc	mbc			mbc	mbc					bc		mmr	mmr										
Timaliidae																						bc	bc				mmr				
<i>Illadopsis fulvescens</i>									nc																						
<i>I. rufipennis</i>						nc									nc	mbc	mbc		mbc	mbc	mbc	mbc									
<i>I. cleaveri</i>			wb / BC			nc	nc									mbc	mbc	mbc	mbc	mbc							mm				
Syviidae																															
<i>Camaroptera brevicaudata</i>								nc		nc	nc	nc												bp		mmr	mmr				
<i>C. superciliaris</i>									nc	nc	nc	nc			mbc	mbc	mbc	mbc						bc	bc	mmr	mmr				
<i>C. chloronota</i>			bc	wb / BC	nc	nc		nc	nc	nc						mbc / mbb													mm	bc	
<i>Eremomela badiceps</i>																	mbc									mmr		bc		bc	
<i>Sylvietta denti</i>							nc																								
<i>S. virens</i>													nc												bp		mmr				
<i>Bathmocercus rufus</i>													mbr																		
<i>Macrosphenus concolor</i>					pbn		mbc	mbc			mbc	mbc	mbc	mbc					bc		mmr										
<i>M. flavicans</i>																											mmr				
<i>Hyliota violacea</i>										pbn																					
<i>Prinia bairdii</i>						nc																									
<i>Apalis rufogularis</i>			sa						nc	nc			nc																		
<i>Cisticola anonyma</i>					nc	nc	nc	nc	nc			nc	nc	mbb		mbb	mbb														
Muscicapidae																							bc	bc	bc	bc	bc				sa
<i>Muscicapa cassini</i>					nc								nc	mbc	mbc		mbc	mbc	mbc												
<i>M. sethsmithi</i>						nc																									
<i>M. infuscata</i>										nc																					
<i>Diaphorophya castanea</i>				wb / BC		nc		nc		nc	nc	nc				mbc	mbc	mbc	mbc												
<i>D. tonsa</i>					nc																										
<i>D. concreta</i>														mbc	mbc	mbc	mbc	mbc	mbc												
<i>Myoparus griseularis</i>																															
<i>Erythrocerus mccalli</i>						pbn																									
<i>Terpsiphone viridis</i>																															
<i>T. rufiventer</i>				wb / BC		nc		mbc	mbc	mbc	mbc																				
<i>T. rufocinerea</i>																															
<i>Fraseria ocreata</i>							nc		nc	nc	nc	nc			mbc	mbc															
<i>Bias musicus</i>				bc			nc																								
Remizidae																															
<i>Anthoscopus flavifrons</i>																															
Nectarinidae																															
<i>Nectarinia olivacea</i>					nc					mbc	mbc	mbc																			
<i>N. chloropygia</i>					nc																										
<i>N. superba</i>						nc					nc																				
<i>N. cyanolaema</i>										nc	nc	nc																			
<i>N. reichenbachii</i>											nc																				
<i>N. rubescens</i>											nc																				
<i>N. johanna</i>																															
<i>N. verticalis</i>					nc																										

Species	11/5	12/5	13/5	14/5	15/5	16/5	17/5	18/5	19/5	20/5	21/5	22/5	23/5	24/5	25/5	26/5	27/5	28/5	29/5	30/5	31/5	1/6	2/6	3/6	4/6	5/6	6/6	7/6	8/6	9/6		
<i>Antheptes collaris</i>								nc			nc				mbc	mbc									mmr	mmb	mmr					
<i>A. fraseri</i>					nc						nc			mbc	mbc	mbc	mbc	mbc	nr / mbc						mmr							
<i>A. rectirostris</i>																																
<i>Hylia prasina</i>		sa							nc	nc				mbc	mbc									bc	bc	mmr	mmr					
Ploceidae																																
<i>Ploceus cucullatus</i>	Bv	Bv	Bv																		bc	bc	Bv	bc.bp								
<i>P. nigerimus</i>	sa.Bv																															
<i>P. aurantius</i>																					sa		bc						bc			
<i>P. preussi</i>																										mm						
<i>P. dorsomaculatus</i>																										mm						
<i>Malimbus nitens</i>	bc	bc	bc								nc																					
<i>M. malimbicus</i>									nc	nc				mbc																		
<i>M. cassini</i>								nc									mbc	mbc								mmr						
<i>M. erythrogaster</i>									pbn		pbn																					
<i>M. rubricollis</i>							pbn				pbn																					
<i>M. coronatus</i>					nc						pbn																					
Estrildidae																																
<i>Lonchura cucullata</i>																																
<i>L. bicolor</i>						nc																				ko						
<i>Nigrita bicolor</i>									nc	nc	nc						mbc															
<i>N. luteifrons</i>					nc		pbn			nc	nc															mm						
<i>N. cannicapilla</i>							nc		nc	nc	nc	nc	mbc		mbc	mbc										mm	mm					
<i>N. fusconota</i>								pbn		nc	pbn																					
<i>Estrilda atricapilla</i>																										mm	mm	mm	mmr			ko
<i>Pirenestes ostrinus</i>																			mbr													
<i>Spermophaga haematina</i>					nc				mbc																							
<i>Mandigoa nuditula</i>							nc																									
spp. I.D. / Day	11	53	38	28	36	39	53	53	65	62	45	58	60	35	56	66	56	68	41	40	28	33	71	34	87	70	44	16	20	30		
Cumulative spp. list	11	58	70	80	92	105	116	129	139	147	148	153	163	165	167	169	170	174	176	181	181	182	191	192	200	202	206	208	211	213		
Date	11/5	12/5	13/5	14/5	15/5	16/5	17/5	18/5	19/5	20/5	21/5	22/5	23/5	24/5	25/5	26/5	27/5	28/5	29/5	30/5	31/5	1/6	2/6	3/6	4/6	5/6	6/6	7/6	8/6	9/6		

Appendix 3

Species captured in mist nets. (u = unsexed, bf = breeding female, f = female, m = male, Imm. = immature, juv. = juvenile)

Species	Location		
	Ndoki	Mbeli	Bomassa
<i>Turtur tympanistria</i>	u		
<i>T. brehmeri</i>	u, bf		
<i>Alcedo cristata</i>		u	
<i>A. leucogaster</i>		u, bf	
<i>Halcyon malimbca</i>	u		
<i>Ceyx lecontei</i>	u		
<i>Indicator maculatus</i>		u	
<i>Smithornis rufolateralis</i>		u	
<i>Andropadus virens</i>	bf, u	u	u (2), bf
<i>A. latirostris</i>	bf	u, bf(2)	bf
<i>A. gracillis</i>		u	
<i>Phyllastrephus icterinus</i>	bf, u	bf, u	
<i>P. xavieri</i>		u	
<i>P. albigularis</i>			bf
<i>Bleda exima notata</i>	u, bf(2)	bf, u	bf
<i>B. syndactyla</i>		u	
<i>Criniger chloronotus</i>		bf, u(3)	
<i>C. calurus</i>	u, bf		bf
<i>Alethe diademata</i>	u	bf(2), Imm.	bf(2)
<i>A. poliocephala</i>	u, bf	u	
<i>Sheppardia cyornithopsis</i>		u, bf	
<i>Stiphromis erythrothorax</i>	u, bf	u	m
<i>Neocossyphus rufus</i>			juv.
<i>N. poensis</i>	u	bf	
<i>Stizorhina fraseri</i>	u		
<i>Illadopsis rufipennis</i>		u	
<i>I. cleaveri</i>		u	
<i>Camaroptera chloronota</i>			bf
<i>Cisticola anonyma</i>	u		
<i>Diaphorophya castanea</i>	m, f		
<i>Terpsiphone rufiventer</i>	u	u	
<i>Nectarinia olivacea</i>	bf, m	bf(2), m	bf
<i>N. chloropygia</i>	bf		
<i>N. cyanolaema</i>	f		
<i>Anthreptes collaris</i>	m		
<i>Hylia prasina</i>	bf		
<i>Malimbus malimbicus</i>	Imm.		
<i>Spermophaga haematina</i>	m, f	f	f
<i>Mandigoa nuditula</i>	m		

Appendix 4

Species previously recorded in the area by B.J. Hatchwell (1991) and Mokoko-Ikonga Jerome *et al* (1992-93) which were not recorded during the present study.

Phalacrocoracidae

Phalacrocorax africanus

Ardeidae

Ixobrychus minutus

I.sturmi

Tigriornis leucolopha

Ciconiidae

Ciconia abdimii

Ciconia episcopus

Ephippiorhynchus senegalensis

Mycteria ibis

Accipitridae

Urotriorchus macrourus

Pandion haliaetus

Accipiter minulus

Circus cinereus

Circus aeruginosus

Necrosyrtes monachus

Aquila rapax

Rallidae

Sarothrura elegans

Charadriidae

Vanellus superciliosus

Tringa hypoleucos

T. ochropu

T.glareola

Charadrius hiaticula

C. dubins

C. forbesi

Glareolidae

Glareola nordmanni

G.pratincola

Psittacidae

Agopornis pullara

A.swinderniana

Strigidae

Bubo poensis

B.africanus

Glaucidium tephronotum

G.sjostedti

Caprimulgidae

Caprimulgus inornatus

Alcedinidae

Alcedo quadribrachys

Meropidae

Merops pusillus

M. mueller

M. albicollis

M. apiaster

Bucerotidae

Bycanistes cylindricus

Capitonidae

Tricholaema hirsutum

Picidae

Verreauxii africana

Dendropicus gabonensis

Mesopicus xantholopus

Motacillidae

Motacilla flava

M. clara

Laniidae

Prionops caniceps

Pycnonotidae

Chlorocichla flavicollis

Pyrrhurus scandens

Sylviidae

Apalis goslingi

Prinia leucopogon

Phylloscopus trochilus

Muscicapidae

Muscicapa comitata

M.olivascens

M. caerulescens

Nectarinidae

Nectarinia cuprea

N.bouvieri

Anthreptes aurantium

Ploceidae

Ploceus pelzelni

Hyphanturgus nigricollis

Coliuspasser hartlaubii

Estrildidae

Lonchura fringilloides