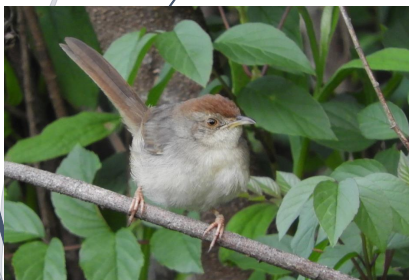
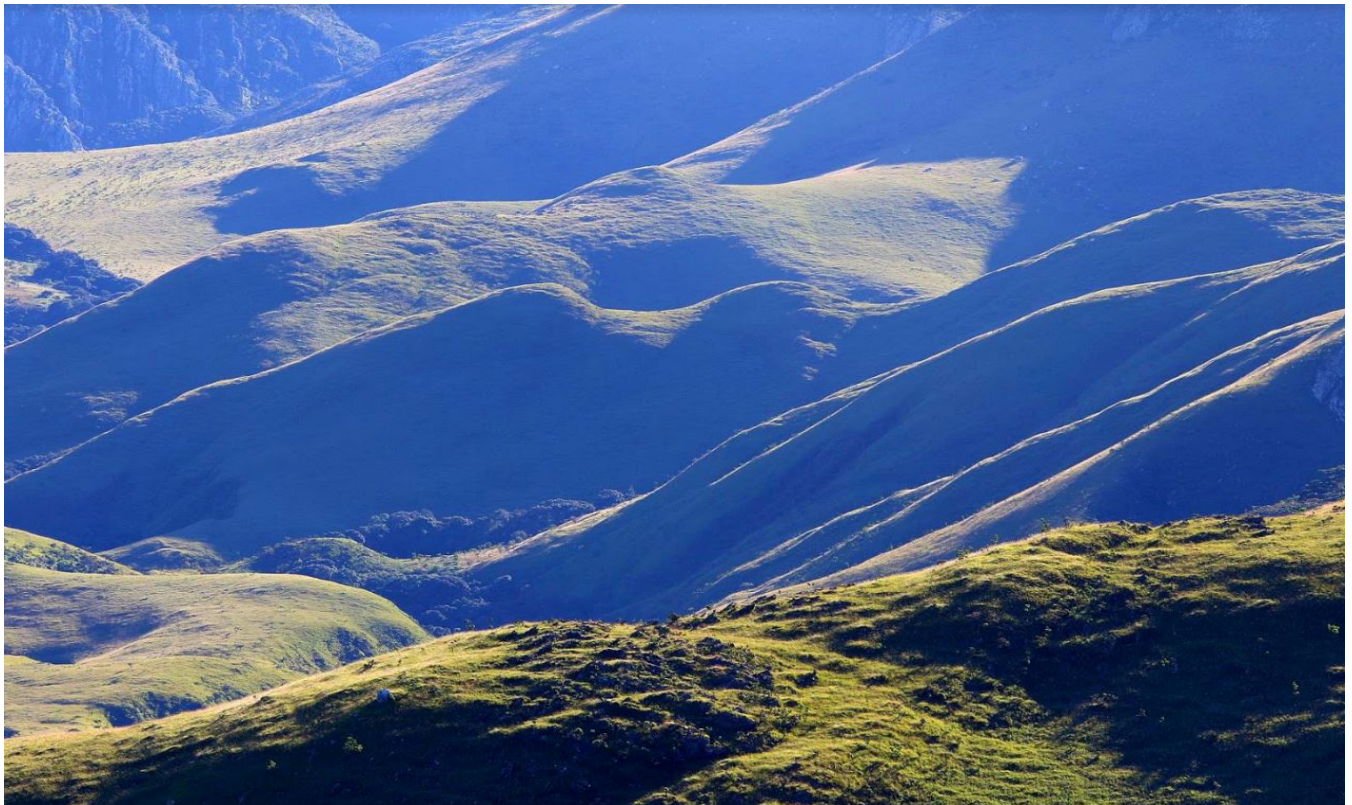
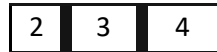
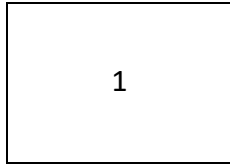


March-December 2018

# Vertebrate Survey of The Mafinga Mountains



Picture covers:



1. *Mafinga Mountain Landscape* (Picture: Leslie Reynolds)

2. *Churring Cisticola-Cisticola njombe* (Picture: Frank Willems)

3. *Nchisi Pygmy Chameleon - Rhampholeon nchisiensis* (Picture: Frank Willems)

4. *Taita Dwarf Toad- Mertensophryne taitana* (Picture: Frank Willems)

By BirdWatch Zambia

Contributing Authors: Frank Willems and Leslie Reynolds

Publication Date: 31<sup>st</sup> January 2019

## **Expedition Fact Sheet**

### **Location**

Muchinga Province- Mafinga Mountains

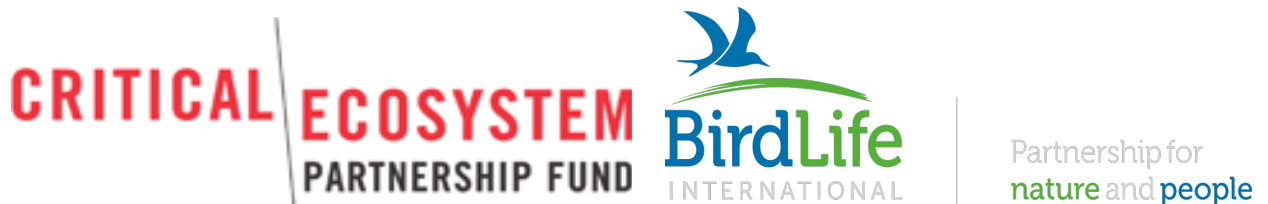
### **Time in the field**

30<sup>th</sup> March - 22<sup>th</sup> April (24 days), we had successfully 20 days in the field and 4 travel days

### **Expedition Members**

Frank Willems	Ecologist
Leslie Reynolds	Ecologist
Omali Phiri	Environmentalist
Kunda Elias	Agricultural Officer
Kennedy Banda	Forester
Nickson Kaila	Porter
Alickson Kaila	Porter
Enwell Kaila	Porter
John Mugala	Porter
Lazarus Mugala	Porter
Patrick Mugala	Porter

### **Financial and logistic support**



## Table of Contents

<i>Expedition Fact Sheet</i> .....	<i>i</i>
<i>Acknowledgements</i> .....	<i>iii</i>
<i>Summary</i> .....	<i>1</i>
<i>1.0 Introduction</i> .....	<i>2</i>
<i>2.0 Aims</i> .....	<i>3</i>
<i>3.0 Access and Logistics</i> .....	<i>3</i>
<i>4.0 Methods</i> .....	<i>6</i>
<i>5.0 Results</i> .....	<i>8</i>
<i>6.0 Birds</i> .....	<i>14</i>
<i>7.0 Mammals</i> .....	<i>31</i>
<i>8.0 Reptiles</i> .....	<i>37</i>
<i>9.0 Amphibians</i> .....	<i>41</i>
<i>10.0 Fish</i> .....	<i>46</i>
<i>11.0 Conclusion</i> .....	<i>47</i>
<i>Appendices: Mafinga Observations</i> .....	<i>51</i>
Appendix 1: Birds.....	51
Appendix 2: Amphibians.....	85
Appendix 3: Reptiles.....	86
Appendix 4: Mammals.....	87
Appendix 5: Fish.....	87
Appendix 6: Mafinga Base Camps.....	88

## **Acknowledgements**

The team is grateful to the Forestry Department, Immigration Department as well as the House of the Chief and Headman for granting us the permission to access Mafinga Mountains. We are also grateful for the support we received from porters/field assistants in carrying food and equipment needed for this work. Additionally numerous people were consulted at various planning and reporting stages of the expedition. Among many more, we thank Patrick Shawa & Gift Mwandila from Wildlife and Environmental Conservation Society of Zambia (WECSZ), Alan Channing and Pete Leonard.

The team gained invaluable field ornithological experience with regards to bird survey methods and use of various equipment during the field and report writing phase of this project.

This would not have been possible without the generous funding by the Critical Ecosystem Partnership Fund through a small grant facilitated by Birdlife International ( under the Eastern Afromontane Hotspot small grants mechanism).

## Summary

With funding from the Critical Ecosystem Partnership Fund through a small grant facilitated by BirdLife International, BirdWatch Zambia undertook a field expedition in Mafinga Key Biodiversity Area (KBA) from 30<sup>th</sup> March to 22<sup>nd</sup> April 2018. The aim of the survey was an intensive survey of vertebrates (birds, mammals, amphibians, reptiles and fish).

The initial results of our field surveys yielded valuable discoveries comprising of multiple range extensions, new national records, and the presence of globally threatened species.

52 bird species were added to the existing Mafinga bird list, bringing it to a total of 207 species. Trigger species recorded are Blue Swallow *Hirundo atrocaerulea* and African Crowned Eagle *Stephanoaetus coronatus*. The discovery of a population of the range-restricted Churring Cisticola *Cisticola njombe* is noteworthy. A total of 15 mammal species was recorded, including the Chequered Giant Sengi *Rhynchocyon cirnei* and the Long-haired Rousette *Stenomycteris Lanorus*. The latter species constitutes a first Zambian record. Seven reptile species were recorded, including Grey-bellied Skaapsteker *Psammophylax variabilis* and Nchisi Pygmy Chameleon *Rhampholeon nchisiensis*. The latter is a highly localised species which was so far only known within Zambia from the Nyika plateau. Among eleven amphibian species recorded, are Spotted Reed Frog *Hyperolius substriatus*, a first Zambian record, and Taita Dwarf Toad-*Mertensophryne taitana*.

## 1.0 Introduction

A mosaic of high-altitude grassland, shrubland and forest as rich in endemism as it is vulnerable on account its 'habitat island' biogeography, the Afromontane biome is represented, in Eastern Africa, by a broken chain of highlands which are ecologically distinct from the lower-lying continental landmass by virtue of their elevation and, to a lesser degree from each other, by virtue of their isolation (birdlife.org). For the most part, they follow the East African Rift, which runs from Ethiopia south to Southern Mozambique and Zimbabwe. A little-known range in the archipelago, the Mafinga Mountains extend from approximately 9°55' to 10°06' South and 33°15' to 33°20' East (Leonard 2005) and rise to over 2330m above sea level, on Zambia's north-eastern border with Malawi. They form a major watershed which defines the Zambia-Malawi Border for about 19km and sit at the head of the game-rich Luangwa Valley. Like the valley, they are a part of the Rift formation.

### Position of Mafinga Mountain in Africa

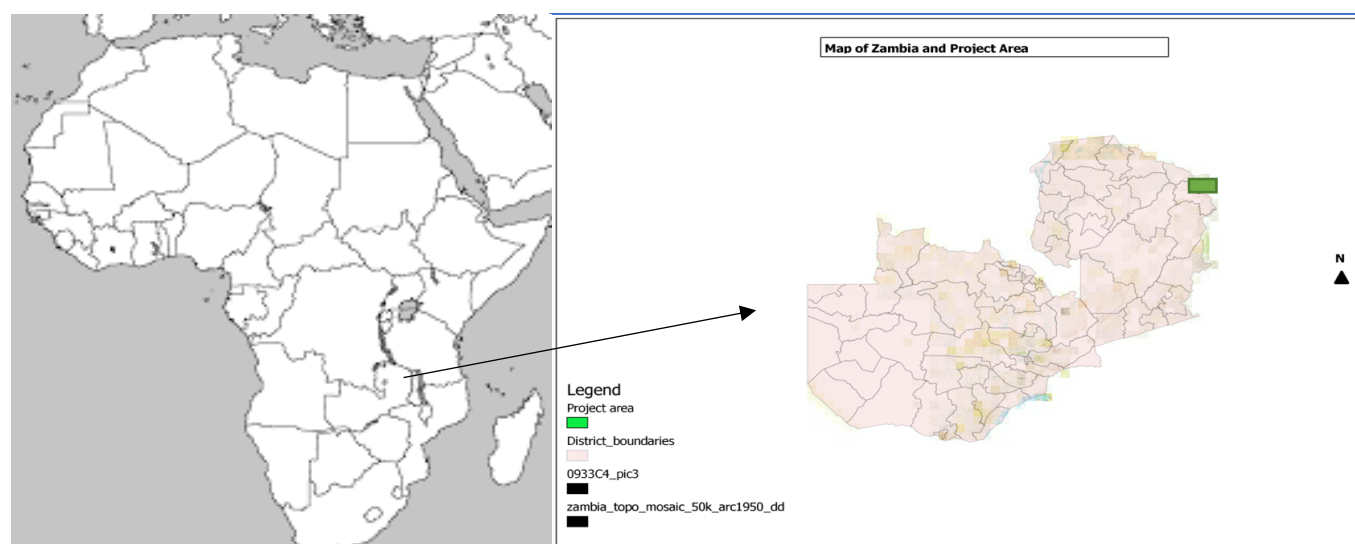


Figure 1: Position of Mafinga Mountain in Zambia courtesy of BirdWatch Zambia; Qgis

Lying over a thousand kilometres by road from the Zambian capital, these remote mountains have received little attention from naturalists. The body of ecological knowledge about the site mostly derives from brief, informal expeditions which have focussed chiefly on birds. Endemics, of which three taxa – the Yellow-throated Woodland-Warbler (*Phylloscopus ruficapillus*), Sharpe's Starling (*Pholia sharpii*) and a race of the Cabanis's Greenbul (*Phyllastrephus cabanisi placidus*) – are known from nowhere else in the country. Information on other vertebrates is very scant. The Nyika Dwarf Toad and Nyika Dwarf Chameleon are two very localized afromontane species listed as present in (WECSZ 2015; Leonard, 2005).

Besides its importance as an Afromontane ecosystem, the site also harbours the source of the Luangwa River (WECSZ, 2015; zambiatravel-safaris.com). With the enormous wildlife populations of the Luangwa Valley and its fishing and farming communities downstream, and an annual discharge of over 22 cubic km into the Zambezi above the Cahora Bassa Dam (FAO 1997), the ecological and economic significance of this catchment would be hard to overstate. Yet outside of the 15500-hectare Mafinga National Forest (no. 296), which receives only nominal protection from the Forestry Department, it has no conservation status in the National Legislature. In 2005, however, the Mafingas were identified as an Important Bird Area (IBA) by the Zambian Ornithological Society (now BirdWatch Zambia) (Leonard 2005) and subsequently, the Critical Ecosystem Partnership Fund, an International conservation body committed to the conservation of crucially important and vulnerable centres of biodiversity, has earmarked the site as a Terrestrial Key Biodiversity Area (KBA) and a Priority Area in the Afromontane Hotspot (site ZMB1; CEPF 2012). This survey was conducted by Birdwatch Zambia to complement the CEPF- funded conservation project in the Mafinga Hills undertaken by the Wildlife and Environmental Conservation Society of Zambia (WECSZ) and detailed in the “Conservation Action Plan for The Mafinga Hills 2016-2025” (WECSZ 2015).

## 2.0 Aims

1. To carry out a systematic ecological survey with particular emphasis on Afromontane species in the following taxonomic groups:

Birds

Larger mammals

Amphibians

Reptiles

Fish

2. To generate ecological data which will feed into the WECSZ Conservation Action Plan

## 3.0 Access and Logistics

Our trek to the Mafinga Mountains began at 06 00 on 30 March, in Lusaka. Given the remoteness of the study site, we had to carry all supplies with us. We had a few stops on the way, for supplies, refueling and lunch, but made it to Mpika just after dark, where we stayed at Bayama Lodge.

The 31<sup>st</sup> of March saw us on the road to Isoka just after 06 00 to complete the remaining 350km to Isoka, before branching off the Great North Road. The 100km from Chinsali to Isoka was particularly poor, with pot-holed tar and no shoulder, and by the time we pulled into the



fuel station our trailer had developed a wheel-wobble which took us an hour or so to remedy. It was here that we picked up Mr Banda, the forestry officer who was to accompany us. We left Isoka at about 1330, turning east onto the road to Mafinga Boma, which is currently being tarred. We had a scenic stop at the old, historic-looking Luangwa Bridge, and another stop for a puncture in the Makutu/ Chirumbi area. It was 1730 by the time we arrived in Mafinga (previously called Tendele). For the night, we booked into Wanipa Guesthouse where we found the host very helpful and accommodating.

First priority next day was to visit the local chief, Mwenechifungwe and acquaint him with our plans, and to leave a gift. We got away from Mafinga town at around 1100. It was a 60km journey to Maliko Village, the last point accessible by vehicle, and our first base within the Mafinga Hills KBA. The roads from here were mostly in reasonable condition, save for a few hundred metres before the Ntonga Stream bridge where it is severely eroded. We arrived at Maliko at 1400. The afternoon was taken up with un-packing our kit, paying a courtesy call on the local headman and doing a brief bit of birding.

#### Base 1: Maliko Village

**GPS:** S10.05296 E33.30533

**Elevation:** 1536m

**Length of Stay:** Total of 4 nights 1/4, 3/4, 10/4, 20/4

**Weather:** rain with heavy winds on the first night; clear mornings; short, heavy afternoon showers on 20/4.

This village, strung out along the Zinsa Stream, served as our supply depot at the base of the main Mafinga massif. We spent the night of our arrival here and walked northeast along the Zinsa stream towards its source the next day, camping near its junction with the Nalupigu. We were back in Maliko the following evening, making final arrangements for our ascent up the mountain next morning. On 10 April, two of the team members returned to Maliko with a porter, for fresh supplies, and spent that night at the village. On 21 April the whole team returned to Maliko on completion of the survey and spent a final night before leaving.

#### Base 2: Zinsa-Nalupigu Confluence

**GPS:** S10.02379 E33.31810

**Elevation:** 1696m

**Length of Stay:** 1 night 2/4

**Weather:** clear

The walk to Zinsa-Nalupigu confluence takes about 40 minutes at moderate pace, with several stream-crossings. The path is well-marked and leads through rock outcrops, fields, homesteads and degraded miombo scrub, with occasional thin riverine strips. We set up camp when it was getting dark, having spent all our time on survey work. The confluence is not an ideal site for a camp and there are better options further up the Zinsa Stream. We only had the opportunity to find this out the next day, however!

#### Base 3: Kaminyamina

**GPS:** S9.99814 E33.31072

**Elevation:** 1930m

**Length of Stay:** 3 nights 3/4 – 6/4

**Weather:** clear; afternoon thunder and 30 minutes of rain on 6/4

The path to the confluence offers the gentlest route up the mountain. After crossing Zinsa just above the confluence it veers north up a spur which rises between the Zinsa and Nalupigu valleys. It leads up to the Nalupigu Source at about 2200m. Maliko to Nalupigu Source can be done in 3 hours with full packs. From here we left the path, which eventually descends into Malawi, and headed north and slightly west, setting up camp alongside a substantial clump of forest on the Kaminyamina Stream.

Base 4: Mulangale

**GPS:** S9.98840 E33.30428

**Elevation:** 1903m

**Length of Stay:** 3 nights 7/4 – 9/4

**Weather:** mostly clear; rain throughout afternoon of 8/4, starting 1430.

Mulangale is the largest intact forest on the mountain. It is only a short distance from Kaminyamina - under 2km to the northwest - but much of this is steep, particularly the Mweniwisi Stream crossing. Upon arriving at the forest edge we did some scouting and found the northeastern corner to best suit our purposes as a base. From here we had several convenient options: working the forest interior; climbing up the northern slopes for a vantage over forest; following the northern edge and sampling the ecotone between forest and bracken-briar. Our approach was to concentrate all our attention on this very important block of habitat, so we did not move very far from base.

Base 5: Musipizi Source

**GPS:** S9.97282 E33.33828

**Elevation:** 2018m

**Length of Stay:** 3 nights 10/4 – 12/4

**Weather:** rain, wind and mist till 0830 on 12/4; rain and mist whole morning 13/4

Our next objective was the area of the Luangwa River Source. We left Mulangale at 0830, after doing some final birding in the forest. It was a 3.5 hour trek to our next base, some of which was fairly steep. We reached the head of the Musipizi stream at 1200. Two of the team had a quick lunch and then headed down the mountain to Maliko, for resupply.

Base 6: Namitawa Hill

**GPS:** S10.00272 E33.3305

**Elevation:** 2036

**Length of Stay:** 2 nights 13/4 - 14/4

**Weather:** Thick mist on afternoon 13/4, heavy winds and rain during the night; heavy mist till 0900 on 14/4; heavy mist on morning of 15/4.

Namitawa peak represents the northernmost reach of our survey. We approached it along the crest that marks the Zambia – Malawi boundary. On this march we reached a height of 1236m: probably the highest point in Zambia. Conditions were not ideal for locating a base,

with visibility in the mist being sometimes less than 30m. A straight-line distance of 4km, the transfer took us 5 hours. The weather throughout our time at Namitawa was restrictively wet and misty. Departed Namitawa at 1130 on 14/4 and headed back south to our final base on the mountain-top.

#### Base 7: Masuwa

**GPS:** S10.00272 E33.32406

**Elevation:** 2211

**Length of Stay:** 3 nights 15/4 – 17/4

**Weather:** heavy afternoon showers afternoon 16/4; on 17/4, thick mist whole morning, afternoon showers; morning mist 18/4

At over 2200m, Masuwa was our highest base. A straight-line distance of 7km from Namitawa, it took us just over four hours in clear conditions. Most of this was easy walking along the crest, following the International Boundary. This site has been used repeatedly by visitors to the mountain, so it offers cleared spots for tents and a long-drop toilet.

#### Base 8: Nalupigu Stream

**GPS:** S10.01834 E33.32406

**Elevation:** 1874

**Length of Stay:** 2 nights 18/4 – 19/4

**Weather:** afternoon rain 18/4; otherwise calm

Access involved some steep walking, first down the spur dividing the Izinsa and Nalupigu systems, then up the eastern bank after crossing the Nalupigu. After a two-hour transfer we set up camp in tall evergreen forest on the eastern bank. The path we used had apparently been set by honey collectors, but there was also some evidence of logging.

## 4.0 Methods

### 4.1.0 Field Work and Recording

All observations of vertebrates were plotted on a 1x1km scale indicating the species and a numeric count. Photographs were taken as evidence for a species' presence as well as to allow for further study and for reporting purposes. Although sometimes constrained by weather conditions, fieldwork took place throughout the day and continued with spot-lighting after dark.

**4.1.1 Birds:** were surveyed through systematic observation and sound recording. Tape-luring (Systematic playing of recorded birdsong) was done to optimize detection chances of key species. Effort was concentrated at times of greatest activity: early morning from 0600 till about 1130, and late afternoon/ early evening. However, bird-watching spilled over into all hours of the day, and was sometimes restricted by the weather during optimal times.

**4.1.2 Mammals:** records were systematically collected from direct observation and sound, and from the interpretation of sign (for example tracks, droppings, places of refuge and

remains from feeding) during survey activities and incidentally when in camp. Nocturnal searches with torches were conducted. No trapping of smaller mammals, such as rodents or bats, was done.

**4.1.3 Amphibians:** in addition to any visual observation during general survey activities, key localities of interest (e.g. pools) were visited to establish the presence of calling adults and/or tadpoles. In addition, nocturnal searches using spotlights were carried out.

**4.1.4 Reptiles:** sightings were collected during day- and night-time survey activities. Promising spots, such as boulder-strewn terrain and evergreen forest, were systematically searched.

**4.1.5 Fish:** streams and other water bodies were sampled visually and by using scoop nets.

#### 4.2.0 Project Area

The KBA boundaries as used in this project follow those of the original IBA description (Leonard, 2005). The southern section includes the Mafinga National Forest (No 296), while in the more northern parts, the western boundary takes in all land above the 1500 m contour line, while the eastern boundary follows the international boundary. In this, the boundaries differ to some extent with those indicated on the CEPF website. KBA boundaries follow the proposal as in Leonard (2005; solid line) and as indicated on the CEPF website (narrow dotted line).

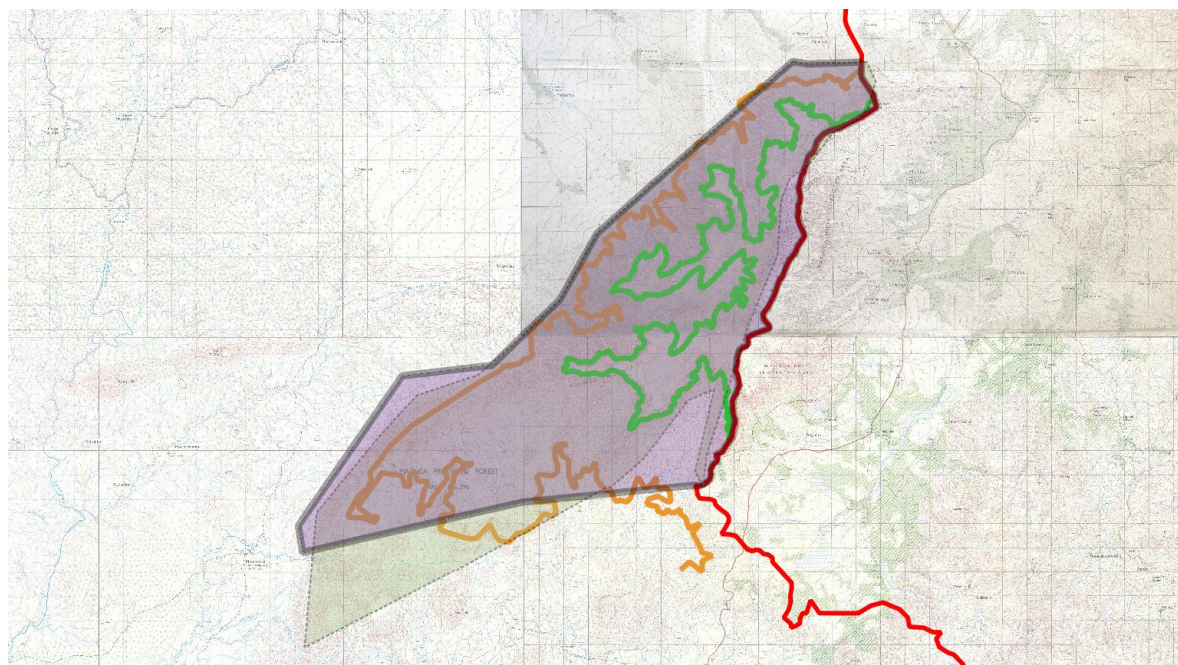


Figure 2: Mafinga KBA with the international Zambia-Malawi boundary (red line) and the 1500 (brown) and 2000 (green) m asl contour line - Map developed by Frank Willems

## 5.0 Results

### 5.1.0 Spatial Coverage

We focused our efforts on the drainage systems within the high-altitude parts of the site, as well as the Zinsa valley which, though lower in elevation, can be assumed to be the wettest valley in the area owing to local weather systems and has yielded several important faunal records in the past. We based ourselves for two or three nights in each of the most promising spots (see Access and Logistics for our itinerary), and managed to cover a total of 43 1X1km squares (our basecamps are also listed in **appendix 6** with GPS points and dates). The figure below shows our spatial coverage in relation to the entire project area and the 1500 and 2000m contour lines.

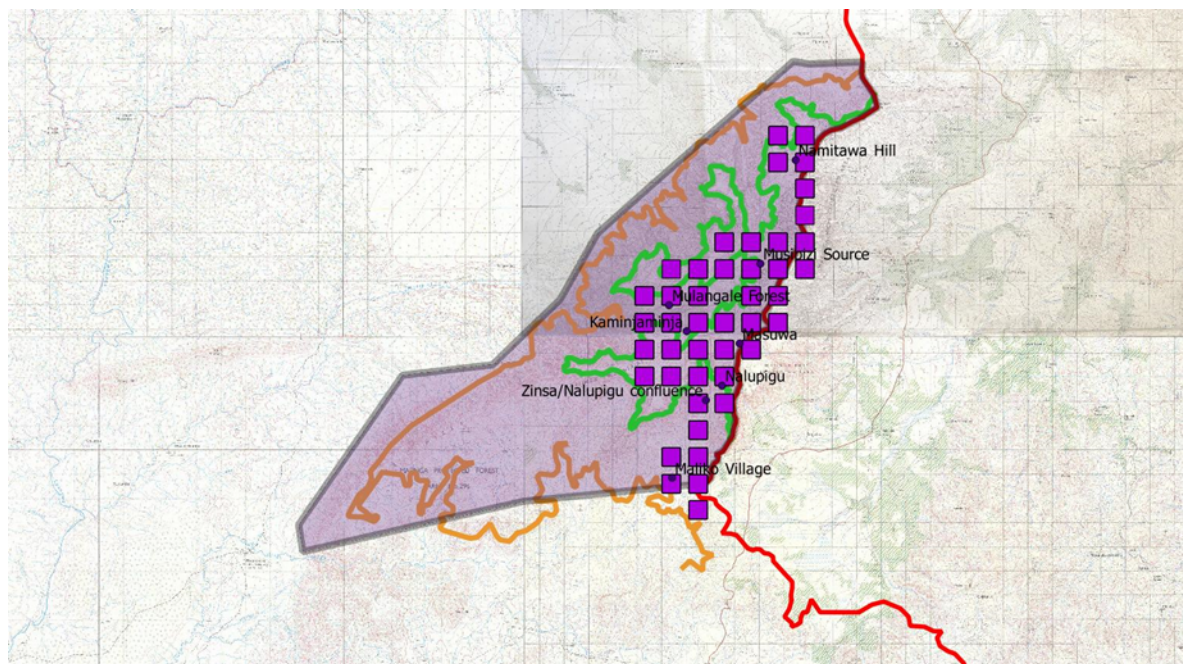


Figure 3: Map of Survey coverage (purple squares); map by Frank Willems

### 5.2.0 Focal Areas

**5.2.1 Zinsa Valley:** Habitats included extensive Bracken-briar, *Acacia abyssinica* stands, tall evergreen forest, miombo woodlands (intact in higher reaches but totally degenerated in lower parts), fields and secondary streamside habitats. Most intact habitat is found upstream of the confluence of the Nalupigu stream (the eastern branch) with the Zinsa (the western branch). There has been a significant amount of logging and fire impact in this area, and hence there is a lot of secondary growth. The valley was notable for providing the KBA's first records of the Slender-billed Starling, which occurred in large mixed flocks alongside the Red-winged Starling. Several other bird species were seen only here and not on the plateau, including Rameron Pigeon (also in big flocks) and Yellow-crowned Canary. Amphibians included the Spotted Reed Frog, new for the Zambian list, and the Nalupigu area yielded us several Nchisi Pygmy Chameleons.



Figure 4: Google Earth image of the Zinsa Valley

**5.1.2 Kaminyaminyanya:** The stream offers several strips of forest along its length and at its head there are broad wet grasslands. The banks are mostly steep and form a gorge in places. It is fed by several smaller streams coming in from the rocky slopes to the east which were productive of amphibians, notably the Obscure Ridged Frog. Whyte's Francolin was encountered several times in open areas and Starred Robin, Yellow-throated Woodland-warbler and Mountain Nightjar were recorded in the forests. Both Yellow Baboon and Moloney's Monkey were seen, as were Klipspringer, Typical Vlei Rat (both of these near the source) and, perhaps most surprisingly, a Bush Squirrel in a tree hollow near camp.



Figure 5: Google Earth Image of the Kaminyamina System

**5.2.3 Mulangale:** tall, extensive montane forest which has evidently suffered from recent fires, with some extensive burnt-out patches. This is one of the most ecologically rich and interesting areas in the site, and it gave us our first encounter with the Nchisi Pygmy Chameleon (*Rhampholeon nchisiensis*). Our most note-worthy mammalian record was the Long-haired Rousette Bat, a single juvenile seen in the scrub fringing the forest, which was the first record of the species for Zambia. A Chequered Giant Senghi (Elephant-shrew) was also seen. Bar-tailed Trogon and White-chested Alethe were heard and seen, Malawi Batis was common, and Forest and Olive Sunbirds were very active in the canopy. Feeding parties of miombo birds, notably Spotted Creeper, Southern Hyliota and Rufous-bellied Tit, occasionally moved some way into the forest from the surrounding woodland. White-tailed Blue Flycatcher was regularly found in the woodland and scrub above our base-camp, and a Whyte's Barbet was active among fig trees on the forest edge.



Figure 6: Google Earth Image of Mulangale Forest

#### **5.2.4 Sources of the Musipizi & Luangwa**

Habitats around Musipizi Base consisted of thin strips of riverine forest, flanked by protea scrub and bracken briar, with extensive grasslands. Two Blue Swallows were seen in flight near camp, where we had a nest of Bronze Sunbirds (with flying young), Pallid Honeyguide in the forest and Black-lored Cisticolas continuously calling from the fringe of protea and bracken briar. Wing-snapping Cisticola was found the eastern plateau, as was a Taita Dwarf Toad. In camp we were visited by a Long-tailed Pouched Rat. The Luangwa Source is nearby to the northeast, and this drainage is characterized by more extensive forests and steeper topography. It was below the source that we recorded Cinnamon Bracken-warbler, confirming its presence in the site.





Figure 7: Google Earth Image of the Upper Musipizi System



Figure 8: Google Image of the head of the Luangwa System

**5.2.5 Namitawa:** patchy, thin riverine forest at high elevation in the northern reaches of the site. Main habitats are extensive bracken briar, grassland and protea scrub. There was not a great deal of activity here. Bird records included Tropical Boubou, Malachite Sunbird, Red-faced Crimsonwing, Brown-throated and Chapin’s Apalises.



Figure 9: Google Earth Image of the area of Namitawa Base

### **5.2.6 Masuwa**

On the route between Namitawa and Masuwa, which runs through the high-altitude grasslands staddling the international border we encountered a Grey-bellied Skaapstekker (an Afromontane snake species) and had several sightings of Common Quail and African Pipit. Bird records from the vicinity of Masuwa base included Cape Robin, Green Twinspot and a possible (unconfirmed) Orange Thrush. A large forest patch in a valley to the north gave us Bar-tailed Trogon and White-chested Alethe.



Figure 10: Google Earth Image of the area of Masuwa Base

## 6.0 Birds

### 6.1 KBA Trigger Species

#### **Crowned Eagle *Stephanoaetus coronatus***

**Status:** Near-threatened (IUCN Red-Data List)

A pair of birds was seen in flight over the Zinsa Valley. The largest African Eagle, this species is thought to be in decline owing to a broad suite of impacts: habitat loss, direct persecution, loss of prey species (small-to -medium mammals) and collisions with tall man-made structures. These pressures are ameliorated, to some degree, by the bird's adaptability to anthropogenic change, but exacerbated by its slow rate of reproduction (BirdLife International 2018.)

#### *Threats*

The most relevant threat to Crowned Eagles in Mafinga would appear to be habitat change due to logging, burning and agricultural expansion. At present, however, the substantial blocks of forest which would provide nesting sites and prey species like the Syke's Monkey, are still relatively intact at the head of Zinsa Valley (below) and at several other sites around the KBA. Whilst the impacts above need monitoring and some level of control, they are not thought to be of immediately dire consequence for the Crowned Eagle population.

#### **Blue Swallow *Hirundo atrocaeruleus***

**Status:** Vulnerable (IUCN Red Data List)

The first record of Blue Swallows in Mafinga KBA: a couple of birds (probably juveniles considering absence of tail streamers and dull plumage) briefly seen flying near our base at the source of the Musipizi Stream by Frank Willems, ranks high in importance. Listed as Vulnerable on the IUCN Red List, the species has shown a severe decline in parts of its range, owing to human activity (BirdLife International 2018). Nested among the islands of habitat in Malawi and Southern Tanzania that are thought to support around 74% of the breeding population, Mafinga may also hold a breeding population. An aerial view of the Musipizi system (below) shows extensive grassland with thin riverine strips: ideal habitat for the swallow. Falling on 12 April, this record is relatively late in the season for Zambia, making it equally likely that this record reflects post-breeding movements from known breeding grounds (such as the Nyika) into the Mafinga Mountains.

Although there is practically no human activity in the montane grasslands, the extent of bracken briar, blackened stumps and burnt-out forest indicate a high fire impact throughout the site. Annual fires are cited as a major threat to breeding populations of the Blue Swallow (BirdLife International 2018).

**Table1: Species recorded in the Mafinga KBA during this and previous surveys.**

S: number of 1x1 km squares in which species recorded during 2018 survey. N: new to KBA list. Note that species recorded in 0 squares in 2018, have been recorded in previous years, as have all species not marked with an x in the N column.

Common name	Scientific name	S	N	Common name	Scientific name	S	N
Whyte's Francolin	<i>Scleroptila whytei</i>	5		Silvery-cheeked Hornbill	<i>Bycanistes brevis</i>	0	
Hildebrandt's Francolin	<i>Pternistis hildebrandti</i>	6		Whyte's Barbet	<i>Stactolaema whytii</i>	2	X
Red-necked Francolin	<i>Pternistis afer</i>	8		Moustached Green Tinkerbird	<i>Pogoniulus leucomyx</i>	11	
Common Quail	<i>Coturnix coturnix</i>	4		Yellow-fronted Tinkerbird	<i>Pogoniulus chrysoconus</i>	7	
Hamerkop	<i>Scopus umbretta</i>	1	X	Black-collared Barbet	<i>Lybius torquatus</i>	2	X
African Harrier-hawk	<i>Polyboroides typus</i>	0		White-faced Barbet	<i>Pogonornis macclounii</i>	1	X
Crowned Eagle	<i>Stephanoaetus coronatus</i>	1		Green-backed Honeybird	<i>Prodotiscus zambesiae</i>	3	
Wahlberg's Eagle	<i>Hieraetus wahlbergi</i>	3		Pallid Honeyguide	<i>Indicator meliphilus</i>	1	X
Verreaux's Eagle	<i>Aquila verreauxii</i>	0		Lesser Honeyguide	<i>Indicator minor</i>	1	X
African Hawk-eagle	<i>Aquila spilogaster</i>	2	X	Scaly-throated Honeyguide	<i>Indicator variegatus</i>	5	
Lizard Buzzard	<i>Kaupifalco monogrammicus</i>	1	X	Greater Honeyguide	<i>Indicator indicator</i>	0	
African Goshawk	<i>Accipiter tachiro</i>	2		Golden-tailed Woodpecker	<i>Campethera abingoni</i>	1	
Black Kite	<i>Milvus migrans</i>	0		Cardinal Woodpecker	<i>Dendropicos fuscescens</i>	6	
Eurasian Buzzard	<i>Buteo buteo</i>	2		Olive Woodpecker	<i>Dendropicos griseocephalus</i>	8	
Augur Buzzard	<i>Buteo augur</i>	0		Common Kestrel	<i>Falco tinnunculus</i>	4	
African Olive-pigeon	<i>Columba arquatrix</i>	3		Amur Falcon	<i>Falco amurensis</i>	2	X
Lemon Dove	<i>Aplopelia larvata</i>	1		Eurasian Hobby	<i>Falco subbuteo</i>	1	
Red-eyed Dove	<i>Streptopelia semitorquata</i>	2	X	Lanner Falcon	<i>Falco biarmicus</i>	2	
Ring-necked Dove	<i>Streptopelia capicola</i>	1		African Broadbill	<i>Smithornis capensis</i>	1	
Emerald-spotted Wood-dove	<i>Turtur chalcospilos</i>	1	X	Malawi Batis	<i>Batis dimorpha</i>	16	
Blue-spotted Wood-dove	<i>Turtur afer</i>	1	X	Chin-spot Batis	<i>Batis molitor</i>	11	
Tambourine Dove	<i>Turtur tympanistris</i>	1		White-crested Helmetshrike	<i>Prionops plumatus</i>	1	
Schalow's Turaco	<i>Tauraco schalowi</i>	5		Retz's Helmetshrike	<i>Prionops retzii</i>	2	
White-browed Coucal	<i>Centropus superciliosus</i>	1	X	Black-fronted Bush-shrike	<i>Chlorophoneus nigrifrons</i>	1	
Diederik Cuckoo	<i>Chrysococcyx caprius</i>	1	X	Orange-breasted Bush-shrike	<i>Chlorophoneus</i>	3	X
Klaas's Cuckoo	<i>Chrysococcyx klaas</i>	0		Brown-crowned Tchagra	<i>Tchagra australis</i>	5	
African Emerald Cuckoo	<i>Chrysococcyx cupreus</i>	0		Black-crowned Tchagra	<i>Tchagra senegalus</i>	11	
Black Cuckoo	<i>Cuculus clamosus</i>	1	X	Black-backed Puffback	<i>Dryoscopus cubla</i>	18	
Red-chested Cuckoo	<i>Cuculus solitarius</i>	0		Tropical Boubou	<i>Laniarius aethiopicus</i>	16	
African Cuckoo	<i>Cuculus gularis</i>	1	X	Brubru	<i>Nilaus afer</i>	4	
Common Cuckoo	<i>Cuculus canorus</i>	2	X	Black Cuckooshrike	<i>Campephaga flava</i>	4	
Spotted Eagle-owl	<i>Bubo africanus</i>	1		Souza's Shrike	<i>Lanius souzae</i>	1	X
African Wood-owl	<i>Strix woodfordii</i>	1		Red-backed Shrike	<i>Lanius collurio</i>	1	X
Montane Nightjar	<i>Caprimulgus poliocephalus</i>	5		Common Fiscal	<i>Lanius collaris</i>	3	
Freckled Nightjar	<i>Caprimulgus tristigma</i>	1		African Golden Oriole	<i>Oriolus auratus</i>	0	
Pennant-winged Nightjar	<i>Caprimulgus vexillarius</i>	0		Eastern Black-headed Oriole	<i>Oriolus larvatus</i>	1	
Mottled Swift	<i>Tachymartis aequatorialis</i>	0		African Paradise-flycatcher	<i>Terpsiphone viridis</i>	2	
Common Swift	<i>Apus apus</i>	1		White-necked Raven	<i>Corvus albicollis</i>	7	
African Swift	<i>Apus barbatus</i>	1		White-tailed Blue-flycatcher	<i>Elminia albicauda</i>	9	
Speckled Mousebird	<i>Colius striatus</i>	1		White-tailed Crested	<i>Elminia albonotata</i>	13	
Bar-tailed Trogon	<i>Apaloderma vittatum</i>	2		Rufous-bellied Tit	<i>Melaniparus rufiventris</i>	3	
Racquet-tailed Roller	<i>Coracias spatulatus</i>	0		Miombo Tit	<i>Melaniparus griseiventris</i>	5	
European Roller	<i>Coracias garrulus</i>	1	X	Grey Penduline-tit	<i>Anthoscopus caroli</i>	4	X
Broad-billed Roller	<i>Eurystomus glaucurus</i>	0		Common Bulbul	<i>Pycnonotus barbatus</i>	27	
African Pygmy-kingfisher	<i>Ispidina picta</i>	0		Black-browed Mountain	<i>Arizelocichla fusciceps</i>	14	
Little Bee-eater	<i>Merops pusillus</i>	0		Little Greenbul	<i>Eurillas virens</i>	2	
Blue-cheeked Bee-eater	<i>Merops persicus</i>	1	X	Grey-olive Greenbul	<i>Phyllastrephus</i>	3	
Olive Bee-eater	<i>Merops superciliosus</i>	0		Cabanis's Greenbul	<i>Phyllastrephus cabanisi</i>	2	
European Bee-eater	<i>Merops apiaster</i>	17		Yellow-streaked Greenbul	<i>Phyllastrephus flavostriatus</i>	13	
Common Hoopoe	<i>Upupa epops</i>	0		White-headed Saw-wing	<i>Psalidoprocne albiceps</i>	14	
Green Woodhoopoe	<i>Phoeniculus purpureus</i>	1	X	Grey-rumped Swallow	<i>Pseudhirundo griseopyga</i>	0	
Common Scimitarbill	<i>Rhinopomastus cyanomelas</i>	2	X	African Plain Martin	<i>Riparia paludicola</i>	2	X
Crowned Hornbill	<i>Lophoceros alboterminatus</i>	6		Barn Swallow	<i>Hirundo rustica</i>	6	
Trumpeter Hornbill	<i>Bycanistes bucinator</i>	0		Blue Swallow	<i>Hirundo atrocaerulea</i>	1	X

Common name	Scientific name	S	N
Red-throated Rock Martin	<i>Ptyonoprogne rufigula</i>	4	
Northern House Martin	<i>Delichon urbicum</i>	0	
Rufous-chested Swallow	<i>Cecropis semirufa</i>	0	
Red-rumped Swallow	<i>Cecropis daurica</i>	3	
Long-billed Crombec	<i>Sylvietta rufescens</i>	2	X
Red-capped Crombec	<i>Sylvietta ruficapilla</i>	3	
Yellow-throated Woodland-	<i>Phylloscopus ruficapilla</i>	3	
Willow Warbler	<i>Phylloscopus trochilus</i>	9	
Marsh Warbler	<i>Acrocephalus palustris</i>	1	X
African Yellow Warbler	<i>Iduna natalensis</i>	0	
Cinnamon Bracken-warbler	<i>Bradypterus cinnamomeus</i>	1	X
Red-faced Cisticola	<i>Cisticola erythrops</i>	3	X
Singing Cisticola	<i>Cisticola cantans</i>	4	
Trilling Cisticola	<i>Cisticola woosnami</i>	10	
Black-lored Cisticola	<i>Cisticola nigriloris</i>	6	
Lazy Cisticola	<i>Cisticola aberrans</i>	9	
Churring Cisticola	<i>Cisticola njombe</i>	5	X
Wailing Cisticola	<i>Cisticola lais</i>	27	
Short-winged Cisticola	<i>Cisticola brachypterus</i>	3	X
Wing-snapping Cisticola	<i>Cisticola ayresii</i>	7	X
Tawny-flanked Prinia	<i>Prinia subflava</i>	8	X
Red-winged Prinia	<i>Prinia erythroptera</i>	6	
Bar-throated Apalis	<i>Apalis thoracica</i>	0	
Chapin's Apalis	<i>Apalis chapini</i>	18	
Brown-headed Apalis	<i>Apalis alticola</i>	28	
Bleating Camaroptera	<i>Camaroptera brachyura</i>	5	
Stierling's Wren-warbler	<i>Calamonastes stierlingi</i>	4	X
Green-capped Eremomela	<i>Eremomela scotops</i>	4	
Eurasian Blackcap	<i>Sylvia atricapilla</i>	0	
Garden Warbler	<i>Sylvia borin</i>	0	
Common Whitethroat	<i>Sylvia communis</i>	1	X
Brown Warbler	<i>Sylvia lugens</i>	0	
African Yellow White-eye	<i>Zosterops senegalensis</i>	15	
Yellow-bellied Hylota	<i>Hylota flavigaster</i>	1	
African Spotted Creeper	<i>Salpornis salvadori</i>	2	X
Violet-backed Starling	<i>Cinnyricinclus leucogaster</i>	0	
Red-winged Starling	<i>Onychognathus morio</i>	12	
Slender-billed Starling	<i>Onychognathus tenuirostris</i>	5	X
Sharpe's Starling	<i>Pholia sharpii</i>	0	
Kurrichane Thrush	<i>Turdus libonyana</i>	2	
Abyssinian Thrush	<i>Turdus abyssinicus</i>	3	
White-browed Scrub Robin	<i>Cercotrichas leucophrys</i>	10	X
Grey Tit-flycatcher	<i>Fraseria plumbea</i>	3	X
White-eyed Slaty-flycatcher	<i>Melaenornis fischeri</i>	8	
Southern Black-flycatcher	<i>Melaenornis pammelaina</i>	0	
Pale Flycatcher	<i>Agricola pallidus</i>	1	X
Spotted Flycatcher	<i>Muscicapa striata</i>	1	
Ashy Flycatcher	<i>Fraseria caerulescens</i>	3	
African Dusky Flycatcher	<i>Muscicapa adusta</i>	9	
White-chested Alethe	<i>Chamaetylas fuelleborni</i>	5	
Cape Robin-chat	<i>Dessonornis caffer</i>	3	

Common name	Scientific name	S	N
White-browed Robin-chat	<i>Cossypha heuglini</i>	13	
Red-capped Robin-chat	<i>Cossypha natalensis</i>	2	
White-starred Robin	<i>Pogonochila stellata</i>	4	
Bocage's Akalat	<i>Sheppardia bocagei</i>	0	
Sharpe's Akalat	<i>Sheppardia sharpei</i>	0	
Miombo Rock-thrush	<i>Monticola angolensis</i>	3	
Common Stonechat	<i>Saxicola torquatus</i>	10	
Mocking Cliff-chat	<i>Thamnolaea</i>	0	
Familiar Chat	<i>Oenanthe familiaris</i>	5	
Anchieta's Sunbird	<i>Anthreptes anchietae</i>	0	
Collared Sunbird	<i>Hedydipna collaris</i>	6	
Green-headed Sunbird	<i>Cyanomitra verticalis</i>	13	
Olive Sunbird	<i>Cyanomitra olivacea</i>	12	
Amethyst Sunbird	<i>Chalcomitra amethystina</i>	9	
Bronze Sunbird	<i>Nectarinia kilimensis</i>	7	
Malachite Sunbird	<i>Nectarinia famosa</i>	10	
Eastern Miombo Sunbird	<i>Cinnyris manoensis</i>	2	X
Western Miombo Sunbird	<i>Cinnyris Gertrudis</i>	3	
Forest Double-collared Sunbird	<i>Cinnyris fuelleborni</i>	14	
Variable Sunbird	<i>Cinnyris venustus</i>	19	
Yellow-throated Bush-sparrow	<i>Gymnoris superciliaris</i>	5	
Bertram's Weaver	<i>Ploceus bertrandi</i>	7	
Holub's Golden Weaver	<i>Ploceus xanthops</i>	2	X
Southern Red Bishop	<i>Euplectes orix</i>	2	X
Yellow Bishop	<i>Euplectes capensis</i>	2	X
Red-collared Widowbird	<i>Euplectes ardens</i>	5	X
Green Twinspot	<i>Mandingoa nitidula</i>	3	
Red-faced Crimsonwing	<i>Cryptospiza reichenovii</i>	2	
African Firefinch	<i>Lagonosticta rubricata</i>	11	
Yellow-bellied Waxbill	<i>Coccyzygia quartinia</i>	13	
Common Waxbill	<i>Estrilda astrild</i>	5	X
Bronze Mannikin	<i>Spermestes cucullata</i>	4	X
Mountain Wagtail	<i>Motacilla clara</i>	2	
African Pied Wagtail	<i>Motacilla aguimp</i>	2	
African Pipit	<i>Anthus cinnamomeus</i>	22	
Woodland Pipit	<i>Anthus nyassae</i>	1	
Tree Pipit	<i>Anthus trivialis</i>	3	
Striped Pipit	<i>Anthus lineiventris</i>	6	
East African Citril	<i>Crithagra hyposticta</i>	7	
Yellow-fronted Canary	<i>Crithagra mozambica</i>	2	X
Brimstone Canary	<i>Crithagra sulphurata</i>	3	
Reichard's Seedeater	<i>Crithagra reichardi</i>	10	X
Black-eared Seedeater	<i>Crithagra mennelli</i>	0	
Streaky Seedeater	<i>Crithagra striolata</i>	0	
Yellow-crowned Canary	<i>Serinus flavivertex</i>	1	
Cinnamon-breasted Bunting	<i>Emberiza tahapisi</i>	1	X
Golden-breasted Bunting	<i>Emberiza flaviventris</i>	0	
Cabanis's Bunting	<i>Emberiza cabanisi</i>	13	
Totals	207	17	5

## 6.2.0 Notes on Elevation

### 6.2.1 Afromontane Endemics

Following Leonard (2005) in selection of biome-restricted species, 20 Afromontane endemics and 14 Afromontane near-endemics were recorded during the survey. Minimum and maximum elevations of these are listed in Table 2.

**Table 2: Afromontane endemics recorded and corresponding minimum and maximum elevation**

Species Common name	Scientific name	Elevation	
		Min	Max
<b>Endemic</b>			
Montane Nightjar	Caprimulgus poliocephalus	1930	2250
Bar-tailed Trogon	Apaloderma vittatum	1900	2150
Moustached Green Tinkerbird	Pogoniulus leucomystax	1730	2220
White-tailed Crested-flycatcher	Elminia albonotata	1875	2220
Chapin's Apalis	Apalis chapini	1800	2150
Black-lored Cisticola	Cisticola nigriloris	2000	2250
Churring Cisticola	Cisticola njombe	2000	2215
Wailing Cisticola	Cisticola lais	1947	2330
Cinnamon Bracken-warbler	Bradypterus cinnamomeus	2100	2100
Blue Swallow	Hirundo atrocaerulea	2000	2000
Black-browed Mountain Greenbul	Arizelocichla fusciceps	1800	2200
Yellow-throated Woodland-warbler	Phylloscopus ruficapilla	1930	2000
Slender-billed Starling	Onychognathus tenuirostris	1500	1800
White-eyed Slaty-flycatcher	Melaenornis fischeri	1685	2200
White-starred Robin	Pogonocichla stellate	1910	2220
White-chested Alethe	Chamaetylas fuelleborni	1800	2150
Bronze Sunbird	Nectarinia kilimensis	1685	2220
Forest Double-collared Sunbird	Cinnyris fuelleborni	1700	2200
Bertram's Weaver	Ploceus bertrandi	1500	2280
Red-faced Crimsonwing	Cryptospiza reichenovii	2000	2100
<b>Near-endemic</b>			
African Olive-pigeon	Columba arquatrix	1685	1850
Lemon Dove	Aplopelia larvata	1850	1850
Malawi Batis	Batis dimorpha	1850	2220
Brown-headed Apalis	Apalis alticola	1685	2280
Singing Cisticola	Cisticola cantans	1580	1800
Wing-snapping Cisticola	Cisticola ayresii	2200	2330
White-headed Saw-wing	Psalidoprocne albiceps	1500	2223
Cabanis's Greenbul	Phyllastrephus cabanisi	1900	2000
Abyssinian Thrush	Turdus abyssinicus	1685	2000
Cape Robin-chat	Dessonornis caffer	2200	2240
Malachite Sunbird	Nectarinia famosa	1870	2286
Yellow-bellied Waxbill	Coccyzygia quartinia	1550	2248
East African Citril	Crithagra hyposticta	1500	2030
Yellow-crowned Canary	Serinus flavivertex	1800	1800

### 6.2.2 Height records for non-Afromontane species

A few non-afromontane species were present well above 2000m, sometimes where many of the specialists were notable by their absence. Here we give a record of all other species found over 2200m asl in Table 3.

**Table 3: Species not (near-) endemic to the Afromontane biome recorded at 2200 m asl or above, in order of highest elevation recorded.**

Common name	Scientific name	Maximum elevation
Common Bulbul	<i>Pycnonotus barbatus</i>	2336
African Pipit	<i>Anthus cinnamomeus</i>	2330
Common Quail	<i>Coturnix coturnix</i>	2300
African Plain Martin	<i>Riparia paludicola</i>	2286
Black-crowned Tchagra	<i>Tchagra senegalus</i>	2280
Red-winged Starling	<i>Onychognathus morio</i>	2280
Common Stonechat	<i>Saxicola torquatus</i>	2280
Hildebrandt's Francolin	<i>Pternistis hildebrandti</i>	2248
European Bee-eater	<i>Merops apiaster</i>	2248
Chin-spot Batis	<i>Batis molitor</i>	2248
Barn Swallow	<i>Hirundo rustica</i>	2248
Red-throated Rock Martin	<i>Ptyonoprogne rufigula</i>	2248
Familiar Chat	<i>Oenanthe familiaris</i>	2248
Eastern Miombo Sunbird	<i>Cinnyris manoensis</i>	2248
Tree Pipit	<i>Anthus trivialis</i>	2248
Whyte's Francolin	<i>Scleroptila whytei</i>	2230
Miombo Rock-thrush	<i>Monticola angolensis</i>	2223
Variable Sunbird	<i>Cinnyris venustus</i>	2223
Red-necked Francolin	<i>Pternistis afer</i>	2220
White-browed Scrub Robin	<i>Cercotrichas leucophrys</i>	2220
White-browed Robin-chat	<i>Cossypha heuglini</i>	2220
Green-headed Sunbird	<i>Cyanomitra verticalis</i>	2220
Blue-cheeked Bee-eater	<i>Merops persicus</i>	2210
Common Kestrel	<i>Falco tinnunculus</i>	2210
Black-backed Puffback	<i>Dryoscopus cubla</i>	2210
Tropical Boubou	<i>Laniarius aethiopicus</i>	2210
White-necked Raven	<i>Corvus albicollis</i>	2210
Miombo Tit	<i>Melaniparus griseiventris</i>	2210
African Dusky Flycatcher	<i>Muscicapa adusta</i>	2210
Brimstone Canary	<i>Crithagra sulphurata</i>	2210
Common Swift	<i>Apus apus</i>	2205
Willow Warbler	<i>Phylloscopus trochilus</i>	2205
Schalow's Turaco	<i>Tauraco schalowi</i>	2200
Spotted Eagle-owl	<i>Bubo africanus</i>	2200
Olive Woodpecker	<i>Dendropicos griseocephalus</i>	2200
Green Twinspot	<i>Mandingoa nitidula</i>	2200
Reichard's Seedeater	<i>Crithagra reichardi</i>	2200
Cinnamon-breasted Bunting	<i>Emberiza tahapisi</i>	2200

### 6.3.0 Additions to KBA List

#### 6.3.1 Systematic list of confirmed additions.

For GPS, date and other details, please refer to appendix 1.

#### **Hamerkop**

*Scopus umbretta*

One heard briefly in the Zinsa Valley (vicinity of Maliko village).

#### **African Hawk-eagle**

*Aquila spilogaster*

One pair in the Zinsa Valley.





Photo: Frank Willems

**Lizard Buzzard** *Kaupifalco monogammicus*

One record from woodland in the Kaminyamina Valley

**Red-eyed Dove** *Streptopelia semitorquata*

Two sightings in the Zinsa Valley

**Emerald-spotted Wood-dove** *Turtur chalcospilos*

One sighted in the Zinsa Valley

**Blue-spotted Wood-dove** *Turtur afer*

One seen along Zinsa Stream close to Maliko Village

**White-browed Coucal** *Centropus superciliosus*

One recorded in Zinsa Valley

**Diederik Cuckoo** *Chrysococcyx caprius*

One seen South of Maliko Village before descending into the Zinsa Valley, 1700m asl



Photo: Frank Willems

**Black Cuckoo** *Cuculus clamosus*

One seen South of Maliko Village before descending into the Zinsa Valley, 1700m asl

**African Cuckoo** *Cuculus gularis*

One seen South of Maliko Village before descending into the Zinsa Valley, 1700m asl



Photo: Frank Willems

**Common Cuckoo**

*Cuculus canorus*

Five seen South of Maliko Village before descending into the Zinsa Valley; one seen in riparian forest along Kaminyamina Stream



Photo: Frank Willems

**European Roller**                      *Coracias garrulus*

One seen South of Maliko Village before descending into the Zinsa Valley en route to first base.

**Blue-cheeked Bee-eater**        *Merops persicus*

A group flying overhead in the vicinity of Masuwa Base

**Green Woodhoopoe**              *Phoeniculus purpureus*

A group of five seen in Zinsa Valley

**Common Scimitarbill**          *Rhinopomastus cyanomelas*

Twice seen in woodland and scrub surrounding Mulangale Forest

**Whyte's Barbet**                      *Stactolaema whytii*

Recorded from riparian habitat along Zinsa Stream, and from the edge of Mulangale Forest



Photo: Frank Willems

**Black-collared Barbet** *Lybius torquatus*

Seen in the Zinsa Valley

**White-faced Barbet** *Pogonornis macclounii*

One record from Zinsa Valley

**Pallid Honeyguide** *Indicator meliphilus*

Edge of riparian forest at Musipizi Basecamp

**Lesser Honeyguide** *Indicator minor*

One record from the edge of Mulangale Forest

**Amur Falcon** *Falco amurensis*

A group of ten, and later a lone bird, in the Zinsa Valley

**Orange-breasted Bush-shrike** *Chlorophoneus sulfureopectus*

Two records from the Zinsa Valley

**Souza's Shrike** *Lanius souzae*

One seen in miombo close to edge of Mulangale Forest

**Red-backed Shrike** *Lanius collurio*

In open grassland with protea bushes between Mulangale Forest and Musipizi system at 1947 m asl.



Photo: Frank Willems

**Grey Penduline-tit**                      *Anthoscopus caroli*

Records from Zinsa and Mulangale Forest area

**African Plain Martin**                      *Riparia paludicola*

Two sightings of est. 60 individuals near Namitawa Hill. All dark brown suggesting East African origin (see 'taxonomic notes').

**Blue Swallow**                                      *Hirundo atrocaerulea*

Two birds, probably juveniles (dull plumage and lacking tail-streamers) seen in flight, from Musipizi Base-camp

**Long-billed Crombec**                      *Sylvietta rufescens*

Twice recorded from Zinsa Valley

**Marsh Warbler**                                      *Acrocephalus palustris*

One record from the Zinsa Valley

**Cinnamon Bracken-warbler** *Bradypterus cinnamomeus*

In bracken briar below the Luangwa Source. This species was cited as 'unconfirmed' by Pete Leonard, Paul Van Dael and Carl Beel in their trip-report of 1999, as was Evergreen Forest Warbler.

**Red-faced Cisticola**                    *Cisticola erythrops*

Recorded in rank vegetation around villages in the Zinsa Valley

**Churring Cisticola**                    *Cisticola njombe*

Seen regularly in suitable habitat at high altitude. Rather common within forest edge habitats.



Photo: Frank Willems

**Short-winged Cisticola**                    *Cisticola brachypterus*

Recorded twice in the Musipizi system

**Wing-snapping Cisticola**                    *Cisticola ayresii*

On the short-grass highland plains, straddling the International Boundary, over 2000m asl, where very common.

**Tawny-flanked Prinia**                    *Prinia subflava*

Nine records from Zinsa Valley and Mulangale

**Stierling's Wren-warbler**                    *Calamonastes stierlingi*

Four records from miombo and scrub in the Zinsa Valley

**Common Whitethroat** *Sylvia communis*

Recorded once in the Zinsa Valley

**African Spotted Creeper** *Salpornis salvadori*

Recorded in Mulangale Forest, in tree tops within climax afro-montane forest, and in the Zinsa Valley

**Slender-billed Starling** *Onychognathus tenuirostris*

In mixed flocks, often with Red-winged Starling, in the Zinsa Valley. An estimated total of some 60 birds was recorded (alongside similar numbers of Red-winged Starling). Separation from Red-winged Starlings challenging when in mixed flocks, however, hence this should be taken as an estimate only.

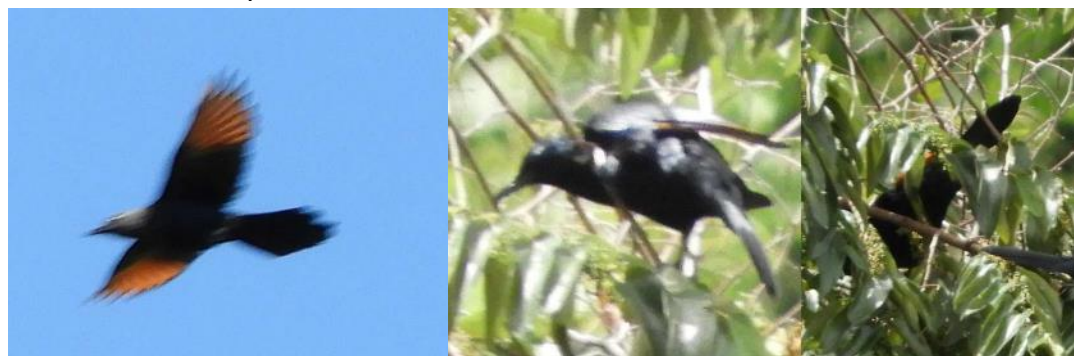


Photo: Frank Willems

**White-browed Scrub Robin** *Cercotrichas leucophrys*

Recorded throughout the site up to 2220m asl.

**Grey Tit-flycatcher** *Fraseria plumbea*

Recorded from Zinsa Valley, Kaminyamina and Mulangale

**Pale Flycatcher** *Agricola pallidus*

Recorded once in the scrub near Kaminyamina Base-camp

**Eastern Miombo Sunbird** *Cinnyris manoensis*

Twice recorded in miombo flanking the Kaminyamina system

**Holub's Golden Weaver** *Ploceus xanthops*

Sighted around Maliko Village. Disused nest also seen in the village.

**Southern Red Bishop** *Euplectes orix*

Sighted among cultivation in the Zinsa Valley

**Yellow Bishop** *Euplectes capensis*

Common among cultivation in the Zinsa Valley

**Red-collared Widowbird** *Euplectes ardens*

Common among cultivation in the Zinsa Valley

**Yellow-fronted Canary** *Crithagra mozambica*

Occasional at lower elevations

**Brimstone Canary** *Crithagra sulphurata*

Recorded in protea scrub/ bracken briar between 2000 and 2210m asl

**Reichard's Seedeater** *Crithagra reichardi*

In miombo throughout the site up to 2200m

**Cinnamon-breasted Bunting** *Emberiza tahapisi*

One record from the area of Masuwa Base-camp

### 5.3.2 Unconfirmed Records

**Evergreen Forest Warbler**

A brief sighting along the Zinsa Stream may have been of this species;

**Waller's Red-winged Starling**

At Mulangale Forest, a burst of calls from invisible birds in the canopy suggested this species on the basis of habitat.

**Orange Thrush**

in a small patch of forest near Masuwa Base (GPS given below) something sounding very like this species was heard.

**Red-winged Francolin**

Francolins calling from the Malawian slopes, while we were in transit along the boundary line, sounded very like Red-winged, as opposed to Whyte's.

### 6.4.0 notes on taxonomy

**Common Kestrel**

All birds recorded thought to belong to the resident "Rock Kestrel" *Falco tinnunculus rupicolus* and suspected to breed locally, given the rather even distribution in the area and the typical occurrence of singles and pairs. Birds were heard calling on several occasions.





Photo: Frank Willems

### **Cabanis's Greenbul**

Distinct subspecies *placidus* ("Placid Greenbul) which in Zambia is only known from the Mafinga Mountains.

### **African Plain Martin**

Some tens of birds were seen at close range. All were all-dark, not showing any clear white on the belly or vent. Such birds are unreported from Zambia. Literature on distribution of colour morphs, and relations with taxonomy (subspecies), is not straight-forward, but these birds might well have been of the race *ducis* which is the form in much of (the Afromontane areas of) East-Africa.

### **Western and Eastern Miombo Sunbird**

Only recently described as distinct species (Irwin *et al.* 2014). Occurrence of both in the Mafinga Mountains was suspected though not yet confirmed. One of the authors is very familiar with both species having been based in the Muchingas for several years, hence confident on the ID of the Mafinga birds, which were vocal on multiple occasions, aiding ID. Western Miombo Sunbird was widespread in miombo and evergreen riparian forest strips in the Kaminyamina system between 1900 and 2000 masl, while Eastern was recorded in protea shrub alongside Malachite Sunbird at 2248masl 'above' the Kaminyamina, as well as (more surprisingly) in a relatively open and rocky area within miombo woodland near the Zinsa source at 1870 masl.



*Western Miombo Sunbird* Photo: Frank Willems

### **African Pipit**

All birds recorded are believed to have been of the form *winterbottomi*. Our impressions in the field would favour placement as a race of Long-billed Pipit *Anthus similis*, which it resembles in plumage as well as song and habitat. Wood Pipit *Anthus nyassae* certainly is present in the woodlands and seems to co-occur with *winterbottomi* in transition zones between woodland and more open grasslands around 2000 m asl.

We see no reason to cluster this form with the “Jackson’s Pipit” *Anthus (cinnamomeus) latistriatus* which is much darker.



Photo: Frank Willems

### 6.5.0 Discussion

The Mafinga Mountains have been visited only rarely by ornithologists, owing to their remoteness and difficulty of access. Notable reports on ornithological explorations include Leonard et al. (1999), Dowsett & Sjernstedt (1973) and Aspinwall (1973, 1976), while “Important Bird Areas of Zambia” (Leonard, 2005) and “Birds of Zambia” (Dowsett et al. 2008) summarize the ornithological knowledge of the site up till 2005 and 2007 respectively. Any additions to the KBA list since 1999 have been published in the Wattled Crane, the newsletter of BirdWatch Zambia.

The total number of species recorded for the site stood at 155 species before the onset of this survey. The addition of 52 bird species to the list, out of a total of 170 species recorded during this survey, shows that the knowledge of this KBA’s avifauna is far from complete.

#### 6.5.1 An Analysis of List Additions

It’s nearly 20 years since Leonard, Van Daele and Beel last climbed the mountain and commented on the status of the site. They reported very little habitation ‘above about 1600m’, but that much of the miombo on the lower slopes was degraded. From interviews with the locals, they gathered that only “subsistence hunters” climbed the mountain, and only occasionally. From our own discussions, we found that things had changed: now it is “only Malawians” who climb the mountain, and their motives are never good! Habitation and cultivation along the Zinsa Stream would seem to have spread in a predictable manner over the intervening years and virtually all the woodland between Kaila’s (Maliko) Village and the Zinsa-Nalupigu Confluence has been reduced to scrub and cultivation. Higher up, between the confluence and the plateau, we did encounter primary woodland which offered some good parties of miombo birds. In the Zinsa Valley there is plentiful evidence of logging, apparently by extractors of trees from the genus *Faurea*. Substantial chunks of Mulangale Forest have recently been burnt, and fire impact is everywhere visible by the extensive swathes of bracken briar. In the table below, we offer an analysis of our additions to the Mafinga bird-list and suggest ‘likely reasons’ why these species would be observed now, rather than on earlier expeditions. It can be seen that we cite habitat change as being a plausible factor in the majority of cases.

**Table 4: Analysis of list additions**

Category	No. new species	Example	Likely reasons
Split	1	Eastern Miombo Sunbird	-
forest/ edge	3	Black-backed Barbet, Pallid Honeyguide	Field time/effort
afromontane specialists	6	Churring Cisticola, Blue Swallow	Spatial coverage, timing of visit
miombo specialists	6	Souza's Shrike, Spotted Creeper	Field time/effort
Open/rank vegetation	9	Red-faced Cisticola, Red-collared Widowbird	Timing of visit, Habitat Change

Migrants	10	Common Cuckoo, Marsh Warbler	Timing of visit
Generalists	20	Black-collared Barbet, Green Woodhoopoe	Field time/ effort, habitat change

### 6.5.2 Importance of the KBA

The survey recorded two so-called “KBA trigger species”. Of these, the presence of Blue Swallow is most notable. This tally can’t, however, be considered all that high and makes listing Mafinga as a “priority KBA” debatable. We are, however, of the opinion that this KBA deserves such treatment beyond any doubt. It should be noted that only globally threatened species are included in the list of “trigger species”. In our opinion, afro-montane endemics should be included here as well, as these typify the ecological functioning of a site as an afro-montane area. A clear and notable example is Churring Cisticola, which has a relatively limited range and occurs patchy even within this range, being restricted to a handful of high-altitude areas with suitable forest edge habitats. The population in the Mafinga Mountains is of significance in our opinion, supported by the fact it is only the 2<sup>nd</sup> known population within Zambia.

## 7.0 Mammals

A total of 15 species was recorded, of which 11 species were identified to the species level with certainty, for GPS, date and other details, please refer to appendix 2. In addition, local community members were interviewed on the presence and absence of mammals in the area.

### **Chequered Giant Sengi - *Rhynchocyon cirnei***

A single animal at Mulangale Forest was the only confirmed record. The species was previously recorded in the site (Ansell 1978).

### **Long-haired Rousette - *Stenonycteris lanosus***

A small fruit bat seen and photographed some 5 meters high up in a tree just outside the Mulangale Forest was identified as being a juvenile of this species, confirmed through expert opinions using the iNaturalist website (<https://www.inaturalist.org/observations/13041817>). It was apparently roosting at about 2 meters height in a small fairly dense bush, from where it was unintentionally flushed. Despite our best effort, it could not be caught and eventually flew off into Mulangale Forest. Elevation 1890 masl.

This is the first Zambian record for this species. It has been recorded from two locations in Malawi and more widespread in East Africa. The species is typical for high altitude habitats. Of 44 known specimens, 42 were collected between 1500 and 4400 masl.



Photo: Frank Willems

**Southern Lesser Galago - *Galago moholi***

A single small galago at the basecamp at the Zinsa/Nalupigu confluence is assumed to have been this species.

**Moloney's Monkey - *Cercopithecus (mitis) moloneyi***

Recorded at four localities. Presumably widespread though secretive in the Mafinga Mountains, as also confirmed by community members. Visual observation of the brown back confirmed that the form involved is *moloneyi* (contra dark, blueish black back in *opistostictus*).

**Yellow Baboon - *Papio cynocephalus***

Numerous observations throughout, thought to comprise at least 6 distinct troops. Shape of the muzzle suggests that the form involved is indeed Yellow Baboon. The divide between this species and Kinda Baboon *P. kindae* seems to follow the (western escarpment of the) Luangwa Rift system, then NW to the Lake Tanganyika area (Kingdon 2016).



Photo: Frank Willems

**African Civet - *Civettictis civetta***

Spoor in the Zinsa Valley was thought to be of this species, presence of which is confirmed by community members as well.

**Blue Duiker - *Philantomba monticola***

Several duiker middens were found in Mulangale Forest. These were identified as being Blue Duiker on base of the middens being compact, and on base of habitat (afromontane evergreen forest). The pellet size (8-10 mm) is in favour of Blue Duiker though does not exclude Bush Duiker.

There was no consensus among community members whether this species is present, suggesting it to be very scarce. None of the community members recognized Harvey's Red Duiker *Cephalophus harveyi* from images shown, strongly suggesting this species to be absent.



Photo: Frank Willems

**Klipspringer - *Oreotragus oreotragus***

Single animal seen at 2200 masl in the Kaminjaminja source area on 6 April in possible association with Yellow Baboon.

**Scrub Hare - *Lepus saxatilis***

Middens found on the central plateau area. The structure of these middens (small quantities probably from single excretion) rule out Smith's Red Rock Rabbit *Pronolagus rupestris*.

**Molerat sp - *Cryptomys* sp**

Mounds ("mole heaps") common on the central plateau.

**South African Porcupine - *Hystrix africae australis***

Diggings along the Nalupigu stream were thought to be from this species, the presence of which is confirmed by community members.

**Mutable Sun Squirrel - *Heliosciurus mutabilis***

Observed in the Kaminjaminja, Mulangale, Musipizi and Nalupigu areas. This suggests the species to be common and widespread. It is assumed that the species present is Mutable, not

Gambian Sun Squirrel *H. gambianus*, as stated for instance in Ansell 1978. However, the animals observed typically had an all-grey pelage resembling *H. gambianus*.



Photos: Frank Willems

#### **Bush Squirrel - *Paraxerus cepapi***

At least one but probably multiple animals occupied a tree crevice near Kaminjaminja basecamp, in miombo woodland at 1930 masl. The animal(s) were initially detected and identified on base of their distinctive call, which could be confirmed by brief visuals. Unfortunately they proved shy and no image could be obtained.

This find came as a surprise considering the habitat and elevation. In Zambia the species is known from low-lying and/or dry areas such as the Luangwa Valley, with mopane, Acacia, Terminalia or Combretum dominated woodland types (e.g. Ansell 1978, Cassola 2016a). The Red Bush Squirrel *P. palliatus* is known from high altitudes and a wider range of woodlands and forest types in Malawi. It is however unrecorded from Zambia or the northern parts of Malawi (Ansell 1978, Cassola 2016b). Also, pelage of the animal seen suggested it to be *P. cepapi* rather than *P. palliatus*.

#### **Long-tailed Pouched Rat - *Beamys hindei***

Single animal briefly seen at Musipizi basecamp, eating nshima remnants from pot placed on bank of the stream around 20:00. Fairly large size, pelage colour and overall jizz suggested this characteristic species. It is known to occur in the Mafinga area (Ansell 1978).

#### **Typical Vlei Rat - *Otomys typus***

Single animal seen and photographed in the upper Kaminjaminja system. Species identification on base of the bright rufous pelage.



Photo: Frank Willems

### Interview with community members

Eight inhabitants (including the village headman) of Maliko Village were interviewed (in a single group) on the presence and absence of mammals in the area. Using the illustrations in “Mammals of Southern Africa” (Stuart & Stuart 2015), they were asked about each individual species that would potentially occur, with the exception of difficult to identify species like bats, shrews and most small rodents. Results are given in **Table 5**.

**Table 5:** Notes on mammal presence in the Mafinga Mountains on the basis of an interview with Maliko Village inhabitants on 20 April 2018.

Species	Local name	Note
Chequered Giant Sengi	Tondo	common on the mountains
Four-toed Sengi	Tondo	common around the village
Rock Sengi (sp)	Ndongosa	occurs around the village
Yellow Baboon	Kolwe	Common
Samango Monkey	Mbiza	common on the mountains
Vervet Monkey	Nsanji	occurs downstream from village
Angola Pied Colobus		formerly present (last 1950's?)
Greater Bushbaby	Changa	Common
Lesser Bushbaby	Kawundi	Common
Ground Pangolin		not known locally
Scrub Hare	Chizuka	Common
Red Rock Rabbit	Chizuka	on rocks, formerly common, now scarce (poaching)
Lord Derby's Anomalure	Chimpepe	occurs around the village
Gambian Sun Squirrel	Sinsa	Common
Bush Squirrel	Mpelemende	Common
Black and Red Squirrel		not known locally
Springhare		not known locally
Porcupine	Chinungu	Common
Greater Cane Rat	Insenze	Common
Lesser Cane Rat	Kulukulu	Common
Giant Rat	Lupenga	Common
Side-striped Jackal	Kamwe	Common
Wild Dog		not known locally
Honey Badger	Chibuli	Common
Striped Weasel	Kampandwe	common e.g. around the village
Striped Polecat	Kampandwe	common e.g. around the village
Otter (either species)		not known locally
Marsh Mongoose	Mbukula	Present
Dwarf Mongoose		not known locally
Genet (sp)	Muturo	Common
African Civet	Sungwe	Common
Palm Civet	Muturo	present (though most people did not recognize)
Spotted Hyena	Chimbwi	few still present
Wild Cat	Zumbwe	few still present
Serval	Chibalabala	few still present
Caracal		not known locally
Cheetah		not known locally
Lion	Nkalamo	formerly present (last 1960's?)
Leopard	Nsobwe	maybe still present e.g. Mulangale
Aardvark	Nyimba	formerly present (last 1960's?)
Elephant	Nsofu	formerly present (last 1950's?)



Species	Local name	Note
Bush Hyrax	Piayi	Scarce
Zebra	Nsinka	formerly present on the high plateau (last 1985?)
Black Rhinoceros	Chipembele	not known locally
Warthog	Munjili	formerly present (last 1940's?)
Bushpig	Ngulube	few still present e.g. Mulangale
Buffalo	Muntando	formerly present (last 1950's?)
Eland	Nsefu	formerly present (last single animal in 1980's)
Greater Kudu		not known locally
Bushbuck	Mbabala	very scarce, on mountains
Roan	Mpelembe	formerly present (last 1950's?)
Sable		not known locally
Waterbuck		not known locally
Reedbuck		not known locally
Hartebeest		not known locally
Impala		not known locally
Klipspringer	Mbuzimabe	few still present on mountains
Sharpe's Grysbok	Tungwe	Common
Blue Duiker		probably present (no consensus within group)
Bush Duiker	Mpombo	Common
Red Duiker		not known locally

## 7.1 Discussion

The results of this survey clearly show the near-absence of large mammals. Decades of unsustainably high human hunting pressure seems the prime reason for this, as also confirmed by community members. Nevertheless, the Mafinga Mountains still host a rich mammal fauna. Improved protection would presumably lead to the recovery of several large mammal species. Return of many of the larger species will however only be feasible through reintroduction. Whether this would be desirable and realistic, is beyond the scope of this report.

## 8.0 Reptiles

A total of 7 species was recorded. In addition, there was a possible sighting of a legless skink which could not be caught. For GPS, date and more details, please refer to appendix 3.

### **Grey-bellied Skaapsteker - *Psammophylax variabilis***

The only snake recorded during this survey. A single animal basking on an overcast morning in boggy grassland on the high-altitude plateau, 2315 masl. In Tanzania, the species is restricted to the afro-montane areas of the southwest (Spawls *et al.* 2018) though it is apparently also known from e.g. the Chobe floodplain (Branch 1998).



Photo: Leslie Reynolds

### **Nchisi Pygmy Chameleon - *Rhampholeon nchisiensis***

Recorded at Mulangale Forest (1 animal) and Nalupigu Forest (11 animals). Hence seems common in the Zinsa system (with the afro-montane forest along the upper Zinsa not explored in the dark) but much less so elsewhere in the range. A difference in local climate might explain this. The south-eastern flank (the Zinsa system) is likely to be wetter than the rest of the Mafingas, given the predominantly south-eastern winds.

These records seem the first published records for the Mafinga Mountains. So far, this species was in Zambia only known from the Nyika Plateau. Elsewhere, it is restricted to the afro-montane forests of northern Malawi (from Nchisi northwards) and SW Tanzania (Broadley 1971, Spawls *et al.* 2018, Tolley & Menegon 2014)

Photos: Frank Willems



**Angulate Dwarf Gecko - *Lygodactylus angularis***

Recorded both in the Zinsa and Nalupigu Valleys (1550 and 1875 m asl respectively) and on the plateau. The Zinsa animal occupied a beehive in degenerated woodland, while the Nalupigu animals were in miombo woodland and inside evergreen forest. The plateau animal was found under a rock in open grassland near Zambia's highest point, at 2336 m asl, hence presumably setting a new national altitudinal record.



Photos: Frank Willems

**Angolan Rough-scaled Lizard - *Ichnotropis bivittata***

Single animal found basking on a trail in the Zinsa Valley at 1580 masl. There are few sightings of this species known in Zambia and surrounding countries (see for instance Broadley 1971 and Spawls *et al.* 2018).



Photo: Frank Willems

**Variable Skink - *Trachylepis varia***

By far the most commonly encountered reptile during this survey. Recorded throughout, with records ranging in elevation from 1530 to 2248 masl. On occasion, Ukinga Skink *T. brauni* could not be ruled out with certainty.

**Striped Skink - *Trachylepis striata***

Despite an abundance of seemingly suitable habitat, only a single animal recorded, on exposed rock at 2160 masl in the Kaminjaminja system.



Photo: Frank Willems

**Speckle-lipped Skink - *Trachylepis maculilabris***

Recorded in the evergreen forest of the upper Zinsa Valley at 1800 masl.

**8.1 Discussion**

The confirmation of the suspected presence of the Nchisi Dwarf Chameleon is of great value. It further confirms the biodiversity significance of the Mafinga mountains.

Further survey work will add many more species to the reptile list without any doubt. Survey work during the onset of the rains (Nov-Dec) is particularly recommended.

## 9.0 Amphibians

A total of 11 species was recorded. Most notable is the presence of African Spotted Reed Frog *Hyperolius substriatus*, an afro-montane species not previously recorded in Zambia. Full details of each observation can be found in the appendix 4.

### **Guttural Toad - *Sclerophrys gutturalis***

Two adults caught in the Zinsa Valley at 1500 and 1700 m asl.



Photos: Frank Willems

### **Taita Dwarf Toad – *Mertensophryne taitana***

Two adults recorded on the high plateau area, both around 2200 m asl. Found sheltering under rocks. ID among others on base of characteristic black trident pattern on upper breast.



Photos: Frank Willems

**Red Toad – *Schismaderma carens***

Single animal in the Zinsa Valley, 1650 masl. Extralimital, several animals seen around Wanipa Guesthouse in Ntendele (Mafinga boma) on 31 March.



Photo: Frank Willems

**Dwarf Squeaker – *Arthroleptus xenodactyloides***

Only recorded in afro-montane forest near the source of the Zinsa Stream, S10.01°/E033.31°, 1800-1900 m asl, on 20 April. Three adults caught and identified. Probably large numbers present (several frogs presumed this species seen disappearing into humus / wood chips).



Photo: Frank Willems

**Mozambique Rain Frog - *Breviceps mossambicus***

Single animal caught walking on trail, Zinsa Valley, S10.03°/E033.31°, 1600 m asl, 2 April. Identified on base of facial pattern (black stripe from eye connecting to black underparts).



Photo: Frank Willems

**Puddle Frog - *Phrynobatrachus* sp**

A small chorus of 2-3 puddle frogs was heard calling in the Zinsa Valley around 1560 masl. The call sounded similar to that of Mababe Puddle Frog *P. mababiensis*. No frogs could be caught to confirm the species. Similar sounding species that might be expected include Stewart's Puddle Frog *P. stewartae*.

**Natal Puddle Frog – *Phrynobatrachus natalensis***

Several adults recorded on the Zinsa Stream at about 1600 masl.



Photo: Frank Willems

**Obscure Ridged Frog – *Ptychadena obscura***

Widespread and common. Tens of juvenile and immature frogs were observed. Many hundreds of tadpoles in tens of locations seemed of this species. Largest (immature) frog was about 20 mm. Seemingly, 2 colour morphs are present: a speckled and a much darker, largely



uniform, greenish black. Using Channing (2001), the animals key out as *P. obscura*, among others on base of a pale triangle on snout, a row of tubercles under the 4<sup>th</sup> metatarsus, the nostril to snout distance being similar to the internarial distance, no vertebral stripe, posterior face of the thighs not having a well-defined pattern (vaguely mottled, certainly no dark bands), no light line on the tibia, 2.5-3 phalanxes of 4<sup>th</sup> toe free of web. It however doesn't match the description in not having a continuous pair of middorsal skin folds. Rather, there are 2 pairs starting behind the head, which are somewhat irregular and form a 3<sup>rd</sup> pair towards the vent.

This constitutes a relatively short but significant extension of known range (IUCN SSC Amphibian Specialist Group. 2013b). So far, the species was only recorded west of the Rift system. DNA analyses to confirm the species ID would be desirable.

Tadpoles were found in shallow seepage waters both on bare gravel soils as well as in peaty plateau grasslands. All localities were between 2030 and 2315 masl, with the majority above 2200 masl.



Photos: Frank Willems

### **Rough Sand Frog – *Tomopterna tuberculosa***

An adult (male?) and juvenile frog found in the source area of the Kaminjaminja stream at 2160 m asl.



Photo: Frank Willems

### **African Spotted (or Mainland) Reed Frog - *Hyperolius substriatus***

A total of 11 calling males was heard and seen at Zinsa, Mulangale and Namitawa streams. All males seen were calling from vegetation (typically the leave of a *Cyathia* tree fern) about a meter above flowing water. Two calling sites were within climax evergreen afromontane (Mulangale) or riparian (Namitawa) forest at 1900 and 2030 masl respectively, while the 3<sup>rd</sup> locality (Zinsa) was in a narrow strip of degenerated riparian forest at 1685 masl.

These records constitute the first ever published records for Zambia. The species is known from Malawi (e.g. Misuku Hills) but was so far only suspected to occur in NE Zambia (IUCN SSC Amphibian Specialist Group. 2013a). Elsewhere, it is known from Malawi, Tanzania and Mozambique, where it typically occupies high altitude habitats.



Photos: Frank Willems

### **Delalande's River Frog – *Amietia delalandii***

This frog is common probably along all permanent streams, with adults, juveniles and tadpoles recorded in seven localities. A recent revision of the *Amietia* complex suggest that at least three species might be expected in the Mafinga Mountains (Channing *et al.* 2016). Analyses of calls and/or DNA is required to establish whether more species are present.



Photos: Frank Willems

### 9.1 Discussion

The results of this explorative survey form the first account to be published on the amphibians of the Zambian Mafinga mountains. It confirms that the Mafinga mountains host a diverse amphibian community. Clear afro-montane elements are Taita Dwarf Toad, African Spotted Reed Frog and Delalande's River Frog, while also Dwarf Squeaker, Obscure Ridged Frog and Rough Sand Frog seem to have a preference for higher altitude habitats (Channing 2001).

There is no doubt that the total of 11 species recorded, represents only a minor part of the total number of species present. There are several reasons to assume this to be the case. Firstly, any 20 day survey is extremely unlikely to record all amphibian species in a site the size of the Mafingas. Secondly, the rugged terrain and related issues of accessibility mean that much of the area remains unexplored. Thirdly, the time of the year (late rains) will have been favourable in some respects (e.g. presence of juveniles) but is not within the main calling period for most species. The noise of the large discharge volumes doesn't help to detect calling amphibians either. An additional survey during the early rains (Nov-Jan) is highly recommended.

## 10.0 Fish

### 10.1 Introduction

Although not the primary scope of this survey, efforts were made to establish the composition of the fish fauna on the Mafinga Mountains. At each of the basecamps, nocturnal searches with a torch were conducted during at least one evening. In addition, streams were frequently searched as part of general survey efforts during the day. On occasion, a small handheld scooping net was used to sample waters for fish and other aquatic organisms.

## 10.2 Results

On the plateau areas, the upper Kaminjaminja, Mulangale system, Musipizi source area, Namitawa source area, Masuwa source area, as well as numerous smaller flows and marshlands, were searched. No fish were detected here.

A single fish was seen shooting off in a small tributary to the Zinsa Stream, in square S10.02°/E033.31° downstream from the confluence with the Nalupigu, but could not be found back.

Extralimital, a **Stargazer *Amphilius uranoscopus*** was caught swimming in the road on the slope S of the bridge over the Ntonga River in square S10.13° / E033.31°. Please refer to appendix 5.



Photos: Frank Willems

## 10.3 Discussion

The timing of this survey was not ideal in the sense that discharge volume and hence current complicated visual searches, notably with a torch at night. It nevertheless seems likely that there are few if any fish inhabiting the rivers and streams on the plateau.

## 11.0 Conclusion

Results from this biodiversity survey have significantly improved the knowledge of the biodiversity of the Mafinga Mountains Priority Key Biodiversity Area (KBA). Despite this survey consisting of only a single visit of a relatively small research team, and automatically focusing on only a limited period in terms of seasonal variation, a wide range of typical Afrotropical species was found. Many of these records constitute first records for the site, or even the country.

The total of two trigger bird species recorded in the site, can be argued to be low. It should be noted that the KBA Trigger Species list is based only on listing of species as globally threatened. In the opinion of the authors, the presence of Afrotropical species is, however,

at least as important to identify the importance of a site for the conservation of the East-african Afromontane biome. The long list of such afromontane species recorded during this survey, including the range-restricted Churring Cisticola and the globally threatened Blue Swallow, confirm the importance as a Priority KBA in our opinion. We consider the absence of these afromontane species in the scoring system a serious omission.

As with the avifauna, other vertebrates recorded suggest the Mafinga Mountains to be of great importance for conservation of the East-african Afromontane biome. The fact that various new country records resulted from this relatively short project, confirms both the importance of the site as well as it being seriously understudied.

It is recommended that this survey is followed up by a more extensive survey project which takes in other parts of the year, most notably the early rains period (Nov-Jan).

Our results also confirm the productivity of the mid-altitude evergreen forests of the Zinsa Valley. Although the plateau areas itself are seeing only limited human pressure, these mid-altitude areas (typically between 1500 and 2000m asl) experience rapid deforestation and cultivation. Conservation interventions are urgently required to preserve the completeness of the site. Although beyond the scope of this project, we believe there is ample space to improve on sustainable management such as through tourism as a revenue generating mechanism. Our impressions on site is that there is local preparedness to work in this direction.

## References

- Ansell, W.F.H. 1978. The Mammals of Zambia. The National Parks and Wildlife Service: Chilanga, Zambia.  
[https://www.birdlife.org/sites/default/files/attachments/cepf\\_eam\\_ecosystem\\_profile\\_summary\\_en.pdf](https://www.birdlife.org/sites/default/files/attachments/cepf_eam_ecosystem_profile_summary_en.pdf)
- BirdLife International 2018. *Stephanoaetus coronatus*. The IUCN Red List of Threatened Species 2018: e.T22696201A129914678. <http://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T22696201A129914678.en>. Downloaded on 21 December 2018.
- BirdLife International 2016. *Hirundo atrocaerulea*. The IUCN Red List of Threatened Species 2016: e.T22712318A94329062. <http://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T22712318A94329062.en>. Downloaded on 21 December 2018.
- Branch, B. 1998. Field Guide to Snakes and Other Reptiles of Southern Africa: Struik Publishers, South Africa.
- Broadley, D.G. 1971. The reptiles and amphibians of Zambia. Puku 6(1-143).
- Cassola, F. 2016a. *Paraxerus cepapi* (errata version published in 2017). The IUCN Red List of Threatened Species 2016: e.T16205A115131842.  
<http://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T16205A22243078.en>. Downloaded on 05 June 2018.
- Cassola, F. 2016b. *Paraxerus palliatus* (errata version published in 2017). The IUCN Red List of Threatened Species 2016: e.T16210A115132374. <http://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T16210A22243543.en>. Downloaded on **05 June 2018**.
- Channing A., Dehling, J.M. Lötters, S. & Ernst, R. 2016. Species boundaries and taxonomy of the African river frogs (Amphibia: Pyxicephalidae: Amietia). Zootaxa 4155(1-76).
- Critical Ecosystem Channing A. 2001. Amphibians of Central and Southern Africa: Cornell University Press, New York.
- FAO 1997 The Zambezi Basin. FAO Land and Water Bulletin 4 Chapter 6: Review of Existing Irrigation Potential.  
<http://www.fao.org/docrep/W4347E/w4347e0o.htm#the%20zambezi%20basin>. Downloaded on 25 December 2018
- IUCN SSC Amphibian Specialist Group. 2013a. *Hyperolius substriatus*. The IUCN Red List of Threatened Species 2013: e.T136152A18367261. <http://dx.doi.org/10.2305/IUCN.UK.2013-2.RLTS.T136152A18367261.en>. Downloaded on **04 June 2018**.
- IUCN SSC Amphibian Specialist Group. 2013b. *Ptychadena obscura*. The IUCN Red List of Threatened Species 2013:

- e.T58515A18400680. <http://dx.doi.org/10.2305/IUCN.UK.2013-2.RLTS.T58515A18400680.en>. Downloaded on **05 June 2018**.
- Irwin, M.P.S., Leonard, P.M. & Colebrook-Robjent, J.F.R. 2014. There are two distinct, not immediately related species of miombo double-collared sunbirds: *Cinnyris manoensis* and *C. gertrudis*. *Honeyguide* 60(2): 54–61.
- Kingdon, J. 2016. *Papio kindae*. The IUCN Red List of Threatened Species 2016: e.T136848A92251482. <http://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T136848A92251482.en>. Downloaded on **05 June 2018**.
- Leonard, P.M. 2005. Important Bird Areas in Zambia: *Zambian Ornithological Society*, Lusaka
- Leonard, P.M., Van Daele, P. & Beel, C. 1999. Birds of the Mafinga Mountains *Zambia Bird Report* 1999 pp 6-15
- Partnership Fund 2012. Ecosystem Profile Eastern Afromontane Biodiversity Hotspot: Report. Critical Ecosystem Partnership Fund
- Robert J., Dowsett, D.A & Françoise, D.L. 2008. *The Birds of Zambia* Tauraco Press and Aves
- Sinclair, I. & Ryan, P. 2003, 2010. *Birds of Africa South of the Sahara* Struik Nature
- Spawls S., K. Howell, H. Hinkel & M. Menegon, 2018. *Field Guide to East African Reptiles*: Bloomsbury, London, UK.
- Stuart C.T. & M. Stuart 2015. *Stuart's field guide to mammals of southern Africa: Including Angola, Zambia & Malawi*. Fifth edition. Struik Nature, South Africa
- Tolley, K. & Menegon, M. 2014. *Rhampholeon nchisiensis*. The IUCN Red List of Threatened Species 2014: e.T172562A1345440. <http://dx.doi.org/10.2305/IUCN.UK.2014-3.RLTS.T172562A1345440.en>. Downloaded on **05 June 2018**.
- <https://www.victoriafalls-zambiatravel-safaris.com/country-info/rivers/luangwa-river>
- WECZS 2015. Conservation Action Plan for Mafinga Hills 2016-2025: WECZS, Lusaka

**Appendices: Mafinga Observations**  
**Appendix 1: Birds**



Species	number	square	lat	lon	Date	Time	Elevation	notes
European Roller	3	1006/3331	10.065	-33.315	01/04/2018	15:00:00	1700	
Eurasian Hobby	4	1006/3331	10.065	-33.315	01/04/2018	15:00:00	1700	
Black Cuckoo	1	1006/3331	10.065	-33.315	01/04/2018	15:00:00	1700	
Common Cuckoo	5	1006/3331	10.065	-33.315	01/04/2018	15:00:00	1700	1 hepatic female
African Cuckoo	1	1006/3331	10.065	-33.315	01/04/2018	15:00:00	1700	
Diderick Cuckoo	1	1006/3331	10.065	-33.315	01/04/2018	15:00:00	1700	
Cardinal Woodpecker	1	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Black-collared Barbet	4	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Yellow-vented Bulbul	15	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Amethyst Sunbird	5	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Yellow-bellied Sunbird	4	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
African Yellow White-eye	4	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Tawny-flanked Prinia	10	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Bertram's Weaver	1	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Red-rumped Swallow	10	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
European Bee-eater	80	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
African Firefinch	5	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Yellow Bishop	4	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Red-necked Francolin	2	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Stierling's Wren-warbler	1	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Brown-crowned Tchagra	1	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Black-crowned Tchagra	4	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Slender-billed Starling	8	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Long-billed Crombec	1	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Red-collared Widow	10	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Tropical Boubou	4	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Red-faced Cisticola	4	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Common Fiscal	1	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Red-winged Warbler	2	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	pair with food; breeds
White-browed Scrub-robin	1	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Southern Citril	5	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
White-browed Robin-chat	2	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Bronze Mannikin	10	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
White-headed Saw-wing	4	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
Olive Sunbird	1	1005/3330	10.055	-33.305	02/04/2018	06:00:00	1500	
African Hawk-eagle	2	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
Common Waxbill	1	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
Southern Citril	1	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
African Firefinch	5	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
Wahlberg's Eagle	4	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
Red-collared Widow	4	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
Cabanis's Bunting	1	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	

Amur Falcon	10	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
Tawny-flanked Prinia	1	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
Red-winged Warbler	1	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
Barn Swallow	4	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
Slender-billed Starling	29	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
White-headed Saw-wing	1	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
Olive Sunbird	1	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
European Bee-eater	20	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
Yellow-vented Bulbul	1	1005/3331	10.055	-33.315	02/04/2018	07:30:00	1550	
Pied Wagtail	1	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Bronze Mannikin	5	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Amethyst Sunbird	2	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Olive Sunbird	2	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Red-faced Cisticola	2	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
African Firefinch	2	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Red-collared Widow	6	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Yellow-vented Bulbul	2	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Yellow-fronted Tinkerbird	1	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Southern Citril	5	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Yellow-fronted Canary	6	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Yellow-bellied Sunbird	20	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
European Bee-eater	5	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Swee	2	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Black-collared Barbet	1	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Marsh Warbler	1	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
African Hawk-eagle	2	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	Pair, same?
Wahlberg's Eagle	2	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Red-winged Warbler	1	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
White-browed Coucal	1	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Common Waxbill	2	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
White-browed Scrub-robin	1	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Slender-billed Starling	22	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	mixed flocks Slender-billed and Red-winged Starling
Red-winged Starling	20	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	mixed flocks Slender-billed and Red-winged Starling

Tawny-flanked Prinia	8	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	
Schalow's Turaco	1	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	
White-browed Scrub-robin	1	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	
Long-billed Crombec	1	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	
Yellow-bellied Sunbird	2	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	
Golden Weaver	1	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	2 nests in 10.04/33.31 (not active)
Red-collared Widow	2	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	
Common Whitethroat	1	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	
Lanner	1	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	
African Firefinch	2	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	
Yellow-vented Bulbul	5	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	
Red-winged Warbler	2	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	
Common Waxbill	4	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	
Wahlberg's Eagle	1	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	
Green Wood-hoopoe	5	1004/3331	10.045	-33.315	02/04/2018	11:00:00	1550	
Common Waxbill	4	1004/3331	10.045	-33.315	02/04/2018	11:00:00	1550	
Stierling's Wren-warbler	1	1004/3331	10.045	-33.315	02/04/2018	11:00:00	1550	
Southern Citril	5	1004/3331	10.045	-33.315	02/04/2018	11:00:00	1550	
Red-winged Warbler	1	1004/3331	10.045	-33.315	02/04/2018	11:00:00	1550	
White-headed Saw-wing	1	1004/3330	10.045	-33.305	02/04/2018	15:00:00	1530	
Red-winged Warbler	4	1004/3330	10.045	-33.305	02/04/2018	15:00:00	1530	
Orange-breasted Bush-shrike	1	1004/3330	10.045	-33.305	02/04/2018	15:00:00	1530	
Yellow-fronted Canary	4	1004/3330	10.045	-33.305	02/04/2018	15:00:00	1530	
Yellow-fronted Tinkerbird	1	1004/3330	10.045	-33.305	02/04/2018	15:00:00	1530	
Penduline Tit	4	1004/3330	10.045	-33.305	02/04/2018	15:00:00	1530	
Pied Wagtail	4	1004/3330	10.045	-33.305	02/04/2018	15:00:00	1530	
Common Waxbill	4	1004/3330	10.045	-33.305	02/04/2018	15:00:00	1530	
Bronze Mannikin	2	1004/3330	10.045	-33.305	02/04/2018	15:00:00	1530	
Yellow-bellied Sunbird	4	1004/3330	10.045	-33.305	02/04/2018	15:00:00	1530	
Speckled Mousebird	3	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
Tawny-flanked Prinia	10	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
Red-winged Warbler	2	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
Red-faced Cisticola	1	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
Puffback	2	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
Red-collared Widow	4	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	

Yellow-vented Bulbul	24	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
Yellow Bishop	2	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
Golden Weaver	2	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
European Bee-eater	1	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
Yellow-fronted Canary	4	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
White-headed Saw-wing	4	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
White-browed Scrub-robin	1	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
Olive Sunbird	1	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
Amethyst Sunbird	4	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
Red-necked Francolin	1	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
Brown-crowned Tchagra	1	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
African Firefinch	6	1004/3331	10.045	-33.315	02/04/2018	15:45:00	1570	
Schalow's Turaco	1	1003/3331	10.035	33.315	02/04/2018	16:30:00	1600	
Yellow-vented Bulbul	20	1003/3331	10.035	33.315	02/04/2018	16:30:00	1600	
African Firefinch	4	1003/3331	10.035	33.315	02/04/2018	16:30:00	1600	
Willow Warbler	1	1003/3331	10.035	33.315	02/04/2018	16:30:00	1600	
Whyte's Barbet	2	1003/3331	10.035	33.315	02/04/2018	16:30:00	1600	
White-headed Saw-wing	4	1003/3331	10.035	33.315	02/04/2018	16:30:00	1600	
Swee	1	1002/3331	10.025	33.315	02/04/2018	19:00:00	1685	sleeping
Orange-breasted Bush-shrike	2	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Brown Parisoma	1	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	unclear (unconfirmed whether this species)
White-browed Robin-chat	2	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Puffback	1	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
White-browed Scrub-robin	1	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Red-winged Warbler	1	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
African Goshawk	1	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Bronze Sunbird	10	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Grey-olive Greenbul	1	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Tawny-flanked Prinia	2	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Yellow-vented Bulbul	50	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
European Bee-eater	40	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Yellow-bellied Sunbird	10	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Red-capped Crombec	1	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Brown-headed Apalis	4	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	

African Yellow White-eye	10	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Southern Citril	4	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Rameron Pigeon	4	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Olive Sunbird	1	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Crowned Hornbill	2	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Reichard's Seedeater	1	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
White-tailed Blue Flycatcher	2	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
White-headed Saw-wing	8	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Slaty Flycatcher	2	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Black-backed Barbet	1	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Collared Sunbird	1	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Yellow-fronted Tinkerbird	2	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Bronze Mannikin	5	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Dusky Flycatcher	2	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Green-backed Honeybird	1	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Swee	1	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Olive Thrush	3	1002/3331	10.025	33.315	03/04/2018	06:00:00	1685	
Moustached Tinkerbird	2	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Black Cuckooshrike	2	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Green Twinspot	6	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Retz's Helmetshrike	6	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
White-chested Alethe	2	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Green-backed Camaroptera	2	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Olive Sunbird	6	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Red-winged Starling	2	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Slaty Flycatcher	1	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Yellow-vented Bulbul	10	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Brown-headed Apalis	2	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Slender-billed Starling	4	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Chapin's Apalis	2	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Ashy Flycatcher	2	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Little Greenbul	1	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Yellow-crowned Canary	2	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Tropical Boubou	2	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Southern Citril	10	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	

Chinspot Batis	1	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Rock Martin	1	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Swee	2	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Puffback	2	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
White-headed Saw-wing	4	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Forest Double-collared Sunbird	2	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Sharpe's Greenbul	1	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Mountain Greenbul	1	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Crowned Eagle	1	1001/3331	10.015	33.315	03/04/2018	08:00:00	1800	
Dusky Flycatcher	2	1002/3331	10.025	33.315	03/04/2018	11:00:00	1700	
Lazy Cisticola	1	1002/3331	10.025	33.315	03/04/2018	11:00:00	1700	
Yellow-fronted Tinkerbird	1	1002/3331	10.025	33.315	03/04/2018	11:00:00	1700	
Striped Pipit	1	1002/3331	10.025	33.315	03/04/2018	11:00:00	1700	
Red-winged Starling	6	1002/3331	10.025	33.315	03/04/2018	11:00:00	1700	
Slender-billed Starling	20	1002/3331	10.025	33.315	03/04/2018	11:00:00	1700	
European Bee-eater	50	1002/3331	10.025	33.315	03/04/2018	11:00:00	1700	
Forest Double-collared Sunbird	2	1002/3331	10.025	33.315	03/04/2018	11:00:00	1700	
Yellow Baboon	2	1002/3331	10.025	33.315	03/04/2018	11:00:00	1700	troop 1
Bertram's Weaver	1	1002/3331	10.025	33.315	03/04/2018	11:00:00	1700	
Red-eyed Dove	1	1002/3331	10.025	33.315	03/04/2018	11:00:00	1700	
Red-eyed Dove	1	1003/3331	10.035	33.315	03/04/2018	13:00:00	1600	
Willow Warbler	1	1005/3330	10.055	33.305	04/04/2018	06:00:00	1540	
Blue-spotted Wood-Dove	1	1004/3331	10.045	33.315	04/04/2018	06:00:00	1560	
Tambourine Dove	1	1003/3331	10.035	33.315	04/04/2018	07:15:00	1580	
White-browed Robin-chat	1	1003/3331	10.035	33.315	04/04/2018	07:15:00	1580	
Emerald-spotted Wood-Dove	1	1003/3331	10.035	33.315	04/04/2018	07:15:00	1580	
Stierling's Wren-warbler	1	1003/3331	10.035	33.315	04/04/2018	07:15:00	1580	
Singing Cisticola	2	1003/3331	10.035	33.315	04/04/2018	07:15:00	1580	
Striped Pipit	1	1002/3332	10.025	33.325	04/04/2018	08:00:00	1680	
Trilling Cisticola	2	1002/3332	10.025	33.325	04/04/2018	08:00:00	1680	
Singing Cisticola	1	1002/3332	10.025	33.325	04/04/2018	08:00:00	1680	
Miombo Rock Thrush	2	1001/3332	10.015	33.325	04/04/2018	08:15:00	1870	
Red-capped Crombec	1	1001/3332	10.015	33.325	04/04/2018	08:15:00	1870	
Chinspot Batis	1	1001/3332	10.015	33.325	04/04/2018	08:15:00	1870	

Eastern Miombo Double-collared Sunbird	1	1001/3332	10.015	33.325	04/04/2018	08:15:00	1870	
Puffback	1	1001/3332	10.015	33.325	04/04/2018	08:15:00	1870	
Green-capped Eremomela	3	1001/3332	10.015	33.325	04/04/2018	08:15:00	1870	
Stierling's Wren-warbler	1	1001/3332	10.015	33.325	04/04/2018	08:15:00	1870	
Malachite Sunbird	1	1001/3332	10.015	33.325	04/04/2018	08:15:00	1870	
Red-necked Francolin	2	1001/3332	10.015	33.325	04/04/2018	08:15:00	1950	
Penduline Tit	2	1001/3332	10.015	33.325	04/04/2018	08:15:00	1950	
Lazy Cisticola	10	1001/3332	10.015	33.325	04/04/2018	08:15:00	1950	
Tropical Boubou	2	1001/3332	10.015	33.325	04/04/2018	08:15:00	1950	
Tree Pipit	3	1001/3332	10.015	33.325	04/04/2018	08:15:00	1950	
European Bee-eater	140	1001/3332	10.015	33.325	04/04/2018	08:15:00	1950	
Chapin's Apalis	2	1001/3332	10.015	33.325	04/04/2018	08:15:00	1950	
Brown-headed Apalis	2	1001/3332	10.015	33.325	04/04/2018	08:15:00	1950	
Wailing Cisticola	2	1001/3332	10.015	33.325	04/04/2018	09:15:00	2160	
Brown-headed Apalis	2	1000/3332	10.005	33.325	04/04/2018	09:40:00	2160	
Malawi Batis	2	1000/3332	10.005	33.325	04/04/2018	09:40:00	2160	
Stonechat	1	1000/3332	10.005	33.325	04/04/2018	09:40:00	2160	
Black-crowned Tchagra	1	1000/3332	10.005	33.325	04/04/2018	09:40:00	2160	
Lanner	1	1000/3332	10.005	33.325	04/04/2018	09:40:00	2160	
Yellow-bellied Sunbird	10	1000/3332	10.005	33.325	04/04/2018	09:40:00	2160	
Wailing Cisticola	4	1000/3332	10.005	33.325	04/04/2018	09:40:00	2200	
Red-necked Francolin	1	1000/3332	10.005	33.325	04/04/2018	09:40:00	2200	
"Jackson's Pipit"	1	1000/3332	10.005	33.325	04/04/2018	09:40:00	2200	
Wailing Cisticola	6	1000/3331	10.005	33.315	04/04/2018	11:00:00	2200	
White-headed Saw-wing	1	1000/3331	10.005	33.315	04/04/2018	11:00:00	2200	
Malawi Batis	2	1000/3331	10.005	33.315	04/04/2018	11:00:00	2200	
Rock Kestrel	2	1000/3331	10.005	33.315	04/04/2018	11:00:00	2200	
Red-winged Starling	2	1000/3331	10.005	33.315	04/04/2018	11:00:00	2200	
Chinspot Batis	2	1000/3331	10.005	33.315	04/04/2018	12:00:00	2200	
Brown-headed Apalis	2	1000/3331	10.005	33.315	04/04/2018	12:00:00	2200	
Malawi Batis	2	1000/3331	10.005	33.315	04/04/2018	12:00:00	2200	
Schalow's Turaco	1	1000/3331	10.005	33.315	04/04/2018	12:00:00	2200	
Yellow-vented Bulbul	4	1000/3331	10.005	33.315	04/04/2018	12:00:00	2200	
Reichard's Seedeater	2	1000/3331	10.005	33.315	04/04/2018	12:00:00	2200	

Amethyst Sunbird	2	0999/3331	9.995	33.315	04/04/2018	13:00:00	2100	
Collared Sunbird	2	0999/3331	9.995	33.315	04/04/2018	13:00:00	2100	
Olive Sunbird	2	0999/3331	9.995	33.315	04/04/2018	13:00:00	2100	
Retz's Helmetshrike	8	0999/3331	9.995	33.315	04/04/2018	18:00:00	1930	campsite @ S9.99814/E33.31072
White-tailed Elminia	2	0999/3331	9.995	33.315	04/04/2018	18:00:00	1930	
Shelley's Francolin	2	0999/3331	9.995	33.315	04/04/2018	18:00:00	1930	call suggests indeed Whyte's
Red-necked Francolin	2	0999/3331	9.995	33.315	04/04/2018	18:00:00	1930	
Yellow-throated Woodland Warbler	1	0999/3331	9.995	33.315	04/04/2018	18:00:00	1930	
Montane Nightjar	1	0999/3331	9.995	33.315	04/04/2018	18:00:00	1930	
White-browed Robin-chat	1	0999/3331	9.995	33.315	05/04/2018	06:00:00	1930	
Collared Sunbird	1	0999/3331	9.995	33.315	05/04/2018	06:00:00	1930	
Olive Sunbird	1	0999/3331	9.995	33.315	05/04/2018	06:00:00	1930	
African Yellow White-eye	3	0999/3331	9.995	33.315	05/04/2018	06:00:00	1930	
Chapin's Apalis	1	0999/3331	9.995	33.315	05/04/2018	06:00:00	1930	
Brown-headed Apalis	1	0999/3331	9.995	33.315	05/04/2018	06:00:00	1930	
Green-headed Sunbird	1	0999/3331	9.995	33.315	05/04/2018	06:00:00	1930	
White-tailed Elminia	2	0999/3331	9.995	33.315	05/04/2018	06:00:00	1930	
Puffback	2	0999/3331	9.995	33.315	05/04/2018	06:00:00	1930	
Grey-olive Greenbul	2	0999/3331	9.995	33.315	05/04/2018	06:00:00	1930	
Sharpe's Greenbul	2	0999/3331	9.995	33.315	05/04/2018	06:00:00	1930	
Dusky Flycatcher	2	0999/3331	9.995	33.315	05/04/2018	06:00:00	1930	
Paradise Flycatcher	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Dusky Flycatcher	3	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Green-headed Sunbird	4	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Grey Tit-Flycatcher	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
White-headed Saw-wing	6	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Trilling Cisticola	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Yellow-vented Bulbul	4	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Yellow-fronted Tinkerbird	2	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
African Yellow White-eye	5	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Forest Double-collared Sunbird	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
White-chested Alethe	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Reichard's Seedeater	6	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
European Bee-eater	5	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	



Yellow-bellied Sunbird	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Amethyst Sunbird	3	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
White-browed Robin-chat	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Barn Swallow	7	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Western Miombo Sunbird	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Malachite Sunbird	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Willow Warbler	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Familiar Chat	2	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Brown-headed Apalis	2	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
White-tailed Elminia	2	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Chapin's Apalis	2	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Yellow-throated Woodland Warbler	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Olive Woodpecker	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Starred Robin	2	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Sharpe's Greenbul	2	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Olive Sunbird	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Miombo Grey Tit	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Green-backed Honeybird	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Crowned Hornbill	3	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Chinspot Batis	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Cabanis's Bunting	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Steppe Buzzard	1	1000/3330	10.005	33.305	05/04/2018	06:30:00	1930	
Spotted Flycatcher	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Black Cuckooshrike	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Pale Flycatcher	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Petronia	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Tropical Boubou	2	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Trilling Cisticola	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Brown-headed Apalis	2	1000/3330	10.005	33.305	05/04/2018	10:07:00	1944	
Puffback	1	1000/3330	10.005	33.305	05/04/2018	10:07:00	1944	
White-headed Saw-wing	5	1000/3330	10.005	33.305	05/04/2018	10:07:00	1944	
Green-headed Sunbird	3	1000/3330	10.005	33.305	05/04/2018	10:07:00	1944	
Yellow-vented Bulbul	1	1000/3330	10.005	33.305	05/04/2018	10:07:00	1944	
Reichard's Seedeater	1	1000/3330	10.005	33.305	05/04/2018	10:07:00	1944	

Collared Sunbird	1	1000/3330	10.005	33.305	05/04/2018	10:07:00	1944	
Trilling Cisticola	1	1000/3330	10.005	33.305	05/04/2018	10:07:00	1944	
Brubru	1	1000/3331	10.005	33.315	05/04/2018	10:47:00	2020	
Chinspot Batis	4	1000/3331	10.005	33.315	05/04/2018	10:47:00	2020	
Striped Pipit	1	1000/3331	10.005	33.315	05/04/2018	10:47:00	2020	
Reichard's Seedeater	10	1000/3331	10.005	33.315	05/04/2018	10:47:00	2030	
Lazy Cisticola	1	1000/3331	10.005	33.315	05/04/2018	10:47:00	2030	
Amur Falcon	1	0999/3331	9.995	33.315	05/04/2018	14:00:00	1930	
White-necked Raven	2	0999/3331	9.995	33.315	05/04/2018	14:00:00	1930	
Sharpe's Greenbul	1	0999/3331	9.995	33.315	05/04/2018	14:00:00	1930	doubles
Ashy Flycatcher	1	0999/3331	9.995	33.315	05/04/2018	14:00:00	1930	
Paradise Flycatcher	1	0999/3331	9.995	33.315	05/04/2018	14:00:00	1930	doubles
White-tailed Elminia	2	0999/3331	9.995	33.315	05/04/2018	14:00:00	1930	doubles
African Goshawk	1	0999/3331	9.995	33.315	06/04/2018	05:30:00	1930	
Amethyst Sunbird	5	0999/3331	9.995	33.315	06/04/2018	05:30:00	1930	
White-browed Robin-chat	1	0999/3331	9.995	33.315	06/04/2018	05:30:00	1930	
White-necked Raven	2	0999/3331	9.995	33.315	06/04/2018	05:30:00	1930	
Brown-headed Apalis	2	0999/3331	9.995	33.315	06/04/2018	05:30:00	1930	
Lazy Cisticola	1	0999/3331	9.995	33.315	06/04/2018	05:30:00	1930	
Yellow-vented Bulbul	1	0999/3331	9.995	33.315	06/04/2018	05:30:00	1930	
Petronia	2	0999/3331	9.995	33.315	06/04/2018	05:30:00	1930	
Yellow-bellied Sunbird	1	0999/3331	9.995	33.315	06/04/2018	05:30:00	1930	
White-browed Scrub-robin	1	0999/3331	9.995	33.315	06/04/2018	05:30:00	1930	
Western Miombo Sunbird	1	0999/3331	9.995	33.315	06/04/2018	05:30:00	1930	
Red-necked Francolin	1	0999/3331	9.995	33.315	06/04/2018	05:30:00	1930	
Amethyst Sunbird	4	0999/3330	9.995	33.305	06/04/2018	06:28:00	1980	
Reichard's Seedeater	1	0999/3330	9.995	33.305	06/04/2018	06:28:00	1980	
Western Miombo Sunbird	1	0999/3330	9.995	33.305	06/04/2018	06:28:00	1980	
Brubru	2	0999/3330	9.995	33.305	06/04/2018	06:28:00	1980	
Petronia	1	0999/3330	9.995	33.305	06/04/2018	06:28:00	1980	
African Yellow White-eye	3	0999/3330	9.995	33.305	06/04/2018	06:28:00	1980	
Lazy Cisticola	1	0999/3330	9.995	33.305	06/04/2018	06:28:00	1980	
White-necked Raven	1	0999/3330	9.995	33.305	06/04/2018	06:28:00	1980	same
White-necked Raven	2	1000/3330	10.005	33.305	06/04/2018	06:50:00	2060	same
Wailing Cisticola	1	1000/3330	10.005	33.305	06/04/2018	06:50:00	2060	

European Bee-eater	20	1000/3330	10.005	33.305	06/04/2018	06:50:00	2060	
Wood Pipit	1	1000/3330	10.005	33.305	06/04/2018	06:50:00	2060	
Lizard Buzzard	1	1000/3331	10.005	33.315	06/04/2018	06:50:00	2060	
Barn Swallow	2	1000/3330	10.005	33.305	06/04/2018	06:50:00	2060	
Shelley's Francolin	2	1000/3330	10.005	33.305	06/04/2018	06:50:00	2060	
Hildebrandt's Francolin	1	1000/3331	10.005	33.315	06/04/2018	06:50:00	2060	
Black-crowned Tchagra	1	1000/3331	10.005	33.315	06/04/2018	06:50:00	2060	
Willow Warbler	1	1000/3330	10.005	33.305	06/04/2018	06:50:00	2060	
Rock Kestrel	1	1000/3330	10.005	33.305	06/04/2018	06:50:00	2060	
Malachite Sunbird	1	1000/3330	10.005	33.305	06/04/2018	06:50:00	2060	
Familiar Chat	1	1000/3329	10.005	33.295	06/04/2018	09:00:00	2248	
Barn Swallow	7	1000/3329	10.005	33.295	06/04/2018	09:00:00	2248	
Malachite Sunbird	1	1000/3329	10.005	33.295	06/04/2018	09:00:00	2248	
Eastern Miombo Double-collared Sunbird	1	1000/3329	10.005	33.295	06/04/2018	09:00:00	2248	
Chin-spot Batis	1	1000/3329	10.005	33.295	06/04/2018	09:00:00	2248	
European Bee-eater	60	1000/3329	10.005	33.295	06/04/2018	09:00:00	2248	
Hildebrandt's Francolin	2	1000/3329	10.005	33.295	06/04/2018	09:00:00	2248	
Swee	14	1000/3329	10.005	33.295	06/04/2018	09:00:00	2248	
"Jackson's Pipit"	2	1000/3329	10.005	33.295	06/04/2018	09:00:00	2248	
Tree Pipit	1	1000/3329	10.005	33.295	06/04/2018	09:00:00	2248	
Wailing Cisticola	4	1000/3329	10.005	33.295	06/04/2018	09:00:00	2248	
Tropical Boubou	2	1000/3329	10.005	33.295	06/04/2018	09:00:00	2100	
Brown-headed Apalis	2	1000/3329	10.005	33.295	06/04/2018	09:00:00	2100	
Rock Martin	6	1000/3329	10.005	33.295	06/04/2018	09:00:00	2248	
Variable Skink	2	1000/3329	10.005	33.295	06/04/2018	09:00:00	2248	
Brown-headed Apalis	2	1000/3330	10.005	33.305	06/04/2018	10:42:00	2214	
Malawi Batis	1	1000/3330	10.005	33.305	06/04/2018	10:42:00	2214	
Wailing Cisticola	6	1000/3329	10.005	33.295	06/04/2018	10:50:00	2100	
Yellow Baboon	20	1001/3329	10.015	33.295	06/04/2018	11:00:00	2200	troop 3
Wailing Cisticola	2	1001/3329	10.015	33.295	06/04/2018	11:00:00	2200	
"Jackson's Pipit"	2	1001/3329	10.015	33.295	06/04/2018	11:00:00	2200	
Chin-spot Batis	1	1001/3329	10.015	33.295	06/04/2018	11:00:00	2200	
Willow Warbler	1	1001/3329	10.015	33.295	06/04/2018	11:00:00	2200	
Striped Skink	1	1001/3329	10.015	33.295	06/04/2018	11:00:00	2160	

Trilling Cisticola	3	1001/3329	10.015	33.295	06/04/2018	12:30:00	2080	
Stonechat	2	1001/3329	10.015	33.295	06/04/2018	12:30:00	2080	
Yellow-vented Bulbul	2	1001/3329	10.015	33.295	06/04/2018	12:30:00	2080	
Black-crowned Tchagra	1	1001/3329	10.015	33.295	06/04/2018	12:30:00	2080	
White-headed Saw-wing	1	1001/3329	10.015	33.295	06/04/2018	12:30:00	2080	
Shelley's Francolin	2	1001/3329	10.015	33.295	06/04/2018	12:30:00	2080	
Brown-headed Apalis	5	1001/3329	10.015	33.295	06/04/2018	12:30:00	2080	
Swee	6	1001/3329	10.015	33.295	06/04/2018	12:30:00	2080	
Cabanis's Bunting	1	1001/3330	10.015	33.305	06/04/2018	12:50:00	2050	
Scaly-throated Honeyguide	1	1001/3330	10.015	33.305	06/04/2018	12:50:00	2050	
Puffback	1	1001/3330	10.015	33.305	06/04/2018	12:50:00	2050	
Common Cuckoo	1	1001/3330	10.015	33.305	06/04/2018	12:50:00	2050	
Slaty Flycatcher	2	1001/3330	10.015	33.305	06/04/2018	12:50:00	2050	
Malawi Batis	2	1001/3330	10.015	33.305	06/04/2018	12:50:00	2050	
Tropical Boubou	1	1001/3330	10.015	33.305	06/04/2018	12:50:00	2050	
White-tailed Elminia	2	1001/3330	10.015	33.305	06/04/2018	12:50:00	2050	
Green-headed Sunbird	1	1001/3330	10.015	33.305	06/04/2018	12:50:00	2050	
Swee	2	1001/3330	10.015	33.305	06/04/2018	12:50:00	2050	
Brown-headed Apalis	2	1001/3330	10.015	33.305	06/04/2018	12:50:00	2050	
Lazy Cisticola	3	1000/3330	10.005	33.305	06/04/2018	14:10:00	2035	
Trilling Cisticola	1	1000/3330	10.005	33.305	06/04/2018	14:10:00	2035	
Freckled Rock Nightjar	1	1000/3331	10.005	33.315	06/04/2018	14:30:00	2000	
Miombo Rock Thrush	2	1000/3331	10.005	33.315	06/04/2018	14:30:00	2000	
Green-capped Eremomela	2	1000/3331	10.005	33.315	06/04/2018	14:30:00	2000	
Miombo Grey Tit	3	1000/3331	10.005	33.315	06/04/2018	14:30:00	2000	
White-headed Saw-wing	3	1000/3331	10.005	33.315	06/04/2018	14:30:00	2000	
Chapin's Apalis	1	1000/3331	10.005	33.315	06/04/2018	14:30:00	2000	
Cardinal Woodpecker	2	1000/3331	10.005	33.315	06/04/2018	14:30:00	2000	
Dusky Flycatcher	1	1000/3331	10.005	33.315	06/04/2018	14:30:00	2000	
Petronia	1	1000/3331	10.005	33.315	06/04/2018	14:30:00	2000	
Reichard's Seedeater	4	1000/3331	10.005	33.315	06/04/2018	14:30:00	2000	
Western Miombo Sunbird	1	0999/3331	9.995	33.315	07/04/2018	06:00:00	1930	
Sharpe's Greenbul	1	0999/3331	9.995	33.315	07/04/2018	06:00:00	1930	
Cabanis's Bunting	1	0999/3331	9.995	33.315	07/04/2018	06:00:00	1930	
Black-crowned Tchagra	1	0999/3331	9.995	33.315	07/04/2018	06:00:00	1930	

Malawi Batis	5	1000/3331	10.005	33.315	07/04/2018	06:20:00	1910	
Sharpe's Greenbul	3	1000/3331	10.005	33.315	07/04/2018	06:20:00	1910	
Starred Robin	1	1000/3331	10.005	33.315	07/04/2018	06:20:00	1910	
Miombo Grey Tit	2	1000/3331	10.005	33.315	07/04/2018	06:20:00	1910	
Reichard's Seedeater	3	1000/3331	10.005	33.315	07/04/2018	06:20:00	1910	
Dusky Flycatcher	2	1000/3331	10.005	33.315	07/04/2018	06:20:00	1910	
Mountain Greenbul	1	1000/3331	10.005	33.315	07/04/2018	06:20:00	1910	
White-tailed Elminia	2	1000/3331	10.005	33.315	07/04/2018	06:20:00	1910	
Olive Sunbird	4	1000/3331	10.005	33.315	07/04/2018	06:20:00	1910	
Green-headed Sunbird	2	1000/3331	10.005	33.315	07/04/2018	06:20:00	1910	
Chapin's Apalis	2	1000/3331	10.005	33.315	07/04/2018	06:20:00	1910	
Green-backed Camaroptera	1	1000/3331	10.005	33.315	07/04/2018	06:20:00	1910	
Puffback	2	1000/3331	10.005	33.315	07/04/2018	06:20:00	1910	
Trilling Cisticola	1	0999/3331	9.995	33.315	07/04/2018	12:00:00	1930	
Brown-headed Apalis	2	0999/3331	9.995	33.315	07/04/2018	12:00:00	1930	
Chinspot Batis	1	0999/3331	9.995	33.315	07/04/2018	12:00:00	1930	
Chapin's Apalis	6	0999/3331	9.995	33.315	07/04/2018	12:00:00	1930	
Chapin's Apalis	2	0998/3331	9.985	33.315	07/04/2018	12:46:00	1850	
White-tailed Blue Flycatcher	1	0998/3331	9.985	33.315	07/04/2018	12:46:00	1850	
Moustached Tinkerbird	1	0998/3331	9.985	33.315	07/04/2018	12:46:00	1850	
Rock Martin	2	0998/3331	9.985	33.315	07/04/2018	12:46:00	1850	
Long-tailed Wagtail	2	0998/3331	9.985	33.315	07/04/2018	12:46:00	1850	
Brown-headed Apalis	2	0998/3331	9.985	33.315	07/04/2018	12:46:00	1850	
Olive Sunbird	2	0998/3331	9.985	33.315	07/04/2018	12:46:00	1850	
Reichard's Seedeater	2	0998/3331	9.985	33.315	07/04/2018	12:46:00	1850	
Trilling Cisticola	1	0998/3331	9.985	33.315	07/04/2018	12:46:00	1850	
Striped Pipit	2	0998/3330	9.985	33.305	07/04/2018	13:15:00	1900	
Cabanis's Bunting	1	0998/3330	9.985	33.305	07/04/2018	13:15:00	1900	
Reichard's Seedeater	2	0998/3330	9.985	33.305	07/04/2018	13:15:00	1900	
Green-capped Eremomela	5	0998/3330	9.985	33.305	07/04/2018	13:15:00	1900	
Trilling Cisticola	1	0998/3330	9.985	33.305	07/04/2018	13:15:00	1900	
Brubru	2	0998/3330	9.985	33.305	07/04/2018	13:15:00	1900	
Chinspot Batis	4	0998/3330	9.985	33.305	07/04/2018	13:15:00	1900	
Bar-tailed Trogon	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Bertram's Weaver	4	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	

Spotted Creeper	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Puffback	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Sharpe's Greenbul	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Chapin's Apalis	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Brown-headed Apalis	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Mountain Greenbul	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Malawi Batis	4	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Tawny-flanked Prinia	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Red-faced Cisticola	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Trilling Cisticola	4	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Southern Citril	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Forest Double-collared Sunbird	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Scaly-throated Honeyguide	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Yellow-vented Bulbul	4	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Olive Woodpecker	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
White-browed Robin-chat	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
White-headed Saw-wing	3	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Cardinal Woodpecker	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Red-necked Francolin	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Black Cuckooshrike	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
White-tailed Blue Flycatcher	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Cabanis's Bunting	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Chinstrap Batis	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
African Yellow White-eye	4	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Yellow-bellied Hylia	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Red-winged Starling	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
White-tailed Elminia	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Collared Sunbird	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Striped Pipit	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Yellow-fronted Tinkerbird	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Moustached Tinkerbird	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Schalow's Turaco	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
White-necked Raven	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Brubru	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Tropical Boubou	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	

Rufous-bellied Tit	3	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Green-backed Camaroptera	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Olive Thrush	3	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Olive Sunbird	1	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Wood Owl	1	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Broadbill	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
White-chested Alethe	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Brown-headed Apalis	10	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Chapin's Apalis	12	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Trilling Cisticola	6	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Moustached Tinkerbird	8	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Olive Sunbird	4	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Forest Double-collared Sunbird	10	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Collared Sunbird	8	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Sharpe's Greenbul	10	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
White-browed Robin-chat	1	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Puffback	4	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Malawi Batis	6	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Bar-tailed Trogon	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Brubru	4	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Yellow-bellied Sunbird	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Spotted Creeper	1	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Rufous-bellied Tit	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Southern Citril	6	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
White-headed Saw-wing	6	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Petronia	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Brown-crowned Tchagra	1	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Miombo Grey Tit	3	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Reichard's Seedeater	6	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Dusky Flycatcher	10	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Black Cuckooshrike	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Tropical Boubou	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Yellow-vented Bulbul	10	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Bertram's Weaver	3	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Green-backed Camaroptera	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	

Grey Tit-Flycatcher	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Amethyst Sunbird	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Souza Shrike	1	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Little Greenbul	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Mountain Greenbul	6	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
African Yellow White-eye	5	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Olive Thrush	1	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
White-browed Scrub-robin	1	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Green-headed Sunbird	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Red-necked Francolin	8	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Hildebrandt's Francolin	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
African Firefinch	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
White-tailed Blue Flycatcher	3	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Yellow-bellied Hyliota	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Tawny-flanked Prinia	6	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Yellow-fronted Tinkerbird	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Placid Greenbul	3	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Chin-spot Batis	6	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Green-capped Eremomela	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Crowned Hornbill	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
European Bee-eater	20	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Penduline Tit	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Whyte's Barbet	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Swee	2	0998/3330	9.985	33.305	08/04/2018	06:00:00	1900	
Schalow's Turaco	1	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Willow Warbler	1	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Cardinal Woodpecker	1	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Scimitarbill	1	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Reichard's Seedeater	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Red-capped Crombec	1	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Lesser Honeyguide	1	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Brown-headed Apalis	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Chapin's Apalis	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Trilling Cisticola	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Moustached Tinkerbird	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	



Collared Sunbird	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Olive Sunbird	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Forest Double-collared Sunbird	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Sharpe's Greenbul	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Puffback	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Malawi Batis	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Yellow-bellied Sunbird	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Rufous-bellied Tit	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Miombo Grey Tit	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
White-headed Saw-wing	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Reichard's Seedeater	4	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Dusky Flycatcher	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Tropical Boubou	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Black Cuckooshrike	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Yellow-vented Bulbul	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Green-backed Camaroptera	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Mountain Greenbul	6	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
African Yellow White-eye	4	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
White-tailed Blue Flycatcher	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Tawny-flanked Prinia	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Yellow-fronted Tinkerbird	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Chin-spot Batis	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Green-capped Eremomela	4	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
European Bee-eater	40	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Amethyst Sunbird	2	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Lazy Cisticola	4	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Trilling Cisticola	2	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Mountain Greenbul	2	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Brown-headed Apalis	2	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Chin-spot Batis	2	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Yellow-vented Bulbul	2	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Puffback	2	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Brubru	2	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Amethyst Sunbird	2	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Chapin's Apalis	2	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	

African Yellow White-eye	5	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Crowned Hornbill	1	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Yellow-fronted Tinkerbird	2	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Reichard's Seedeater	2	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Scaly-throated Honeyguide	1	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Sharpe's Greenbul	2	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Striped Pipit	1	0999/3329	9.995	33.295	08/04/2018	10:30:00	1872	
Scimitarbill	1	0999/3330	9.995	33.305	08/04/2018	11:30:00	1850	
Sharpe's Greenbul	2	0999/3330	9.995	33.305	08/04/2018	11:30:00	1850	
Chapin's Apalis	2	0999/3330	9.995	33.305	08/04/2018	11:30:00	1850	
Puffback	2	0999/3330	9.995	33.305	08/04/2018	11:30:00	1850	
Malawi Batis	2	0999/3330	9.995	33.305	08/04/2018	11:30:00	1850	
Olive Sunbird	1	0999/3330	9.995	33.305	08/04/2018	11:30:00	1850	
Green-backed Camaroptera	5	0999/3330	9.995	33.305	08/04/2018	11:30:00	1850	nest with chicks
Lemon Dove	1	0999/3330	9.995	33.305	08/04/2018	11:30:00	1850	
Mountain Greenbul	2	0999/3330	9.995	33.305	08/04/2018	11:30:00	1850	
Red-capped Robin-chat	1	0999/3330	9.995	33.305	08/04/2018	11:30:00	1850	
Ashy Flycatcher	2	0998/3330	9.985	33.305	08/04/2018	12:45:00	1870	
Golden-tailed Woodpecker	1	0998/3330	9.985	33.305	09/04/2018	06:00:00	1890	
White-necked Raven	1	0998/3330	9.985	33.305	09/04/2018	06:00:00	1890	
Black-fronted Bush-shrike	1	0998/3330	9.985	33.305	09/04/2018	15:00:00	1890	
Rameron Pigeon	2	0999/3330	9.995	33.305	09/04/2018	16:00:00	1850	
Slaty Flycatcher	2	0999/3330	9.995	33.305	09/04/2018	16:00:00	1850	
Hildebrandt's Francolin	1	0998/3329	9.985	33.295	09/04/2018	18:00:00	1850	
Red-backed Shrike	1	0998/3331	9.985	33.315	10/04/2018	08:45:00	1947	
Lazy Cisticola	2	0998/3331	9.985	33.315	10/04/2018	08:45:00	1947	
Wailing Cisticola	6	0998/3331	9.985	33.315	10/04/2018	08:45:00	1947	
Trilling Cisticola	2	0998/3331	9.985	33.315	10/04/2018	08:45:00	1947	
Tropical Boubou	2	0998/3331	9.985	33.315	10/04/2018	08:45:00	1947	
White-browed Robin-chat	1	0998/3331	9.985	33.315	10/04/2018	08:45:00	1947	
Brown-headed Apalis	2	0998/3331	9.985	33.315	10/04/2018	08:45:00	1947	
Chapin's Apalis	2	0998/3331	9.985	33.315	10/04/2018	08:45:00	1947	
Yellow-bellied Sunbird	2	0998/3331	9.985	33.315	10/04/2018	08:45:00	1947	
"Jackson's Pipit"	1	0998/3331	9.985	33.315	10/04/2018	08:45:00	1947	
Yellow-vented Bulbul	2	0998/3331	9.985	33.315	10/04/2018	08:45:00	1947	

Trilling Cisticola	4	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
Yellow-vented Bulbul	2	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
Wailing Cisticola	6	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
Brown-headed Apalis	4	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
Puffback	1	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
Sharpe's Greenbul	2	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
European Bee-eater	40	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
"Jackson's Pipit"	4	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
White-browed Scrub-robin	1	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
African Yellow White-eye	4	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
Kurrichane Thrush	2	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
Kurrichane Thrush	2	0997/3330	9.975	33.305	10/04/2018	09:00:00	1980	
Hildebrandt's Francolin	2	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
Hildebrandt's Francolin	2	0997/3330	9.975	33.305	10/04/2018	09:00:00	1980	
Reichard's Seedeater	2	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
Striped Pipit	2	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
Yellow-bellied Sunbird	1	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
Steppe Buzzard	1	0997/3331	9.975	33.315	10/04/2018	09:00:00	1980	
Familiar Chat	1	0997/3332	9.975	33.325	10/04/2018	10:30:00	2190	
Wailing Cisticola	4	0997/3332	9.975	33.325	10/04/2018	10:30:00	2190	
European Bee-eater	20	0997/3332	9.975	33.325	10/04/2018	10:30:00	2190	
Wailing Cisticola	10	0996/3332	9.965	33.325	10/04/2018	11:10:00	2223	
"Jackson's Pipit"	1	0996/3332	9.965	33.325	10/04/2018	11:10:00	2223	
European Bee-eater	20	0996/3332	9.965	33.325	10/04/2018	11:10:00	2223	
Miombo Rock Thrush	1	0996/3332	9.965	33.325	10/04/2018	11:10:00	2223	
Brown-headed Apalis	2	0996/3332	9.965	33.325	10/04/2018	11:10:00	2223	
White-headed Saw-wing	2	0996/3332	9.965	33.325	10/04/2018	11:10:00	2223	
Yellow-bellied Sunbird	2	0996/3332	9.965	33.325	10/04/2018	11:10:00	2223	
Barn Swallow	20	0996/3333	9.965	33.335	10/04/2018	12:00:00	2030	
Willow Warbler	1	0996/3333	9.965	33.335	10/04/2018	12:00:00	2030	
Black-lored Cisticola	2	0996/3333	9.965	33.335	10/04/2018	12:00:00	2030	
Yellow Baboon	10	0997/3333	9.975	33.335	10/04/2018	12:00:00	2030	troop 4
Wailing Cisticola	4	0997/3333	9.975	33.335	10/04/2018	16:00:00	2200	
Wailing Cisticola	4	0997/3334	9.975	33.345	10/04/2018	16:00:00	2250	
Wailing Cisticola	4	0998/3334	9.985	33.345	10/04/2018	16:00:00	2300	

Wailing Cisticola	4	0999/3334	9.995	33.345	10/04/2018	16:00:00	2250	
Wailing Cisticola	4	0999/3333	9.995	33.335	10/04/2018	16:00:00	2200	
Wailing Cisticola	4	1000/3333	10.005	33.335	10/04/2018	16:00:00	2200	
Wailing Cisticola	4	1000/3332	10.005	33.325	10/04/2018	16:00:00	2200	
"Jackson's Pipit"	4	0997/3333	9.975	33.335	10/04/2018	16:00:00	2200	
"Jackson's Pipit"	4	0997/3334	9.975	33.345	10/04/2018	16:00:00	2250	
"Jackson's Pipit"	4	0998/3334	9.985	33.345	10/04/2018	16:00:00	2300	
"Jackson's Pipit"	4	0999/3334	9.995	33.345	10/04/2018	16:00:00	2250	
"Jackson's Pipit"	4	0999/3333	9.995	33.335	10/04/2018	16:00:00	2200	
"Jackson's Pipit"	4	1000/3333	10.005	33.335	10/04/2018	16:00:00	2200	
"Jackson's Pipit"	4	1000/3332	10.005	33.325	10/04/2018	16:00:00	2200	
Malawi Batis	2	1000/3333	10.005	33.335	10/04/2018	16:00:00	2200	
Forest Double-collared Sunbird	2	1000/3333	10.005	33.335	10/04/2018	16:00:00	2200	
Bronze Sunbird	2	1000/3333	10.005	33.335	10/04/2018	16:00:00	2200	
Malachite Sunbird	2	0997/3334	9.975	33.345	10/04/2018	16:00:00	2250	
Montane Nightjar	1	0997/3334	9.975	33.345	10/04/2018	18:00:00	2250	
Montane Nightjar	1	0997/3333	9.975	33.335	10/04/2018	18:00:00	2200	
Red-winged Starling	20	0997/3334	9.975	33.345	10/04/2018	18:00:00	2250	
Brown-headed Apalis	14	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Sharpe's Greenbul	12	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Mountain Greenbul	4	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Chapin's Apalis	8	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Olive Woodpecker	2	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Short-winged Cisticola	6	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Olive Thrush	3	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
White-chested Alethe	5	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Yellow-vented Bulbul	5	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Tree Pipit	2	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Swee	8	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
African Yellow White-eye	4	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Stonechat	2	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Bronze Sunbird	4	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Malawi Batis	8	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
White-necked Raven	2	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Malachite Sunbird	2	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	

Forest Double-collared Sunbird	4	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Slaty Flycatcher	1	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Puffback	6	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Placid Greenbul	2	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
White-browed Robin-chat	2	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Tropical Boubou	2	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Yellow-bellied Sunbird	10	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Cabanis's Bunting	2	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Moustached Tinkerbird	1	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Churring Cisticola	2	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Dusky Flycatcher	2	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
"Jackson's Pipit"	2	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
White-tailed Elminia	8	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Scaly-throated Honeyguide	1	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Green-headed Sunbird	3	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Yellow Baboon	5	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	troop 4
Long-tailed Wagtail	1	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Rock Kestrel	1	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Black-crowned Tchagra	2	0997/3332	9.975	33.325	11/04/2018	06:00:00	2000	0997/3332
Black-lored Cisticola	1	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
European Bee-eater	40	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
Red-collared Widow	3	0997/3332	9.975	33.325	11/04/2018	06:00:00	2000	0997/3332
Stonechat	1	0997/3332	9.975	33.325	11/04/2018	06:00:00	2000	0997/3332
Yellow-throated Woodland Warbler	1	0997/3333	9.975	33.335	11/04/2018	06:00:00	2000	
White-tailed Blue Flycatcher	2	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Starred Robin	2	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
African Firefinch	2	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Red-faced Crimsonwing	2	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Mountain Greenbul	2	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Stonechat	1	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Forest Double-collared Sunbird	1	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Wailing Cisticola	2	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
White-tailed Elminia	3	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Chapin's Apalis	2	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	

White-browed Robin-chat	1	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
"Jackson's Pipit"	2	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Short-winged Cisticola	2	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Green-headed Sunbird	1	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Scaly-throated Honeyguide	1	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Puffback	2	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Malawi Batis	2	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Yellow-vented Bulbul	2	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
European Bee-eater	20	0996/3333	9.965	33.335	11/04/2018	10:00:00	2000	
Common Fiscal	1	0997/3333	9.975	33.335	11/04/2018	11:30:00	2050	
Wailing Cisticola	2	0997/3333	9.975	33.335	11/04/2018	11:30:00	2050	
Bronze Sunbird	2	0997/3333	9.975	33.335	11/04/2018	11:30:00	2050	
Mountain Greenbul	2	0997/3333	9.975	33.335	11/04/2018	11:30:00	2050	
Sharpe's Greenbul	2	0997/3333	9.975	33.335	11/04/2018	11:30:00	2050	
Wailing Cisticola	2	0997/3334	9.975	33.345	11/04/2018	13:20:00	2200	
Wailing Cisticola	6	0998/3334	9.985	33.345	11/04/2018	14:00:00	2280	
"Jackson's Pipit"	2	0998/3334	9.985	33.345	11/04/2018	14:00:00	2280	
Wing-snapping Cisticola	4	0998/3334	9.985	33.345	11/04/2018	14:00:00	2280	
Red-winged Starling	1	0998/3334	9.985	33.345	11/04/2018	14:00:00	2280	
Wailing Cisticola	2	0999/3334	9.995	33.345	11/04/2018	14:20:00	2280	
"Jackson's Pipit"	4	0999/3334	9.995	33.345	11/04/2018	14:20:00	2280	
Wing-snapping Cisticola	2	0999/3334	9.995	33.345	11/04/2018	14:20:00	2280	
Wing-snapping Cisticola	3	0999/3333	9.995	33.335	11/04/2018	14:30:00	2280	
Stonechat	2	0999/3333	9.995	33.335	11/04/2018	14:30:00	2280	
Wailing Cisticola	6	0999/3333	9.995	33.335	11/04/2018	14:30:00	2280	
Brown-headed Apalis	2	1000/3333	10.005	33.335	11/04/2018	14:45:00	2215	
Wailing Cisticola	4	1000/3333	10.005	33.335	11/04/2018	14:45:00	2215	
Yellow-vented Bulbul	2	1000/3333	10.005	33.335	11/04/2018	14:45:00	2215	
Obscure Ridged Frog	20	1000/3332	10.005	33.325	11/04/2018	15:00:00	2220	tadpoles
Red-necked Francolin	1	1000/3332	10.005	33.325	11/04/2018	15:00:00	2220	
Green-headed Sunbird	1	1000/3332	10.005	33.325	11/04/2018	15:00:00	2220	
Wailing Cisticola	2	1001/3332	10.015	33.325	11/04/2018	16:00:00	2220	
Churring Cisticola	4	1000/3333	10.005	33.335	11/04/2018	14:45:00	2215	
Bertram's Weaver	1	0998/3334	9.985	33.345	11/04/2018	17:30:00	2280	
Stonechat	2	0998/3334	9.985	33.345	11/04/2018	17:30:00	2280	

Brown-headed Apalis	2	0998/3334	9.985	33.345	11/04/2018	17:30:00	2280	
Black-crowned Tchagra	1	0998/3334	9.985	33.345	11/04/2018	17:30:00	2280	
Malachite Sunbird	4	0998/3334	9.985	33.345	11/04/2018	17:30:00	2280	
Spotted Eagle Owl	1	0997/3334	9.975	33.345	11/04/2018	18:00:00	2200	technically, Cape was not excluded
Blue Swallow	2	0997/3333	9.975	33.335	12/04/2018	10:15:00	2000	Quite possibly juvs as no tail streamers and not very glossy, though presumably adults similar in April
Pallid Honeyguide	1	0997/3333	9.975	33.335	12/04/2018	06:00:00	2000	
Moustached Tinkerbird	2	0997/3333	9.975	33.335	12/04/2018	06:00:00	2000	
Olive Woodpecker	1	0997/3333	9.975	33.335	12/04/2018	06:00:00	2000	
Churring Cisticola	2	0997/3333	9.975	33.335	12/04/2018	06:00:00	2000	
Bronze Sunbird	4	0997/3333	9.975	33.335	12/04/2018	06:00:00	2000	nest: still active on 11th (fledgling and female entering regularly) but fully fledged on 12th
Malachite Sunbird	4	0997/3333	9.975	33.335	12/04/2018	06:00:00	2000	
Short-winged Cisticola	2	0997/3333	9.975	33.335	12/04/2018	06:00:00	2000	
Chapin's Apalis	4	0997/3333	9.975	33.335	12/04/2018	06:00:00	2000	
Brown-headed Apalis	4	0997/3333	9.975	33.335	12/04/2018	06:00:00	2000	
Green-headed Sunbird	2	0997/3333	9.975	33.335	12/04/2018	06:00:00	2000	
Cabanis's Bunting	1	0997/3334	9.975	33.345	12/04/2018	09:00:00	2100	
Chapin's Apalis	2	0997/3334	9.975	33.345	12/04/2018	09:00:00	2100	
Brown-headed Apalis	2	0997/3334	9.975	33.345	12/04/2018	09:00:00	2100	
Sharpe's Greenbul	1	0997/3334	9.975	33.345	12/04/2018	09:00:00	2100	
Wailing Cisticola	2	0997/3334	9.975	33.345	12/04/2018	09:00:00	2100	
Forest Double-collared Sunbird	1	0997/3334	9.975	33.345	12/04/2018	09:00:00	2100	
African Yellow White-eye	4	0997/3334	9.975	33.345	12/04/2018	09:00:00	2100	
Black-lored Cisticola	2	0997/3333	9.975	33.335	12/04/2018	06:00:00	2000	
Red-winged Starling	50	0996/3334	9.965	33.345	12/04/2018	15:00:00	2100	
Wailing Cisticola	2	0996/3334	9.965	33.345	12/04/2018	15:00:00	2100	
"Jackson's Pipit"	2	0996/3334	9.965	33.345	12/04/2018	15:00:00	2100	
"Jackson's Pipit"	2	0996/3333	9.965	33.335	12/04/2018	15:15:00	2080	
Brown-headed Apalis	2	0996/3333	9.965	33.335	12/04/2018	15:15:00	2080	
Wailing Cisticola	2	0996/3333	9.965	33.335	12/04/2018	15:15:00	2080	
Quail	1	0996/3333	9.965	33.335	12/04/2018	15:15:00	2080	calling male
Chapin's Apalis	2	0996/3333	9.965	33.335	12/04/2018	15:15:00	2080	

Black-lored Cisticola	2	0996/3333	9.965	33.335	12/04/2018	15:15:00	2080	
Red-winged Starling	80	0996/3333	9.965	33.335	12/04/2018	15:15:00	2080	
Black-lored Cisticola	6	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Bronze Sunbird	12	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Moustached Tinkerbird	4	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Stonechat	4	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Cabanis's Bunting	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
"Jackson's Pipit"	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Chapin's Apalis	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Green-headed Sunbird	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Cinnamon Bracken Warbler	1	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
African Yellow White-eye	6	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Malachite Sunbird	4	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Wailing Cisticola	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Sharpe's Greenbul	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Mountain Greenbul	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Short-winged Cisticola	1	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Red-winged Starling	3	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Swee	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Churring Cisticola	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Red-faced Crimsonwing	1	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Olive Woodpecker	1	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Yellow-bellied Sunbird	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Forest Double-collared Sunbird	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Black-crowned Tchagra	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Tropical Boubou	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Yellow-vented Bulbul	1	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Malawi Batis	2	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
White-browed Scrub-robin	1	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Common Fiscal	1	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Brown-headed Apalis	6	0996/3334	9.965	33.345	12/04/2018	16:00:00	2100	
Slaty Flycatcher	2	0997/3333	9.975	33.335	13/04/2018	06:00:00	2000	
Green Twinspot	1	0997/3333	9.975	33.335	13/04/2018	06:00:00	2000	
Stonechat	2	0996/3334	9.965	33.345	13/04/2018	13:00:00	2200	additional to 12/4
White-browed Robin-chat	2	0996/3334	9.965	33.345	13/04/2018	13:00:00	2200	additional to 12/4



Wailing Cisticola	2	0996/3334	9.965	33.345	13/04/2018	13:00:00	2200	additional to 12/4
Black-crowned Tchagra	2	0996/3334	9.965	33.345	13/04/2018	13:00:00	2200	additional to 12/4
Wailing Cisticola	4	0996/3335	9.965	33.355	13/04/2018	14:00:00	2250	
"Jackson's Pipit"	1	0996/3335	9.965	33.355	13/04/2018	14:00:00	2250	
Black-lored Cisticola	2	0996/3335	9.965	33.355	13/04/2018	14:00:00	2250	
Wailing Cisticola	4	0996/3335	9.965	33.355	13/04/2018	14:00:00	2250	
Red-winged Starling	1	0996/3335	9.965	33.355	13/04/2018	14:00:00	2250	
"Jackson's Pipit"	4	0995/3335	9.955	33.355	13/04/2018	14:40:00	2290	
Wailing Cisticola	2	0995/3335	9.955	33.355	13/04/2018	14:40:00	2290	
"Jackson's Pipit"	6	0994/3335	9.945	33.355	13/04/2018	15:10:00	2320	
Wailing Cisticola	6	0994/3335	9.945	33.355	13/04/2018	15:10:00	2320	
"Jackson's Pipit"	6	0993/3335	9.935	33.355	13/04/2018	16:10:00	2230	
Wailing Cisticola	6	0993/3335	9.935	33.355	13/04/2018	16:10:00	2230	
Montane Nightjar	1	0993/3335	9.935	33.355	13/04/2018	18:00:00	2030	
Olive Woodpecker	1	0993/3335	9.935	33.355	13/04/2018	18:00:00	2030	
Montane Nightjar	1	0993/3335	9.935	33.355	14/04/2018	04:30:00	2030	
White-tailed Blue Flycatcher	4	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
White-browed Robin-chat	3	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Tropical Boubou	2	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
African Firefinch	4	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Swee	14	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Yellow-vented Bulbul	3	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Puffback	4	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
White-necked Raven	2	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Forest Double-collared Sunbird	2	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Bronze Sunbird	6	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Brimstone Canary	2	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Stonechat	2	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Malawi Batis	2	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Brown-headed Apalis	8	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Cabanis's Bunting	1	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Green-headed Sunbird	1	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Yellow-bellied Sunbird	1	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Common Waxbill	4	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Moustached Tinkerbird	1	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	

Mountain Greenbul	2	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Lazy Cisticola	1	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Chapin's Apalis	4	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
African Yellow White-eye	4	0993/3335	9.935	33.355	14/04/2018	06:00:00	2030	
Chapin's Apalis	2	0993/3334	9.935	33.345	14/04/2018	11:30:00	2000	
Brown-headed Apalis	4	0993/3334	9.935	33.345	14/04/2018	11:30:00	2000	
Tropical Boubou	2	0993/3334	9.935	33.345	14/04/2018	11:30:00	2000	
White-tailed Blue Flycatcher	2	0993/3334	9.935	33.345	14/04/2018	11:30:00	2000	
Brimstone Canary	1	0993/3334	9.935	33.345	14/04/2018	11:30:00	2000	
"Jackson's Pipit"	4	0993/3334	9.935	33.345	14/04/2018	11:30:00	2000	
Brown-throated Martin	60	0993/3334	9.935	33.345	14/04/2018	11:30:00	2000	Completely dark; EA birds!
Wailing Cisticola	4	0993/3334	9.935	33.345	14/04/2018	11:30:00	2000	
Yellow Baboon	5	0992/3334	9.925	33.345	14/04/2018	13:00:00	2000	
African Yellow White-eye	15	0992/3334	9.925	33.345	14/04/2018	13:00:00	2000	
Wailing Cisticola	2	0992/3334	9.925	33.345	14/04/2018	13:00:00	2000	
Brown-headed Apalis	2	0992/3334	9.925	33.345	14/04/2018	13:00:00	2000	
Chapin's Apalis	1	0992/3334	9.925	33.345	14/04/2018	13:00:00	2000	
Cabanis's Bunting	1	0992/3334	9.925	33.345	14/04/2018	13:00:00	2000	
"Jackson's Pipit"	2	0992/3334	9.925	33.345	14/04/2018	13:00:00	2000	
Dusky Flycatcher	3	0993/3335	9.935	33.355	14/04/2018	16:00:00	2030	
Bertram's Weaver	2	0993/3335	9.935	33.355	14/04/2018	16:00:00	2030	
Bronze Sunbird	2	0993/3335	9.935	33.355	14/04/2018	16:00:00	2030	Nest: female in/out regularly but nothing audible, no food etc; egg-laying or early incubation?
Yellow-vented Bulbul	4	0993/3335	9.935	33.355	15/04/2018	07:00:00	2030	additional to 13/4
Brown-headed Apalis	3	0993/3335	9.935	33.355	15/04/2018	07:00:00	2030	additional to 13/4
Malawi Batis	2	0993/3335	9.935	33.355	15/04/2018	07:00:00	2030	additional to 13/4
Puffback	2	0993/3335	9.935	33.355	15/04/2018	07:00:00	2030	additional to 13/4
Slaty Flycatcher	1	0993/3335	9.935	33.355	15/04/2018	07:00:00	2030	additional to 13/4
Wailing Cisticola	2	0993/3335	9.935	33.355	15/04/2018	07:00:00	2030	additional to 13/4
Forest Double-collared Sunbird	2	0993/3335	9.935	33.355	15/04/2018	07:00:00	2030	additional to 13/4
White-tailed Elminia	2	0993/3335	9.935	33.355	15/04/2018	07:00:00	2030	additional to 13/4
Chapin's Apalis	2	0993/3335	9.935	33.355	15/04/2018	07:00:00	2030	additional to 13/4
Southern Citril	1	0993/3335	9.935	33.355	15/04/2018	07:00:00	2030	additional to 13/4
Malachite Sunbird	2	0992/3335	9.925	33.355	15/04/2018	08:15:00	2286	

Wailing Cisticola	2	0992/3335	9.925	33.355	15/04/2018	08:15:00	2286	
"Jackson's Pipit"	1	0992/3335	9.925	33.355	15/04/2018	08:15:00	2286	
Brown-throated Martin	1	0992/3335	9.925	33.355	15/04/2018	08:15:00	2286	
Cabanis's Bunting	1	0994/3335	9.945	33.355	15/04/2018	11:30:00	2130	
Wailing Cisticola	2	0994/3335	9.945	33.355	15/04/2018	11:30:00	2130	
"Jackson's Pipit"	1	0994/3335	9.945	33.355	15/04/2018	11:30:00	2130	
Yellow-vented Bulbul	2	0994/3335	9.945	33.355	15/04/2018	11:30:00	2130	
Bronze Sunbird	2	0994/3335	9.945	33.355	15/04/2018	11:30:00	2130	
Cape Robin	1	0996/3335	9.965	33.355	15/04/2018	13:00:00	2240	Extralimital; Malawi side
Wing-snapping Cisticola	2	0996/3335	9.965	33.355	15/04/2018	13:00:00	2240	
Wing-snapping Cisticola	1	0997/3335	9.975	33.355	15/04/2018	13:45:00	2300	
"Jackson's Pipit"	2	0997/3335	9.975	33.355	15/04/2018	13:45:00	2300	
Quail	2	0997/3335	9.975	33.355	15/04/2018	13:45:00	2300	flushed
Wing-snapping Cisticola	6	0997/3334	9.975	33.345	15/04/2018	14:00:00	2315	
"Jackson's Pipit"	8	0997/3334	9.975	33.345	15/04/2018	14:00:00	2315	
Shelley's Francolin	2	0999/3333	9.995	33.335	15/04/2018	15:30:00	2230	
Wing-snapping Cisticola	2	0999/3333	9.995	33.335	15/04/2018	15:30:00	2230	
Brimstone Canary	2	1000/3333	10.005	33.335	15/04/2018	16:00:00	2210	
Miombo Grey Tit	1	1000/3333	10.005	33.335	15/04/2018	16:00:00	2210	
Brown-headed Apalis	4	1000/3333	10.005	33.335	15/04/2018	16:00:00	2210	
White-necked Raven	2	1000/3333	10.005	33.335	15/04/2018	16:00:00	2210	
Cape Robin	1	1000/3333	10.005	33.335	15/04/2018	16:00:00	2210	
Montane Nightjar	3	1000/3333	10.005	33.335	15/04/2018	16:00:00	2210	
Puffback	2	1000/3333	10.005	33.335	15/04/2018	16:00:00	2210	
Tropical Boubou	2	1000/3333	10.005	33.335	15/04/2018	16:00:00	2210	
Wailing Cisticola	4	1000/3333	10.005	33.335	15/04/2018	16:00:00	2210	
Shelley's Francolin	2	1000/3333	10.005	33.335	15/04/2018	16:00:00	2210	
Red-necked Francolin	2	1000/3333	10.005	33.335	15/04/2018	16:00:00	2210	
Bronze Sunbird	1	1000/3333	10.005	33.335	15/04/2018	16:00:00	2210	
Mountain Greenbul	1	1000/3332	10.005	33.325	16/04/2018	06:00:00	2200	
Olive Woodpecker	1	1000/3332	10.005	33.325	16/04/2018	06:00:00	2200	
Brown-headed Apalis	2	1000/3332	10.005	33.325	16/04/2018	06:00:00	2200	
White-browed Robin-chat	2	1000/3332	10.005	33.325	16/04/2018	06:00:00	2200	
Chinspot Batis	1	1000/3332	10.005	33.325	16/04/2018	06:00:00	2200	
Black-crowned Tchagra	1	1000/3332	10.005	33.325	16/04/2018	06:00:00	2200	

Puffback	2	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Tropical Boubou	4	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
White-browed Scrub-robin	2	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
White-necked Raven	3	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
White-browed Robin-chat	2	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Cape Robin	1	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Malawi Batis	4	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Black-lored Cisticola	2	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Brown-headed Apalis	4	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Green Twinspot	1	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Yellow-vented Bulbul	12	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Rock Bunting	1	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Bronze Sunbird	1	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Yellow-bellied Sunbird	3	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
European Bee-eater	5	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Wailing Cisticola	6	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Willow Warbler	4	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Forest Double-collared Sunbird	4	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Malachite Sunbird	2	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Mountain Greenbul	3	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Olive Woodpecker	1	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Black-crowned Tchagra	1	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Slaty Flycatcher	2	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
White-tailed Elminia	1	1000/3333	10.005	33.335	16/04/2018	06:00:00	2200	
Yellow-bellied Sunbird	2	1000/3332	10.005	33.325	16/04/2018	09:00:00	2160	
Swee	1	1000/3332	10.005	33.325	16/04/2018	09:00:00	2160	
African Firefinch	2	1000/3332	10.005	33.325	16/04/2018	09:00:00	2160	
White-tailed Elminia	2	1000/3332	10.005	33.325	16/04/2018	09:00:00	2160	
Malawi Batis	2	1000/3332	10.005	33.325	16/04/2018	09:00:00	2160	
Forest Double-collared Sunbird	2	1000/3332	10.005	33.325	16/04/2018	09:00:00	2160	
Yellow-vented Bulbul	4	1000/3332	10.005	33.325	16/04/2018	09:00:00	2160	
Green-headed Sunbird	1	1000/3332	10.005	33.325	16/04/2018	09:00:00	2160	
Tropical Boubou	2	1000/3332	10.005	33.325	16/04/2018	09:00:00	2160	
Brown-headed Apalis	6	0999/3332	9.995	33.325	16/04/2018	10:00:00	2150	
Black-crowned Tchagra	1	0999/3332	9.995	33.325	16/04/2018	10:00:00	2150	

Wailing Cisticola	6	0999/3332	9.995	33.325	16/04/2018	10:00:00	2150	
Yellow-vented Bulbul	2	0999/3332	9.995	33.325	16/04/2018	10:00:00	2150	
Malawi Batis	3	0999/3332	9.995	33.325	16/04/2018	10:00:00	2150	
White-tailed Elminia	2	0999/3332	9.995	33.325	16/04/2018	10:00:00	2150	
Green-headed Sunbird	1	0999/3332	9.995	33.325	16/04/2018	10:00:00	2150	
Chapin's Apalis	2	0999/3332	9.995	33.325	16/04/2018	10:00:00	2150	
Wailing Cisticola	4	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Brown-headed Apalis	6	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Sharpe's Greenbul	2	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Mountain Greenbul	2	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Malawi Batis	2	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Churring Cisticola	2	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Cabanis's Bunting	1	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Puffback	2	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Tropical Boubou	2	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Red-necked Francolin	1	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Yellow-bellied Sunbird	2	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Schalow's Turaco	1	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Black-crowned Tchagra	1	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
European Bee-eater	30	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Starred Robin	1	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Chapin's Apalis	2	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
African Yellow White-eye	6	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Yellow-vented Bulbul	6	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
White-tailed Elminia	2	0999/3333	9.995	33.335	16/04/2018	11:00:00	2135	
Blue-cheeked Bee-eater	4	1000/3333	10.005	33.335	16/04/2018	15:05:00	2210	passing overhead to N
Forest Double-collared Sunbird	2	0998/3333	9.985	33.335	16/04/2018	11:00:00	2100	
Familiar Chat	2	0998/3333	9.985	33.335	16/04/2018	11:00:00	2100	
Cabanis's Bunting	2	0998/3333	9.985	33.335	16/04/2018	11:00:00	2100	
Wailing Cisticola	3	0998/3333	9.985	33.335	16/04/2018	11:00:00	2100	
White-tailed Elminia	2	0998/3333	9.985	33.335	16/04/2018	11:00:00	2100	
Yellow-vented Bulbul	4	0998/3333	9.985	33.335	16/04/2018	11:00:00	2100	
Malawi Batis	2	0998/3333	9.985	33.335	16/04/2018	11:00:00	2100	
Chinspot Batis	1	1000/3333	10.005	33.335	16/04/2018	15:30:00	2210	
Miombo Grey Tit	2	1000/3333	10.005	33.335	16/04/2018	15:30:00	2210	

Stonechat	2	1000/3333	10.005	33.335	16/04/2018	15:30:00	2210	
Dusky Flycatcher	1	1000/3333	10.005	33.335	16/04/2018	15:30:00	2210	
Bertram's Weaver	3	1000/3333	10.005	33.335	16/04/2018	15:30:00	2210	including a juv
Swee	10	1000/3333	10.005	33.335	16/04/2018	15:30:00	2210	
Rock Kestrel	2	1000/3333	10.005	33.335	16/04/2018	15:30:00	2210	
Wing-snapping Cisticola	2	1000/3333	10.005	33.335	16/04/2018	15:30:00	2210	
"Jackson's Pipit"	6	1000/3333	10.005	33.335	16/04/2018	15:30:00	2210	
White-headed Saw-wing	1	1000/3333	10.005	33.335	16/04/2018	15:30:00	2210	
Montane Nightjar	1	1000/3333	10.005	33.335	17/04/2018	05:00:00	2210	
Wing-snapping Cisticola	1	0999/3333	9.995	33.335	17/04/2018	07:00:00	2200	
Wailing Cisticola	2	0999/3333	9.995	33.335	17/04/2018	07:00:00	2200	
Churring Cisticola	2	0999/3333	9.995	33.335	17/04/2018	07:00:00	2200	
"Jackson's Pipit"	2	0999/3333	9.995	33.335	17/04/2018	07:00:00	2200	
Quail	1	0999/3334	9.995	33.345	17/04/2018	07:40:00	2230	
"Jackson's Pipit"	4	0999/3334	9.995	33.345	17/04/2018	07:40:00	2230	
Wing-snapping Cisticola	5	0999/3334	9.995	33.345	17/04/2018	07:40:00	2230	
"Jackson's Pipit"	4	0998/3334	9.985	33.345	17/04/2018	08:15:00	2280	
Wailing Cisticola	2	0998/3334	9.985	33.345	17/04/2018	08:15:00	2280	
"Jackson's Pipit"	4	0997/3334	9.975	33.345	17/04/2018	08:40:00	2330	
Wing-snapping Cisticola	1	0997/3334	9.975	33.345	17/04/2018	08:40:00	2330	
Wailing Cisticola	2	0997/3334	9.975	33.345	17/04/2018	08:40:00	2330	
Quail	1	0997/3335	9.975	33.355	17/04/2018	09:05:00	2300	flushed
"Jackson's Pipit"	2	0997/3335	9.975	33.355	17/04/2018	09:05:00	2300	
Wing-snapping Cisticola	2	0997/3335	9.975	33.355	17/04/2018	09:05:00	2300	
"Jackson's Pipit"	4	0996/3335	9.965	33.355	17/04/2018	09:30:00	2290	
Wing-snapping Cisticola	2	0996/3335	9.965	33.355	17/04/2018	09:30:00	2290	
Wailing Cisticola	2	0996/3335	9.965	33.355	17/04/2018	09:30:00	2290	
Brown-headed Apalis	1	0996/3335	9.965	33.355	17/04/2018	09:35:00	2250	
Quail	3	0997/3334	9.975	33.345	17/04/2018	10:00:00	2300	flushed
"Jackson's Pipit"	2	0997/3334	9.975	33.345	17/04/2018	10:00:00	2300	
Yellow-vented Bulbul	1	0997/3334	9.975	33.345	17/04/2018	10:30:00	2336	At Zambia's highest peak!
Barn Swallow	40	1000/3332	10.005	33.325	17/04/2018	12:00:00	2205	
Common Swift	1	1000/3332	10.005	33.325	17/04/2018	12:00:00	2205	
Cape Robin	1	1000/3332	10.005	33.325	17/04/2018	12:00:00	2205	
Wailing Cisticola	4	1000/3332	10.005	33.325	17/04/2018	12:00:00	2205	

Churring Cisticola	1	1000/3332	10.005	33.325	17/04/2018	12:00:00	2205	
"Jackson's Pipit"	6	1000/3332	10.005	33.325	17/04/2018	12:00:00	2205	
Stonechat	2	1000/3332	10.005	33.325	17/04/2018	12:00:00	2205	
Black-lored Cisticola	2	1000/3332	10.005	33.325	17/04/2018	12:00:00	2205	
Willow Warbler	2	1000/3332	10.005	33.325	17/04/2018	12:00:00	2205	
Red-winged Starling	2	1000/3333	10.005	33.335	17/04/2018	16:00:00	2220	
Starred Robin	1	1000/3333	10.005	33.335	17/04/2018	16:00:00	2220	
White-browed Robin-chat	2	1000/3333	10.005	33.335	17/04/2018	16:00:00	2220	
White-browed Scrub-robin	1	1000/3333	10.005	33.335	17/04/2018	16:00:00	2220	
Cape Robin	1	1000/3333	10.005	33.335	17/04/2018	16:00:00	2220	
Bronze Sunbird	2	1000/3333	10.005	33.335	18/04/2018	07:00:00	2220	
Moustached Tinkerbird	1	1000/3333	10.005	33.335	18/04/2018	07:00:00	2220	
Yellow-vented Bulbul	6	1000/3333	10.005	33.335	18/04/2018	07:00:00	2220	
Starred Robin	4	1000/3333	10.005	33.335	18/04/2018	07:00:00	2220	2 pairs
Malawi Batis	2	1000/3333	10.005	33.335	18/04/2018	07:00:00	2220	
Brown-headed Apalis	2	1000/3333	10.005	33.335	18/04/2018	07:00:00	2220	
White-tailed Elminia	2	1000/3333	10.005	33.335	18/04/2018	07:00:00	2220	
White-tailed Blue Flycatcher	2	0999/3333	9.995	33.335	18/04/2018	08:00:00	2150	
Bar-tailed Trogon	1	0999/3333	9.995	33.335	18/04/2018	08:00:00	2150	
White-chested Alethe	1	0999/3333	9.995	33.335	18/04/2018	08:00:00	2150	
Chapin's Apalis	4	0999/3333	9.995	33.335	18/04/2018	08:00:00	2150	2 pairs
Churring Cisticola	6	0999/3333	9.995	33.335	18/04/2018	08:00:00	2150	3 pairs incl plain-backed ind
Moustached Tinkerbird	2	0999/3333	9.995	33.335	18/04/2018	08:00:00	2150	
Red-capped Robin-chat	1	0999/3333	9.995	33.335	18/04/2018	08:00:00	2150	
Wailing Cisticola	2	1000/3332	10.005	33.325	18/04/2018	10:45:00	2200	
Red-rumped Swallow	2	1001/3332	10.015	33.325	18/04/2018	11:30:00	2100	
Rock Martin	10	1001/3332	10.015	33.325	18/04/2018	11:30:00	2100	
Red-winged Starling	2	1001/3332	10.015	33.325	18/04/2018	11:30:00	2100	
Petronia	2	1001/3332	10.015	33.325	18/04/2018	11:30:00	2100	
Chinspot Batis	2	1001/3332	10.015	33.325	18/04/2018	11:30:00	2100	
Amethyst Sunbird	4	1001/3332	10.015	33.325	18/04/2018	11:30:00	2100	
Tropical Boubou	1	1001/3332	10.015	33.325	18/04/2018	11:30:00	2100	
White Helmetshrike	10	1001/3332	10.015	33.325	18/04/2018	11:30:00	2100	
Sharpe's Greenbul	2	1001/3332	10.015	33.325	18/04/2018	17:00:00	1875	
Brown-headed Apalis	2	1001/3332	10.015	33.325	18/04/2018	11:30:00	1875	

Chapin's Apalis	2	1001/3332	10.015	33.325	18/04/2018	11:30:00	1875	
African Black Swift	100	1001/3332	10.015	33.325	18/04/2018	11:30:00	1875	
Chapin's Apalis	6	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Sharpe's Greenbul	4	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Brown-headed Apalis	6	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Yellow-vented Bulbul	6	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Swee	10	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Reichard's Seedeater	6	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Red-necked Francolin	2	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Moustached Tinkerbird	4	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Forest Double-collared Sunbird	4	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Mountain Greenbul	2	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Malawi Batis	6	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Olive Sunbird	4	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Familiar Chat	2	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Green-backed Honeybird	1	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Dusky Flycatcher	5	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Slaty Flycatcher	5	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Collared Sunbird	2	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Green-headed Sunbird	2	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Olive Woodpecker	2	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Lazy Cisticola	2	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Puffback	2	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Cardinal Woodpecker	2	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Red-capped Crombec	1	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Rufous-bellied Tit	4	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Yellow Baboon	10	1002/3332	10.025	33.325	19/04/2018	06:00:00	1875	troop 7 (or 1?), 1002/3332
Miombo Grey Tit	2	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
African Firefinch	2	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Crowned Hornbill	2	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
White-tailed Elminia	4	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Grey Tit-Flycatcher	1	1002/3332	10.025	33.325	20/04/2018	07:00:00	1875	
Singing Cisticola	4	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Puffback	2	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Collared Sunbird	2	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	



Yellow-bellied Sunbird	10	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Brown-crowned Tchagra	2	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
African Firefinch	4	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Red-winged Starling	40	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
White-browed Robin-chat	1	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Red-rumped Swallow	1	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Yellow-fronted Tinkerbird	1	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
White-browed Scrub-robin	1	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
White-headed Saw-wing	2	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Southern Citril	2	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Bronze Sunbird	2	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Grey-olive Greenbul	2	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Yellow-vented Bulbul	8	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
African Yellow White-eye	6	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Brown-headed Apalis	2	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Moustached Tinkerbird	1	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Dusky Flycatcher	2	1002/3331	10.025	33.315	20/04/2018	08:45:00	1730	
Orange-breasted Bush-shrike	1	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Bronze Sunbird	4	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Yellow-bellied Sunbird	4	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Chin-spot Batis	4	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Spotted Creeper	1	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Tawny-flanked Prinia	1	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Yellow-vented Bulbul	6	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Brown-headed Apalis	1	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Red-winged Starling	10	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Singing Cisticola	4	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Bertram's Weaver	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
African Firefinch	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
White-browed Scrub-robin	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Tropical Boubou	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Crowned Eagle	1	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Cardinal Woodpecker	1	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Brown-crowned Tchagra	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Swee	4	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	

Chapin's Apalis	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Southern Citril	6	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Puffback	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Moustached Tinkerbird	4	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Olive Sunbird	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Green-headed Sunbird	1	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Green-backed Camaroptera	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Sharpe's Greenbul	4	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Ashy Flycatcher	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Mountain Greenbul	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Rameron Pigeon	11	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Crowned Hornbill	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Grey-olive Greenbul	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
White-tailed Blue Flycatcher	2	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Slender-billed Starling	50	1002/3331	10.025	33.315	20/04/2018	12:15:00	1750	in flock with at least 10 Red-winged
Rameron Pigeon	1	1002/3331	10.025	33.315	20/04/2018	12:15:00	1750	
Black-headed Oriole	1	1003/3331	10.035	33.315	20/04/2018	13:30:00	1650	
Penduline Tit	4	1003/3331	10.035	33.315	20/04/2018	13:30:00	1650	
Southern Red Bishop	1	1004/3330	10.045	33.305	20/04/2018	14:30:00	1550	
Cape Turtle Dove	1	1004/3330	10.045	33.305	20/04/2018	14:30:00	1550	
Southern Red Bishop	1	1005/3330	10.055	33.305	21/04/2018	06:00:00	1530	

## Appendix 2: Amphibians

Guttural Toad	1	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Breviceps mossambicus	1	1003/3331	10.035	33.315	02/04/2018	16:30:00	1600	
Hyperolius puncticulatus	1	1002/3331	10.025	33.315	02/04/2018	19:00:00	1685	calling and seen. Possibly 2nd male calling. Above main stream (Izinsa)
Natal Puddle Frog	4	1003/3331	10.035	33.315	03/04/2018	13:00:00	1600	
Moyer's River Frog	2	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Moyer's River Frog	2	1000/3330	10.005	33.305	05/04/2018	10:07:00	1944	
Obscure Ridged Frog	103	1000/3331	10.005	33.315	05/04/2018	10:47:00	2030	100 tadpoles, 3 juv
Rough Sand Frog	2	1001/3329	10.015	33.295	06/04/2018	11:00:00	2160	
Obscure Ridged Frog	4	1001/3329	10.015	33.295	06/04/2018	11:00:00	2160	
Moyer's River Frog	5	1001/3329	10.015	33.295	06/04/2018	11:00:00	2160	tadpoles
Moyer's River Frog	4	1001/3330	10.015	33.305	06/04/2018	12:50:00	2050	

Moyer's River Frog	2	1000/3330	10.005	33.305	06/04/2018	14:10:00	2035	
Hyperolius puncticulatus	4	0998/3330	9.985	33.305	07/04/2018	20:00:00	1900	
Moyer's River Frog	1	0997/3333	9.975	33.335	10/04/2018	12:00:00	2000	
Obscure Ridged Frog	20	0997/3334	9.975	33.345	10/04/2018	16:00:00	2250	tadpoles
Obscure Ridged Frog	5	0998/3334	9.985	33.345	10/04/2018	16:00:00	2300	tadpoles
Obscure Ridged Frog	55	0999/3333	9.995	33.335	10/04/2018	16:00:00	2200	5 juv 50 tadpole
Obscure Ridged Frog	30	1000/3332	10.005	33.325	10/04/2018	16:00:00	2200	
Taita Dwarf Toad	1	0997/3334	9.975	33.345	10/04/2018	16:00:00	2200	
Obscure Ridged Frog	100	0998/3334	9.985	33.345	11/04/2018	14:00:00	2280	tadpoles
Obscure Ridged Frog	50	1000/3333	10.005	33.335	11/04/2018	14:45:00	2215	tadpoles
Moyer's River Frog	100	0997/3333	9.975	33.335	12/04/2018	06:00:00	2000	tadpoles
Moyer's River Frog	30	0997/3334	9.975	33.345	12/04/2018	09:00:00	2100	tadpoles
Hyperolius puncticulatus	6	0993/3335	9.935	33.355	14/04/2018	20:00:00	2030	calling males
Obscure Ridged Frog	10	0997/3334	9.975	33.345	15/04/2018	14:00:00	2315	tadpoles
Obscure Ridged Frog	2	1000/3332	10.005	33.325	16/04/2018	09:00:00	2160	juvs
Obscure Ridged Frog	105	1000/3333	10.005	33.335	16/04/2018	15:30:00	2210	5 juvs 100 tadpole
Obscure Ridged Frog	120	1000/3332	10.005	33.325	17/04/2018	12:00:00	2205	20 juv 100 tadpole
Taita Dwarf Toad	1	1000/3332	10.005	33.325	18/04/2018	10:45:00	2200	
Moyer's River Frog	20	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	tadpole
Dwarf Squeaker	3	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Red Toad	1	1003/3331	10.035	33.315	20/04/2018	13:30:00	1650	

### Appendix 3: Reptiles

Variable Skink	4	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Angulate Dwarf Gecko	1	1004/3331	10.045	-33.315	02/04/2018	07:45:00	1550	
Variable Skink	2	1004/3330	10.045	-33.305	02/04/2018	15:00:00	1530	
Variable Skink	3	1002/3331	10.025	33.315	03/04/2018	11:00:00	1700	
Variable Skink	4	1003/3331	10.035	33.315	03/04/2018	13:00:00	1600	
Angolan Rough-scaled Lizard	1	1003/3331	10.035	33.315	04/04/2018	07:15:00	1580	
Variable Skink	1	0999/3331	9.995	33.315	04/04/2018	13:00:00	2100	
Variable Skink	3	1000/3330	10.005	33.305	05/04/2018	10:07:00	1944	
Nchisi Dwarf Chameleon	1	0998/3330	9.985	33.305	07/04/2018	20:00:00	1900	
Grey-bellied Skaapsteker	1	0997/3334	9.975	33.345	15/04/2018	14:00:00	2315	P. variabilis. Striped ind, 65 cm, 09.9744/33.34876
Angulate Dwarf Gecko	2	0997/3334	9.975	33.345	17/04/2018	10:30:00	2336	Very close to Zambia's peak

Variable Skink	3	1000/3332	10.005	33.325	18/04/2018	10:45:00	2200	
Angulate Dwarf Gecko	2	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	
Nchisi Dwarf Chameleon	6	1001/3332	10.015	33.325	19/04/2018	20:00:00	1875	
Speckle-lipped Skink	1	1001/3331	10.015	33.315	20/04/2018	09:30:00	1800	
Variable Skink	1	1002/3331	10.025	33.315	20/04/2018	12:15:00	1750	

#### Appendix 4: Mammals

Civet	1	1003/3331	10.035	-33.315	02/04/2018	09:15:00	1580	Spoor thought to be of this species
Lesser Bushbaby	1	1002/3331	10.025	33.315	02/04/2018	19:00:00	1685	
Yellow Baboon	1	1001/3332	10.015	33.325	04/04/2018	08:15:00	1870	troop 1
Samango Monkey	1	1001/3332	10.015	33.325	04/04/2018	08:15:00	1950	Les: 1 calling from riparian
Molerat sp	5	1000/3331	10.005	33.315	04/04/2018	11:00:00	2200	mounds
Yellow Baboon	3	0999/3331	9.995	33.315	04/04/2018	12:00:00	2200	troop 2
Yellow Baboon	5	1000/3330	10.005	33.305	05/04/2018	06:30:00	1930	troop 2?
Gambian Sun Squirrel	1	1000/3331	10.005	33.315	05/04/2018	06:30:00	1930	
Bush Squirrel	1	0999/3331	9.995	33.315	05/04/2018	14:00:00	1930	
Klipspringer	1	1001/3329	10.015	33.295	06/04/2018	11:00:00	2200	
Samango Monkey	20	1001/3330	10.015	33.305	06/04/2018	12:50:00	2050	
Gambian Sun Squirrel	2	0998/3330	9.985	33.305	07/04/2018	14:00:00	1900	
Samango Monkey	10	0998/3329	9.985	33.295	08/04/2018	10:00:00	1880	
Blue Duiker	1	0998/3330	9.985	33.305	08/04/2018	12:45:00	1870	3 middens with droppings, reasonably fresh
Fruit Bat sp	1	0998/3330	9.985	33.305	09/04/2018	06:00:00	1890	See pics; possible imm Rousettus (lanosus?!).
Chequered Giant Sengi	1	0998/3330	9.985	33.305	09/04/2018	06:00:00	1890	
Molerat sp	5	1000/3333	10.005	33.335	11/04/2018	14:45:00	2215	mounds
Molerat sp	5	0999/3333	9.995	33.335	11/04/2018	14:30:00	2280	mounds
Samango Monkey	1	0997/3334	9.975	33.345	11/04/2018	18:00:00	2200	
Yellow Baboon	10	0996/3334	9.965	33.345	12/04/2018	15:00:00	2100	troop 5
Gambian Sun Squirrel	1	0997/3333	9.975	33.335	13/04/2018	06:00:00	2000	
Scrub Hare	1	1000/3333	10.005	33.335	16/04/2018	15:30:00	2210	droppings
Gambian Sun Squirrel	1	1001/3332	10.015	33.325	19/04/2018	06:00:00	1875	

#### Appendix 5: Fish

Stargazer	1	1013/3331	10.135	33.315	21/04/2018	08:00:00	1420	Outside KBA. Caught in road!
-----------	---	-----------	--------	--------	------------	----------	------	------------------------------

### Appendix 6: Mafinga Base Camps

Base Camps	GPS	Elevation
Base 1: Maliko Village	S10.05296 E33.30533	1536m
Base 2: Zinsa-Nalupigu Confluence	S10.02379 E33.31810	1696m
Base 3: Kaminjaminja	S9.99814 E33.31072	1930m
Base 4: Mulangale	S9.98840 E33.30428	1903m
Base 5: Musipizi Source	S9.97282 E33.33828	2018m
Base 6: Namitawa Hill	S10.00272 E33.3305	2036m
Base 7: Masuwa	S10.00272 E33.32406	2211m
Base 8: Nalupigu Stream	S10.01834 E33.32406	1874m